2025 | TECHNICAL PROGRAM

SPIE. MEDICAL IMAGING

16–20 FEBRUARY 2025 | TOWN AND COUNTRY RESORT
SAN DIEGO, CALIFORNIA, USA

SPIE. MEDICAL IMAGING

THE EVENT WHERE THE SCIENCE OF MEDICAL IMAGING IS EXPLORED

Cutting-Edge Research

Training and Education

16–20 February 2025

Conferences and Courses

Town and Country Resort & Convention Center
San Diego, California, USA

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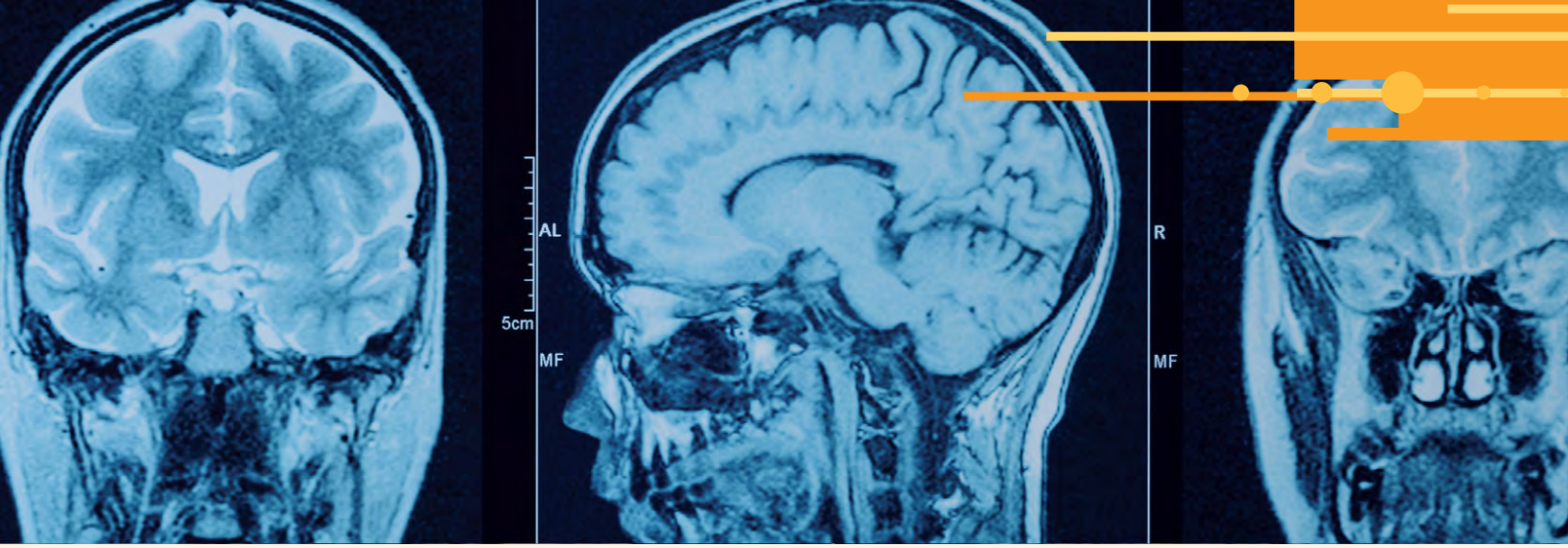

Experience the energy of Medical Imaging

Get ready to enjoy real conversations, hear the latest breakthroughs, and make important in-person connections. Join us for five days of exciting cutting-edge research in image processing, physics, computer-aided diagnosis, perception, image-guided procedures, biomedical applications, ultrasound, informatics, radiology, and digital and computational pathology, and more. Attend technical presentations, courses, plenary presentations, and a variety of networking activities.

CONTENTS

SPIE.

SPIE is the international society for optics and photonics. We bring engineers, scientists, students, and business professionals together to advance light-based science and technology. Over the past five years, we have invested more than $25 million in the international optics community through our advocacy and support, including scholarships, educational resources, travel grants, endowed gifts, and public-policy development.

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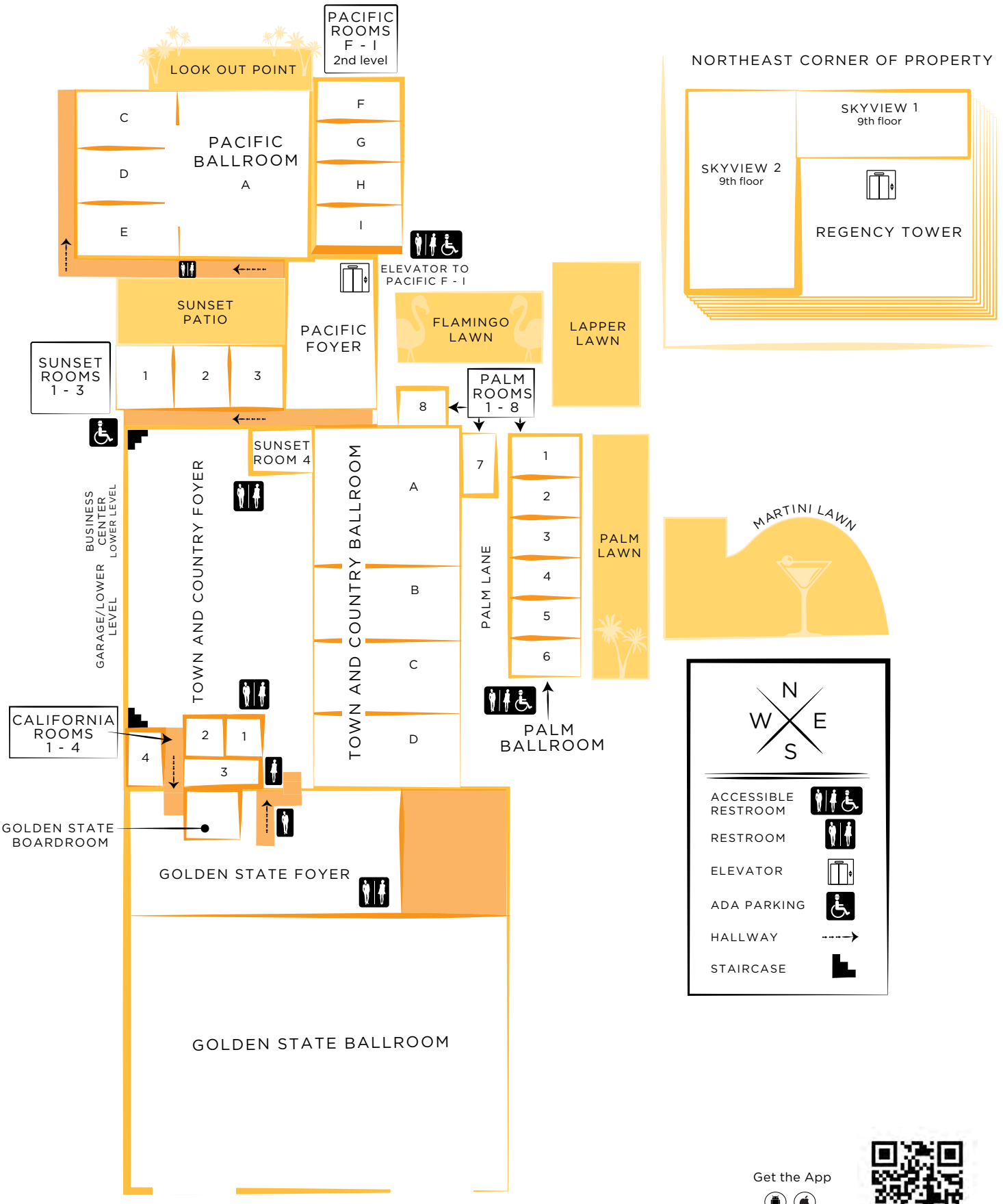
TOWN AND COUNTRY RESORT



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EVENT SCHEDULE

	Conference 13405 Physics of Medical Imaging John M. Sabol; Ke Li; Shiva Abbaszadeh 16 - 20 February 2025 LOCATION: **Town & Country B**	Conference 13406 Image Processing Olivier Colliot; Jhimli Mitra 16 - 20 February 2025 LOCATION: **Town & Country A**	Conference 13407 Computer-Aided Diagnosis Susan M. Astley; Axel Wismüller 16 - 20 February 2025 LOCATION: **Town & Country C**	Conference 13408 Image-Guided Procedures, Robotic Interventions, and Modeling Maryam E. Rettmann; Jeffrey H. Siewerdsen 16 - 20 February 2025 LOCATION: **Town & Country D**	Conference 13409 Image Perception, Observer Performance, and Technology Assessment Mark A. Anastasio; Jovan G. Brankov 16 - 19 February 2025 LOCATION: **Palm 7**

SUNDAY 16 FEBRUARY

COURSES
8:30 AM - 5:30 PM

SC1295: From Analytic to Clinical Validation: Moving AI/ML into Practice
Instructors: **William Y. Hsu,** Univ. of California, Los Angeles (USA); **Matthew S. Brown,** UCLA Ctr. for Computer Vision & Imaging Biomarkers (USA); **Robert M. Nishikawa,** Univ. of Pittsburgh (USA); **Elizabeth A. Krupinski,** Emory Univ. School of Medicine (USA)

12:30 PM to 5:30 PM

SC1324: Transformers: A Powerful Tool for Image Analysis and Generation
Instructors: **Hans Meine,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Felix Thielke,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

1:30 PM - 5:30 PM

SC1129: Photon Counting CT
Instructors: **Mats Danielsson,** KTH Royal Institute of Technology (Sweden); **Mats U. Persson,** KTH Royal Institute of Technology (Sweden)

EVENING

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A

SPIE Medical Imaging Awards and Plenary

Welcome and Introduction, Session Chairs: **Joseph Y. Lo,** Carl E. Ravin Advanced Imaging Labs. (USA), **Cristian A. Linte,** Rochester Institute of Technology (USA)

Robert F. Wagner All-Conference Best Student Paper Award Announcement—*Award Sponsored by:* **MIPS and SPIE**

Acknowledgment of New SPIE Fellows

SPIE Harrison H. Barrett Award in Medical Imaging

Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions *(Keynote Presentation)*
Aaron Fenster, Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

6:30 PM - 8:00 PM — **All-Symposium Welcome Reception**

Thank you to the following cooperating organizations for their support

Promotional Partners: **Electro Optics** and **Photonics Media**

Conference 13410 Clinical and Biomedical Imaging	Conference 13411 Imaging Informatics	Conference 13412 Ultrasonic Imaging and Tomography	Conference 13413 Digital and Computational Pathology
Barjor S. Gimi; Andrzej Krol	Shandong Wu	Christian Boehm; Mohammad Mehrmohammadi	John E. Tomaszewski; Aaron D. Ward
18 - 20 February 2025	16 - 19 February 2025	18 - 20 February 2025	18 - 20 February 2025
LOCATION: **Palm 5**	LOCATION: **Palm 8**	LOCATION: **Palm 2**	LOCATION: **Sunset 1/2**

See full details and updates at **spie.org/mi** or on the **SPIE App**

Event Schedule continues on next page

All-Symposium Welcome Reception

16 February 2025 • 6:30 PM–8:00 PM • Flamingo Lawn

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

SYMPOSIUM CHAIRS:

Joseph Lo
Carl E. Ravin Advanced Imaging Labs., Duke Univ. School of Medicine (USA)

Cristian A. Linte
Carlson Ctr. for Imaging Science, Rochester Institute of Technology (USA)

EXECUTIVE ORGANIZING COMMITTEE

Shiva Abbaszadeh, Univ. of California, Santa Cruz (USA)

Mark Anastasio, Univ. of Illinois (USA)

Susan Astley, The Univ. of Manchester (United Kingdom)

Christian Boehm, ETH Zurich (Switzerland)

Jovan Brankov, Illinois Institute of Technology (USA)

Olivier Colliot, Ctr. National de la Recherche Scientifique (France)

Barjor Gimi, Univ. of Massachusetts Chan Medical School (USA)

Andrzej Krol, SUNY Upstate Medical Univ. (USA)

Ke Li, Univ. of Wisconsin School of Medicine and Public Health (USA)

Mohammad Mehrmohammadi, Univ. of Rochester (USA)

Jhimli Mitra, GE Healthcare (USA)

Maryam Rettmann, Mayo Clinic (USA)

John Sabol, Konica Minolta Healthcare Americas, Inc. (USA)

Jeffrey Siewerdsen, The Univ. of Texas MD Anderson Cancer Ctr. (USA)

John Tomaszewski, Univ. at Buffalo (USA)

Aaron Ward, The Univ. of Western Ontario (Canada)

Axel Wismüller, Univ. of Rochester Medical Ctr. (USA)

Shandong Wu, Univ. of Pittsburgh (USA)

EVENT SCHEDULE

	Conference 13405 Physics of Medical Imaging John M. Sabol; Ke Li; Shiva Abbaszadeh 16 - 20 February 2025 LOCATION: **Town & Country B**	Conference 13406 Image Processing Olivier Colliot; Jhimli Mitra 16 - 20 February 2025 LOCATION: **Palm 4**	Conference 13407 Computer-Aided Diagnosis Susan M. Astley; Axel Wismüller 16 - 20 February 2025 LOCATION: **Town & Country C**	Conference 13408 Image-Guided Procedures, Robotic Interventions, and Modeling Maryam E. Rettmann; Jeffrey H. Siewerdsen 16 - 20 February 2025 LOCATION: **Town & Country D**	Conference 13409 Image Perception, Observer Performance, and Technology Assessment Mark A. Anastasio; Jovan G. Brankov 16 - 19 February 2025 LOCATION: **Palm 7**
MONDAY 17 FEBRUARY					
COURSE	1:30 PM - 5:30 PM **SC1351: AI-based Medical Imaging: Fairness in Models and Causality in Images** Instructors: **Markus Wenzel,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Eike Petersen,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)				
MORNING	8:20 AM - 10:30 AM | Town & Country B/C **Monday Morning Keynotes** Session Chairs**: Ke Li,** The Univ. of Texas M.D. Anderson Cancer Ctr. (USA), **Mark A. Anastasio,** Univ. of Illinois (USA), **Shandong Wu,** Univ. of Pittsburgh (USA) **Welcome and Introduction** **Award announcements** • Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411 • Physics of Medical Imaging Student Paper Award **Promoting innovation in your team: Lessons learned from 40 years in medical imaging** *(Keynote Presentation)* **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (USA) **Designing AI for clinical imaging: the important role of model observers** *(Keynote Presentation)* **Abhinav K. Jha,** Washington Univ. in St. Louis (USA) **Tackling the health AI paradox** *(Keynote Presentation)* **Karandeep Singh,** UC San Diego Health (USA)				
	COFFEE BREAK • 10:30 AM - 11:00 AM				
	11:00 AM Town & Country B **SESSION 1: Novel X-ray Sources and Systems** *(Shuai Leng, Karl Stierstorfer)*	11:00 AM Palm 4 **SESSION 1: Vision-Language and Foundation Models**	11:00 AM Town & Country C **SESSION 1: Classification** *(Samuel G. Armato, Weijie Chen)*	11:00 AM Town & Country D **SESSION 1: Surgical Navigation** *(William E. Higgins, Baowei Fei)*	11:00 AM Palm 7 **SESSION 1: Observer Performance** *Craig K. Abbey, Howard C. Gifford,)*
AFTERNOON	**LUNCH BREAK**				
	1:40 PM Town & Country B **SESSION 2: Cone Beam CT** *(Adam S. Wang, Joseph Webster Stayman)*	1:40 PM Palm 4 **SESSION 2: Brain**	1:40 PM Town & Country C **SESSION 2: Abdomen I** *(Lubomir M. Hadjiiski, Amber L. Simpson)*	1:40 PM Town & Country D **SESSION 2: Interventional Radiology and Minimally Invasive Surgery** *(Matthieu Chabanas, Elvis C.S. Chen)*	1:30 PM Palm 7 **SESSION 2: Breast** *Robert M. Nishikawa, Claudia R. Mello-Thoms)*
	COFFEE BREAK				
	3:30 PM Town & Country B **SESSION 3: Detectors** *(Wei Zhao, Seungryong Cho, Arundhuti Ganguly)*	3:40 PM Palm 4 **SESSION 3: Segmentation**	3:30 PM Town & Country C **SESSION 3: Head, Neck, and Eye** *(Thomas Martin Deserno, Leticia Rittner)*	3:30 PM Town & Country D **SESSION 3: Video-based Interventional Applications** *(Kristy K. Brock, Jack H. Noble)*	3:40 PM Palm 7 **SESSION 3: Model Observers** *(Elizabeth A. Krupinski, Stephen H. Adamo)*
EVENING	5:30 PM - 7:00 PM | Golden State Ballroom **Monday Poster Session**				

Conference 13410 Clinical and Biomedical Imaging Barjor S. Gimi; Andrzej Krol 18 - 20 February 2025 LOCATION: **Palm 5**	Conference 13411 Imaging Informatics Shandong Wu 16 - 19 February 2025 LOCATION: **Palm 8**	Conference 13412 Ultrasonic Imaging and Tomography Christian Boehm; Mohammad Mehrmohammadi 18 - 20 February 2025 LOCATION: **Palm 2**	Conference 13413 Digital and Computational Pathology John E. Tomaszewski; Aaron D. Ward 18 - 20 February 2025 LOCATION: **Sunset 1/2**

See full details and updates at **spie.org/mi** or on the **SPIE App**

	COFFEE BREAK • 10:30 AM - 11:00 AM			
	LUNCH BREAK			
		1:30 PM Palm 8 **SESSION 1: Model Guided Precision Medicine** *(Shandong Wu, Dooman Arefan)*		
	COFFEE BREAK			
		4:00 PM Palm 8 **SESSION 2: Augmenting Decision-Making and Workflow** *(Brent J. Liu, Heinz U. Lemke)*		

Event Schedule continues on next page

Student 3-Minute Poster Presentations, sponsored by the *Journal of Medical Imaging*

17 February 2025 • 5:30 PM - 6:30 PM
Golden State Ballroom

Students present 3-minute rapid-fire overviews of their JMI poster research. The top three presentations will receive cash prizes.

Monday Poster Session

17 February 2025 • 5:30 PM - 7:00 PM
Golden State Ballroom

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.
Poster presentations from the following conferences will be included:

- Physics of Medical Imaging
- Image-Guided Procedures, Robotic Interventions, and Modeling
- Image Perception, Observer Performance, and Technology Assessment
- Imaging Informatics for Healthcare, Research, and Applications

Poster Setup and Pre-Session Viewing: 10:00 AM Monday – 5:30 PM Monday *
**In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Monday. Judging may begin after this time. Posters must remain on display until the end of the Monday evening poster session, but may be left hanging until 1:00 PM Tuesday. After 1:00 PM on Tuesday, posters will be removed and discarded.*

Next-Day Viewing and Tear-Down Posters may be left hanging until 1:00 PM on Tuesday for extended viewing. All Posters must be removed by 1:00 PM on Tuesday. Any unclaimed posters will be discarded.

View poster presentation guidelines and set-up instructions at: **https://spie.org/MI/Poster-Presentation-Guidelines**

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	Conference 13405 Physics of Medical Imaging John M. Sabol; Ke Li; Shiva Abbaszadeh 16 - 20 February 2025 LOCATION: **Town & Country B**	Conference 13406 Image Processing Olivier Colliot; Jhimli Mitra 16 - 20 February 2025 LOCATION: **Town & Country A**	Conference 13407 Computer-Aided Diagnosis Susan M. Astley; Axel Wismüller 16 - 20 February 2025 LOCATION: **Town & Country C**	Conference 13408 Image-Guided Procedures, Robotic Interventions, and Modeling Maryam E. Rettmann; Jeffrey H. Siewerdsen 16 - 20 February 2025 LOCATION: **Town & Country D**	Conference 13409 Image Perception, Observer Performance, and Technology Assessment Mark A. Anastasio; Jovan G. Brankov 16 - 19 February 2025 LOCATION: **Palm 7**
TUESDAY 18 FEBRUARY					
COURSE	1:30 PM - 5:30 PM **SC1183: Modern and Future Diagnostic X-ray Sources** Instructor: **Rolf K. Behling,** KTH Royal Institute of Technology (Germany)				
MORNING	8:30 AM - 10:00 AM | Town & Country A **Tuesday Morning Keynotes** Session Chairs: **Jhimli Mitra,** GE Research (USA), **Christian Boehm,** ETH Zurich (Switzerland) **Welcome and Introduction** **Award announcements** • Robert F. Wagner Award finalists for conferences 13406 and 13412 • Image Processing Student Paper Award **Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine** *(Keynote Presentation)* **Duygu Tosun-Turgut,** Univ. of California, San Francisco (USA) **Wearable ultrasound technology** *(Keynote Presentation)* **Sheng Xu,** Univ. of California, San Diego (USA)				
	COFFEE BREAK • 10:00 AM - 10:30 AM				
	10:30 AM Town & Country B **SESSION 4: Photon Counting Detector CT** *(Mats B. Danielsson, Mini Das)*	10:30 AM Palm 4 **SESSION 4: Image Synthesis and Generative Models**	10:30 AM Town & Country C **Session 4: CAD and Perception:** Joint Session with Conferences 13407 and 13409 *(Susan M. Astley)*	10:30 AM Town & Country D **SESSION 4: Cardiac Applications** *(Cristian A. Linte, David R. Holmes)*	10:30 AM Town & Country **SESSION 4: CAD and Perception** Joint Session with Conferences 13407 and 13409 *(Susan M. Astley)*
AFTERNOON	**LUNCH BREAK**				
	1:50 PM Town & Country B **SESSION 5: Breast Imaging** *(Anders Tingberg, Ioannis Sechopoulos)*	1:40 PM Palm 4 **TUTORIAL: Neural Network Verification for Medical Imaging Analysis** *(Ipek Oguz, Taylor T. Johnson)*	1:50 PM Town & Country C **SESSION 5: Cardiovascular** *(Khan M. Iftekharuddin, Chisako Muramatsu)*	1:40 PM Town & Country D **SESSION 5: Image-Guided Procedures, Robotic Interventions, and Ultrasonic Imaging/ Tomography** Joint Session with Conferences 13408 and 13412 *(Jessica R. Rodgers)*	1:40 PM Palm 7 **SESSION 5: Technology Assessment** *(Miguel A. Lago, François O. Bochud)*
	COFFEE BREAK				
	3:40 PM Town & Country B **SESSION 6: Physics/Image-Guided Procedures** Joint Session with Conferences 13405 and 13408 *(Shuai Leng, Shuo Li)*	3:40 PM Palm 4 **SESSION 5: Transformers**	3:50 PM Town & Country C **SESSION 6: Chest** *(Maryellen L. Giger, Horst Karl Hahn)*	3:40 PM Town & Country B **SESSION 6: Physics/Image-Guided Procedures** Joint Session with Conferences 13405 and 13408 *(Shuai Leng, Shuo Li)*	3:40 PM Palm 7 **SESSION 6: Task-informed Computed Imaging** *(Frank W. Samuelson, Jovan G. Brankov)*
EVENING	5:30 PM - 6:30 PM **NIH/NIBIB Session: Funding Opportunities and Grant Writing Tips for New Investigators**		5:30 PM - 7:00 PM Golden State Ballroom **Live Demonstrations Workshop**	5:30 PM - 6:30 PM **NIH/NIBIB Session: Funding Opportunities and Grant Writing Tips for New Investigators**	

Conference 13410 Clinical and Biomedical Imaging Barjor S. Gimi; Andrzej Krol 18 - 20 February 2025 LOCATION: **Palm 5**	Conference 13411 Imaging Informatics Shandong Wu 16 - 19 February 2025 LOCATION: **Palm 8**	Conference 13412 Ultrasonic Imaging and Tomography Christian Boehm; Mohammad Mehrmohammadi 18 - 20 February 2025 LOCATION: **Palm 2**	Conference 13413 Digital and Computational Pathology John E. Tomaszewski; Aaron D. Ward 18 - 20 February 2025 LOCATION: **Sunset 1/2**

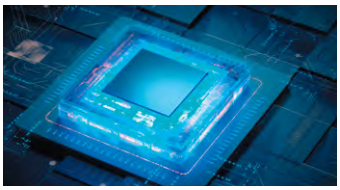
See full details and updates at **spie.org/mi** or on the **SPIE App**

	COFFEE BREAK • 10:00 AM - 10:30 AM			
	10:30 AM Palm 5 **SESSION 1: Novel Molecular, Functional, MRI, and Nanoparticle Imaging Technologies**	10:30 AM Palm 8 **SESSION 3: Foundation Models** *(Hiroyuki Yoshida, Xiaofeng Yang)*	10:30 AM Palm 2 **SESSION 1: Ultrasound Image Processing and Analysis**	10:30 AM Sunset 1/2 **SESSION 1: Segmentation of Cellular and Tissue Structures I**
	LUNCH BREAK			
	1:40 PM Palm 5 **SESSION 2: Ocular, OCT, and Optical Imaging**	1:40 PM Palm 8 **SESSION 4: Synthetic Data** *(Nils Daniel Forkert, Dooman Arefan)*	1:40 PM Town & Country D **SESSION 2: Image-Guided Procedures, Robotic Interventions, and Ultrasonic Imaging/ Tomography** Joint Session with Conferences 13408 and 13412 *(Jessica R. Rodgers)*	1:40 PM Sunset 1/2 **SESSION 2: Segmentation of Cellular and Tissue Structures II**
	COFFEE BREAK			
	3:20 PM Palm 5 **SESSION 3: Bone/Skeletal Imaging**	4:10 PM Palm 8 **SESSION 5: Informatics Data Management** *(William Hsu, Anh H. Le)*	3:30 PM Palm 2 **SESSION 3: Imaging Algorithms and Reconstruction Techniques**	3:30 PM Sunset 1/2 **SESSION 3: Automated Quantification of Tissue Biomarkers**
	6:00 PM - 7:00 PM Palm 5 **NiChart Software Platform Demonstration**			

Application tracks

Application tracks enable attendees to group and explore presentations in the conference programs to more easily plan their event schedule around the topic of interest. Application track filters span across all conferences at an SPIE event. The ability to group presentations has the reciprocal benefit of helping authors' presentations be more easily found.

See conference app or website for a full listing of presentations in each of these tracks: **spie.org/mi**



AI/ML

Papers that showcase the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems across multiple sectors, technologies, and applications.

Sustainability

Papers that highlight the use of optics and photonics for renewable energy, natural resource management, sustainable manufacturing, and greenhouse gas mitigation in support of the UN Sustainable Development Goals.

Event Schedule continues on next page

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WEDNESDAY 19 FEBRUARY					
MORNING	8:30 AM - 10:00 AM | Town & Country A **Wednesday Morning Keynotes** Session Chairs: **Maryam E. Rettmann,** Mayo Clinic (USA), **Aaron D. Ward,** The Univ. of Western Ontario (Canada) **Welcome and Introduction** **Award announcements** • Robert F. Wagner Award finalists for conferences 13408 and 13413 • Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling • Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling **Image-guided surgery and examinations using ultrasound** *(Keynote Presentation)* **Tim Salcudean,** The Univ. of British Columbia (Canada) **The future of diagnostics: the role of computational pathology in tomorrow's medicine** *(Keynote Presentation)* **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)				
	COFFEE BREAK • 10:00 AM - 10:30 AM				
	10:30 AM Town & Country B **SESSION 7:** **Image Reconstruction with Diffusion Models** *(Marc Kachelrieß, Yuxiang Xing, Behrouz Shabestari)*	10:30 AM Palm 4 **SESSION 6:** **Cardiovascular Imaging**	10:30 AM Town & Country **SESSION 7:** **Breast** *(Juhun Lee, Heather M. Whitney)*	10:30 AM Town & Country D **SESSION 7:** **Surgical Data Science** *(Pierre Jannin, Jeffrey Harold Siewerdsen)*	10:30 AM Palm 7 **SESSION 7:** **Data Issues for AI Assessment** *(Weimin Zhou, Mark A. Anastasio)*
AFTERNOON	**LUNCH BREAK**				
	1:50 PM Town & Country B **SESSION 8:** **Angiography and Radiography** *(Michael A. Speidel, Andreas Maier)*	1:30 PM Palm 4 **SESSION 7:** **Deep Dive**	1:50 PM Town & Country C **SESSION 8:** **Methods** *(Kenji Suzuki, Ronald M. Summers)*	1:40 PM Town & Country D **SESSION 8:** **Robotic Interventions** *(Robert J. Webster, Ziv R. Yaniv)*	
	COFFEE BREAK				
	3:40 PM Town & Country B **SESSION 9:** **Virtual Clinical Trials** *(Lifeng Yu, Grace Jianan Gang, Hilde Bosmans)*	3:40 PM Palm 4 **SESSION 8:** **Image Reconstruction and Enhancement**	3:50 PM Town & Country **SESSION 9:** **Segmentation** *(Shandong Wu, Karen Drukker)*	3:30 PM Town & Country D **SESSION 9:** **Cancer Interventions** *(Junghoon Lee)*	
EVENING	5:30 PM–7:00 PM | Pacific A **Wednesday Poster Session**				

	Conference 13410 Clinical and Biomedical Imaging Barjor S. Gimi; Andrzej Krol 18 - 20 February 2025 LOCATION: **Palm 5**	Conference 13411 Imaging Informatics Shandong Wu 16 - 19 February 2025 LOCATION: **Palm 8**	Conference 13412 Ultrasonic Imaging and Tomography Christian Boehm; Mohammad Mehrmohammadi 18 - 20 February 2025 LOCATION: **Palm 2**	Conference 13413 Digital and Computational Pathology John E. Tomaszewski; Aaron D. Ward 18 - 20 February 2025 LOCATION: **Sunset 1/2**
	COFFEE BREAK • 10:00 AM - 10:30 AM			
	10:30 AM Palm 5 **SESSION 4: AI, ML, Deep Learning, Neural Networks in Molecular, Structural, Functional Imaging I**	10:30 AM Palm 8 **SESSION 6: Generative AI - Diffusion Models** *(Xiaofeng Yang, William Hsu)*	10:30 AM Palm 2 **SESSION 4: Photoacoustic Imaging**	10:30 AM Sunset 1/2 **SESSION 4: Grading, Classification, and Diagnosis**
	LUNCH BREAK			
	1:30 PM Palm 5 **SESSION 5: Clinical Imaging**	1:30 PM Palm 8 **SESSION 7: AI/ML for Data Analytics** *(Thomas Martin Deserno, Hiroyuki Yoshida)*	1:40 PM Palm 2 **SESSION 5: Blood Flow Imaging**	1:40 PM Sunset 1/2 **SESSION 5: Model Interpretability**
	COFFEE BREAK			
	3:30 PM Palm 5 **SESSION 6: Neuroimaging**		3:30 PM Palm 2 **SESSION 6: Ultrasound Computed Tomography**	3:30 PM Sunset 1/2 **SESSION 6: Multistain and Multispectral Imaging and Analysis**

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Event Schedule continues on next page

Student 3-Minute Poster Presentations, sponsored by the *Journal of Medical Imaging*

19 February 2025 • 5:30 PM 6:30 PM | Golden State Ballroom

Students present 3-minute rapid-fire overviews of their JMI poster research. The top three presentations will receive cash prizes.

Wednesday Poster Session

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster presentations from the following conferences will be included:

- Image Processing
- Computer-Aided Diagnosis
- Clinical and Biomedical Imaging
- Ultrasonic Imaging and Tomography
- Digital and Computational Pathology

Poster Setup and Pre-Session Viewing: 7:30 AM – 5:30 PM Wednesday*

**In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session, but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.*

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THURSDAY 20 FEBRUARY					
MORNING	8:30 AM - 10:00 AM | Town & Country A **Thursday Morning Keynotes** Session Chairs: **Susan M. Astley,** The Univ. of Manchester (United Kingdom), **Andrzej Krol,** SUNY Upstate Medical Univ. (USA) **Welcome and Introduction** **Award announcements** • Robert F. Wagner Award finalists for conferences 13407 and 13410 • Computer-Aided Diagnosis Best Paper Award **Pioneering vision: The journey of building AI for transformative healthcare** *(Keynote Presentation)* **Elad Walach,** Aidoc (Israel) **Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers** *(Keynote Presentation)* **Christos Davatzikos,** Penn Medicine(USA)				
	COFFEE BREAK • 10:00 AM - 10:30 AM				
	10:30 AM Town & Country B **SESSION 10: CT Image Quality** *(Frédéric Noo, Lifeng Yu)*	10:30 AM Palm 4 **SESSION 9: Explainable and Trustworthy AI**	10:30 AM Town & Country C **SESSION 10: Brain** *(Chuan Zhou, Hiroyuki Yoshida)*	10:30 AM Town & Country D **SESSION 10: Image-Guided Liver Interventions** *(Michael I. Miga, Terry Yoo)*	
AFTERNOON	**LUNCH BREAK**				
	1:50 PM Town & Country B **SESSION 11: Phase Contrast and Dark Field Imaging** *(John M. Sabol, Ke Li)*		1:50 PM Town & Country C **SESSION 11: Abdomen II** *(Xiaofeng Yang, Zhengrong (Jerome) Liang)*		
	COFFEE BREAK				
	3:40 PM Town & Country B **SESSION 12: Deep Learning Applied to Imaging Physics** *(Frédéric Noo, Andreas Maier)*				

Thank you for participating at

	Conference 13410 Clinical and Biomedical Imaging Barjor S. Gimi; Andrzej Krol 18 - 20 February 2025 LOCATION: **Palm 5**	Conference 13411 Imaging Informatics Shandong Wu 16 - 19 February 2025 LOCATION: **Palm 8**	Conference 13412 Ultrasonic Imaging and Tomography Christian Boehm; Mohammad Mehrmohammadi 18 - 20 February 2025 LOCATION: **Palm 2**	Conference 13413 Digital and Computational Pathology John E. Tomaszewski; Aaron D. Ward 18 - 20 February 2025 LOCATION: **Sunset 1/2**
	COFFEE BREAK • 10:00 AM - 10:30 AM			
	10:30 AM Palm 5 **SESSION 7: AI, ML, Deep Learning, Neural Networks in Molecular, Structural, Functional Imaging II**		10:30 AM Palm 2 **SESSION 7: Applications of Machine Learning in Ultrasound Imaging**	10:30 AM Sunset 1/2 **SESSION 7: Standardization, Multimodal Analysis, and Synthetic Data Generation**
	LUNCH BREAK			
	1:40 PM Palm 5 **SESSION 8: Cardiac and Soft Tissue Imaging**			
	COFFEE BREAK			
	3:40 PM Palm 5 **SESSION 9: Image Processing, Detection, Segmentation, Analysis for Quantifying/ Modeling**			

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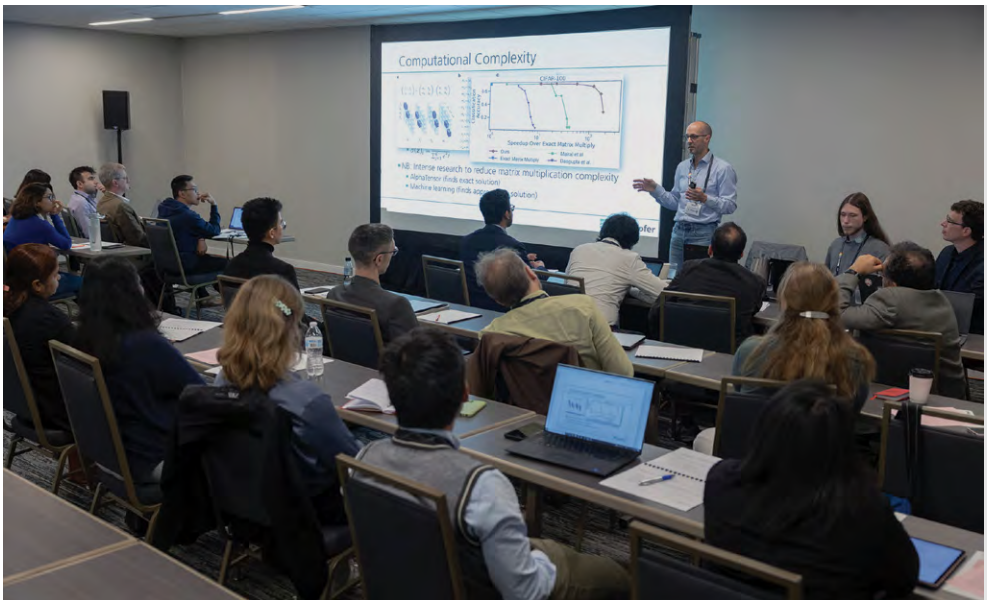
The Medical Imaging conference proceedings papers and presentations are published in the SPIE Digital Library. All paid conference registrations include 50 downloads for ongoing access.

See full details and updates at **spie.org/mi** or on the **SPIE App**

SPIE Medical Imaging 2025.

COURSES



Courses for SPIE Medical Imaging

Advance your career by adding in-person training

Created and taught by experts, SPIE courses are designed to expand professional knowledge and skills.

From Analytic to Clinical Validation: Moving AI/ML into Practice

SC1295 • Level: Intermediate
Sunday, 16 February 2025 • 8:30 AM - 5:30 PM

Member: $810.00 | Non-member: $920.00
Student member: $468.00

INSTRUCTORS
William Y. Hsu - Univ. of California, Los Angeles (USA)

Matthew S. Brown - UCLA Ctr. for Computer Vision & Imaging Biomarkers (USA)

Robert M. Nishikawa - Univ. of Pittsburgh (USA)

Elizabeth A. Krupinski - Emory Univ. School of Medicine (USA)

Artificial Intelligence (AI) is increasingly being used in a wide variety of medical imaging applications. Most of the focus, however, is on algorithm and scheme development, but this is only part of the picture. In order to have an impact on clinical decision making, workflow and patient care these AI tools must be evaluated using real-world cases and actual clinical providers that are expected to use them in routine care. The techniques used to conduct these types of studies are less well known in this field thus investigators need to be trained the proper study design and analysis methods. This course will cover basic principles, techniques, and process for validating models developed using artificial intelligence (AI)/machine learning (ML) techniques. The primary goal of this course is to help the audience understand and apply fundamental principles related to designing, executing, and interpreting model evaluation studies. The course will be organized around two parts: analytic validation and clinical validation. In the first half, the audience will be exposed to approaches for performing a technical validation of a prediction model, including different study designs, appropriate statistical tests, metrics, dataset considerations, and decision curve analysis. The second half will cover the process of undertaking clinical validation that would address real-world use of models, regulatory and deployment issues. Topics include workflow integration, prospective clinical trials, reader impact studies, and regulatory approvals. Examples will focus on imaging-related models that are drawn from literature and the instructors' personal experiences in prognostic modeling, computer-aided diagnosis, and imaging biomarker development.

Course level is Intermediate and will include some Advanced level concepts.

Transformers: A Powerful Tool for Image Analysis and Generation

SC1324 • Level: Intermediate
Sunday, 16 February 2024 • 12:30 PM to 5:30 PM

Member: $825.00 | Non-member: $935.00
Student member: $474.00

INSTRUCTORS
Hans Meine - Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

Felix Thielke - Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

Compared to the tremendous success models like GPT4, Bard, or Llama, which are all based on transformers, had in the field of

MONEY-BACK GUARANTEE

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SPIE awards digital badges and certificates to participants who attend courses and complete the evaluation and quiz. Digital credentials are always accessible, easily shareable, printable at any time, and verified. For more information visit spie.org/digital-badges

SPIE reserves the right to cancel a course due to insufficient advance registration.

Onsite courses

View course descriptions and register online.

SPIE Members and Student Members receive discounts on courses.

text analysis, machine translation, and de-novo text generation, it took longer for transformers to enter the scene of image analysis and image generation. Reasons being the high demands in terms of compute and data. More successful approaches in training transformers have led to a change that will likely be as impactful as the introduction of CNNs for image classification. Already, first (still limited) "image foundation models" have been published, and also in medical image analysis, several attempts are being made to parallel the semantic understanding and emergence seen in large language models for image models. In this course, we explain the thought model and elementary mathematics of the attention mechanism underlying transformers. You will learn in theory and explore in hands-on work the reason for their modeling capacity and understand why this creates the need of larger training datasets. The course traces the development of transformers for image analysis tasks and shows ways to pre-train transformers on weak or unlabeled data. The course concludes with examples of applications used in medical image analysis tasks.

This is an interactive course and participants will need to bring their own laptops.

Photon Counting CT

SC1129 • Level: Introductory
Sunday, 16 February 2025 • 1:30 PM - 5:30 PM

Member: $505.00 | Non-member: $570.00
Student member: $328.00

INSTRUCTORS
Mats Danielsson - KTH Royal Institute of Technology (Sweden)

Mats U. Persson - KTH Royal Institute of Technology (Sweden)

This course explains the principles of photon counting detectors for spectral x-ray imaging. Typical technical implementations are described and fundamental differences to energy integrating systems are pointed out. In particular, the issues of high-rate handling and the effect of detector cross talk on energy resolution are described. Requirements on electronics for spectral imaging in computed tomography is also discussed. A second objective of the course is to describe how energy sensitive counting detectors make use of the energy sampling of the linear attenuation coefficients of the background and target materials for any given imaging task; methods like material basis decomposition and optimal energy weighting will be explained. The second objective highlights the interesting fact that while the spatial-frequency descriptor of signal-to-noise-ratio transfer (DQE) of a system gives a complete characterization of performance for energy integrating (and pure photon counting) systems, it fails to characterize multibin systems since a complete description of the transfer characteristics requires specification of how the information of each energy bin is handled. The latter is in turn dependent on the imaging case at hand which shows that there is no such thing as an imaging case independent system DQE for photon counting multibin systems. We also suggest how this issue could be resolved.

AI-based Medical Imaging: Fairness in Models and Causality in Images

SC1351 • Level: Intermediate
Monday, 17 February 2025 • 1:30 PM - 5:30 PM

Member: $520.00 | Non-member: $585.00
Student member: $334.00

INSTRUCTORS
Markus Wenzel - Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

Eike Petersen - Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

The rapidly increasing clinical deployment of AI-based medical image analysis software has led to heightened concerns about the (potential lack of) fairness and robustness of such AI models. Multiple recent high-profile studies have shown that there is indeed cause for concern: medical imaging AI models can, and do, discriminate against different demographic groups, often in surprising ways. In this half-day workshop, we will bring the increasingly important research fields of algorithmic fairness and causality to the attention of the medical imaging community. The workshop will start with a clarification and open discussion of what "fairness" might mean in a medical imaging context, and answer the question of how a model can be "unfair". We will provide examples of several such "unfair" or biased models and derive different types and sources of bias, along with technical approaches to detect and mitigate them (where available). We will provide code examples in Python to empower participants to experience the proposed methods during the workshop. Using these interactive sessions, we want to enable participants to diagnose and - if possible - fix certain types of bias in example datasets and models, using mitigation strategies that will be discussed in more technical talks in the workshop. This shall result in a set of analytical tools and an overview of methods that the participants can later use in their work. Lastly, we will introduce the concept of causality in medical imaging, by asking what causes certain biases in medical images, and ultimately a training dataset used for modeling. To this end, we will introduce fundamental concepts and assumptions in causal modeling, including the causal graph as a tool for specifying causal assumptions..

This is an interactive course and participants will need to bring their own laptops.

Modern and Future Diagnostic X-ray Sources

SC1183 • Level: Introductory
Tuesday, 18 February 2025 • 1:30 PM - 5:30 PM

Member: $505.00 | Non-member: $570.00
Student member: $328.00

INSTRUCTOR
Rolf K. Behling - KTH Royal Institute of Technology (Germany)

More than 100,000 diagnostic X-ray tubes are being installed or replaced every year. Tubes for dental application, non-destructive testing and material analytics add to this number. Particularly since the advent of computed tomography and the increasing sophistication of interventional X-ray systems, progress in the development of diagnostic X-ray sources has been tremendous. However, improvements began to decline in the last two decades due to the ageing technology of rotating anodes. This lecture will discuss the state of technology and provide a fresh outlook into its future. As a sound basis for their work, specialists and academicians working in the realm of X-rays may want to improve their background knowledge and ask specific questions. Literature on the topic has grown recently, among others with several publications by the lecturer, including a standard textbook. In addition, this course will offer 1:1 interaction to improve understanding the physics of production of "clinical" X-rays for diagnostics. It will comprehensively treat functional principles of X-ray sources. Design aspects, special features, radiation protection, modern performance metric, manufacturing technology, and cost aspects will be discussed. Why is vacuum technology not at all outdated? Will we find X-ray LED, compact X-ray Lasers or flat panel sources in medical imaging soon? Why do hundreds of special tube types populate the market? The lecture will cover system performance aspects related to the source, material boundary conditions, and manufacturing technology. The quest for affordable healthcare demands trade-offs between value and cost, and objective comparison of tube types. Initial costs and costs of tube replacement will be discussed as well as means to extend tube life and to save natural resources. Recent technology and application will be treated as well as possible paradigm shifts that are on the horizon. Finally, the lecture may spark fascination for these vacuum electronic light sources off the scientific mainstream.

PLENARY AND KEYNOTE EVENTS

HEAR FROM THE LEADING SPEAKERS HIGHLIGHTING THEIR AREAS OF RESEARCH

SPIE Medical Imaging plenary/keynote sessions feature presentations from a wide range of leaders in the field, with focus on developing research and visions of the future of imaging technologies.

PLENARY EVENT

SPIE Medical Imaging Awards and Plenary

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A

5:30 PM - 5:40 PM:

Symposium Chair Welcome and Best Student Paper Award Announcement

Joseph Lo
Carl E. Ravin Advanced Imaging Labs., Duke Univ. School of Medicine (USA)

Cristian Linte
Carlson Ctr. for Imaging Science, Rochester Institute of Technology (USA)

Welcome to SPIE Medical Imaging 2025 attendees and the announce the first-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award.

AWARD SPONSORED BY:

5:40 PM - 5:45 PM:

Acknowledgment of New SPIE Fellows
Each year, SPIE promotes Members as new Fellows of the Society. Fellows are Members of distinction who have made significant scientific and technical contributions in the multidisciplinary fields of optics, photonics, and imaging. They are honored for their technical achievement and for their service to the general optics community and to SPIE in particular. Join us as we welcome members of the medical imaging community who have been selected this year as new SPIE Fellows.

5:45 PM - 5:50 PM:

SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging.

5:50 PM - 6:30 PM:

Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions

Aaron Fenster, Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), and Centre for Imaging Technology Commercialization (CIMTEC) (Canada)

Conventional 2D ultrasound (2D US) is used extensively for a wide variety of diagnostic and interventional procedures. However, some procedures require 3D images to allow better appreciation of the anatomy and provide a means for registration with images from other modalities. Thus, the use of 3D US has increased over the past two decades with innovations from research laboratories and ultrasound system manufacturers. Some of these systems make use of 3D tracking devices (optical and electromagnetic) to allow free-hand scanning of the anatomy while 2D US images are acquired into a computer together with pose information.

Our research has been focused on developing 3D US scanning devices that overcome the limitations of conventional US imaging methods. We have been developing and fabricating various mechanical external motorized fixtures that move a conventional US probe in specific patterns and used them in systems for image-guided prostate biopsy prostate, prostate and gynecologic brachytherapy, and focal liver tumour ablation. As well, we developed 3D US-based system for point of care diagnostic application such as whole breast imaging, carotid plaque quantification, and hand and knee osteoarthritis.

Aaron Fenster is a Scientist at the Robarts Research Institute, founder and past Director of the Imaging Research Laboratories (IRL) at the Robarts Research Institute. He is a Professor and Chair of the Division of Imaging Sciences of the Department of Medical Imaging at Western University, Canada. In addition, he is the founder and past Director of the graduate Program in Biomedical Engineering and past Director for the Biomedical Imaging Research Centre at The Western University.

Monday Morning Keynotes

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country B/C

Session Chairs:
Ke Li, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA)
Mark A. Anastasio, Univ. of Illinois (USA)
Shandong Wu, Univ. of Pittsburgh (USA

8:20 AM - 8:25 AM:

Welcome and introduction

8:25 AM - 8:30 AM:

Award announcements

» Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
» Physics of Medical Imaging Student Paper Award

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8:30 AM - 9:10 AM:

Promoting innovation in your team: Lessons learned from 40 years in medical imaging

Thomas M. Grist, University of Wisconsin School of Medicine and Public Health (USA)

The development of advanced cross-sectional imaging technologies, especially X-ray CT and MRI, are widely recognized as the most impactful inventions in health care during the last 50 years. During this period of transformative innovation in medical imaging, progress has been accelerated through collaborative efforts between medical physicists, physicians, and the medical imaging industry. Innovation can be accelerated through individual efforts to promote the creative process, as well as frameworks to enhance collaboration and invention amongst teams of researchers. The purpose of this lecture is to examine key elements of the inventive process that have contributed to the development of medical imaging in the past that can be leveraged for ongoing advances in healthcare in the future.

9:10 AM - 9:50 AM:

Designing AI for clinical imaging: the important role of model observers

Abhinav Kumar Jha, Washington Univ. in St. Louis (USA)

Deep learning algorithms for image reconstruction and processing are showing strong promise for multiple medical-imaging applications. However, medical images are acquired for clinical tasks, such as defect detection and feature quantification, and these algorithms are often developed and evaluated agnostic to this clinical task. This talk will demonstrate how model observers can facilitate the development and evaluation of deep learning algorithms for clinical tasks by presenting two case studies. The first case study will underscore the misleading interpretations that clinical-task-agnostic evaluation of AI algorithms can yield, emphasizing the crucial need for clinical-task-based evaluation. Next, we will see how model observers can not only facilitate such evaluation but also enable the designing of deep learning algorithms that explicitly account for the clinical task, thus poising the algorithm for success in clinical applications. The second case study will demonstrate the use of model observers to select deep learning algorithms for subsequent human-observer evaluation. We will then see how this led to the successful evaluation of a candidate algorithm in a multi-reader multi-case human observer study. These case studies will illustrate how model observers provide a practical, reliable, interpretable, and efficient mechanism for development and translation of AI-based medical imaging solutions.

9:50 AM - 10:30 AM:

Tackling the health AI paradox

Karandeep Singh,
UC San Diego Health (USA)

KEYNOTE PRESENTATIONS

Tuesday Morning Keynotes

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country B/C

Session Chairs:
Jhimli Mitra, GE Healthcare (USA)
Christian Boehm, ETH Zurich (Switzerland)

8:30 AM - 8:35 AM:

Welcome and introduction

8:35 AM - 8:40 AM:

Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

SPONSORED BY: PHILIPS

8:40 AM - 9:20 AM:

Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine

Duygu Tosun-Turgut, Medical Imaging Informatics and Artificial Intelligence, Univ. of California, San Francisco (USA)

Early detection and intervention in neurodegenerative diseases hold the potential to significantly impact patient outcomes. This presentation will explore the development of multi-disciplinary and multi-modality biomarkers to identify individuals at risk and monitor disease progression. By combining advanced imaging techniques, such as MRI, and PET, with fluid biomarkers, we aim to detect subtle changes in brain structure and function that precede clinical symptoms. These biomarkers could serve as powerful tools for early diagnosis, enabling timely intervention and potentially delaying disease onset. Furthermore, by identifying individuals at highest risk, we can optimize the design of clinical trials and accelerate the development of effective therapies. Ultimately, our goal is to improve the lives of individuals with neurodegenerative diseases through early detection, precise diagnosis, and targeted treatment.

9:20 AM - 10:00 AM:

Wearable ultrasound technology

Sheng Xu, Univ. of California, San Diego (USA)

Wearable electronic devices that continuously and noninvasively monitor vital signs have become a transformative trend in healthcare. Advances in materials design and microfabrication techniques have enabled the seamless integration of sensors and components onto soft, flexible platforms that conform to the body, allowing for real-time health data collection with minimal impact on daily activities. These systems enable continuous monitoring, making them highly valuable for proactive health management. A key advantage of wearable ultrasound technology lies in its ability to capture physiological signals from deep tissues, which provide more accurate and timely information on internal processes than traditional surface-level measurements. This makes it particularly useful for monitoring critical internal functions with greater precision. In this presentation, I will showcase a novel soft ultrasonic system that can noninvasively and continuously acquire dynamic information from deep tissues and central organs. The technology enables high-resolution recording of blood pressure and flow waveforms in central vessels, precise monitoring of cardiac chamber activities, and accurate measurement of core body temperatures.

Wednesday Morning Keynotes

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country B/C

Session Chairs:
Maryam E. Rettmann, Mayo Clinic (USA)
Aaron D. Ward, The Univ. of Western Ontario (Canada)

8:30 AM - 8:35 AM:

Welcome and introduction

8:35 AM - 8:40 AM:

Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling

  SPONSORED BY: SIEMENS Healthineers
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

  SPONSORED BY: INTUITIVE

8:40 AM - 9:20 AM:

Image-guided surgery and examinations using ultrasound

Tim Salcudean, Univ. of British Columbia (Canada)

Many of today's cancer surgeries are carried out with robot assistance. Using real-time intra-operative ultrasound, we can overlay pre-operative imaging into the surgeon's console, enabling visualization of sub-surface anatomy and cancer at the same time with the standard laparoscopic camera view. We will discuss aspects of system design, visualization and registration methods that enable such visualization, and present our results. We will also present tissue and instrument tracking approaches that can be used in future augmented reality systems. For remote and underserved communities, we developed a teleultrasound approach that relies upon using a novice – the patient, a family member or friend – as a robot to carry out the examination. The novice wears a mixed reality headset and follows a rendered virtual ultrasound transducer with the actual transducer. The virtual transducer is controlled by an expert, who sees the remote ultrasound images and feels the transducer forces. This tightly-coupled expert-novice approach has advantages relative to both conventional and robotic teleultrasound. We discuss our system implementation and results.

9:20 AM - 10:00 AM:

The future of diagnostics: the role of computational pathology in tomorrow's medicine

Geert J.S. Litjens, Radboud University Medical Center (Netherlands)

Computational Pathology has already led to remarkable innovations in diagnostics, achieving expert pathologist performance in tasks such as prostate cancer grading and cancer metastasis detection. In recent years, we have seen rapid advances, with weakly supervised models able to predict patient outcomes or genetic mutations and foundation models enabling application to rarer diseases. However, this only scratches the surface of what will be possible in the near future. In this talk, I will briefly touch on the history of computational pathology and how we got to where we are today. Subsequently, I will highlight the current methodological innovations in the field and their potential for causing a paradigm shift in diagnostic pathology. I will discuss how these innovations, combined with the AI-driven integration of radiology, pathology, and 'omics data streams, could change the future of diagnostics as a whole. Last, I will discuss the challenges and pitfalls moving forward and how we, as a community, can contribute to addressing them.

Thursday Morning Keynotes

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country B/C

Session Chairs:
Susan M. Astley, The Univ. of Manchester (United Kingdom)
Andrzej Krol, SUNY Upstate Medical Univ. (USA)

8:30 AM - 8:35 AM:

Welcome and introduction

8:35 AM - 8:40 AM:

Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

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8:40 AM - 9:20 AM:

Pioneering vision: The journey of building AI for transformative healthcare

Elad Walach, CEO, Aidoc (Israel)

Medical imaging has long been a driving force in healthcare innovation, paving the way for digital transformation. In this session, we'll explore the evolution of AI in medical imaging - where it started, the challenges of real-world adoption, and the breakthroughs shaping its future. From early academic research to real-world clinical integration, we'll examine how AI is moving beyond theoretical potential to deliver real impact in patient care. Join us for an engaging discussion on how engineering, data science, and AI are redefining healthcare workflows, and what's next for those leading the charge in this transformation.

9:20 AM - 10:00 AM:

Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers

Christos Davatzikos, Univ. of Pennsylvania (USA)

Machine learning has transformed medical imaging in general, and neuroimaging in particular, during the past two decades. We review our work in this field, starting with early contributions on developing personalized predictive markers of brain change in aging and Alzheimer's Disease, and moving to recent weakly-supervised deep learning methods, aiming to dissect heterogeneity of brain change in neurodegenerative and neuropsychiatric diseases, as well as in brain cancer. We show that disease-related brain changes can follow multiple trajectories and patterns, which have distinct clinical and genetic correlates, thereby suggesting a dimensional approach to capturing brain phenotypes, using machine learning methods.

TECHNICAL EVENTS

Connect with your colleagues and explore topics in depth. Events include technical workshops, tutorials, demonstrations, and poster sessions.

Student 3-Minute Poster Presentations, sponsored by the *Journal of Medical Imaging*

17 February 2025 • 5:30 PM - 6:30 PM | Golden State Ballroom

Students present 3-minute rapid-fire overviews of their JMI poster research. The top three presentations will receive cash prizes.

Monday Poster Session

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster presentations from the following conferences will be included:

- Physics of Medical Imaging
- Image-Guided Procedures, Robotic Interventions, and Modeling
- Image Perception, Observer Performance, and Technology Assessment
- Imaging Informatics for Healthcare, Research, and Applications

Poster Setup and Pre-Session Viewing: 10:00 AM Monday – 5:30 PM Monday *

**In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Monday. Judging may begin after this time. Posters must remain on display until the end of the Monday evening poster session, but may be left hanging until 1:00 PM Tuesday. After 1:00 PM on Tuesday, posters will be removed and discarded.*

Next-Day Viewing and Tear-Down Posters may be left hanging until 1:00 PM on Tuesday for extended viewing. All Posters must be removed by 1:00 PM on Tuesday. Any unclaimed posters will be discarded.

View poster presentation guidelines and set-up instructions at:
https://spie.org/MI/Poster-Presentation-Guidelines

Neural Network Verification for Medical Imaging Analysis

18 February 2025 • 1:40 PM - 3:20 PM | Palm 4

Neural network verification is an emerging approach to establish neural networks satisfy various specifications and requirements, such as formalized notions of safety, security, and trustworthiness. This tutorial will present neural network verification methods in the context of medical imaging analysis and aims to present this line of work being developed in the formal methods, security, and machine learning communities to the medical imaging analysis community. Interactive demonstrations will be done through the Neural Network Verification (NNV) software tool, and for example, allow for characterizations of robustness for neural networks used in medical imaging analysis.

Live Demonstrations Workshop

18 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

Participate in this workshop featuring interactive demonstrations for systems and algorithms developers to show off their creations, complementary to the topics of SPIE Medical Imaging. This workshop will feature live system demonstrations and software presentations. These demonstrations will highlight the implementation, operation, and utility of both emerging and well-established research. The session will include a Certificate of Merit Award and a generous prize sponsored by Siemens Healthineers.

NIH/NIBIB Session: Funding Opportunities and Grant Writing Tips for New Investigators

18 February 2025 • 5:30 PM - 6:30 PM | Town & Country D

Session Chairs: **Maryam E. Rettmann,** Mayo Clinic (USA); **John M. Sabol,** Konica Minolta Healthcare Americas, Inc. (USA)

This session provides valuable insights for new investigators aiming to secure NIH funding. Experts from NIBIB will share strategies for navigating the NIH grant system, preparing competitive applications, and identifying funding opportunities within the NIBIB. Join this interactive session to enhance your grant-writing skills and discover resources to support your research initiatives.

5:30 PM – 6:00 PM
Navigating the NIH Grant System and Tips for Preparing Successful and Competitive NIH Grant Applications
Speaker: **Behrouz Shabestari,** Director, NIBIB National Technology Centers Program; Director, Division of Health Informatics Technologies (DHIT), NIBIB

6:00 PM – 6:15 PM
Scientific Program and Funding Opportunities at NIBIB
Speaker: **Rui Pereira de Sá,** Program Director, Division of Health Informatics Technologies (DHIT), NIBIB

6:15 PM – 6:30 PM
Question and Answers with **Behrouz Shabestari** and **Rui Pereira de Sá**

NiChart Software Platform Demonstration

18 February 2025 • 6:00 PM - 7:00 PM | Palm 5

Session Chairs: **Andrzej Krol,** SUNY Upstate Medical Univ. (USA); **Barjor S. Gimi,** Univ. of Massachusetts Chan Medical School (USA)

NiChart software platform demo by Guray Erus, NiChart Project Manager, Penn Medicine (USA)

NiChart is a set of modular but integrated software tools for neuroimaging research, and a cloud-based web application to provide wide access to these tools. NiChart enables mapping of large-scale multi-modal brain MRI data into a dimensional system of neuroimaging derived measures, including signatures implemented by machine learning (ML) models.

Guray Erus is a research director at the University of Pennsylvania Perelman School of Medicine. He specializes in biomedical image analysis, leveraging AI to analyzing complex neuroimaging data to understand brain structure and function. His research focuses on understanding brain development, aging, and neurodegenerative diseases like Alzheimer's and Schizophrenia.

Student 3-Minute Poster Presentations, sponsored by the *Journal of Medical Imaging*

19 February 2025 • 5:30 PM - 6:30 PM | Golden State Ballroom

Students present 3-minute rapid-fire overviews of their JMI poster research. The top three presentations will receive cash prizes.

Wednesday Poster Session

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster presentations from the following conferences will be included:

» Image Processing

» Computer-Aided Diagnosis

» Clinical and Biomedical Imaging

» Ultrasonic Imaging and Tomography

» Digital and Computational Pathology

Poster Setup and Pre-Session Viewing: 7:30 AM – 5:30 PM Wednesday*

**In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session, but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.*

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View poster presentation guidelines and set-up instructions at:
https://spie.org/MI/Poster-Presentation-Guidelines

SOCIAL AND NETWORKING EVENTS

These sessions give you the opportunity to network, learn, and discuss with medical imaging professionals from around the world.

All-Symposium Welcome Reception

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

LGBTQ+ Social

17 February 2025 • 7:00 PM - 8:00 PM | Sunset 1/2

Come join us in the Community Lounge to socialize and network with other LGBTQ+ attendees and allies in the medical imaging community.

SPIE Student Member Meetup

18 February 2025 • 3:00 PM - 4:00 PM | Community Lounge (Golden State Ballroom)

Student Members are invited to join this networking event to meet other students attending SPIE Medical Imaging over delightful refreshments.

JMI Editor Reception

18 February 2025 • 7:30 PM - 9:30 PM | Presidential Suite

The editorial volunteers for the *Journal of Medical Imaging* are invited to a private reception. Location information will be sent via invitation.

Women's Networking Breakfast

19 February 2025 • 7:30 AM - 8:30 AM | Community Lounge (Golden State Ballroom)

Join other women in the Medical Imaging field for informal discussions and networking.

Career Speed Mentoring

19 February 2025 • 3:00 PM - 4:00 PM | Community Lounge (Golden State Ballroom)

Students and Early Career attendees! Looking to get advice on critical career choices, life in academia, government, industry, and more? Join us for this fun and casual speed-mentoring session. Snacks and drinks provided!

GENERAL INFORMATION

Badge pick up and registration hours

Town and Country Resort - Ballroom Foyer

Sunday 16 February	7:30 AM–6:00 PM
Monday 17 February	7:30 AM–4:00 PM
Tuesday 18 February	7:30 AM–4:00 PM
Wednesday 19 February	7:30 AM–4:00 PM
Thursday 20 February	7:30 AM–1:30 PM

SPIE Cashier

Town and Country Ballroom Foyer -
Open during registration hours.

Registration payments
If you are planning to register onsite, please do so at the "Need to Register" laptop station. Your credit card payment will be processed during registration. If you wish to pay with cash or check, you will be directed to the Cashier once you have completed registration for final payment.

If you have already registered and wish to add a course, workshop, or special event, you may do this online by signing into your SPIE account.

Receipt and Certificate of Attendance
Preregistered attendees who need an SPIE-stamped receipt or attendees who need a Certificate of Attendance may obtain those at the Cashier.

Badge Corrections
Badge corrections can be made at the Cashier. Please mark your badge with your changes before approaching the counter.

Speaker check-in and preview station

Town and Country Resort, Sunset 4 - Open during registration hours

All speakers must stop at Speaker Check-In to upload and preview their slide presentation files at least two hours before their scheduled session or the day before if they present in the first session. Speakers are not able to present using their own devices. All conference rooms are equipped with a laptop, projector, screen, lapel microphone, and laser pointer.

SPIE will record the audio plus screen content of all presentations; Recordings will be published in the conference proceedings on the SPIE Digital Library.

Internet access

Lobbies, Meeting Rooms, and Registration area

Free Wifi will be available throughout the meeting space. Login information will be posted onsite.

SPIE Conference and Exhibition app

This useful tool allows you to search and browse the program, special events, participants, exhibitors, courses, and more. It is free and available for iPhone and Android phones.

If you don't already have it, Download the SPIE App at:
spie.org/spie-conference-app

SPIE Course materials

Location: Town and Country Ballroom Foyer - Open during registration hours

Browse course offerings or learn more about SPIE courses available in portable formats such as online and customizable, in-company courses.

SPIE Bookstore

SPIE merchandise will be available for purchase. For information on Press books or other SPIE publications, visit spie.org/publications.

SPIE luggage & coat check

Location: Town and Country Ballroom Foyer
Wednesday and Thursday

Luggage can be dropped near SPIE Registration. Note that no attendant will be present and owners assume risk for lost or stolen bags.

Child care services

Sitterwise
Email: sarah@sitterwise.com
Office: 619.303.4379 or text 619.663.4379
Make a reservation online. Sitterwise.com

Note: SPIE does not imply an endorsement or recommendation of these services. They are provided on an "information only" basis for your further analysis and decision. Other services may be available.

Gender inclusive restroom

Location: Town and Country Resort, Town and Country Foyer Level 2

Quiet Room

Location: California 3 - open during registration hours

The Quiet Room is intended for silent meditation, reflection, and prayer. No mobile devices or computer use is allowed, and no food or beverages are allowed.

Mothers' Room

Location: California 4

The Mothers' Lounge is a lockable room intended for nursing mothers. There is no storage, running water, or refrigeration available in this space.

Lost and found

Location: Town and Country Ballroom Foyer - Open during registration hours

Found items will be kept at the SPIE Cashier in the Registration area during the meeting and available only during registration hours. At the end of the meeting, all found items will be turned over to the Town and Country Resort Security.

GENERAL INFORMATION

Food and beverage services

Coffee Breaks - Daily complimentary coffee

Town and Country Ballroom Foyer

Sunday - Thursday . . . . . .7:30 AM - 4:00 PM

SPIE Hosted Lunches

Location: Town and Country Golden State Ballroom

Tuesday and Wednesday only*

Timing dependent upon conference break times.

*These two lunches are included with conference registrations.

Food and Refreshments for Purchase

Location: Town and Country Resort

Sunday - Thursday . . . . . Hours vary

Various food outlets will be open and available during the week. Visit the Town and Country Resort website for hours and menu options.

Restaurants and City Information

Restaurants near the Town and Country Resort can be found online.

CONFERENCE 13405

Physics of Medical Imaging

16 - 20 February 2025 | Town & Country B

CONFERENCE CO-SPONSOR

UNITED IMAGING

Conference Chair(s): **John M. Sabol,** Konica Minolta Healthcare Americas, Inc. (United States); **Ke Li,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

Conference Co-Chair(s): **Shiva Abbaszadeh,** Univ. of California, Santa Cruz (United States)

Program Committee: **Adam M. Alessio,** Michigan State Univ. (United States); **Hilde Bosmans,** Univ. Ziekenhuis Leuven (Belgium); **Seungryong Cho,** KAIST (Korea, Republic of); **Mats E. Danielsson,** KTH Royal Institute of Technology (Sweden); **Mini Das,** Univ. of Houston (United States); **Bruno De Man,** GE Research (United States); **Rebecca Fahrig,** Siemens Healthineers (Germany); **Grace J. Gang,** Penn Medicine (United States); **Arundhuti Ganguly,** Siemens Healthineers (United States); **Yongshuai Ge,** Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences (China); **Stephen J. Glick,** U.S. Food and Drug Administration (United States), Univ. of Massachusetts Medical School (United States); **Christina R. Inscoe,** The Univ. of North Carolina at Chapel Hill (United States); **Marc Kachelriess,** Deutsches Krebsforschungszentrum (Germany); **Karim S. Karim,** Univ. of Waterloo (Canada); **Patrick J. La Riviere,** The Univ. of Chicago (United States); **Shuai Leng,** Mayo Clinic (United States); **Quanzheng Li,** Massachusetts General Hospital (United States); **Joseph Y. Lo,** Carl E. Ravin Advanced Imaging Labs. (United States); **Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Jonathan S. Maltz,** Lawrence Berkeley National Lab. (United States); **Peter B. Noël,** Univ. of Pennsylvania (United States); **Frédéric Noo,** The Univ. of Utah (United States); **Jinyi Qi,** Univ. of California, Davis (United States); **Ioannis Sechopoulos,** Radboud Univ. Medical Ctr. (Netherlands); **Behrouz Shabestari,** National Institute of Biomedical Imaging and Bioengineering (United States); **Shobhit Sharma,** Canon Medical Research USA, Inc. (United States); **Michael A. Speidel,** Univ. of Wisconsin School of Medicine and Public Health (United States); **Joseph W. Stayman,** Johns Hopkins Univ. (United States); **Karl Stierstorfer,** Siemens Healthineers (Germany); **Jesse Tanguay,** Toronto Metropolitan Univ. (Canada); **Anders Tingberg,** Skåne Univ. Hospital (Sweden); **Adam S. Wang,** Stanford Univ. School of Medicine (United States); **Wenying Wang,** United Imaging Healthcare Co., Ltd. (United States); **Yuxiang Xing,** Tsinghua Univ. (China); **Lifeng Yu,** Mayo Clinic (United States); **Wei Zhao,** Stony Brook Univ. (United States)

Sunday 16 February 2025

SPIE MEDICAL IMAGING AWARDS AND PLENARY

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A

Session Chair(s): **Joseph Y. Lo**, Carl E. Ravin Advanced Imaging Labs. (United States); **Cristian A. Linte**, Rochester Institute of Technology (United States)

View Full Details: spie.org/medical-imaging-awards-plenary

5:30 PM - 5:40 PM:
Symposium Chair Welcome and Best Student Paper Award announcement
First-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award
Sponsored by:
MIPS and SPIE

5:40 PM - 5:45 PM:
New SPIE Fellow acknowledgments
Each year, SPIE promotes Members as new Fellows of the Society. Join us as we recognize colleagues of the medical imaging community who have been selected.

5:45 PM - 5:50 PM:
SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging

13408-500 • 5:50 PM - 6:30 PM
Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions (Plenary Presentation)
Author(s): **Aaron Fenster,** Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

ALL-SYMPOSIUM WELCOME RECEPTION

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

View Full Details: spie.org/mi/welcome-reception

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

Monday 17 February 2025

MONDAY MORNING KEYNOTES

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country A
Session Chair(s): **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Mark A. Anastasio**, Univ. of Illinois (United States); **Shandong Wu**, Univ. of Pittsburgh (United States)

View Full Details: spie.org/monday-morning-keynotes

8:20 AM - 8:25 AM:
Welcome and introduction

8:25 AM - 8:30 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
- Physics of Medical Imaging Student Paper Award

13405-501 • 8:30 AM - 9:10 AM
Promoting innovation in your team: lessons learned from 40 years in medical imaging (Keynote Presentation)
Author(s): **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13409-502 • 9:10 AM - 9:50 AM
Designing AI for clinical imaging: the important role of model observers (Keynote Presentation)
Author(s): **Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13411-503 • 9:50 AM - 10:30 AM
Tackling the health AI paradox (Keynote Presentation)
Author(s): **Karandeep Singh,** UC San Diego Health (United States)

Coffee Break 10:30 AM - 11:00 AM

SESSION 1: NOVEL X-RAY SOURCES AND SYSTEMS

17 February 2025 • 11:00 AM - 12:40 PM | Town & Country B
Session Chair(s): **Shuai Leng**, Mayo Clinic (United States); **Karl Stierstorfer**, Siemens Healthineers (Germany)

13405-1 • 11:00 AM - 11:20 AM
Rotating anode x-ray tube technology at the limit
Author(s): **Rolf K. Behling**, **Christopher K. O. Hulme**, **Panagiotis B. Tolias, Mats Danielsson,** KTH Royal Institute of Technology (Sweden)

13405-2 • 11:20 AM - 11:40 AM
Multi-source static CT with adaptive fluence modulation to minimize hallucinations in generative reconstructions
Author(s): **Matthew Tivnan**, **Amar Prasad Gupta**, **Kai Yang**, **Dufan Wu, Rajiv Gupta,** Massachusetts General Hospital (United States)

13405-3 • 11:40 AM - 12:00 PM
Reducing scatter and cone-beam artifacts in DE-CBCT
Author(s): **Yuanming Hu**, **Boyuan Li**, **Shuang Xu**, **Christina R. Inscoe**, **Donald A. Tyndall**, **Yueh Z. Lee**, **Jianping Lu, Otto Zhou,** The Univ. of North Carolina at Chapel Hill (United States)

13405-4 • 12:00 PM - 12:20 PM
High-fidelity prefiltration using a double bowtie design for quantitative low-dose pediatric spectral CT imaging
Author(s): **Yinglin Ge**, **Olivia F. Sandvold,** Univ. of Pennsylvania (United States); **Amy E. Perkins,** Philips Healthcare (United States); **Roland Proksa, Peter B. Noël,** Univ. of Pennsylvania (United States)

13405-5 • 12:20 PM - 12:40 PM
Detection and classification of breast cancer and microcalcifications with multi-contrast x-ray phase imaging mammography
Author(s): **Juan Carlos R. Luna**, **Jingcheng Yuan, Mini Das,** Univ. of Houston (United States)

Lunch Break 12:40 PM - 2:00 PM

SESSION 2: CONE BEAM CT

17 February 2025 • 2:00 PM - 3:00 PM | Town & Country B
Session Chair(s): **Adam S. Wang**, Stanford Univ. School of Medicine (United States); **Joseph Webster Stayman**, Johns Hopkins Univ. (United States)

13405-6 • 2:00 PM - 2:20 PM
Metal artifact quantification in metal artifact avoidance
Author(s): **Nicolas Münster**, **Maximilian Rohleder,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Björn Kreher,** Siemens Healthineers (Germany); **Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Adam Wang,** Stanford Univ. (United States)

13405-8 • 2:20 PM - 2:40 PM
Optimization for spectral modulator in fast-KV-switching dual-energy CBCT imaging
Author(s): **Hao Zhou**, **Yifan Deng, Hewei Gao,** Tsinghua Univ. (China)

13405-9 • 2:40 PM - 3:00 PM
Deep-learning-based noise reduction for ultra-low-dose dental CBCT images using paired datasets from different domains
Author(s): **Seungyoung Kang**, **Hyunwoo Lee**, **Taeseong Kim**, **Jinwoo Kim**, **Sunjung Kim, Min Kook Cho,** OSSTEM IMPLANT Co., Ltd. (Korea, Republic of)

Coffee Break 3:00 PM - 3:30 PM

SESSION 3: DETECTORS

17 February 2025 • 3:30 PM - 5:30 PM | Town & Country B
Session Chair(s): **Wei Zhao**, Stony Brook Univ. (United States); **Seungryong Cho**, KAIST (Korea, Republic of); **Arundhuti Ganguly**, Siemens Healthineers (United States)

13405-10 • 3:30 PM - 3:50 PM
An ultra-high sensitivity coded sensing SPECT: design, modelling, and assessment
Author(s): **Ling Cai**, **Samarth Aggarwal**, **Kweku Enninful**, **Yunlai Chen**, **Sergey Komarov**, **Daniel Thorek**, **Abhinav K. Jha, Yuan-Chuan Tai,** Washington Univ. in St. Louis (United States)

13405-11 • 3:50 PM - 4:10 PM
First experimental demonstration of charge-cloud imaging for micrometer-scale resolution with a photon-counting silicon CT detector
Author(s): **Rickard Brunskog**, **Mats Persson, Mats Danielsson,** KTH Royal Institute of Technology (Sweden)

13405-12 • 4:10 PM - 4:30 PM
On the performance of a stacked dual-layer flat-panel detector
Author(s): **Dong Sik Kim,** Hankuk Univ. of Foreign Studies (Korea, Republic of); **Hyunjong Kim**, **Yoonjong Jeon**, **Youngbok Kim,** DRTECH Corp. (Korea, Republic of); **Dayeon Lee,** Hankuk Univ. of Foreign Studies (Korea, Republic of); **Ilwoong Choi, Choul Woo Shin,** DRTECH Corp. (Korea, Republic of)

13405-13 • 4:30 PM - 4:50 PM
A-Se thin film detector on ITkpix CMOS readout: time-over-threshold tuning and pixel performance analysis
Author(s): **Jennifer Ott**, **Shiva Abbaszadeh**, **Kaitlin Hellier**, **Akyl Swaby,** Univ. of California, Santa Cruz (United States); **Luc LePottier**, **Timon Heim**, **Maria Mironova**, **Charles Hultquist, Maurice Garcia-Sciveres,** Lawrence Berkeley National Lab. (United States)

13405-14 • 4:50 PM - 5:10 PM
Optimizing parylene and photoconductor thickness in indirect conversion amorphous selenium detectors
Author(s): **Kaitlin Hellier**, **Hamid Mirzanezhad**, **Molly McGrath,** Univ. of California, Santa Cruz (United States); **Paul Pryor**, **Ivan Mollov,** Varex Imaging Corp. (United States); **Shiva Abbaszadeh,** Univ. of California, Santa Cruz (United States)

13405-15 • 5:10 PM - 5:30 PM
Experimental investigation of direct-indirect flat-panel imager using tellurium doped amorphous selenium
Author(s): **Corey Orlik**, **Adrian F. Howansky,** Stony Brook Medicine (United States); **Sébastien Levéillé**, **Salman M. M. Arnab,** Analogic Canada Corp. (Canada); **Jann Stavro,** Stony Brook Medicine (United States); **Scott Dow**, **Amir H. Goldan,** Stony Brook Univ. (United States); **Safa O. Kasap,** Univ. of Saskatchewan (Canada); **Kenkichi Tanioka,** Stony Brook Medicine (United States); **Wei Zhao,** Stony Brook Univ. (United States)

POSTERS - MONDAY

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/monday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 10:00 AM - 5:30 PM Monday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Monday. Judging may begin after this time. Posters must remain on display until the end of the Monday evening poster session, but may be left hanging until 1:00 PM Tuesday. After 1:00 PM on Tuesday, posters will be removed and discarded.

View poster presentation guidelines and set-up instructions at
https://spie.org/MI/Poster-Presentation-Guidelines

Poster groupings are listed below by topic.

POSTERS: CBCT

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13405-59 • 5:30 PM - 7:00 PM
A novel scatter correction method for dual-layer flat-panel detector CBCT
Author(s): **Xin Zhang**, **Jixiong Xie**, **Ting Su, Yongshuai Ge,** Shenzhen Institute of Advanced Technology (China)

13405-60 • 5:30 PM - 7:00 PM
Deep learning reconstruction of triple-source CT data with sparse view and truncation
Author(s): **Ying Cheng**, **Zhe Wang**, **Linjie Chen**, **Shishi Shu, Guohua Cao,** ShanghaiTech Univ. (China)

13405-61 • 5:30 PM - 7:00 PM
Unified scatter estimation in x-ray spectral cone-beam CT using linear Boltzmann transport equation with labels on energy groups
Author(s): **Guoxi Zhu**, **Zhiqiang Chen, Hewei Gao,** Tsinghua Univ. (China)

13405-62 • 5:30 PM - 7:00 PM
Cephalometric radiograph generation from 3D dental CBCT images with automatic positioning
Author(s): **Dan Xia,** XPI Imaging LLC (United States); **Zhenhua Yang**, **Hongwei Cao**, **Xiaofeng Yang**, **Hongyan Qu**, **Fangjun Tian,** Bondent Technology Co., Ltd. (China); **Xiaochuan Pan,** The Univ. of Chicago Medicine (United States)

13405-63 • 5:30 PM - 7:00 PM
Improving soft tissue contrast using a multisource CBCT for potential application in adaptive radiation therapy
Author(s): **Shuang Xu**, **Christina R. Inscoe**, **Jun Lian**, **Yueh Z. Lee**, **Jianping Lu, Otto Zhou,** The Univ. of North Carolina at Chapel Hill (United States)

13405-64 • 5:30 PM - 7:00 PM
Multi-scale information guided dual-domain fusion network for metal artifact reduction in dental CBCT
Author(s): **Jiayi Wu**, **Zihao Lin,** ShanghaiTech Univ. (China); **Yuan Li,** Shanghai Ninth People's Hospital (China), Shanghai Jiao Tong Univ. School of Medicine (China); **Zhe Wang**, **Huamin Wang,** ShanghaiTech Univ. (China); **Maurizio S. Tonetti,** Shanghai Ninth People's Hospital (China), Shanghai Jiao Tong Univ. School of Medicine (China); **Guohua Cao,** ShanghaiTech Univ. (China), State Key Lab. of Advanced Medical Materials and Devices (China)

POSTERS: IMAGE-GUIDED INTERVENTION AND RADIOTHERAPY

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13405-65 • 5:30 PM - 7:00 PM
Respiratory volume prediction for pediatric TIS patients with MAGEC rod treatment from pre-operative dynamic MRI and chest radiographs
Author(s): **You Hao**, **Jayaram K. Udupa**, **Yubing Tong**, **Caiyun Wu,** Univ. of Pennsylvania (United States); **Samantha Gogel**, **David Biko**, **Hank O. Mayer**, **Joseph McDonough,** The Children's Hospital of Philadelphia (United States); **Drew A. Torigian,** Univ. of Pennsylvania (United States); **Jason Anari,** The Children's Hospital of Philadelphia (United States)

13405-66 • 5:30 PM - 7:00 PM
Investigation of the effect of training set parameters on deep neural network prediction accuracy of fluoroscopic procedure-room scatter dose distributions
Author(s): **Martina P. Orji**, **Kyle Williams,** Univ. at Buffalo (United States), Canon Stroke and Vascular Research Ctr. (United States); **Jonathan Troville,** Univ. of Wisconsin-Madison (United States); **Swetadri Vasan Setlur Nagesh**, **Stephen Rudin, Daniel R. Bednarek,** Univ. at Buffalo (United States), Canon Stroke and Vascular Research Ctr. (United States)

13405-67 • 5:30 PM - 7:00 PM
Experimental evaluation of metal artifact avoidance for anterior cervical discectomy and fusion surgery
Author(s): **Maximilian Rohleder,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Siemens Healthineers (Germany); **Minghe Yao,** West China Hospital of Sichuan Univ. (China); **Siming Bayer,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Siemens Healthineers (Germany); **Fuxin Fan**, **Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Björn Kreher,** Siemens Healthineers (Germany); **Beiyu Wang,** West China Hospital of Sichuan Univ. (China)

13405-68 • 5:30 PM - 7:00 PM
The role of SiPM-based PET for accurate volume delineation
Author(s): **Nicholas Leybourne,** Univ. of Surrey (United Kingdom); **Mohammad Hussein**, **Andrew Fenwick,** National Physical Lab. (United Kingdom); **Philip Evans, Lucia Florescu,** Univ. of Surrey (United Kingdom)

13405-69 • 5:30 PM - 7:00 PM
Direct head orientation parameter estimation for IPEN
Author(s): **Donghyeon Lee**, **Shalini Subramanian**, **Jingyan Xu**, **Vivek Yedavalli**, **Meisam Hoseinyazdi**, **Dhairya Lakhani, Katsuyuki Taguchi,** Johns Hopkins Univ. (United States)

13405-70 • 5:30 PM - 7:00 PM
Swine liver segmentation for FEM-based image fusion in CBCT guided histotripsy
Author(s): **Grace M. Minesinger**, **Paul F. Laeseke**, **Katrina L. Falk**, **Noah D. Winkel**, **Michael A. Speidel, Martin G. Wagner,** Univ. of Wisconsin-Madison (United States)

13405-71 • 5:30 PM - 7:00 PM
CycleGAN with multi-scale block and attention gate for synthesizing CT image in adaptive radiotherapy
Author(s): **Youngeun Choi, Seungwan Lee,** Konyang Univ. (Korea, Republic of)

POSTERS: IMAGE RECONSTRUCTION

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13405-72 • 5:30 PM - 7:00 PM
Projection-embedded Schrödinger bridge for CT sparse view reconstruction
Author(s): **Yuang Wang,** Tsinghua Univ. (China), Harvard Medical School (United States), Massachusetts General Hospital (United States); **Pengfei Jin**, **Siyeop Yoon**, **Matthew Tivnan**, **Quanzheng Li,** Harvard Medical School (United States), Massachusetts General Hospital (United States); **Li Zhang**, **Zhiqiang Chen,** Tsinghua Univ. (China); **Dufan Wu,** Harvard Medical School (United States), Massachusetts General Hospital (United States)

13405-75 • 5:30 PM - 7:00 PM
Second-generation AI iterative reconstruction for abdominopelvic CT imaging of colorectal cancer: a comprehensive evaluation
Author(s): **Yixuan Zou**, **Senyang Jiang**, **Haohua Sun**, **Wenjing Cao, Guozhi Zhang,** United Imaging Healthcare Co., Ltd. (China)

13405-76 • 5:30 PM - 7:00 PM
A deep-learning reconstruction framework for low-dose, dynamic x-ray CT
Author(s): **Darin P. Clark, Cristian T. Badea,** Duke Univ. Medical Ctr. (United States)

13405-77 • 5:30 PM - 7:00 PM
Reconstructing multiple basis images directly from dual-energy CT data using the basis-region model and volume conservation constraint
Author(s): **Buxin Chen**, **Zheng Zhang**, **Dan Xia**, **Emil Y. Sidky, Xiaochuan Pan,** The Univ. of Chicago Medicine (United States)

13405-78 • 5:30 PM - 7:00 PM
Accurate image reconstruction from truncated offset CT data using TVL1 algorithm
Author(s): **Zheng Zhang**, **Buxin Chen**, **Dan Xia**, **Emil Y. Sidky, Xiaochuan Pan,** The Univ. of Chicago Medicine (United States)

13405-79 • 5:30 PM - 7:00 PM
Optimizing hyperparameters in regularized tomographic reconstruction via pixel-wise adaptive fine-tuning
Author(s): **Haizhu Wang, Soo-Jin Lee,** Pai Chai Univ. (Korea, Republic of)

13405-80 • 5:30 PM - 7:00 PM
Regularizing neural fields for 3D computed tomographic imaging from sparse projections
Author(s): **Jooho Lee**, **Byeongjoon Kim, Jongduk Baek,** Yonsei Univ. (Korea, Republic of)

13405-81 • 5:30 PM - 7:00 PM
A robust focused SNR method to suppress spectrum leaking for calibration-based magnetic particle imaging reconstruction
Author(s): **Tao Zhu,** Institute of Automation (China); **Xin Yang,** Institute of Automation, Key Lab. of Molecular Imaging (China); **Jie Tian,** Beihang Univ. (China); **Hui Hui,** Institute of Automation, Key Lab. of Molecular Imaging (China)

13405-82 • 5:30 PM - 7:00 PM
Black-box optimization of CT acquisition and reconstruction parameters: a reinforcement learning approach
Author(s): **David J. Fenwick**, **Navid Naderializadeh**, **Vahid Tarokh**, **Darin P. Clark**, **Nicholas Felice**, **Ehsan Samei, Ehsan Abadi,** Duke Univ. (United States)

13405-83 • 5:30 PM - 7:00 PM
Optimization-based image reconstruction for limited-angle dual-energy cone-beam CT
Author(s): **Junbo Peng**, **Richard Qiu,** Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Xiangyang Tang, Xiaofeng Yang,** Emory Univ. (United States)

13405-84 • 5:30 PM - 7:00 PM
Notes on fan-beam FBP reconstruction algorithm without backprojection weight
Author(s): **Daxin Shi,** Vital Research Institute Inc. (United States)

13405-85 • 5:30 PM - 7:00 PM
Wavelet-based iterative network for dual-domain sparse-view CT reconstruction using MRI priors
Author(s): **Qiulei Yao**, **Ying Cheng**, **Jun Chen**, **Zhe Wang, Guohua Cao,** ShanghaiTech Univ. (China)

POSTERS: ARTIFICIAL INTELLIGENCE

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13405-86 • 5:30 PM - 7:00 PM
Optimization of the U-Net++ model for cerebral artery segmentation based on deep learning in computed tomographic angiography images
Author(s): **Hajin Kim,** Gachon Univ. (Korea, Republic of); **Kang-Hyeon Seo,** Hallym Hospital (Korea, Republic of); **Kyuseok Kim,** Eulji Univ. (Korea, Republic of); **Youngjin Lee,** Gachon Univ. (Korea, Republic of)

13405-87 • 5:30 PM - 7:00 PM
Multiple organ segmentation for CT scout images
Author(s): **Kaylee Fang,** Columbia Univ. (United States); **Sen Wang**, **Maria Jose Medrano,** Stanford Univ. (United States); **Grant M. Stevens,** GE HealthCare (United States); **Justin Tse, Adam Wang,** Stanford Univ. (United States)

13405-88 • 5:30 PM - 7:00 PM
Fully automated AI-based dual-energy subtraction system for chest radiography
Author(s): **Asumi Yamazaki**, **Hana Nakajima,** Osaka Univ. (Japan); **Masashi Seki,** Kitasato Univ. Hospital (Japan); **Takayuki Ishida,** Osaka Univ. (Japan)

13405-89 • 5:30 PM - 7:00 PM
Dose-aware adaptive denoising network for low-dose CT
Author(s): **Seongjun Kim**, **Byeongjoon Kim,** Yonsei Univ. (Korea, Republic of); **Jongduk Baek,** Yonsei Univ. (Korea, Republic of), Bareunex Imaging, Inc. (Korea, Republic of)

13405-90 • 5:30 PM - 7:00 PM
Quality enhancement of radiographic x-ray images by interpretable mapping
Author(s): **Hongxu Yang,** GE HealthCare (Netherlands); **Najib A. M. Aboobacker**, **Xiaomeng Dong**, **German Gonzalez,** GE HealthCare (United States); **Lehel Ferenczi,** GE HealthCare Hungary (Hungary); **Gopal Avinash,** GE HealthCare (United States)

13405-91 • 5:30 PM - 7:00 PM
Self-supervised metal artifacts reduction with a continuous constraint along the z-axis
Author(s): **Junhyun Ahn,** Yonsei Univ. (Korea, Republic of); **Sungil Choi**, **Seungwon Choi**, **Chulkyu Park**, **Jueon Park**, **Chul Lee,** Vatech Research and Development Ctr. (Korea, Republic of); **Jongduk Baek,** Yonsei Univ. (Korea, Republic of)

13405-92 • 5:30 PM - 7:00 PM
Early step skipping score-based generative model for low-dose CT denoising
Author(s): **Hojin Jung, Jongduk Baek,** Yonsei Univ. (Korea, Republic of)

13405-93 • 5:30 PM - 7:00 PM
Simulating scanner- and algorithm-specific 3D CT noise texture using physics-informed 2D and 2.5D generative neural network models
Author(s): **Hao Gong**, **Thomas Huber**, **Timothy Winfree**, **Scott S. Hsieh**, **Lifeng Yu**, **Shuai Leng, Cynthia H. McCollough,** Mayo Clinic (United States)

13405-94 • 5:30 PM - 7:00 PM
Synthesis of realistic medical images with pathologies using diffusion models with application to lung CT and mammography
Author(s): **Arjun Krishna,** Stony Brook Univ. (United States); **Eric Papenhausen**, **Darius Coelho,** 12Bit Inc. (United States); **Klaus D. Mueller,** Stony Brook Univ. (United States)

13405-95 • 5:30 PM - 7:00 PM
Compressibility analysis for the differentiable shift-variant filtered backprojection model
Author(s): **Chengze Ye,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Linda-Sophie Schneider**, **Yipeng Sun,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Fraunhofer-Institut für Integrierte Schaltungen IIS (Germany); **Mareike Thies, Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13405-96 • 5:30 PM - 7:00 PM
PET image denoising based on diffusion models and sequential Monte Carlo posterior sampling
Author(s): **Heng Zhou**, **Boxiao Yu,** Univ. of Florida (United States); **Emma Thibault**, **Cristina Lois Gomez,** Massachusetts General Hospital (United States), Harvard Medical School (United States); **Jiong Wu,** Univ. of Florida (United States); **Alex A. Becker**, **Julie C. Price**, **Keith A. Johnson,** Massachusetts General Hospital (United States), Harvard Medical School (United States); **Kuang Gong,** Univ. of Florida (United States)

13405-97 • 5:30 PM - 7:00 PM
Noise aware system generative model (NASGM) of PET: a deep learning-based model for PET image simulation with quantitative assessment
Author(s): **Suya Li**, **Kaushik Dutta, Kooresh Shoghi,** Washington Univ. in St. Louis (United States)

13405-98 • 5:30 PM - 7:00 PM
Robust deep-learning with protocol-invariant encoder and physics-informed contrastive loss
Author(s): **Pengwei Wu, Bruno De Man,** GE HealthCare (United States)

13405-99 • 5:30 PM - 7:00 PM
PET image reconstruction with diffusion priors and half-quadratic splitting
Author(s): **Sangjin Bae,** Seoul National Univ. (Korea, Republic of); **Boxiao Yu,** Univ. of Florida (United States); **Jae Sung Lee,** Seoul National Univ. Hospital (Korea, Republic of); **Kuang Gong,** Univ. of Florida (United States)

13405-100 • 5:30 PM - 7:00 PM
CT synthesis from MRI using 3D swin UNETR and distillation for upper abdominal radiotherapy treatment planning
Author(s): **Dufan Wu**, **Sifan Song**, **Yi Wang**, **Kelly J. Torolski**, **Hui Ren**, **Marcio A. B. C. Rockenbach**, **Kavitha Srinivasan**, **Karen A. Rich,** Massachusetts General Hospital (United States); **Sandeep Kaushik,** GE HealthCare (United States); **Cristina Cozzini,** GE HealthCare (Germany); **Florian Wiesinger,** GE HealthCare (United States); **Quanzheng Li, Theodore S. Hong,** Massachusetts General Hospital (United States)

13405-101 • 5:30 PM - 7:00 PM
Validation of a deep learning-based approach for automatic left ventricular myocardial segmentation and its efficacy in clinical CT perfusion measurement
Author(s): **Hamidreza Khodajou-Chokami**, **Qiyu Zhang**, **Dean Nguyen**, **Dale Black**, **Logan Hubbard, Sabee Molloi,** Univ. of California, Irvine (United States)

13405-102 • 5:30 PM - 7:00 PM
Deep learning-based segmentation of heart chambers and myocardium from cardiac CT images
Author(s): **Dean Nguyen**, **Hamidreza Khodajou-Chokami**, **Qiyu Zhuang**, **Yumeng Zhang**, **Chris Cho, Sabee Molloi,** Univ. of California, Irvine (United States)

13405-103 • 5:30 PM - 7:00 PM
Feature extraction effect in multi-agent reinforcement learning-based denoising model for digital tomosynthesis
Author(s): **Seungwan Lee,** Konyang Univ. (Korea, Republic of); **Kibok Nam,** Deepnoid Inc. (Korea, Republic of); **Youngeun Choi,** Konyang Univ. (Korea, Republic of)

POSTERS: VIRTUAL CLINICAL TRIAL AND PHANTOMS

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
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13405-105 • 5:30 PM - 7:00 PM
Development of a virtual photon-counting micro-CT imaging platform for preclinical cancer studies
Author(s): **Rohan Nadkarni,** Duke Univ. School of Medicine (United States); **Darin P. Clark,** Duke Univ. Medical Ctr. (United States); **Alex J. Allphin**, **Yi Qi,** Duke Univ. School of Medicine (United States); **Yvonne M. Mowery,** UPMC Hillman Cancer Ctr. (United States), Univ. of Pittsburgh (United States); **William P. Segars, Cristian T. Badea,** Duke Univ. School of Medicine (United States)

13405-106 • 5:30 PM - 7:00 PM
A Monte Carlo model of coronary artery plaque growth for use in computational phantoms
Author(s): **Nicholas Felice**, **William P. Segars, Ehsan Samei,** Duke Univ. (United States)

13405-107 • 5:30 PM - 7:00 PM
Insights from the first international summit for virtual imaging trials in medicine (VITM)
Author(s): **Liesbeth Vancoillie,** Ctr. for Virtual Imaging Trials (CVIT) (United States); **Ehsan Abadi,** Duke Univ. (United States); **Predrag R. Bakic,** Lund Univ. (Sweden); **Krisitina Bliznakova,** Medical Univ. Varna (Bulgaria); **Hilde Bosmans,** KU Leuven (Belgium); **Ann-Katherine Carton,** GE HealthCare France (France); **Alejandro A. Frangi,** The Univ. of Manchester (United Kingdom); **Stephen J. Glick,** U.S. Food and Drug Administration (United States); **Paul E. Kinahan,** Univ. of Washington (United States); **Joseph Y. Lo,** Ctr. for Virtual Imaging Trials (CVIT) (United States); **Andrew Maidment,** Univ. of Pennsylvania (United States); **Francesco Ria,** Ctr. for Virtual Imaging Trials (CVIT) (United States); **Ioannis Sechopoulos,** Radboud Univ. Nijmegen (Netherlands); **William P. Segars,** Ctr. for Virtual Imaging Trials (CVIT) (United States); **Rie Tanaka,** Kanazawa Univ. (Japan); **Ehsan Samei,** Ctr. for Virtual Imaging Trials (CVIT) (United States)

13405-108 • 5:30 PM - 7:00 PM
An integrated PET-CT simulation pipeline for biomedical imaging research
Author(s): **Katie M. Olivas,** Duke Univ. (United States); **Darrin W. Byrd,** Univ. of Washington (United States); **Nicholas Felice**, **William P. Segars,** Duke Univ. (United States); **Paul E. Kinahan,** Univ. of Washington (United States); **Ehsan Abadi, Ehsan Samei,** Duke Univ. (United States)

13405-109 • 5:30 PM - 7:00 PM
3D CTGAN: generating 3D heterogeneous tissue textures for virtual phantoms
Author(s): **Cornelio Salvador Salinas,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. (United States); **Kirti Magudia,** Duke Univ. School of Medicine (United States); **Aman Sangal**, **Lei Ren,** Univ. of Maryland School of Medicine (United States); **Ehsan Samei, William P. Segars,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. (United States)

13405-110 • 5:30 PM - 7:00 PM
Development of breast suppression technique for dynamic chest radiography using a mixed dataset of virtual and real patients
Author(s): **Yuna Yamawaki, Rie Tanaka,** Kanazawa Univ. (Japan)

13405-111 • 5:30 PM - 7:00 PM
Characterizing 3D printed deformable CT phantoms for respiratory motion applications
Author(s): **Jessica Y. Im,** Univ. of Pennsylvania (United States); **Neghemi Micah,** Swarthmore College (United States); **Amy E. Perkins,** Philips Healthcare (United States); **Kai Mei**, **Michael Geagan, Peter B. Noël,** Univ. of Pennsylvania (United States)

13405-112 • 5:30 PM - 7:00 PM
Efficient formation of patient-specific finite-element models of the heart
Author(s): **Ethan Malin,** Duke Univ. (United States); **Chris Goddard,** Synopsys Northen Europe Ltd. (United Kingdom); **Christoph Maurath Sommer**, **Chein J. Huang,** Ansys, Inc. (United States); **Rebecca Bryan,** Synopsys Northen Europe Ltd. (United Kingdom); **William P. Segars, Ehsan Samei,** Ctr. for Virtual Imaging Trials (CVIT) (United States)

13405-113 • 5:30 PM - 7:00 PM
GPU-accelerated Monte Carlo simulation of single-photon imaging for image-based dosimetry research in radioligand therapy
Author(s): **Zhihua Qi,** Henry Ford Health System (United States)

13405-114 • 5:30 PM - 7:00 PM
Replication of ultra-high-resolution patient features in 3D printed CT phantoms
Author(s): **Ryan A. Fair**, **Austin W. Zhuang**, **Michael Geagan, Peter B. Noël,** Univ. of Pennsylvania (United States)

POSTERS: DETECTORS

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
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13405-115 • 5:30 PM - 7:00 PM
Evaluating the impact of detector internal noise on antiscatter grid performance in x-ray imaging: a Monte Carlo simulation study
Author(s): **Rodrigo T. Massera**, **Katrien Houbrechts,** KU Leuven (Belgium); **Hilde Bosmans, Nicholas W. Marshall,** Univ. Ziekenhuis Leuven (Belgium)

13405-116 • 5:30 PM - 7:00 PM
Efficient GPU-accelerated Monte Carlo simulation for x-ray diffraction imaging with spectroscopic detector modeling
Author(s): **Le Shen**, **Shengzi Zhao**, **Yuxiang Xing, Li Zhang,** Tsinghua Univ. (China)

13405-117 • 5:30 PM - 7:00 PM
Modelling the impact of including the charge carrier creation and transport in photon counting detectors on the radiographic image formation
Author(s): **Hitalo R. Mendes,** Univ. of Campinas (Brazil), Institute Hardware Br. (Brazil); **Alessandra Tomal,** Univ. of Campinas (Brazil)

13405-118 • 5:30 PM - 7:00 PM
The potential of scintillator-based photon counting detectors: evaluation using Monte Carlo simulations
Author(s): **Scott S. Hsieh,** Mayo Clinic (United States); **Katsuyuki Taguchi,** Johns Hopkins Univ. (United States); **Marlies C. Goorden, Dennis R. Schaart,** Technische Univ. Delft (Netherlands)

13405-119 • 5:30 PM - 7:00 PM
Performance evaluation of small pixel-sized Gd_2O_2S and CsI CMOS x-ray detectors
Author(s): **Yagiz Mart,** Xera Medical Sytems and Technology (Turkey); **Ahmet Arif Aslan,** Bilkent Univ. (Turkey); **Kaan Büyükdemirci,** Xera Medical Sytems and Technology (Turkey); **Denny Lee,** Direct X Ray Digital Imaging Technology LLC (United States); **Tayfun Akin,** Mikro-Tasarim Elektronik San. ve Tic. A.S. (Turkey); **Ahmet Çamlica,** Xera Medical Sytems and Technology (Turkey)

POSTERS: NOVEL IMAGING METHODS

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
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13405-120 • 5:30 PM - 7:00 PM
Grating-based dark-field computed tomography: an ex-vivo porcine lung study
Author(s): **Josepha Franziska Hilmer**, **Manuel Viermetz**, **Jakob Haeusele**, **Paulina Bleuel**, **Bettina Kohlhaas**, **Nikolai Gustschin**, **Clemens Schmid,** Technische Univ. München (Germany), Munich Institute of Biomedical Engineering (Germany); **Daniela Pfeiffer,** Klinikum rechts der Isar der Technischen Univ. München (Germany), Technische Univ. München (Germany), Munich Institute of Biomedical Engineering (Germany); **Thomas Koehler,** Philips GmbH Innovative Technologies (Germany), TUM Institute for Advanced Study (Germany); **Franz Pfeiffer,** Technische Univ. München (Germany), Munich Institute of Biomedical Engineering (Germany), TUM Institute for Advanced Study (Germany)

13405-121 • 5:30 PM - 7:00 PM
Quantification of the dark-field signal and its linear decomposition approximation of packed spheres
Author(s): **Longchao Men**, **Jincheng Lu**, **Peiyuan Guo**, **Li Zhang, Zhentian Wang,** Tsinghua Univ. (China)

13405-122 • 5:30 PM - 7:00 PM
Scalable multiplexed readout design for radioactive contaminated seafood imaging system
Author(s): **Choi Suhan,** Chonnam National Univ. (Korea, Republic of)

13405-123 • 5:30 PM - 7:00 PM
Control of deep optical imaging depth using gas bubble induced by combined optical and ultrasound energies
Author(s): **Jinwoo Kim**, **Juwon Kwon, Jin Ho Chang,** Daegu Gyeongbuk Institute of Science & Technology (Korea, Republic of)

13405-124 • 5:30 PM - 7:00 PM
Biosignal measurement system using two cameras and real-time measurement
Author(s): **Joo Beom Eom,** Dankook Univ. (Korea, Republic of)

13405-125 • 5:30 PM - 7:00 PM
The world's smallest and lightest pocket x-ray system using carbon nanotube technology for soft x-ray imaging and cellular irradiation
Author(s): **Amar Prasad Gupta,** Massachusetts General Hospital (United States), Harvard Medical School (United States); **Taewon Kim,** CAT Beam Tech Co., Ltd. (Korea, Republic of); **Natalie Livingston,** Massachusetts General Hospital (United States), Harvard Medical School (United States); **Seung Jun Yeo,** CAT Beam Tech Co., Ltd. (Korea, Republic of); **Jeung Sun Ahn,** Kyung Hee Univ. (Korea, Republic of); **Jehwang Ryu,** Kyung Hee Univ. (Korea, Republic of), CAT Beam Tech Co., Ltd. (Korea, Republic of); **Rajiv Gupta,** Massachusetts General Hospital (United States), Harvard Medical School (United States)

13405-126 • 5:30 PM - 7:00 PM
A dataset of x-ray diffraction patterns of common amorphous materials
Author(s): **Shengzi Zhao**, **Le Shen**, **Donghang Miao, Yuxiang Xing,** Tsinghua Univ. (China)

13405-127 • 5:30 PM - 7:00 PM
Head-to-head comparison of analog-filament vs a digital-CNT x-ray source
Author(s): **Yile Fang**, **Amar Prasad Gupta**, **Jake Hecla**, **Matthew Tivnan**, **Darash Desai**, **Dufan Wu**, **Kai Yang**, **Tim Moulton**, **Wolfgang Krull, Rajiv Gupta,** Massachusetts General Hospital (United States), Harvard Medical School (United States)

13405-128 • 5:30 PM - 7:00 PM
Liver dosimetry in 225Ac-rituximab planar images using CT images for attenuation correction
Author(s): **Muath Almaslamani,** Univ. of Science and Technology (Korea, Republic of), Korea Institute of Radiological & Medical Sciences (Korea, Republic of); **Jingyu Yang**, **Kyo Chul Lee**, **Ilhan Lim,** Korea Institute of Radiological & Medical Sciences (Korea, Republic of); **Sang-Keun Woo,** Korea Institute of Radiological & Medical Sciences (Korea, Republic of), Univ. of Science and Technology (Korea, Republic of)

13405-129 • 5:30 PM - 7:00 PM
Optimizing transmit field inhomogeneity of parallel RF transmit design in 7T MRI using deep learning
Author(s): **Zhengyi Lu,** Vanderbilt Univ. (United States); **Hao Liang,** Vanderbilt Univ. Medical Ctr. (United States); **Xiao Wang,** Oak Ridge National Lab. (United States); **Xinqiang Yan,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

POSTERS: PHOTON COUNTING DETECTOR CT

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13405-130 • 5:30 PM - 7:00 PM
Pixel-to-pixel variation correction using cylindrical phantoms in photon-counting CT: total count results
Author(s): **Donghyeon Lee,** Johns Hopkins Medicine (United States); **Xiaohui Zhan,** Canon Medical Research USA, Inc. (United States); **W. Yang Tai**, **Wojciech Zbijewski,** Johns Hopkins Univ. (United States); **Katsuyuki Taguchi,** Johns Hopkins Medicine (United States)

13405-131 • 5:30 PM - 7:00 PM
Feasibility of photon-counting micro-CT for intraoperative specimen imaging: a simulation study
Author(s): **Grace Burton,** Yale Univ. (United States); **Mats Danielsson, Mats U. Persson,** KTH Royal Institute of Technology (Sweden)

13405-133 • 5:30 PM - 7:00 PM
Scatter levels in triple-energy photon-counting x-ray imaging
Author(s): **Kaitlyn Sims**, **Sharmin Islam, Jesse Tanguay,** Toronto Metropolitan Univ. (Canada)

13405-134 • 5:30 PM - 7:00 PM
Comparative evaluation of noise texture and images of a synthetic lung nodule using energy-integrating and photon-counting CT
Author(s): **Paulo Costa,** Univ. de São Paulo (Brazil), Radboud Univ. Medical Ctr. (Netherlands); **Elsa B. Pimenta,** Univ. de São Paulo (Brazil); **Luuk J. Oostveen, Ioannis Sechopoulos,** Radboud Univ. Medical Ctr. (Netherlands)

13405-135 • 5:30 PM - 7:00 PM
Lung nodule volumetry accuracy and precision on energy-integrating and CdZnTe photon-counting CT technologies
Author(s): **Paulo Costa,** Univ. de São Paulo (Brazil), Radboud Univ. Medical Ctr. (Netherlands); **Elsa B. Pimenta,** Univ. de São Paulo (Brazil); **Luuk J. Oostveen,** Radboud Univ. Medical Ctr. (Netherlands); **Gisell R. Boisett**, **Raissa S. Moura,** Univ. de São Paulo (Brazil); **Ioannis Sechopoulos,** Radboud Univ. Medical Ctr. (Netherlands)

13405-136 • 5:30 PM - 7:00 PM
Deep learning-based iodine map prediction with PCCT images
Author(s): **Jón H. Sigurdsson,** KTH Royal Institute of Technology (Sweden); **Dominic Crotty,** GE HealthCare (Ireland); **Staffan Holmin,** Karolinska Institute (Sweden); **Mats U. Persson,** KTH Royal Institute of Technology (Sweden)

13405-137 • 5:30 PM - 7:00 PM
Balance between the number of projections and exposure time in photon counting CT with a data-driven approach
Author(s): **Raziye Kubra Kumrular, Thomas Blumensath,** Univ. of Southampton (United Kingdom)

13405-138 • 5:30 PM - 7:00 PM
Optimizing photon-counting CT protocol for enhanced pancreatic cancer imaging: a phantom study comparing kV settings and imaging modes
Author(s): **Liqiang Ren**, **Xinhui Duan**, **Richard Ahn**, **Caroline Lux**, **Connor Endsley**, **Tsuicheng Chiu**, **Tiylar Cotton**, **Ravi Kaza**, **Yin Xi, Lakshmi Ananthakrishnan,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

13405-139 • 5:30 PM - 7:00 PM
Influence of anti-scatter grid on the SNR of photon-counting and energy-integrating detectors: a simulation study
Author(s): **Jiaxuan Liu,** Tsinghua Univ. (China); **Yanyan Liu**, **Xiaoxuan Zhang,** United Imaging Healthcare Co., Ltd. (China); **Xiaopeng Yu**, **Xinjie Yan,** ShanghaiTech Univ. (China); **Xi Zhang,** United Imaging Healthcare Co., Ltd. (China); **Guotao Quan,** ShanghaiTech Univ. (China); **Scott S. Hsieh,** Mayo Clinic (United States); **Xiaochun Lai,** ShanghaiTech Univ. (China); **Wenying Wang,** United Imaging Healthcare Co., Ltd. (United States)

13405-140 • 5:30 PM - 7:00 PM
The utility of photon counting localizer radiograph as a tool in bone densitometry
Author(s): **George Ibrahim**, **Cindy McCabe**, **Ehsan Abadi**, **Ehsan Samei,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. (United States); **Erin Macdonald**, **Steve Bache,** Duke Univ. School of Medicine (United States); **Tristan Nowak**, **Michael Grasruck,** Siemens Healthineers (Germany); **Andres Abadia,** Siemens Healthineers (United States)

13405-141 • 5:30 PM - 7:00 PM
Advancing image domain performance evaluation in photon-counting computed tomography: a physics-guided deep learning approach
Author(s): **Wenhui Qin**, **Tao Zhong**, **Xiaopeng Yu, Xiaochun Lai,** ShanghaiTech Univ. (China)

13405-142 • 5:30 PM - 7:00 PM
Impact of bowtie filters on photon counting CT imaging
Author(s): **Xin Zhang**, **Jixiong Xie**, **Ting Su, Yongshuai Ge,** Shenzhen Institute of Advanced Technology (China)

13405-143 • 5:30 PM - 7:00 PM
A Monte Carlo-based assessment of a SPECT/CT system with a single photon counting detector: a feasibility study
Author(s): **James Day**, **Xinchen Deng, Magdalena Bazalova-Carter,** Univ. of Victoria (Canada)

13405-144 • 5:30 PM - 7:00 PM
Multi-material decomposition using photon-counting CT: iodine and residual error measurements
Author(s): **Hamidreza Khodajou-Chokami**, **Huanjun Ding**, **David Clymer**, **Dale Black**, **Justin Truong**, **Qiyu Zhang, Sabee Molloi,** Univ. of California, Irvine (United States)

13405-145 • 5:30 PM - 7:00 PM
Joint contrast-enhanced and non-contrast CT segmentation by means of PCCT data: improved AI tuning illustrated for kidney segmentation
Author(s): **Konstantinos Koukoutegos**, **Richard 's Heeren**, **Frederik De Keyzer**, **Liesbeth De Wever,** Univ. Ziekenhuis Leuven (Belgium); **Frederik Maes,** KU Leuven (Belgium); **Hilde Bosmans,** Univ. Ziekenhuis Leuven (Belgium)

13405-146 • 5:30 PM - 7:00 PM
Assessment of spatial resolution variability in clinical photon-counting detector CT
Author(s): **Kishore Rajendran**, **Jamison Thorne**, **Francis Baffour**, **Cynthia H. McCollough, Andrea Ferrero,** Mayo Clinic (United States)

13405-147 • 5:30 PM - 7:00 PM
Small pixel effect in clinical photon-counting CT: noise power spectrum and low-contrast detectability
Author(s): **Colin Shan**, **Xinhui Duan**, **Yue Zhang**, **Kuan Zhang, Liqiang Ren,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

13405-148 • 5:30 PM - 7:00 PM
Evaluation of spectral performance in photon-counting CT for breast cancer imaging: a feasibility phantom study
Author(s): **Liqiang Ren**, **Todd Soesbe**, **Matthew Lewis**, **Yin Xi**, **Stephen Seiler**, **Afrouz Ataei,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Hong Liu**, **Yuhua Li,** The Univ. of Oklahoma (United States); **Richard Ahn,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

13405-149 • 5:30 PM - 7:00 PM
One-step material decomposition for photon-counting CT using implicit neural representation and physics-guided model
Author(s): **Wenhui Qin**, **Xiaopeng Yu**, **Zhentao Liu**, **Tao Zhong,** ShanghaiTech Univ. (China); **Yikun Zhang**, **Xu Ji,** Southeast Univ. (China); **Wenying Wang,** Shanghai United Imaging Healthcare Advanced Technology Research Institute Co., Ltd. (China); **Zhiming Cui,** ShanghaiTech Univ. (China); **Guotao Quan,** Shanghai United Imaging Healthcare Advanced Technology Research Institute Co. (China); **Yang Chen,** Southeast Univ. (China); **Xiaochun Lai,** ShanghaiTech Univ. (China)

13405-150 • 5:30 PM - 7:00 PM
Line profile edge-width half maximum analysis of mixed coronary plaque phantom by photon counting CT: impact of calcium and iodine on detection of low attenuation plaque with ground truth reference
Author(s): **Bálint Szilveszter**, **Anikó Kubovje,** Semmelweis Univ. (Hungary); **Márton Kolossváry,** Gottsegen National Cardiovascular Ctr. (Hungary); **Hugo Marques,** Hospital da Luz (Portugal); **Borbála Vattay**, **Zsófia Jokkel**, **Milán Vecsey-Nagy**, **Melinda Boussoussou,** Semmelweis Univ. (Hungary); **Shawn Newlander**, **George Wesbey,** Scripps Clinic, Scripps Health (United States); **Elliot McVeigh,** Univ. of California, San Diego (United States)

POSTERS: BREAST IMAGING

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13405-152 • 5:30 PM - 7:00 PM
Monte Carlo simulation of photon-counting breast CT system: from implementation to image quality evaluation
Author(s): **Alessandra Tomal,** Instituto de Física "Gleb Wataghin", Univ. of Campinas (Brazil), Radboud Univ. Medical Ctr. (Netherlands); **Koen Michielsen**, **Juan J. Pautasso, Ioannis Sechopoulos,** Radboud Univ. Medical Ctr. (Netherlands)

13405-153 • 5:30 PM - 7:00 PM
Two-stage convolutional neural network for breast CT reconstruction
Author(s): **Zhikai Yang**, **Yihan Xiao**, **Ozan Öktem**, **Örjan Smedby, Rodrigo Moreno,** KTH Royal Institute of Technology (Sweden)

13405-154 • 5:30 PM - 7:00 PM
Pipeline to generate synthesized mammographic images: reliability of a new framework for data augmentation-based ray-tracing method, Monte Carlo simulation, and deep-learning scatter estimation
Author(s): **Aline Y. Machado,** Univ. of Campinas (Brazil); **Rodrigo T. Massera,** KU Leuven (Belgium); **Alessandra Tomal,** Univ. of Campinas (Brazil)

13405-155 • 5:30 PM - 7:00 PM
Characterization of breast samples via basis function methods using differential linear x-ray scattering coefficients
Author(s): **Prarthana Pasricha,** Carleton Univ. (Canada); **Robert J. LeClair,** Laurentian Univ. (Canada)

13405-156 • 5:30 PM - 7:00 PM
Evaluation of deep learning-based scatter correction in x-ray breast imaging: across image domains and downsampling ratios
Author(s): **Seoyoung Lee**, **SuBong Hyun, Seungryong Cho,** KAIST (Korea, Republic of)

13405-157 • 5:30 PM - 7:00 PM
Objectivity of a quality assurance phantom for mammography and tomosynthesis
Author(s): **Elisabeth Salomon,** Medizinische Univ. Wien (Austria); **Marija Veselinovic,** Univ. Wien (Austria); **Johann Hummel, Michael Figl,** Medizinische Univ. Wien (Austria)

POSTERS: CT IMAGE QUALITY

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13405-158 • 5:30 PM - 7:00 PM
Deep scatter estimation for static CT using multiple projections
Author(s): **Andreas Heinkele,** Deutsches Krebsforschungszentrum (Germany); **Julien Erath,** Siemens Healthineers (Germany); **Lukas Hennemann**, **Joscha Maier,** Deutsches Krebsforschungszentrum (Germany); **Eric Fournié**, **Johan Sunnegaardh**, **Christian Hofmann**, **Martin Petersilka**, **Karl Stierstorfer,** Siemens Healthineers (Germany); **Marc Kachelrieß,** Deutsches Krebsforschungszentrum (Germany)

13405-159 • 5:30 PM - 7:00 PM
Investigating the effects of non-uniqueness in dual-energy CT for an object containing k-edge contrast agent
Author(s): **J.P. Phillips**, **Emil Y. Sidky**, **Ingrid S. Reiser, Xiaochuan Pan,** The Univ. of Chicago (United States)

13405-160 • 5:30 PM - 7:00 PM
Quantitative accuracy of CT protocols for cross-sectional and longitudinal assessment of chronic obstructive pulmonary disease (COPD): a virtual imaging study
Author(s): **Mridul Bhattarai,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. (United States), Duke Univ. Medical Physics Graduate Program (United States); **Daniel W. Shin,** Canon Medical Systems Corp. (Japan); **Fong C. Ho**, **Saman Sotoudeh-Paima,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. (United States); **Ilmar Hein**, **Steven Ross**, **Naruomi Akino**, **Kirsten L. Boedeker,** Canon Medical Systems Corp. (Japan); **Ehsan Samei, Ehsan Abadi,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. (United States)

13405-161 • 5:30 PM - 7:00 PM
Intra- and inter-scanner CT variability and their impact on diagnostic tasks
Author(s): **Isabel S. Montero,** Duke Univ. (United States); **Saman Sotoudeh-Paima,** Duke Univ. School of Medicine (United States); **Ehsan Abadi, Ehsan Samei,** Duke Univ. (United States)

13405-162 • 5:30 PM - 7:00 PM
Impact of beam hardening on CT attenuation values of the lung parenchyma: analysis using computer simulations with voxelized patient models
Author(s): **Zijia Guo**, **Frédéric Noo,** The Univ. of Utah (United States); **Karl Stierstorfer,** Siemens Healthineers (Germany); **Michael McNitt-Gray,** Univ. of California, Los Angeles (United States)

13405-164 • 5:30 PM - 7:00 PM
A diffusion model-based dual domain approach for CT metal artifact reduction
Author(s): **SuBong Hyun**, **Da-in Choi**, **Sungho Yun**, **Seoyoung Lee**, **Raymond Hyunwoo Moon, Seungryong Cho,** KAIST (Korea, Republic of)

13405-165 • 5:30 PM - 7:00 PM
Noise power spectrum analysis in CT for improved patient-specific image optimization: a shift from phantom model to clinical scan
Author(s): **Changmin Park**, **Sihwan Kim, Jonghyo Kim,** Seoul National Univ. (Korea, Republic of), ClariPi Inc. (Korea, Republic of)

13405-166 • 5:30 PM - 7:00 PM
A weighted multi-ray model for penumbra effects induced spectral mixing in x-ray CT
Author(s): **Yifan Deng**, **Hao Zhou, Hewei Gao,** Tsinghua Univ. (China)

13405-167 • 5:30 PM - 7:00 PM
A hybrid spatial resolution CT architecture and its super-resolution reconstruction using diffusion model
Author(s): **Wenxin Mo, Hewei Gao,** Tsinghua Univ. (China)

13405-168 • 5:30 PM - 7:00 PM
Enhancing clinical CT image quality assessment: adapting no-reference methods NIQE and BRISQUE
Author(s): **Alexander Neißner**, **Ulf Mäder, Martin Fiebich,** Technische Hochschule Mittelhessen (Germany)

13405-169 • 5:30 PM - 7:00 PM
Exploring bias in spectral CT material decomposition: a simulation-based approach
Author(s): **Milan Smulders,** Univ. Twente (Netherlands); **Dufan Wu, Rajiv Gupta,** Massachusetts General Hospital (United States)

13405-170 • 5:30 PM - 7:00 PM
Trainable spatio-temporal bilateral filters: 4D-filtering for 4DCT denoising
Author(s): **Annette Schwarz**, **Simon Schmidt,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Siemens Healthineers (Germany); **Patrick Wohlfahrt**, **Jannis Dickmann,** Siemens Healthineers (Germany); **Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13405-171 • 5:30 PM - 7:00 PM
Image quality assessment of computed tomography images using uncertainty estimation
Author(s): **Aparna Harindranath**, **Oscar Bates, Oscar Calderon Agudo,** Imperial College London (United Kingdom)

13405-172 • 5:30 PM - 7:00 PM
Variability in patient CT radiation dose and image quality: the impact of positioning and body habitus via a virtual imaging trial study
Author(s): **Martina Talarico,** Duke Univ. Health System (United States), Ospedale Centrale di Bolzano (Italy), Univ. degli Studi di Padova (Italy); **Njood Alsaihati**, **Milo Fryling**, **Ehsan Abadi,** Duke Univ. Health System (United States), Carl E. Ravin Advanced Imaging Labs. (United States); **Nadia Oberhofer,** Ospedale Centrale di Bolzano (Italy); **Francesco Ria, Ehsan Samei,** Ctr. for Virtual Imaging Trials (CVIT), Duke Univ. Health System (United States), Carl E. Ravin Advanced Imaging Labs. (United States), Clinical Imaging Physics Group (United States)

13405-173 • 5:30 PM - 7:00 PM
Feasibility of scatter correction in triple-source CT with 1D anti-scatter grid and beam blockers
Author(s): **Linjie Chen**, **Xiaoxue Zhong**, **Ying Cheng, Guohua Cao,** ShanghaiTech Univ. (China)

13405-174 • 5:30 PM - 7:00 PM
Characterization of X-ray Tomography based on a Novel Continuous Projection functor
Author(s): **Yuanwei He, Dan Ruan,** Univ. of California, Los Angeles (United States)

13405-175 • 5:30 PM - 7:00 PM
Robust calibration of a dynamic model for a high-resolution microCT scanner
Author(s): **Richard Taschereau**, **Shili Xu, Arion Chatziioannou,** Univ. of California, Los Angeles (United States)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: PHOTON COUNTING DETECTOR CT

18 February 2025 • 10:30 AM - 12:30 PM | Town & Country B
Session Chair(s): **Mats B. Danielsson**, KTH Royal Institute of Technology (Sweden); **Mini Das**, Univ. of Houston (United States)

13405-16 • 10:30 AM - 10:50 AM
Implicitly defined PCCT material decomposition estimator and learned physics-informed neural proxy
Author(s): **Sen Wang**, **Yirong Yang,** Stanford Univ. School of Medicine (United States); **Fredrik Grönberg**, **Grant M. Stevens,** GE HealthCare (United States); **Adam Wang,** Stanford Univ. School of Medicine (United States)

13405-17 • 10:50 AM - 11:10 AM
Log conversion with fewer counts for photon counting CT: decreasing both bias and variance simultaneously
Author(s): **Jia Wei**, **Donghyeon Lee,** Johns Hopkins Univ. (United States); **Karl Stierstorfer,** Siemens Healthineers (Germany); **George S. K. Fung,** Siemens Healthineers (United States); **Christoph Polster,** Siemens Healthineers (Germany); **Shalini Subramanian, Katsuyuki Taguchi,** Johns Hopkins Univ. (United States)

13405-18 • 11:10 AM - 11:30 AM
Design of a "3.5th generation" photon counting detector CT architecture for higher spatial resolution and decreased ring artifact
Author(s): **Scott S. Hsieh,** Mayo Clinic (United States)

13405-19 • 11:30 AM - 11:50 AM
Deep bowtie and patient scatter correction applied to clinical photon-counting CT
Author(s): **Lukas Hennemann,** Deutsches Krebsforschungszentrum (Germany), Siemens Healthineers (Germany); **Julien Erath,** Siemens Healthineers (Germany); **Andreas Heinkele,** Deutsches Krebsforschungszentrum (Germany), Siemens Healthineers (Germany); **Joscha Meier,** Deutsches Krebsforschungszentrum (Germany); **Eric Fournié**, **Martin Petersilka**, **Karl Stierstorfer,** Siemens Healthineers (Germany); **Marc Kachelrieß,** Deutsches Krebsforschungszentrum (Germany)

13405-20 • 11:50 AM - 12:10 PM
Increasing spatial resolution in photon counting CT by exploiting the non-linear partial volume effect
Author(s): **Boyuan Li**, **Yirong Yang**, **Sen Wang**, **Ethan Darwin,** Stanford Univ. (United States); **Grant M. Stevens,** GE HealthCare (United States); **Marc Levenston, Adam Wang,** Stanford Univ. (United States)

13405-21 • 12:10 PM - 12:30 PM
Task-specific deep learning-based denoising for UHR cardiac PCD-CT adaptive to imaging conditions and patient characteristics: impact on image quality and clinical diagnosis and quantitative assessment
Author(s): **Madeleine Wilson**, **Shaojie Chang**, **Emily Koons**, **Cynthia H. McCollough, Shuai Leng,** Mayo Clinic (United States)

Lunch Break 12:30 PM - 1:50 PM

SESSION 5: BREAST IMAGING

18 February 2025 • 1:50 PM - 3:10 PM | Town & Country B
Session Chair(s): **Anders Tingberg**, Skåne Univ. Hospital (Sweden); **Ioannis Sechopoulos**, Radboud Univ. Medical Ctr. (Netherlands)

13405-22 • 1:50 PM - 2:10 PM
Towards quantitative spectral mammography using triple-energy K-edge imaging and a two-pass reconstruction approach
Author(s): **Ferdinand Lück**, **Beatriz Pilar Garcia-Allende**, **Ludwig Ritschl**, **Christopher Syben, Steffen Kappler,** Siemens Healthineers (Germany)

13405-23 • 2:10 PM - 2:30 PM
Multi-task training of a single convolutional neural network for simultaneous estimations of breast thickness map and scatter maps for dual-energy digital breast tomosynthesis with a dual-layer detector
Author(s): **Xiangyi Wu**, **Xiaoyu Duan**, **Andy LaBella, Wei Zhao,** Stony Brook Medicine (United States)

13405-24 • 2:30 PM - 2:50 PM
Methodology to simulate temporal changes in breast tumors and parenchyma using Perlin noise
Author(s): **Hanna Tomic**, **Pontus Timberg**, **John-Henry Markbo**, **Sophia Zackrisson**, **Anders Tingberg**, **Magnus Dustler, Predrag R. Bakic,** Lund Univ. (Sweden)

13405-25 • 2:50 PM - 3:10 PM
Modular breast and tumor perfusion phantoms for validation of 4D dynamic contrast-enhanced dedicated breast CT
Author(s): **Liselot Goris,** Univ. Twente (Netherlands), Radboud Univ. Medical Ctr. (Netherlands); **Sanne Gouma,** Univ. Twente (Netherlands); **Juan J. Pautasso**, **Koen Michielsen,** Radboud Univ. Medical Ctr. (Netherlands); **Ioannis Sechopoulos,** Radboud Univ. Medical Ctr. (Netherlands), Univ. Twente (Netherlands), Dutch Reference Ctr. for Screening (Netherlands)

Coffee Break 3:10 PM - 3:40 PM

SESSION 6: PHYSICS/IMAGE-GUIDED PROCEDURES: JOINT SESSION WITH CONFERENCES 13405 AND 13408

18 February 2025 • 3:40 PM - 5:20 PM | Town & Country B
Session Chair(s): **Shuai Leng**, Mayo Clinic (United States); **Shuo Li**, Case Western Reserve Univ. (United States)

13405-26 • 3:40 PM - 4:00 PM
Learning-based dual-domain rigid motion estimation in interventional C-arm cone-beam CT
Author(s): **Manuela Goldmann,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Siemens Healthineers (Germany); **Alexander Preuhs**, **Michael Manhart**, **Markus Kowarschik,** Siemens Healthineers (Germany); **Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13408-23 • 4:00 PM - 4:20 PM
Image-based metrics of arterial embolization endpoints using an in vitro model
Author(s): **Altea Lorenzon**, **Pallavi Ekbote**, **Prateek Gowda,** Johns Hopkins Univ. (United States); **Tina Ehtiati,** Siemens Healthineers (United States); **J. Webster Stayman, Clifford R. Weiss,** Johns Hopkins Univ. (United States)

13405-27 • 4:20 PM - 4:40 PM
In silico study of quantitative digital subtraction angiography (qDSA) blood velocity measurements versus catheter geometry
Author(s): **Marlin E. Keller**, **Martin G. Wagner**, **Paul F. Laeseke, Michael A. Speidel,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13408-24 • 4:40 PM - 5:00 PM
AI-based spectral metal artifact reduction algorithm for improved iodine detection in virtual monoenergetic images: A quantitative assessment for interventional oncology applications
Author(s): **Andrea Ferrero,** Mayo Clinic (United States); **Wenchao Cao,** Thomas Jefferson Univ. (United States); **Andrew Missert, Christopher Favazza,** Mayo Clinic (United States)

13405-28 • 5:00 PM - 5:20 PM
Can we assess brain perfusion even when DSA images are contaminated by motion artifacts?
Author(s): **Katsuyuki Taguchi**, **Shalini Subramanian**, **Andreia V. Faria,** Johns Hopkins Univ. (United States); **William P. Segars,** Duke Univ. (United States)

NIH/NIBIB SESSION: FUNDING OPPORTUNITIES AND GRANT WRITING TIPS FOR NEW INVESTIGATORS

18 February 2025 • 5:30 PM - 6:45 PM | Town & Country D
Session Chair(s): **John M. Sabol**, Konica Minolta Healthcare Americas, Inc. (United States); **Maryam E. Rettmann**, Mayo Clinic (United States)

View Full Details: spie.org/nih-nibb-session

5:30 PM – 6:00 PM
Navigating the NIH Grant System and Tips for Preparing Successful and Competitive NIH Grant Applications
Speaker: **Behrouz Shabestari**, Director, NIBIB National Technology Centers Program; Director, Division of Health Informatics Technologies (DHIT), NIBIB

6:00 PM – 6:15 PM
Scientific Program and Funding Opportunities at NIBIB
Speaker: **Rui Pereira de Sá**, Program Director, Division of Health Informatics Technologies (DHIT), NIBIB

6:15 PM – 6:30 PM
Speaker: **Eleni Liapi**, Scientific Review Officer, National Institutes of Health (United States)

6:30 PM – 6:45 PM
Question and Answers

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: IMAGE RECONSTRUCTION WITH DIFFUSION MODELS

19 February 2025 • 10:30 AM - 12:30 PM | Town & Country B
Session Chair(s): **Marc Kachelrieß**, Deutsches Krebsforschungszentrum (Germany); **Yuxiang Xing**, Tsinghua Univ. (China)

13405-29 • 10:30 AM - 10:50 AM
Physics-driven and data consistency-constrained sinogram completion using a denoising diffusion probabilistic model for limited-angle reconstruction
Author(s): **Shujie Jin**, **Ran Zhang**, **Zilin Jiang**, **Danyang Li**, **Ke Li, Guang-Hong Chen,** Univ. of Wisconsin-Madison (United States)

13405-30 • 10:50 AM - 11:10 AM
Patlak reconstruction from dynamic PET based on diffusion models: evaluations using total-body dynamic datasets
Author(s): **Ziqian Huang**, **Boxiao Yu,** Univ. of Florida (United States); **Siqi Li**, **Guobao Wang,** UC Davis Medical Ctr. (United States); **Kuang Gong,** Univ. of Florida (United States)

13405-31 • 11:10 AM - 11:30 AM
Joint reconstruction and scatter estimation in cone-beam CT using diffusion posterior sampling
Author(s): **Altea Lorenzon**, **Xiao Jiang,** Johns Hopkins Univ. (United States); **Grace J. Gang,** Univ. of Pennsylvania (United States); **J. Webster Stayman,** Johns Hopkins Univ. (United States)

13405-32 • 11:30 AM - 11:50 AM
Generative super-resolution PET imaging with Fourier diffusion models
Author(s): **Matthew Tivnan, Quanzheng Li,** Massachusetts General Hospital (United States)

13405-33 • 11:50 AM - 12:10 PM
3D diffusion posterior sampling for CT reconstruction
Author(s): **Peiqing Teng**, **Xiao Jiang,** Johns Hopkins Univ. (United States); **Liang Cai**, **Tzu-Cheng Lee**, **Ruoqiao Zhang**, **Jian Zhou,** Canon Medical Research USA, Inc. (United States); **J. Webster Stayman,** Johns Hopkins Univ. (United States)

13405-34 • 12:10 PM - 12:30 PM
A study of bias and precision in conditional diffusion denoising probabilistic models (DDPMs) for CT imaging
Author(s): **Ran Zhang**, **Shujie Jin**, **Zilin Jiang**, **Ke Li, Guang-Hong Chen,** Univ. of Wisconsin School of Medicine and Public Health (United States)

Lunch Break 12:30 PM - 1:50 PM

SESSION 8: ANGIOGRAPHY AND RADIOGRAPHY

19 February 2025 • 1:50 PM - 3:10 PM | Town & Country B
Session Chair(s): **Michael A. Speidel**, Univ. of Wisconsin School of Medicine and Public Health (United States); **Andreas Maier**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13405-35 • 1:50 PM - 2:10 PM
Impact of spectral separation on robustness to scatter errors in quantitative dual-energy radiography
Author(s): **Stephen Z. Liu**, **Gengxin Shi,** Johns Hopkins Univ. School of Medicine (United States); **Jamin Schaefer**, **Sebastian Vogt**, **Ludwig Ritschl**, **Steffen Kappler,** Siemens Healthineers (Germany); **Mahadevappa Mahesh, Wojciech Zbijewski,** Johns Hopkins Univ. School of Medicine (United States)

13405-36 • 2:10 PM - 2:30 PM
Synthetic-mask energy subtraction angiography: phantom study
Author(s): **Lisa M. Garland**, **Haechan J. Yang,** Western Univ. (Canada), Robarts Research Institute (Canada); **Michael R. Ward,** London Health Sciences Ctr. (Canada); **Ian A. Cunningham,** Western Univ. (Canada), Robarts Research Institute (Canada)

13405-37 • 2:30 PM - 2:50 PM
Deep-learning fluoroscopy denoising: a beam quality insensitive approach
Author(s): **Joseph F. Whitehead**, **Yi Hu**, **Jong Woo Kim**, **Yu-Bing Chang**, **John Baumgart, Joseph Manak,** Canon Medical Research USA, Inc. (United States)

13405-38 • 2:50 PM - 3:10 PM
Microparticle x-ray targets
Author(s): **Rolf K. Behling**, **Christopher K. O. Hulme,** KTH Royal Institute of Technology (Sweden); **Gavin Poludniowski,** Karolinska Institute (Sweden); **Panagiotis B. Tolias, Mats Danielsson,** KTH Royal Institute of Technology (Sweden)

Coffee Break 3:10 PM - 3:40 PM

SESSION 9: VIRTUAL CLINICAL TRIALS

19 February 2025 • 3:40 PM - 5:20 PM | Town & Country B
Session Chair(s): **Lifeng Yu**, Mayo Clinic (United States); **Grace Jianan Gang**, Penn Medicine (United States); **Hilde Bosmans**, Univ. Ziekenhuis Leuven (Belgium)

13405-39 • 3:40 PM - 4:00 PM
Model generation of the extended coronary vasculature for more realistic simulation of coronary artery disease
Author(s): **Ruoyu Chen,** Duke Univ. (United States); **Seungmin Lee,** KAIST (Korea, Republic of); **Nicholas Felice**, **Ethan Malin,** Duke Univ. (United States); **Hyun Jin Kim,** KAIST (Korea, Republic of); **Ehsan Samei, William P. Segars,** Duke Univ. (United States)

13405-41 • 4:00 PM - 4:20 PM
ISIT-GEN: An in silico imaging trial to assess the inter-scanner generalizability of CTLESS for MPI SPECT on defect-detection task
Author(s): **Zitong Yu**, **Nu Ri Choi**, **Zezhang Yang**, **Barry A. Siegel, Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13405-43 • 4:20 PM - 4:40 PM
A representation-based method for continuous CT image reconstruction
Author(s): **Minwoo Yu, Jongduk Baek,** Yonsei Univ. (Korea, Republic of)

13405-104 • 4:40 PM - 5:00 PM
The role of harmonization in phantoms: a systematic analysis of various task-based scenarios
Author(s): **Shao-Jun Xia**, **Liesbeth Vancoillie**, **Saman Sotoudeh-Paima**, **Mojtaba Zarei**, **Fong C. Ho**, **Fakrul Islam Tushar**, **Xiaoyang Chen**, **Lavsen Dahal**, **Kyle J. Lafata**, **Ehsan Abadi**, **Joseph Y. Lo, Ehsan Samei,** Duke Univ. (United States)

13405-40 • 5:00 PM - 5:20 PM
Deep virtual CT workflow for evaluating AI in low-dose CT lung cancer screening: a 2D demonstration study
Author(s): **Ahad O. Ezzati,** Johns Hopkins Univ. (United States); **Xun Jia,** John Hopkins Univ. (United States); **Arjun Krishina**, **Klaus D. Mueller,** Stony Brook Univ. (United States); **Kyle J. Myers,** Puente Solutions, LLC (United States); **Chuang Niu**, **Ge Wang, Wenjun Xia,** Rensselaer Polytechnic Institute (United States)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 10: CT IMAGE QUALITY

20 February 2025 • 10:30 AM - 12:30 PM | Town & Country B
Session Chair(s): **Frédéric Noo**, The Univ. of Utah (United States); **Lifeng Yu**, Mayo Clinic (United States)

13405-44 • 10:30 AM - 10:50 AM
In vivo evaluation of non-invasive temperature monitoring with spectral CT thermometry
Author(s): **Leening P. Liu,** Univ. of Pennsylvania (United States); **Amy E. Perkins,** Philips Healthcare (United States); **Klaus Hopster**, **Thomas P Schaer**, **Ali H. Dhanaliwala**, **Daniel M. DePietro**, **Michael C. Soulen, Peter B. Noël,** Univ. of Pennsylvania (United States)

13405-45 • 10:50 AM - 11:10 AM
The impact of noise texture on a deep-learning denoising model for high-resolution cardiac EID-CT
Author(s): **Kevin Treb**, **Shaojie Chang**, **Jeff F. Marsh**, **Cynthia H. McCollough, Shuai Leng,** Mayo Clinic (United States)

13405-46 • 11:10 AM - 11:30 AM
A perfusion phantom for dynamic micro-CT imaging
Author(s): **Alex J. Allphin**, **Ana M. Badea**, **Darin P. Clark, Cristian T. Badea,** Duke Univ. Medical Ctr. (United States)

13405-47 • 11:30 AM - 11:50 AM
Patient-specific channelized hotelling observer to estimate lesion detectability in CT
Author(s): **Zhongxing Zhou**, **Jarod Wellinghoff**, **Cynthia H. McCollough, Lifeng Yu,** Mayo Clinic (United States)

13405-48 • 11:50 AM - 12:10 PM
Motion compensation in cardiac CT for the entire heart using a residual UNet
Author(s): **Ou Li**, **Joscha Maier, Marc Kachelrieß,** Deutsches Krebsforschungszentrum (Germany)

13405-49 • 12:10 PM - 12:30 PM
Contrast-guided virtual monoenergetic image synthesis via adversarial learning for coronary CT angiography using photon counting detector CT
Author(s): **Shaojie Chang**, **Madeleine Wilson**, **Emily Koons**, **Hao Gong**, **Scott S. Hsieh**, **Lifeng Yu**, **Cynthia H. McCollough, Shuai Leng,** Mayo Clinic (United States)

Lunch Break 12:30 PM - 1:50 PM

SESSION 11: PHASE CONTRAST AND DARK FIELD IMAGING

20 February 2025 • 1:50 PM - 3:10 PM | Town & Country B
Session Chair(s): **John M. Sabol**, Konica Minolta Healthcare Americas, Inc. (United States); **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

13405-50 • 1:50 PM - 2:10 PM
Quantitative characterization of speckle-based x-ray imaging setup for sub-resolution microstructure analysis using standardized samples
Author(s): **Austin W. Zhuang**, **Ryan A. Fair, Peter B. Noël,** Univ. of Pennsylvania (United States)

13405-51 • 2:10 PM - 2:30 PM
A global phase retrieval method for continuously acquired grating-based dark-field computed tomography
Author(s): **Jakob Haeusele**, **Clemens Schmid**, **Josepha Hilmer**, **Florian Schaff**, **Tobias Lasser,** Technische Univ. München (Germany); **Thomas Koehler,** Philips GmbH Innovative Tehnologies (Germany); **Franz Pfeiffer,** Technische Univ. München (Germany)

13405-52 • 2:30 PM - 2:50 PM
Analytic and accurate reconstruction method for x-ray dark-field computed tomography
Author(s): **Peiyuan Guo**, **Longchao Men**, **Li Zhang, Zhentian Wang,** Tsinghua Univ. (China)

13405-53 • 2:50 PM - 3:10 PM
Single-shot dark-field and phase contrast micro CT with single-mask phase contrast imaging
Author(s): **Jingcheng Yuan**, **Juan Carlos R. Luna, Mini Das,** Univ. of Houston (United States)

Coffee Break 3:10 PM - 3:40 PM

SESSION 12: DEEP LEARNING APPLIED TO IMAGING PHYSICS

20 February 2025 • 3:40 PM - 5:20 PM | Town & Country B
Session Chair(s): **Frédéric Noo**, The Univ. of Utah (United States); **Andreas Maier**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13405-54 • 3:40 PM - 4:00 PM
Joint estimation of anatomy and implants in x-ray CT using a mixed prior model
Author(s): **Xiao Jiang,** Johns Hopkins Univ. (United States); **Grace Gang,** Univ. of Pennsylvania (United States); **J. Webster Stayman,** Johns Hopkins Univ. (United States)

13405-55 • 4:00 PM - 4:20 PM
Deep-learning micro-CT perfusion quantification
Author(s): **Alex J. Allphin**, **Rohan Nadkarni**, **Darin P. Clark, Cristian T. Badea,** Duke Univ. Medical Ctr. (United States)

13405-56 • 4:20 PM - 4:40 PM
Improving low-contrast liver metastases detectability in deep-learning CT denoising using adaptive local fusion driven by total uncertainty and predictive mean
Author(s): **Hao Gong**, **Shravani Kharat**, **Shuai Leng**, **Lifeng Yu**, **Scott S. Hsieh, Cynthia H. McCollough,** Mayo Clinic (United States)

13405-57 • 4:40 PM - 5:00 PM
A detection task-specific deep learning method to improve the quality of sparse-view myocardial perfusion SPECT images
Author(s): **Zezhang Yang**, **Zitong Yu**, **Nuri Choi, Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13405-58 • 5:00 PM - 5:20 PM
NAS-DRP: neural architecture search with deep radon prior for sparse-view CT image reconstruction
Author(s): **Jintao Fu**, **Yuewen Sun, Peng Cong,** Tsinghua Univ. (China)

ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13405-73
LM-SPD-Net: list-mode TOF-PET image reconstruction using stochastic primal-dual network
Author(s): **Kun Tian**, **Rui Hu**, **Zhenrong Zheng,** Zhejiang Univ. (China); **Yunmei Chen,** Univ. of Florida (United States); **Huafeng Liu,** Zhejiang Univ. (China)

13405-163
A CT metal artifact reduction method driven by implicit neural representation and dual-domain regularization
Author(s): **Xuan Liu,** Huazhong Univ. of Science and Technology (China); **Yutong He**, **Yaoqin Xie,** Shenzhen Institute of Advanced Technology (China); **Shan Tan,** Huazhong Univ. of Science and Technology (China); **Xiaokun Liang,** Shenzhen Institute of Advanced Technology (China)

CONFERENCE 13406

Image Processing

16 - 20 February 2025 | Town & Country A

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Sunday 16 February 2025

SPIE MEDICAL IMAGING AWARDS AND PLENARY

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A
Session Chair(s): **Joseph Y. Lo**, Carl E. Ravin Advanced Imaging Labs. (United States); **Cristian A. Linte**, Rochester Institute of Technology (United States)

View Full Details: spie.org/medical-imaging-awards-plenary

5:30 PM - 5:40 PM:
Symposium Chair Welcome and Best Student Paper Award announcement
First-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award
Sponsored by:
MIPS and SPIE

5:40 PM - 5:45 PM:
New SPIE Fellow acknowledgments
Each year, SPIE promotes Members as new Fellows of the Society. Join us as we recognize colleagues of the medical imaging community who have been selected.

5:45 PM - 5:50 PM:
SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging

13408-500 • 5:50 PM - 6:30 PM
Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions (Plenary Presentation)
Author(s): **Aaron Fenster,** Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

ALL-SYMPOSIUM WELCOME RECEPTION

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

View Full Details: spie.org/mi/welcome-reception

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

Monday 17 February 2025

MONDAY MORNING KEYNOTES

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country A
Session Chair(s): **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Mark A. Anastasio**, Univ. of Illinois (United States); **Shandong Wu**, Univ. of Pittsburgh (United States)

View Full Details: spie.org/monday-morning-keynotes

8:20 AM - 8:25 AM:
Welcome and introduction

8:25 AM - 8:30 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
- Physics of Medical Imaging Student Paper Award

13405-501 • 8:30 AM - 9:10 AM
Promoting innovation in your team: lessons learned from 40 years in medical imaging (Keynote Presentation)
Author(s): **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13409-502 • 9:10 AM - 9:50 AM
Designing AI for clinical imaging: the important role of model observers (Keynote Presentation)
Author(s): **Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13411-503 • 9:50 AM - 10:30 AM
Tackling the health AI paradox (Keynote Presentation)
Author(s): **Karandeep Singh,** UC San Diego Health (United States)

Coffee Break 10:30 AM - 11:00 AM

SESSION 1: VISION-LANGUAGE AND FOUNDATION MODELS

17 February 2025 • 11:00 AM - 12:20 PM | Town & Country A
Session Chair(s): **Kensaku Mori**, Nagoya Univ. (Japan); **Yubing Tong**, Penn Medicine (United States)

13406-1 • 11:00 AM - 11:20 AM
Reinforcement-learning-based proactive medical dialogue system for health status and medical image collection
Author(s): **Xinlong Hou**, **Xueshen Li,** Stevens Institute of Technology (United States); **Nirupama Ravi**, **Ziyi Huang,** Nokia Bell Labs. (United States); **Yu Gan,** Stevens Institute of Technology (United States)

13406-2 • 11:20 AM - 11:40 AM
Memorizing SAM: 3D medical Segment Anything Model with memorizing transformer
Author(s): **Xinyuan Shao**, **Yiqing Shen, Mathias Unberath,** Johns Hopkins Univ. (United States)

13406-3 • 11:40 AM - 12:00 PM
CXR-DINO: Paving the way for a medical vision foundation model through self-supervised learning in chest x-ray analysis
Author(s): **Evyatar Burshtein**, **Noa Cahan**, **Lev Ayzenberg, Hayit Greenspan,** Tel Aviv Univ. (Israel)

13406-4 • 12:00 PM - 12:20 PM
ProtoSAM-2D: 2D semantic Segment Anything Model with mask-level prototype-learning and distillation
Author(s): **Yiqing Shen,** Johns Hopkins Univ. (United States); **David Dreizin,** Univ. of Maryland School of Medicine (United States); **Blanca Inigo, Mathias Unberath,** Johns Hopkins Univ. (United States)

Lunch Break 12:20 PM - 1:40 PM

SESSION 2: BRAIN

17 February 2025 • 1:40 PM - 3:20 PM | Town & Country A
Session Chair(s): **Jerry L. Prince**, Johns Hopkins Univ. (United States); **Antong Chen**, Merck & Co., Inc. (United States)

13406-5 • 1:40 PM - 2:00 PM
TauFlowNet-V: predicting Tau spreading dynamics and its implications in Alzheimer's Disease pathology
Author(s): **Xinyu Liu, Guorong Wu,** The Univ. of North Carolina at Chapel Hill (United States)

13406-6 • 2:00 PM - 2:20 PM
A 4D atlas of diffusion-informed spatial smoothing windows for BOLD signal in white matter
Author(s): **Adam M. Saunders**, **Gaurav Rudravaram**, **Nancy R. Newlin**, **Michael E. Kim,** Vanderbilt Univ. (United States); **John C. Gore,** Vanderbilt Univ. Medical Ctr. (United States); **Bennett A. Landman,** Vanderbilt Univ. (United States); **Yurui Gao,** Vanderbilt Univ. Medical Ctr. (United States)

13406-7 • 2:20 PM - 2:40 PM
Approximate diffusion tractography from FLAIR MRI and anatomical context using recurrent neural networks
Author(s): **Zhiyuan Li**, **Michael E. Kim**, **Tian Yu**, **Praitayini Kanakaraj**, **Tianyuan Yao**, **Chenyu Gao,** Vanderbilt Univ. (United States); **Susan M. Resnick**, **Lori L. Beason-Held,** National Institute on Aging (United States); **Mohamad Habes,** The Univ. of Texas Health Science Ctr. at San Antonio (United States); **Leon Y. Cai,** Johns Hopkins Bayview Medical Ctr. (United States); **Bennett A. Landman,** Vanderbilt Univ. (United States)

13406-8 • 2:40 PM - 3:00 PM
Tractography enhancement in clinically-feasible diffusion MRI using T1-weighted MRI and anatomical context
Author(s): **Jongyeon Yoon**, **Elyssa M. McMaster**, **Chloe Cho**, **Kurt G. Schilling**, **Bennett A. Landman, Daniel Moyer,** Vanderbilt Univ. (United States)

13406-9 • 3:00 PM - 3:20 PM
Counterfactual brain amyloid pathology image synthesis
Author(s): **Murat Bilgel,** National Institute on Aging (United States); **Lianrui Zuo,** Vanderbilt Univ. (United States); **Susan M. Resnick,** National Institute on Aging (United States); **Aaron Carass,** Johns Hopkins Univ. (United States)

Coffee Break 3:20 PM - 3:50 PM

SESSION 3: SEGMENTATION

17 February 2025 • 3:50 PM - 5:10 PM | Town & Country A
Session Chair(s): **Tanja Alderliesten**, Leiden Univ. Medical Ctr. (Netherlands); **Tomaž Vrtovec**, Univ. of Ljubljana (Slovenia)

13406-12 • 3:50 PM - 4:10 PM
PRISM Lite: A lightweight model for interactive 3D placenta segmentation in ultrasound
Author(s): **Hao Li,** Vanderbilt Univ. (United States); **Baris Oguz**, **Gabriel Arenas,** Univ. of Pennsylvania (United States); **Xing Yao**, **Jiacheng Wang**, **Daiwei Lu,** Vanderbilt Univ. (United States); **Alison Pouch,** Univ. of Pennsylvania (United States); **Brett Byram,** Vanderbilt Univ. (United States); **Nadav Schwartz,** Univ. of Pennsylvania (United States); **Ipek Oguz,** Vanderbilt Univ. (United States)

13406-11 • 4:10 PM - 4:30 PM
Semi-supervised bone marrow lesion detection from knee MRI segmentation using mask inpainting models
Author(s): **Shihua Qin,** Massachusetts General Hospital (United States), Harvard Medical School (United States), Boston Univ. (United States); **Ming Zhang,** Boston Univ. (United States); **Juan Shan,** Pace Univ. (United States); **Taehoon Shin,** Massachusetts General Hospital (United States), Harvard Medical School (United States), Ewha Womans Univ. (Korea, Republic of); **Jonghye Woo, Fangxu Xing,** Massachusetts General Hospital (United States), Harvard Medical School (United States)

13406-13 • 4:30 PM - 4:50 PM
EPSCL: zero-shot segmentation with embedded pre-trained model and supervised contrastive learning on NIR-II vessel images
Author(s): **Keyi Han**, **Anqi Xiao,** Institute of Automation (China); **Chunzhao Li,** Capital Medical Univ. (China); **Lidan Fu**, **Jie Tian, Zhenhua Hu,** Institute of Automation (China)

13406-14 • 4:50 PM - 5:10 PM
coDice: Connectivity-preserving dice loss for 2D/3D tubular structure segmentation
Author(s): **Jiahui Dong**, **Yan Lv**, **Xuan Bai**, **Ming Tian,** Escope Tech Co., Ltd. (China); **Chao Zhang,** Escope Tech Co. (China); **Xiahai Zhuang,** Fudan University (China); **Tomas Jernberg,** Karolinska Institutet (Sweden); **Chunliang Wang,** KTH Royal Institute of Technology (Sweden)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: IMAGE SYNTHESIS AND GENERATIVE MODELS

18 February 2025 • 10:30 AM - 12:10 PM | Town & Country A
Session Chair(s): **James C. Gee**, Univ. of Pennsylvania (United States); **Yu Gan**, Stevens Institute of Technology (United States)

13406-15 • 10:30 AM - 10:50 AM
Synthetic CT image generation for CBCT-guided lung radiotherapy using a diffusion model
Author(s): **Xiaoqian Chen**, **Richard L. J. Qiu**, **Junbo Peng**, **Joseph W. Shelton**, **Chih-Wei Chang**, **Xiaofeng Yang, Aparna H. Kesarwala,** The Winship Cancer Institute of Emory Univ., Emory Univ. School of Medicine (United States)

13406-16 • 10:50 AM - 11:10 AM
Robust body composition analysis by generating 3D CT volumes from limited 2D slices
Author(s): **Lianrui Zuo**, **Xin Yu**, **Dingjie Su,** Vanderbilt Univ. (United States); **Kaiwen Xu,** Insitro (United States); **Aravind R. Krishnan**, **Yihao Liu,** Vanderbilt Univ. (United States); **Shunxing Bao,** Vanderbilt Univ. (United States); **Fabien Maldonado,** Vanderbilt Univ. Medical Ctr. (United States); **Luigi Ferrucci,** National Institutes of Health (United States); **Bennett A. Landman,** Vanderbilt Univ. (United States)

13406-17 • 11:10 AM - 11:30 AM
AdverX-Ray: Ensuring x-ray integrity through frequency-sensitive adversarial VAEs
Author(s): **Francisco Caetano**, **Christiaan Viviers,** Technische Univ. Eindhoven (Netherlands); **Lena Filatova,** Koninklijke Philips Electronics N.V. (Netherlands); **Peter H. N. De With, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

13406-18 • 11:30 AM - 11:50 AM
Beyond the lungs: Extending the field-of-view in chest CT with latent diffusion models
Author(s): **Lianrui Zuo,** Vanderbilt Univ. (United States); **Kaiwen Xu,** Insitro (United States); **Dingjie Su**, **Xin Yu**, **Aravind R. Krishnan**, **Yihao Liu,** Vanderbilt Univ. (United States); **Shunxing Bao**, **Thomas Z. Li,** Vanderbilt Univ. (United States); **Kim L. Sandler**, **Fabien Maldonado,** Vanderbilt Univ. Medical Ctr. (United States); **Bennett A. Landman,** Vanderbilt Univ. (United States)

13406-19 • 11:50 AM - 12:10 PM
Feature extractor sensitivity in synthetic medical image evaluation
Author(s): **Daniel Mensing**, **Jochen G. Hirsch,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Markus Wenzel,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Constructor Univ. (Germany); **Matthias Günther,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

Lunch Break 12:10 PM - 1:40 PM

NEURAL NETWORK VERIFICATION FOR MEDICAL IMAGING ANALYSIS

18 February 2025 • 1:40 PM - 3:20 PM | Town & Country A
Session Chair(s): **Taylor T. Johnson**, Vanderbilt Univ. (United States)

View Full Details: spie.org/neural-network-verification-for-mi

Neural network verification is an emerging approach to establish neural networks satisfy various specifications and requirements, such as formalized notions of safety, security, and trustworthiness. This tutorial will present neural network verification methods in the context of medical imaging analysis and aims to present this line of work being developed in the formal methods, security, and machine learning communities to the medical imaging analysis community. Interactive demonstrations will be done through the Neural Network Verification (NNV) software tool, and for example, allow for characterizations of robustness for neural networks used in medical imaging analysis.

Coffee Break 3:20 PM - 3:40 PM

SESSION 5: TRANSFORMERS

18 February 2025 • 3:40 PM - 5:20 PM | Town & Country A
Session Chair(s): **Tanveer F. Syeda-Mahmood**, IBM Research - Almaden (United States); **Joshua Victor Stough**, Bucknell Univ. (United States)

13406-20 • 3:40 PM - 4:00 PM
Deep-learning-based outcome prediction from endoscopic videos for robot-assisted radical prostatectomy
Author(s): **Chiara Tappermann**, **Felix Thielke,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Markus Graefen,** Universitätsklinikum Hamburg-Eppendorf (Germany); **Alexander Haese,** Martini-Klinik am UKE GmbH, Universitätsklinikum Hamburg-Eppendorf (Germany); **Horst K. Hahn,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Univ. Bremen (Germany); **Jan Lukas Hohenhorst,** Martini-Klinik am UKE GmbH, Universitätsklinikum Hamburg-Eppendorf (Germany); **Hans Meine,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

13406-21 • 4:00 PM - 4:20 PM
Reconstructing physiological signals from fMRI across the adult lifespan
Author(s): **Shiyu Wang**, **Ziyuan Xu**, **Laurent M Lochard**, **Yamin Li,** Vanderbilt Univ. (United States); **Jiawen Fan,** Massachusetts General Hospital (United States); **Jingyuan E Chen,** Harvard Medical School (United States); **Yuankai Huo,** Vanderbilt Univ. (United States); **Mara Mather,** The Univ. of Southern California (United States); **Roza G. Bayrak, Catie Chang,** Vanderbilt Univ. (United States)

13406-22 • 4:20 PM - 4:40 PM
Advancing reliability in self-supervised transformer models through hierarchical mask attention heads
Author(s): **Simon Baur,** Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany); **Amirhossein Vahidi,** Wellcome Trust Sanger Institute (United Kingdom); **Mengyu Wang**, **Nazlee Zebardast**, **Tobias Elze,** Harvard Medical School (United States); **Bernd Bischl**, **Mina Rezaei,** Ludwig-Maximilians-Univ. München (Germany); **Mohammad Eslami,** Harvard Medical School (United States)

13406-23 • 4:40 PM - 5:00 PM
Polyhedra encoding transformers: enhancing diffusion MRI analysis beyond voxel and volumetric embedding
Author(s): **Tianyuan Yao**, **Zhiyuan Li**, **Praitayini Kanakaraj,** Vanderbilt Univ. (United States); **Derek Archer**, **Kurt G. Schilling,** Vanderbilt Univ. Medical Ctr. (United States); **Lori L. Beason-Held**, **Susan M. Resnick,** National Institutes of Health (United States); **Bennett A. Landman, Yuankai Huo,** Vanderbilt Univ. (United States)

13406-24 • 5:00 PM - 5:20 PM
A novel attention-based network for geometry reconstruction with error estimation from medical images
Author(s): **Linchen Qian**, **Jiasong Chen**, **Linhai Ma**, **Timur Urakov**, **Weiyong Gu, Liang Liang,** Univ. of Miami (United States)

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 6: CARDIOVASCULAR IMAGING

19 February 2025 • 10:30 AM - 11:50 AM | Town & Country A
Session Chair(s): **Ivana Išgum**, Amsterdam UMC (Netherlands); **Murray H. Loew**, The George Washington Univ. (United States)

13406-25 • 10:30 AM - 10:50 AM
Attenuation artifact detection and severity classification in intracoronary OCT using mixed image representations
Author(s): **Pierandrea Cancian**, **Simone Saitta**, **Xiaojin Gu**, **Rudolf L. M. van Herten,** Amsterdam UMC (Netherlands); **Thijs J. Luttikholt**, **Jos Thannhauser**, **Rick H.J. A. Volleberg**, **Ruben G. A. van der Warden**, **Joske L. van der Zande,** Radboud Univ. Medical Ctr. (Netherlands); **Clarisa I. Sànchez,** University of Amsterdam (Netherlands); **Bram van Ginneken**, **Niels van Royen,** Radboud Univ. Medical Ctr. (Netherlands); **Ivana Išgum,** Amsterdam UMC (Netherlands)

13406-26 • 10:50 AM - 11:10 AM
Mitigating Population Drift in MACE Risk Prediction Using Causal Reasoning
Author(s): **Jialu Pi,** Arizona State Univ. (United States); **Juan M. Farina**, **Chieh-Ju Chao**, **Chadi Ayoub**, **Reza Arsanjani,** Mayo Clinic (United States); **Imon Banerjee,** Arizona State Univ. (United States), Mayo Clinic (United States)

13406-27 • 11:10 AM - 11:30 AM
Temporally consistent mitral annulus measurements from sparse annotations in echocardiographic videos
Author(s): **Gino E. Jansen,** Amsterdam UMC (Netherlands), Univ. of Amsterdam (Netherlands); **Mark J. Schuuring,** Univ. Twente (Netherlands); **Berto J. Bouma,** Amsterdam UMC (Netherlands); **Ivana Išgum,** Amsterdam UMC (Netherlands), Univ. of Amsterdam (Netherlands)

13406-28 • 11:30 AM - 11:50 AM
A dual-feet encoder-based framework for joint affine and deformable cardiac MRI registration
Author(s): **Liwen Li,** Huazhong Univ. of Science and Technology (China); **Jaykumar H. Patel,** Univ. of Toronto (Canada); **Xinrui Guo,** Huazhong Univ. of Science and Technology (China); **Calder D. Sheagren**, **Graham A. Wright,** Univ. of Toronto (Canada); **Fumin Guo,** Huazhong Univ. of Science and Technology (China)

Lunch Break 11:50 AM - 1:30 PM

SESSION 7: DEEP DIVE

19 February 2025 • 1:30 PM - 3:10 PM | Town & Country A
Session Chair(s): **Bennett A. Landman**, Vanderbilt Univ. (United States); **Jonghye Woo**, Massachusetts General Hospital (United States)

13406-29 • 1:30 PM - 2:00 PM
Self-supervised Mamba-based mastoidectomy shape prediction for cochlear implant surgery *(Invited Paper)*
Author(s): **Yike Zhang**, **Eduardo Davalos Anaya**, **Dingjie Su**, **Ange Lou, Jack Noble,** Vanderbilt Univ. (United States)

13406-30 • 2:00 PM - 2:30 PM
Multiple instance learning: attention to instance classification *(Invited Paper)*
Author(s): **Denis Baručić, Jan Kybic,** Czech Technical Univ. in Prague (Czech Republic)

13406-31 • 2:30 PM - 3:00 PM
Bi-directional multiple sclerosis lesion filling and synthesis using denoising diffusion implicit model-based lesion repainting *(Invited Paper)*
Author(s): **Jinwei Zhang,** Johns Hopkins Univ. (United States); **Lianrui Zuo**, **Yihao Liu,** Vanderbilt Univ. (United States); **Samuel W. Remedios,** Johns Hopkins Univ. (United States); **Bennett A. Landman,** Vanderbilt Univ. (United States); **Jerry L. Prince, Aaron Carass,** Johns Hopkins Univ. (United States)

Deep-Dive Closing Remarks • 3:00 PM - 3:10 PM

Coffee Break 3:10 PM - 3:40 PM

SESSION 8: IMAGE RECONSTRUCTION AND ENHANCEMENT

19 February 2025 • 3:40 PM - 5:20 PM | Town & Country A
Session Chair(s): **Rakesh Shiradkar**, Emory Univ. (United States); **Mads Nielsen**, Univ. of Copenhagen (Denmark)

13406-32 • 3:40 PM - 4:00 PM
Tiered sampling step sharing strategy for accelerating diffusion-based image restoration of multi-phasic CT
Author(s): **Xi Chen**, **Tzu-Cheng Lee, Liang Cai,** Canon Medical Research USA, Inc. (United States)

13406-33 • 4:00 PM - 4:20 PM
Boost the adversarial learning with Fourier regulator: bias-field correction on MRI
Author(s): **Tong Li,** Washington Univ. in St. Louis (United States); **Anran Liu,** The Hong Kong Polytechnic Univ. (Hong Kong, China); **David Kügler,** German Ctr. for Neurodegenerative Diseases e.V. (Germany); **Martin Reuter,** German Ctr. for Neurodegenerative Diseases e.V. (Germany), Athinoula A. Martinos Ctr. for Biomedical Imaging, Massachusetts General Hospital (United States), Harvard Medical School (United States)

13406-34 • 4:20 PM - 4:40 PM
Rapid reconstruction of extremely accelerated liver 4D MRI via chained iterative refinement
Author(s): **Di Xu,** Univ. of California, San Francisco (United States); **Xin Miao,** Siemens Healthineers (United States); **Hengjie Liu,** Univ. of California, Los Angeles (United States); **Jessica E. Scholey**, **Wensha Yang**, **Mary Feng**, **Michael Ohliger**, **Hui Lin,** Univ. of California, San Francisco (United States); **Yi Lao,** Univ. of California, Los Angeles (United States); **Yang Yang,** Univ. of California, San Francisco (United States); **Ke Sheng,** Univ of California, San Francisco (United States)

13406-35 • 4:40 PM - 5:00 PM
Enhancing retinal SELFF-OCT image quality: A deep learning-based pipeline
Author(s): **Marc Steffen Seibel**, **Marc Rowedder**, **Julia Andresen,** Univ. zu Lübeck (Germany); **Richard Neffin**, **Tobias Neumann**, **Helge Sudkamp,** visotec GmbH (Germany); **Heinz Handels,** Univ. zu Lübeck (Germany), Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); **Timo Kepp,** Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany)

13406-36 • 5:00 PM - 5:20 PM
SRMapping: A super-resolution network with multi-level fine-grained feature fusion for cardiac MR T1 mapping
Author(s): **Chun Liu**, **Hanxi Liao**, **Zhenfeng Lyu,** ShanghaiTech Univ. (China); **Yimin Luo,** Weill Cornell Medicine (United States); **Haikun Qi, Wenhui Qin,** ShanghaiTech Univ. (China)

POSTERS - WEDNESDAY

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/wednesday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 7:30 AM - 5:30 PM Wednesday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.

View poster presentation guidelines and set-up instructions at
spie.org/MI/Poster-Presentation-Guidelines

13406-41 • 5:30 PM - 7:00 PM
Prediction of axillary lymph node metastasis in breast cancer using intraoperative fluorescence dual-modal imaging
Author(s): **He Sun,** Beihang Univ. (China); **Siqi Qiu,** Shantou Central Hospital (China); **Xiaobo Zhu**, **Zhenyu Liu,** Institute of Automation (China); **Liyun Xie**, **Yingzi Li,** Shantou Central Hospital (China); **Jie Tian,** Beihang Univ. (China); **Zhiyong Wu,** Shantou Central Hospital (China); **Yu An,** Beihang Univ. (China)

13406-42 • 5:30 PM - 7:00 PM
Segmentation of kidney ablation zone using deep learning in CT images
Author(s): **Maryam Rastegarpoor,** Robarts Research Institute (Canada), Western Univ. (Canada); **Derek W. Cool, Aaron Fenster,** Western Univ. (Canada)

13406-43 • 5:30 PM - 7:00 PM
Multi-objective deep-learning-based biomechanical deformable image registration with MOREA
Author(s): **Georgios Andreadis,** Leiden Univ. Medical Ctr. (Netherlands); **Eduard Ruiz Munné**, **Thomas H. W. Bäck,** Leiden Univ. (Netherlands); **Peter A. N. Bosman,** Ctr. Wiskunde & Informatica (Netherlands), Technische Univ. Delft (Netherlands); **Tanja Alderliesten,** Leiden Univ. Medical Ctr. (Netherlands)

13406-45 • 5:30 PM - 7:00 PM
GaSpCT: Gaussian splatting for novel brain CBCT projection view synthesis
Author(s): **Emmanouil Nikolakakis**, **Utkarsh Gupta**, **Jonathan Vengosh**, **Justin Bui, Razvan Marinescu,** Univ. of California, Santa Cruz (United States)

13406-46 • 5:30 PM - 7:00 PM
Self-supervised learning for automated image quality assessment in endoscopy
Author(s): **Tim J. M. Jaspers,** Technische Univ. Eindhoven (Netherlands); **Martijn R. Jong,** Amsterdam UMC (Netherlands); **Carolus H. J. Kusters**, **Tim G. W. Boers,** Technische Univ. Eindhoven (Netherlands); **Rixta A. H. Van Eijck van Heslinga**, **Jelmer B. Jukema**, **Albert J. de Groof**, **Jacques J. Bergman,** Amsterdam UMC (Netherlands); **Peter H. N. De With, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

13406-47 • 5:30 PM - 7:00 PM
Enhanced prostate zone segmentation with multi-timepoint MRI: a cross-attention augmented 3D U-Net approach
Author(s): **Yovin Ransika Yahathugoda,** King's College London (United Kingdom); **Davide Prezzi,** King's College London (United Kingdom), Guy's and St Thomas' NHS Foundation Trust (United Kingdom); **Piyalitt Ittichaiwong,** King's College London (United Kingdom); **Vicky Goh,** King's College London (United Kingdom), Guy's and St Thomas' NHS Foundation Trust (United Kingdom); **Sébastien Ourselin, Michela Antonelli,** King's College London (United Kingdom)

13406-48 • 5:30 PM - 7:00 PM
Divide to conquer: a field decomposition approach for multi-organ whole-body CT image registration
Author(s): **Xuan Loc Pham**, **Mathias Prokop,** Radboud Univ. Medical Ctr. (Netherlands); **Bram van Ginneken,** Radboud Univ. Medical Ctr. (Netherlands), Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Alessa Hering,** Radboud Univ. Medical Ctr. (Netherlands)

13406-49 • 5:30 PM - 7:00 PM
Self-supervised deformable registration of digital tomosynthesis and 3D CT images for surgical navigation
Author(s): **Muyul Park**, **Jeongtae So**, **Young-Jun Jung**, **Mikiko Ito**, **Byung Kee Lee,** LG Electronics Inc. (Korea, Republic of); **Gyeongmin Lee, Sang Hyun Park,** Daegu Gyeongbuk Institute of Science & Technology (Korea, Republic of)

13406-50 • 5:30 PM - 7:00 PM
Optimizing 3D UNet for Real-Time Kidney Segmentation in 3D Ultrasound: A Comparative Study of Loss Functions
Author(s): **Simão Valente,** Instituto Politécnico do Cávado e do Ave (Portugal), Life and Health Sciences Research Institute, Univ. do Minho (Portugal); **Helena R. Torres,** Instituto Politécnico do Cávado e do Ave (Portugal); **Pedro Morais,** Instituto Politécnico do Cávado e do Ave (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal); **Andreas Fritz**, **Lukas Buschle,** Karl Storz SE & Co. KG (Germany); **Estevão Lima,** Life and Health Sciences Research Institute, Univ. do Minho (Portugal); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal)

13406-51 • 5:30 PM - 7:00 PM
CT cardiac image and label generation by a 3D latent diffusion model
Author(s): **Ashok Vardhan Addala,** GE HealthCare (United States); **Quanqi Hu,** Texas A&M Univ. (United States); **Masaki Ikuta**, **Ravi Soni, Gopal Avinash,** GE HealthCare (United States)

13406-52 • 5:30 PM - 7:00 PM
Segment Anything Small for ultrasound: Enhanced segmentation of small anatomical structures using iterative point prompts and image transformations
Author(s): **Danielle Ferreira**, **Ahana Gangopadhyay**, **Hsi-Ming Chang**, **Gopal Avinash, Ravi Soni,** GE HealthCare (United States)

13406-53 • 5:30 PM - 7:00 PM
Domain-invariant feature learning in brain MR imaging for content-based image retrieval
Author(s): **Shuya Tobari**, **Shuhei Tomoshige**, **Hayato Muraki,** Hosei Univ. (Japan); **Kenichi Oishi,** Johns Hopkins Medicine (United States); **Hitoshi Iyatomi,** Hosei Univ. (Japan)

13406-54 • 5:30 PM - 7:00 PM
Evaluating the interpretability of prototype networks for medical image analysis
Author(s): **Pieter Gort**, **Cris Claessens**, **Fons van der Sommen, Peter H. N. De With,** Technische Univ. Eindhoven (Netherlands)

13406-55 • 5:30 PM - 7:00 PM
Diffusion-based lung nodule synthesis for advanced evaluation of deep learning models
Author(s): **Cris Claessens**, **Francisco Caetano,** Technische Univ. Eindhoven (Netherlands); **Kasper van der Wulp**, **Lotte Ewals,** Catharina Hospital (Netherlands); **Peter H. N. De With, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

13406-56 • 5:30 PM - 7:00 PM
Region of interest detection for efficient aortic segmentation
Author(s): **Loris Giordano,** Vrije Univ. Brussel (Belgium), Interuniv. Institute of Bioinformatics in Brussels (Belgium); **Ine Dirks,** Vrije Univ. Brussel (Belgium), imec (Belgium); **Tom Lenaerts,** Univ. Libre de Bruxelles (Belgium), Vrije Univ. Brussel (Belgium), Interuniv. Institute of Bioinformatics in Brussels (Belgium); **Jef Vandemeulebroucke,** Vrije Univ. Brussel (Belgium), imec (Belgium), Interuniv. Institute of Bioinformatics in Brussels (Belgium)

13406-57 • 5:30 PM - 7:00 PM
Hybrid contour and distance-based loss for enhanced bladder and prostate segmentation in CT images
Author(s): **Raul Ribeiro**, **Helena R. Torres,** Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal); **Siobhan Moane,** LIFE, the Health and Wellbeing Biosciences Research Institute, Technological Univ. of the Shannon (Ireland); **Pedro Morais, João L. Vilaça,** Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal)

13406-58 • 5:30 PM - 7:00 PM
Predicting anatomical structures from 2D depth images of patients
Author(s): **Kai Geißler**, **Daniel Mensing**, **Temke Kohlbrandt**, **Jochen G. Hirsch, Stefan Heldmann,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

13406-59 • 5:30 PM - 7:00 PM
Swin transformers are robust to distribution and concept drift in endoscopy-based longitudinal rectal cancer assessment
Author(s): **Jorge Tapias Gomez**, **Aneesh Rangnekar**, **Hannah Williams**, **Hannah M. Thompson**, **Julio Garcia-Aguilar**, **Joshua Jesse Smith, Harini Veeraraghavan,** Memorial Sloan-Kettering Cancer Ctr. (United States)

13406-60 • 5:30 PM - 7:00 PM
Bridging the gap: enabling PyTorch3D and advanced dental imaging tools on Windows through WSL2
Author(s): **Gaelle Leroux,** Univ. of Michigan (United States); **David Allemang,** Kitware, Inc. (United States); **Jeanne Claret,** Univ. of Michigan (United States); **Juan C. Prieto,** The Univ. of North Carolina at Chapel Hill (United States); **Steve Pieper,** Isomics, Inc. (United States); **Claudia Mattos, Lucia Cevidanes,** Univ. of Michigan (United States)

13406-61 • 5:30 PM - 7:00 PM
MRI-derived skull parameters for early, normative, pediatric cranial evaluation
Author(s): **Austin Tapp,** Children's National Hospital (United States); **David García-Mato,** Apolo AI (Spain); **Athelia Paulli,** Children's Hospital Los Angeles (United States), The Univ. of Southern California (United States); **Can Zhao**, **Holger R. Roth,** NVIDIA Corp. (United States); **Antonio R Porras,** Colorado School of Public Health (United States), Children's Hospital Colorado (United States); **Syed M. Anwar,** Children's National Hospital (United States), The George Washington Univ. (United States); **Natasha Lepore,** Children's Hospital Los Angeles (United States), The Univ. of Southern California (United States); **Marius G. Linguraru,** Children's National Hospital (United States), The George Washington Univ. (United States)

13406-62 • 5:30 PM - 7:00 PM
Domain-adaptive myocardial segmentation using multi-platform cine magnetic resonance images
Author(s): **Fangxu Xing,** Massachusetts General Hospital (United States); **Xiaofeng Liu,** Yale Univ. (United States); **Iman Aganj,** Massachusetts General Hospital (United States); **Panki Kim**, **Byoung Wook Choi,** Phantomics (Korea, Republic of); **Jonghye Woo,** Massachusetts General Hospital (United States)

13406-63 • 5:30 PM - 7:00 PM
Multi-site segmentation of breast and fibroglandular tissue in MRI with a focus on clinical practicality
Author(s): **Kai Geißler,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Markus Wenzel,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Constructor Univ. (Germany); **Robert Grimm**, **Heinrich von Busch,** Siemens Healthineers (Germany); **Dieter Szolar,** Diagnostikum Graz Süd-West GmbH (Austria); **Sabine Ohlmeyer,** Universitätsklinikum Erlangen (Germany); **Edyta Szurowska,** Medical Univ. of Gdansk (Poland); **Uwe Fischer,** Diagnostisches Brustzentrum Göttingen (Germany); **Nachiko Uchiyama,** Nippon Medical School Hospital (Japan); **Hans Meine,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

13406-64 • 5:30 PM - 7:00 PM
Synthetic MRI generation to empower autosegmentation of pediatric brain tumors in limited data scenarios
Author(s): **Dimosthenis Chrysochoou,** Univ. of Pennsylvania (United States); **Deep Gandhi**, **Ariana M. Familiar**, **Arastoo Vossough**, **Phillip B. Storm**, **Adam C. Resnick,** The Children's Hospital of Philadelphia (United States); **Christos Davatzikos,** Perelman School of Medicine, Univ. of Pennsylvania (United States); **Ali Nabavizadeh, Anahita Fathi Kazerooni,** The Children's Hospital of Philadelphia (United States)

13406-65 • 5:30 PM - 7:00 PM
MR-to-CT synthesis for cross-modality model adaptation
Author(s): **Daniel Mensing**, **Kai Geißler**, **Jochen G. Hirsch**, **Stefan Heldmann, Matthias Günther,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

13406-66 • 5:30 PM - 7:00 PM
End-to-end MPI image reconstruction with dual-task generative adversarial network
Author(s): **Jing Zhao**, **Xinyi Liu**, **Yuanchao Gao**, **Yu An**, **Jie Tian, Hui Zhang,** Beihang Univ. (China)

13406-67 • 5:30 PM - 7:00 PM
Difference-map-enhanced dice loss for fetal brain segmentation
Author(s): **Francisca Costa,** Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal), Ctr. ALGORITMI, Univ. do Minho (Portugal); **Bruno Oliveira**, **João Vilaça,** Applied Artificial Intelligence Lab. (Portugal), LASI-Associate Laboratory of Intelligent Systems (Portugal); **Jaime C. Fonseca,** Ctr. ALGORITMI, Univ. do Minho (Portugal); **Helena Torres,** Applied Artificial Intelligence Lab. (Portugal), LASI-Associate Laboratory of Intelligent Systems (Portugal)

13406-69 • 5:30 PM - 7:00 PM
Quantitative analysis of dynamic tau brain positron emission tomography (PET) imaging using cluster initialized factor analysis
Author(s): **Vaishnavi Abodh Dixit,** Florida Institute of Technology (United States)

13406-70 • 5:30 PM - 7:00 PM
Localization of ear landmarks in head CT images using self-supervised anatomical embeddings
Author(s): **Dingjie Su**, **Yubo Fan, Benoit M. Dawant,** Vanderbilt Univ. (United States)

13406-71 • 5:30 PM - 7:00 PM
Deep-learning detection of phase-binning artifacts in 4DCT images
Author(s): **Jorge Cisneros Paz**, **Nathan H. Feldt,** The Univ. of Texas at Austin (United States); **Yevgeniy Vinogradskiy,** Thomas Jefferson Univ. (United States); **Richard Castillo,** Emory Univ. School of Medicine (United States); **Edward Castillo,** The Univ. of Texas at Austin (United States)

13406-72 • 5:30 PM - 7:00 PM
Longitudinal analysis of cerebellum volume changes in a multiple sclerosis cohort
Author(s): **Shimeng Wang,** Johns Hopkins Univ. (United States); **Peter Calabresi**, **Shiv Saidha,** The Johns Hopkins Univ. School of Medicine (United States); **Aaron Carass, Jerry L. Prince,** Johns Hopkins Univ. (United States)

13406-73 • 5:30 PM - 7:00 PM
Diffusion semantic segmentation: A generative segmentation model based on joint distributions
Author(s): **Jinze Liu,** Yanshan Univ. (China); **Jayaram K. Udupa**, **Drew A. Torigian**, **Yubing Tong,** Univ. of Pennsylvania (United States); **Qibing Xiong**, **Kaige Zhang, Tiange Liu,** Yanshan Univ. (China)

13406-74 • 5:30 PM - 7:00 PM
A technical assessment of latent diffusion for Alzheimer's disease progression
Author(s): **Elyssa M. McMaster,** Vanderbilt Univ. (United States); **Lemuel Puglisi,** Univ. degli Studi di Catania (Italy); **Chenyu Gao**, **Aravind R. Krishnan**, **Adam M. Saunders,** Vanderbilt Univ. (United States); **Daniele Ravi,** Univ. of Hertfordshire (United Kingdom); **Lori L. Beason-Held**, **Susan M. Resnick,** National Institute on Aging (United States); **Lianrui Zuo**, **Daniel Moyer, Bennett A. Landman,** Vanderbilt Univ. (United States)

13406-75 • 5:30 PM - 7:00 PM
Vasculature-informed spatial smoothing of white matter functional magnetic resonance imaging
Author(s): **Adam M. Saunders**, **Michael E. Kim,** Vanderbilt Univ. (United States); **Kurt G. Schilling**, **John C. Gore,** Vanderbilt Univ. Medical Ctr. (United States); **Bennett A. Landman,** Vanderbilt Univ. (United States); **Yurui Gao,** Vanderbilt Univ. Medical Ctr. (United States)

13406-76 • 5:30 PM - 7:00 PM
Uncertainty-aware semi-supervised learning for enhanced multi-organ segmentation in CT volumes
Author(s): **Guotai Dong**, **Masahiro Oda**, **Yuichiro Hayashi**, **Kensaku Mori,** Nagoya Univ. (Japan); **Kazunari Misawa,** Aichi Cancer Center (Japan)

13406-77 • 5:30 PM - 7:00 PM
Introducing cosine similarity into the loss function: application to 3D vertebra segmentation
Author(s): **Luka Škrlj, Tomaž Vrtovec,** Univ. of Ljubljana (Slovenia)

13406-78 • 5:30 PM - 7:00 PM
Does SAM dream of EIG? Characterizing interactive segmenter performance using expected information gain
Author(s): **Kuan-I Chung, Daniel Moyer,** Vanderbilt Univ. (United States)

13406-79 • 5:30 PM - 7:00 PM
Semi-supervised medical image segmentation based on cross-pseudo-supervised guidance with high-confidence pseudo labeling
Author(s): **Cheng Tansi**, **Ke Lu,** Univ. of Chinese Academy of Sciences (China); **Haiyi Wang,** Chinese PLA General Hospital (China); **Yang Zhao**, **Chuang Jia, Jian Xue,** Univ. of Chinese Academy of Sciences (China)

13406-80 • 5:30 PM - 7:00 PM
SemiOrth: A novel orthogonal dual network architecture for enhanced semi-supervised medical image segmentation
Author(s): **Luyang Zhang**, **Masahiro Oda,** Nagoya Univ. (Japan); **Kensaku Mori,** Nagoya Univ. (Japan), National Institute of Informatics (Japan)

13406-81 • 5:30 PM - 7:00 PM
Video inspired lesion segmentation algorithm for OCT retinal images
Author(s): **Zeyu Zhang**, **Huiyu Duan**, **Guangtao Zhai**, **Bo Jiang, Yuye Ling,** Shanghai Jiao Tong Univ. (China)

13406-82 • 5:30 PM - 7:00 PM
Spectral pixels as images: CNN-based pixel classification of 4D hyperspectral data for nerve and ligament differentiation
Author(s): **Naira Matosyan,** American Univ. of Armenia (Armenia), Yerevan State Univ. (Armenia); **Narek Chilingaryan,** L.A. Orbeli Institute of Physiology (Armenia); **Narine Sarvazyan,** American Univ. of Armenia (Armenia), L.A. Orbeli Institute of Physiology (Armenia), The George Washington Univ. (United States); **Varduhi Yeghiazaryan,** American Univ. of Armenia (Armenia)

13406-84 • 5:30 PM - 7:00 PM
SAM3D: Zero-shot semi-automatic segmentation in 3D medical images with the segment anything model
Author(s): **Trevor Chan**, **Aarush Sahni**, **Yijin Fang**, **Jie Li**, **Alisha Luthra**, **Alison Pouch, Chamith S. Rajapakse,** Univ. of Pennsylvania (United States)

13406-85 • 5:30 PM - 7:00 PM
Recovery of GLRLM Features in Degraded Images using Deep Learning and Image Property Models
Author(s): **Yijie Yuan**, **Joseph Stayman,** Johns Hopkins Univ. (United States); **Grace J. Gang,** Univ. of Pennsylvania (United States); **Grace H. Kim, Michael McNitt-Gray,** Univ. of California, Los Angeles (United States)

13406-86 • 5:30 PM - 7:00 PM
Calibrating CT slice location and body part in body part regression
Author(s): **Dingjie Su,** Vanderbilt Univ. (United States); **Thomas Z. Li,** Vanderbilt Univ. (United States); **Lianrui Zuo,** Vanderbilt Univ. (United States); **Yucheng Tang,** NVIDIA Corp. (United States); **Benoit M. Dawant, Bennett A. Landman,** Vanderbilt Univ. (United States)

13406-87 • 5:30 PM - 7:00 PM
Unique MS Lesion Identification from MRI
Author(s): **Carlos A. Rivas**, **Jinwei Zhang**, **Shuwen Wei**, **Samuel W. Remedios**, **Aaron Carass, Jerry L. Prince,** Johns Hopkins Univ. (United States)

13406-88 • 5:30 PM - 7:00 PM
Score-based diffusion model based synthetic CT generation from MR images and post-hoc uncertainty analysis
Author(s): **Si Young Yie,** Seoul National Univ. (Korea, Republic of), Massachusetts General Hospital (United States); **Siyeop Yoon,** Massachusetts General Hospital, Harvard Medical School (United States); **Jaewon Yang,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Kyungsang Kim,** Massachusetts General Hospital, Harvard Medical School (United States); **Jae Sung Lee,** Seoul National Univ. (Korea, Republic of); **Quanzheng Li,** Massachusetts General Hospital, Harvard Medical School (United States)

13406-89 • 5:30 PM - 7:00 PM
A pseudo-3D multi attention mechanism for prostate zonal segmentation
Author(s): **Chetana Krishnan**, **Ezinwanne Onuoha,** The Univ. of Alabama at Birmingham (United States); **Alex Hung**, **Kyung H. Sung,** Univ. of California, Los Angeles (United States); **Harrison Kim,** The Univ. of Alabama at Birmingham (United States)

13406-90 • 5:30 PM - 7:00 PM
NCF: neural correspondence field for medical image registration
Author(s): **Lei Zhou**, **Nimu Yuan, Jinyi Qi,** Univ. of California, Davis (United States)

13406-91 • 5:30 PM - 7:00 PM
Intermediate image-guided unsupervised deformable image registration using a latent diffusion model
Author(s): **Jiong Wu**, **Heng Zhou**, **Ziqian Huang**, **Boxiao Yu**, **Sangjin Bae**, **Wei Shao, Kuang Gong,** Univ. of Florida (United States)

13406-92 • 5:30 PM - 7:00 PM
Static and dynamic edge convolution for PointNet based white matter fiber segmentation
Author(s): **Lucas Valladon**, **Florian Davaux**, **Lucie Dole**, **Roza Vlasova**, **Juan C. Prieto, Martin A. Styner,** The Univ. of North Carolina at Chapel Hill (United States)

13406-93 • 5:30 PM - 7:00 PM
Automatic image unfolding and stitching framework for esophageal lining video based on density-weighted feature matching
Author(s): **Muyang Li**, **Juming Xiong**, **Ruining Deng**, **Tianyuan Yao,** Vanderbilt Univ. (United States); **Regina N. Tyree**, **Girish Hiremath,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

13406-94 • 5:30 PM - 7:00 PM
Heat residual U-Net: segmenting anatomical tissue layers depicted on 3D ultrasound images for cLBP
Author(s): **Pengyu Chen**, **Matthew Cartier**, **Xiaoyan Zhao, Jiantao Pu,** Univ. of Pittsburgh (United States)

13406-95 • 5:30 PM - 7:00 PM
Expanding training data for endoscopic phenotyping of eosinophilic esophagitis
Author(s): **Juming Xiong,** Vanderbilt Univ. (United States); **Hou Xiong,** Univ. of California, Santa Barbara (United States); **Quan Liu**, **Ruining Deng,** Vanderbilt Univ. (United States); **Regina N. Tyree**, **Girish Hiremath,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

13406-96 • 5:30 PM - 7:00 PM
Automatic detection of standard anatomical planes of the fetal brain from 3D ultrasound volumes
Author(s): **Helena R. Torres**, **Pedro Morais,** Instituto Politécnico do Cávado e do Ave (Portugal); **Anne Fritze,** Universitätsklinikum Carl Gustav Carus Dresden, TU Dresden (Germany); **Cahit Birdir**, **Mario Rüdiger,** Universitätsklinikum Carl Gustav Carus Dresden (Germany); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal)

13406-97 • 5:30 PM - 7:00 PM
Is SAM 2 better than SAM in medical image segmentation?
Author(s): **Sourya Sengupta,** GE HealthCare (United States), Univ. of Illinois (United States); **Satrajit Chakrabarty, Ravi Soni,** GE HealthCare (United States)

13406-98 • 5:30 PM - 7:00 PM
Synthetic data generation for modality-agnostic zero-shot promptable medical image segmentation
Author(s): **Sourya Sengupta,** GE HealthCare (United States), Univ. of Illinois (United States); **Satrajit Chakrabarty**, **Ravi Soni, Gopal Avinash,** GE HealthCare (United States)

13406-99 • 5:30 PM - 7:00 PM
OTID: optimal transport based low-dose CT image denoising
Author(s): **Harsha Koduri, Ming Ma,** Yeshiva Univ. (United States)

13406-100 • 5:30 PM - 7:00 PM
Reliability of deep learning models for anatomical landmark detection: the role of inter-rater variability
Author(s): **Soorena Salari**, **Hassan Rivaz, Yiming Xiao,** Concordia Univ. (Canada)

13406-101 • 5:30 PM - 7:00 PM
An intrinsically explainable approach to detecting vertebral compression fractures in CT scans via neurosymbolic modeling
Author(s): **Blanca Inigo**, **Yiqing Shen**, **Benjamin Killeen**, **Michelle Song**, **Axel Krieger**, **Christopher Bradley, Mathias Unberath,** Johns Hopkins Univ. (United States)

13406-102 • 5:30 PM - 7:00 PM
Self-supervised ultrasound video frame interpolation based on conditional latent diffusion model
Author(s): **Xing Yao**, **Hsi-Ming Chang**, **Ahana Gangopadhyay**, **Ashok Vardhan Addala, Ravi Soni,** GE HealthCare (United States)

13406-103 • 5:30 PM - 7:00 PM
Centerline dice metric implementation is not streamlined
Author(s): **Gašper Podobnik, Tomaž Vrtovec,** Univ. of Ljubljana (Slovenia)

13406-104 • 5:30 PM - 7:00 PM
Diffusion-Based MR-to-CT Translation of Head and Neck Images
Author(s): **Rok Marko Šter**, **Gašper Podobnik, Tomaž Vrtovec,** Univ. of Ljubljana (Slovenia)

13406-105 • 5:30 PM - 7:00 PM
Zero-shot surgical tool segmentation in monocular video using Segment Anything Model 2
Author(s): **Ange Lou**, **Yamin Li**, **Yike Zhang,** Vanderbilt Univ. (United States); **Robert F. Labadie,** Medical Univ. of South Carolina (United States); **Jack Noble,** Vanderbilt Univ. (United States)

13406-106 • 5:30 PM - 7:00 PM
Zero-shot swift lung 4D CT segmentation via optimized Segment Anything Model
Author(s): **Mingzhe Hu**, **Richard L. J. Qiu**, **Mojtaba Safari**, **Justin Roper, Xiaofeng Yang,** Emory Univ. (United States)

13406-107 • 5:30 PM - 7:00 PM
Deep-learning-based automatic patient motion correction for ^{18}F-flurpiridaz PET-MPI
Author(s): **Meghana Kiran Urs**, **Aditya Killekar**, **Valerie Builoff**, **Mark Lemley**, **Chih-Chun Wei**, **Paul Kavanagh, Piotr J. Slomka,** Cedars-Sinai Medical Ctr. (United States)

13406-108 • 5:30 PM - 7:00 PM
TTT-Vnet: A 3D vision test-time training model for medical image analysis
Author(s): **Shaoyan Pan**, **Vanessa Su,** Emory Univ. (United States); **Shao-Yuan Lo,** Honda Research Institute USA, Inc. (United States); **Mingzhe Hu**, **Yuheng Li**, **Chih-Wei Chang,** Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Richard L. J. Qiu, Xiaofeng Yang,** Emory Univ. (United States)

13406-109 • 5:30 PM - 7:00 PM
Sparse measurement medical CT reconstruction using multi-fused block matching denoising priors
Author(s): **Maliha Hossain,** Oak Ridge National Lab. (United States); **Yuankai Huo**, **Xinqiang Yan,** Vanderbilt Univ. (United States); **Xiao Wang,** Oak Ridge National Lab. (United States)

13406-111 • 5:30 PM - 7:00 PM
Enhancing skin lesion classification using segmentation-based global-local feature fusion
Author(s): **Runxuan Yu**, **Xing Yao**, **Yuankai Huo, Catie Chang,** Vanderbilt Univ. (United States)

13406-112 • 5:30 PM - 7:00 PM
Exploring connections of spectral analysis and transfer learning in medical imaging
Author(s): **Yucheng Lu**, **Dovile Juodelyte,** The IT Univ. of Copenhagen (Denmark); **Jonathan D. Victor,** Weill Cornell Medicine (United States); **Veronika Cheplygina,** The IT Univ. of Copenhagen (Denmark)

13406-113 • 5:30 PM - 7:00 PM
Correlation ratio for unsupervised learning of multi-modal deformable registration
Author(s): **Xiaojian Chen,** Johns Hopkins Univ. (United States); **Yihao Liu,** Vanderbilt Univ. (United States); **Shuwen Wei**, **Aaron Carass,** Johns Hopkins Univ. (United States); **Yong Du,** Johns Hopkins Medicine (United States); **Junyu Chen,** Johns Hopkins Univ. (United States)

13406-114 • 5:30 PM - 7:00 PM
Content-consistent adaptation network for substantia nigra segmentation in cross-modalities and -datasets scenarios without retraining
Author(s): **Tao Hu,** Nagoya Univ. (Japan); **Hayato Itoh,** Fukuoka Univ. (Japan); **Masahiro Oda,** Nagoya Univ. (Japan); **Shinji Saiki,** Univ. of Tsukuba (Japan); **Nobutaka Hattori**, **Koji Kamagata**, **Wataru Sako,** Juntendo Univ. (Japan); **Kei-ichi Ishikawa,** Juntendo Univ. (Japan); **Shigeki Aoki,** Juntendo Univ. (Japan); **Kensaku Mori,** Nagoya Univ. (Japan)

13406-115 • 5:30 PM - 7:00 PM
Deep-learning framework for analysis of longitudinal MRI studies
Author(s): **Razieh Faghihpirayesh,** Northeastern Univ. (United States); **Xueqi Guo**, **Matthias M. Wolf**, **Kaman Chung, Mohammad Abdi,** Siemens Healthineers (United States)

13406-116 • 5:30 PM - 7:00 PM
Semi-automatic anatomy segmentation in thoracic dynamic MRI based on Segment Anything Model
Author(s): **Lipeng Xie,** Zhengzhou Univ. (China); **Yubing Tong**, **Jayaram K. Udupa**, **Caiyun Wu,** Univ. of Pennsylvania (United States); **Samantha Gogel**, **David M. Biko**, **Oscar H. Mayer**, **Joseph M. McDonough**, **Patrick Cahill**, **Jason B. Anari,** The Children's Hospital of Philadelphia (United States); **Drew A. Torigian,** Univ. of Pennsylvania (United States)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 9: EXPLAINABLE AND TRUSTWORTHY AI

20 February 2025 • 10:30 AM - 11:50 AM | Town & Country A
Session Chair(s): **Fons van der Sommen**, Technische Univ. Eindhoven (Netherlands); **Kenji Suzuki**, Institute of Science Tokyo (Japan)

13406-37 • 10:30 AM - 10:50 AM
Learning multimodal explainable AI models from Medical Images and Tabular Data: Proof of Concept
Author(s): **Mafalda Malafaia,** Ctr. Wiskunde & Informatica (Netherlands); **Thalea Schlender,** Leiden Univ. Medical Ctr. (Netherlands); **Peter A. N. Bosman,** Ctr. Wiskunde & Informatica (Netherlands), Technische Univ. Delft (Netherlands); **Tanja Alderliesten,** Leiden Univ. Medical Ctr. (Netherlands)

13406-38 • 10:50 AM - 11:10 AM
Multi-factor debiasing for correlating confounders for 'fair' diagnostic model
Author(s): **Vedant Joshi,** Arizona State Univ. (United States); **Ramon Correa,** Arizona State Univ. (Uruguay); **Avisha Das,** Mayo Clinic (United States); **Judy Gichoya,** Emory Univ. (United States); **Imon Banerjee,** Mayo Clinic (United States)

13406-39 • 11:10 AM - 11:30 AM
Joint image clustering and self-supervised representation learning through debiased contrastive loss
Author(s): **Shunjie-Fabian Zheng**, **Jaeeun Nam,** Ludwig-Maximilians-Univ. München (Germany); **Mengyu Wang**, **Nazlee Zebardast**, **Tobias Elze,** Harvard Medical School (United States); **Shekoofeh Azizi,** Google DeepMind (Canada); **Bernd Bischl**, **Mina Rezaei,** Ludwig-Maximilians-Univ. München (Germany); **Mohammad Eslami,** Harvard Medical School (United States); **Simon Baur,** Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany)

13406-40 • 11:30 AM - 11:50 AM
iCBIR-Sli: interpretable content-based image retrieval with 2D slice embeddings
Author(s): **Shuhei Tomoshige**, **Hayato Muraki,** Hosei Univ. (Japan); **Kenichi Oishi,** Johns Hopkins Medicine (United States); **Hitoshi Iyatomi,** Hosei Univ. (Japan)

POSTER AWARDS

20 February 2025 • 11:50 AM - 12:00 PM | Town & Country A
Join us for the announcement of the Image Processing conference poster awards.

Sponsored by:
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ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13406-110
Improved detection of RPD using a network with multi-head attention layer
Author(s): **Amr Elsawy,** National Ctr. for Biotechnology Information (United States); **Tiarnan Keenan**, **Emily Chew,** National Eye Institute (United States); **Zhiyong Lu,** National Library of Medicine (United States)

CONFERENCE 13407

Computer-Aided Diagnosis

16 - 20 February 2025 | Town & Country C

CONFERENCE CO-SPONSOR

SIEMENS Healthineers

Conference Chair(s): **Susan M. Astley,** The Univ. of Manchester (United Kingdom); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States)

Program Committee: **Sameer K. Antani,** U.S. National Library of Medicine (United States); **Samuel G. Armato,** The Univ. of Chicago (United States); **Ulas Bagci,** Northwestern Univ. (United States); **Matthew S. Brown,** UCLA Ctr. for Computer Vision & Imaging Biomarkers (United States); **Kenny H. Cha,** U.S. Food and Drug Administration (United States); **Heang-Ping Chan,** Univ. of Michigan (United States); **Weijie Chen,** U.S. Food and Drug Administration (United States); **Thomas Martin Deserno,** Peter L. Reichertz Institut für Medizinische Informatik (Germany); **Karen Drukker,** The Univ. of Chicago (United States); **Jan Ehrhardt,** Univ. zu Lübeck (Germany); **Catalin Fetita,** Télécom SudParis (France); **Aimilia Gastounioti,** Washington Univ. School of Medicine in St. Louis (United States); **Maryellen L. Giger,** The Univ. of Chicago (United States); **Hayit Greenspan,** Tel Aviv Univ. (Israel); **Lubomir M. Hadjiiski,** Michigan Medicine (United States); **Horst Karl Hahn,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Jacobs Univ. Bremen (Germany); **Takeshi Hara,** Gifu Univ. School of Medicine (Japan); **Anja B. Hennemuth,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Helen Hong,** Seoul Women's Univ. (Korea, Republic of); **Khan M. Iftekharuddin,** Old Dominion Univ. (United States); **JongHyo Kim,** Seoul National Univ. Hospital (Korea, Republic of); **Despina Kontos,** Columbia Univ. Irving Medical Ctr. (United States); **Juhun Lee,** Univ. of Pittsburgh (United States); **Zhengrong Jerome Liang,** Stony Brook Univ. (United States); **Marius George Linguraru,** Children's National Medical Ctr. (United States); **Hongbing Lu,** PLA Air Force Military Medical Univ. (China); **Fabrice Meriaudeau,** Univ. de Bourgogne (France); **Kensaku Mori,** Nagoya Univ. (Japan); **Chisako Muramatsu,** Shiga Univ. (Japan); **Janne J. Näppi,** Massachusetts General Hospital (United States), Harvard Medical School (United States); **Carol L. Novak,** Siemens Healthineers (United States); **Nicholas A. Petrick,** U.S. Food and Drug Administration (United States); **Antonio R. Porras,** Children's National Health System (United States); **Prateek Prasanna,** Stony Brook Univ. (United States); **Letícia Rittner,** Univ. of Campinas (Brazil); **Ravi K. Samala,** U.S. Food and Drug Administration (United States); **Clarisa I. Sánchez-Gutiérrez,** Univ. of Amsterdam (Netherlands); **Amber L. Simpson,** Queen's Univ. (Canada); **Ronald M. Summers,** National Institutes of Health Clinical Ctr. (United States); **Kenji Suzuki,** Institute of Science Tokyo (Japan); **Pallavi Tiwari,** Univ. of Wisconsin-Madison (United States); **Heather M. Whitney,** The Univ. of Chicago (United States); **Matthias Wilms,** Univ. of Calgary (Canada); **Shandong Wu,** Univ. of Pittsburgh (United States); **Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States); **Hiroyuki Yoshida,** Massachusetts General Hospital (United States), Harvard Medical School (United States); **Chuan Zhou,** Michigan Medicine (United States)

Sunday 16 February 2025

SPIE MEDICAL IMAGING AWARDS AND PLENARY

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A
Session Chair(s): **Joseph Y. Lo**, Carl E. Ravin Advanced Imaging Labs. (United States); **Cristian A. Linte**, Rochester Institute of Technology (United States)

View Full Details: spie.org/medical-imaging-awards-plenary

5:30 PM - 5:40 PM:
Symposium Chair Welcome and Best Student Paper Award announcement
First-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award
Sponsored by:
MIPS and SPIE

5:40 PM - 5:45 PM:
New SPIE Fellow acknowledgments
Each year, SPIE promotes Members as new Fellows of the Society. Join us as we recognize colleagues of the medical imaging community who have been selected.

5:45 PM - 5:50 PM:
SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging

13408-500 • 5:50 PM - 6:30 PM
Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions (Plenary Presentation)
Author(s): **Aaron Fenster,** Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

ALL-SYMPOSIUM WELCOME RECEPTION

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

View Full Details: spie.org/mi/welcome-reception

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

Monday 17 February 2025

MONDAY MORNING KEYNOTES

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country A
Session Chair(s): **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Mark A. Anastasio**, Univ. of Illinois (United States); **Shandong Wu**, Univ. of Pittsburgh (United States)

View Full Details: spie.org/monday-morning-keynotes

8:20 AM - 8:25 AM:
Welcome and introduction

8:25 AM - 8:30 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
- Physics of Medical Imaging Student Paper Award

13405-501 • 8:30 AM - 9:10 AM
Promoting innovation in your team: lessons learned from 40 years in medical imaging (Keynote Presentation)
Author(s): **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13409-502 • 9:10 AM - 9:50 AM
Designing AI for clinical imaging: the important role of model observers (Keynote Presentation)
Author(s): **Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13411-503 • 9:50 AM - 10:30 AM
Tackling the health AI paradox (Keynote Presentation)
Author(s): **Karandeep Singh,** UC San Diego Health (United States)

Coffee Break 10:30 AM - 11:00 AM

SESSION 1: CLASSIFICATION

17 February 2025 • 11:00 AM - 12:20 PM | Town & Country C
Session Chair(s): **Sameer K. Antani**, U.S. National Library of Medicine (United States)

13407-1 • 11:00 AM - 11:20 AM
A global-local hierarchical fusion method for the automated gallbladder cancer diagnosis with ultrasound images
Author(s): **Pan Yang**, **Xianwei Yang, Min Zhang,** Northwest Univ. (China)

13407-2 • 11:20 AM - 11:40 AM
Characterizing inherent image ordinality to improve multiclass classification
Author(s): **Ian Loveless**, **Meiqi Liu**, **Kenneth Rosenman**, **Ling Wang, Adam Alessio,** Michigan State Univ. (United States)

13407-3 • 11:40 AM - 12:00 PM
A surface-based deep-learning approach for cortical shape analysis
Author(s): **Yanghee Im,** Imaging Genetics Ctr., Mark and Mary Stevens Neuroimaging and Informatics Institute, Keck School of Medicine of USC, The Univ. of Southern California (United States); **Yuji Zhao**, **Boris A. Gutman,** Illinois Institute of Technology (United States); **Sophia I. Thomopoulos**, **Elizabeth Haddad**, **Alyssa H. Zhu**, **Neda Jahanshad**, **Paul M. Thompson, Christopher R. K. Ching,** Imaging Genetics Ctr., Mark and Mary Stevens Neuroimaging and Informatics Institute, Keck School of Medicine of USC, The Univ. of Southern California (United States)

13407-4 • 12:00 PM - 12:20 PM
Knowledge-driven deep learning: automated ultrasound diagnosis of follicular thyroid carcinoma
Author(s): **Rui Wang**, **Zesen Zou,** Beihang Univ. (China); **Peng Fu,** Peking Univ. Third Hospital (China); **Haoyuan Zhou,** Beihang Univ. (China); **Yang Bai,** Peking Univ. Third Hospital (China)

Lunch Break 12:20 PM - 1:40 PM

SESSION 2: ABDOMEN I

17 February 2025 • 1:40 PM - 3:00 PM | Town & Country C
Session Chair(s): **Lubomir M. Hadjiiski**, Michigan Medicine (United States); **Amber L. Simpson**, Queen's Univ. (Canada)

13407-5 • 1:40 PM - 2:00 PM
Towards Synergistic deep-learning models for volumetric cirrhotic liver segmentation in MRIs
Author(s): **Vandan Gorade**, **Onkar Susladkar**, **Gorkem Durak**, **Elif Keles**, **Alpay Medetalibeyoglu,** Northwestern Univ. (United States); **Ertugrul Aktas**, **Timurhan Cebeci,** Istanbul Univ. (Turkey); **Daniela Ladner**, **Debesh Jha, Ulas Bagci,** Northwestern Univ. (United States)

13407-6 • 2:00 PM - 2:20 PM
Generative models for high-resolution synthetic image of gastric cancer for improved gastric cancer detection
Author(s): **Gi Pyo Lee,** Gachon Univ. (Korea, Republic of); **Young Jae Kim,** Gachon Biomedical & Convergence Institute, Gachon Univ. Gil Medical Ctr. (Korea, Republic of); **Kwang Gi Kim,** Gachon Univ. Gil Medical Ctr., Gachon Univ. (Korea, Republic of)

13407-7 • 2:20 PM - 2:40 PM
Comparative study on kidney tumor segmentation for partial nephrectomy planning using hybrid CNN-transformer networks
Author(s): **Goun Kim**, **Min Jin Lee, Helen Hong,** Seoul Women's Univ. (Korea, Republic of)

13407-8 • 2:40 PM - 3:00 PM
Confidence estimation of AI model output for bladder cancer treatment response assessment in CT urography
Author(s): **Di Sun**, **Basavasagar Patil**, **Lubomir Hadjiiski**, **Heang-Ping Chan**, **Richard Cohan**, **Elaine Caoili**, **Ajjai Alva,** Univ. of Michigan (United States); **Jared Vicory,** Kitware, Inc. (United States); **Ravi K. Samala**, **Alexis Burgon,** U.S. Food and Drug Administration (United States); **Chuan Zhou,** Univ. of Michigan (United States)

Coffee Break 3:00 PM - 3:30 PM

SESSION 3: HEAD, NECK, AND EYE

17 February 2025 • 3:30 PM - 5:30 PM | Town & Country C
Session Chair(s): **Thomas Martin Deserno**, Peter L. Reichertz Institut für Medizinische Informatik (Germany)

13407-9 • 3:30 PM - 3:50 PM
Improving orbital bone segmentation with diffusion models and consensus-based refinement in facial CT images
Author(s): **Jinseo An**, **Min Jin Lee,** Seoul Women's Univ. (Korea, Republic of); **Kyu Won Shim,** Severance Children's Hospital, Yonsei Univ. College of Medicine (Korea, Republic of); **Helen Hong,** Seoul Women's Univ. (Korea, Republic of)

13407-10 • 3:50 PM - 4:10 PM
Graph-based representation of retinal lesions for an interpretable diagnosis of diabetic retinopathy
Author(s): **Zacharie Legault,** Polytechnique Montréal (Canada); **Clément Playout,** Ctr. de recherche de l'Hôpital Maisonneuve-Rosemont (Canada); **Fantin Girard,** IDEMIA (Canada); **Farida Cheriet,** Polytechnique Montréal (Canada)

13407-11 • 4:10 PM - 4:30 PM
Contrast-enhanced image-guided learning for nasopharyngeal carcinoma diagnosis using non-contrast MRI
Author(s): **Zhen Li,** Yale Univ. (United States); **Yuxuan Shi**, **Xueli Liu**, **Li Wang,** Fudan Univ. (China); **Jonghye Woo,** Gordon Ctr. for Medical Imaging, Massachusetts General Hospital, Harvard Medical School (United States); **Jinsong Ouyang,** Yale Univ. (United States); **Georges El Fakhri,** Yale PET Ctr., Yale Univ. School of Medicine (United States); **Hongmeng Yu,** Fudan Univ. (China); **Xiaofeng Liu,** Yale Univ. (United States)

13407-12 • 4:30 PM - 4:50 PM
A diffusion model-based self-explainable generative classifier for retinal image analysis
Author(s): **Ahmad Omar Ahsan**, **Christopher Nielsen**, **Nils D. Forkert, Matthias Wilms,** Univ. of Calgary (Canada)

13407-13 • 4:50 PM - 5:10 PM
Multilabel learning and model visualization for reliable head and neck cancer radiotherapy outcome prediction
Author(s): **Meixu Chen,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Kai Wang,** Univ. of Maryland Medical Ctr. (United States); **Jing Wang,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

13407-14 • 5:10 PM - 5:30 PM
Visual acuity assessment from optical coherence tomography images using the foundation model RETFound
Author(s): **Caroline v. Dresky,** Univ. zu Lübeck (Germany); **Claus von der Burchard,** Universitätsklinikum Schleswig-Holstein (Germany); **Julia Andresen**, **Marc S. Seibel**, **Marc Rowedder,** Univ. zu Lübeck (Germany); **Timo Kepp,** Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); **Johann Roider,** Universitätsklinikum Schleswig-Holstein (Germany); **Heinz Handels,** Univ. zu Lübeck (Germany), Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: CAD AND PERCEPTION: JOINT SESSION WITH CONFERENCES 13407 AND 13409

18 February 2025 • 10:30 AM - 12:40 PM | Town & Country C
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom)

13409-16 • 10:30 AM - 11:00 AM
Does concurrent reading with AI lead to more false negative errors for cancers that are not marked by AI? *(Invited Paper)*
Author(s): **Robert M. Nishikawa,** Univ. of Pittsburgh (United States); **Jeffrey W. Hoffmeister,** iCAD, Inc. (United States); **Emily F. Conant,** Univ. of Pennsylvania (United States); **Jeremy M. Wolfe,** Brigham and Women's Hospital (United States)

13407-15 • 11:00 AM - 11:20 AM
Explainable unsupervised TNM category differentiation in PET images with deep texture analysis
Author(s): **Robert John**, **Mabela Budlla**, **Ian Ackerley,** Univ. of Surrey (United Kingdom); **Rhodri Smith,** Department of Radiology and Diagnostic Imaging, University of Alberta (Canada); **Andrew Robinson,** National Physical Lab. (United Kingdom); **Vineet Prakash**, **Manu Shastry,** The Royal Surrey County Hospital NHS Trust (United Kingdom); **Peter Strouhal,** Alliance Medical Ltd. (United Kingdom); **Kevin Wells,** Univ. of Surrey (United Kingdom)

13409-17 • 11:20 AM - 11:40 AM
Dual roles of calcification features in the Mirai mammographic breast cancer risk prediction model: early micro-calcification detection and identification of high-risk calcifications
Author(s): **Yao-Kuan Wang,** KU Leuven (Belgium); **Zan Klanecek,** Univ. of Ljubljana (Slovenia); **Tobias Wagner,** KU Leuven (Belgium); **Lesley Cockmartin,** Univ. Ziekenhuis Leuven (Belgium); **Nicholas W. Marshall,** Univ. Ziekenhuis Leuven (Belgium), KU Leuven (Belgium); **Andrej Studen,** Univ. of Ljubljana (Slovenia), Jožef Stefan Institute (Slovenia); **Robert Jeraj,** Univ. of Ljubljana (Slovenia), Univ. of Wisconsin-Madison (United States); **Hilde Bosmans,** Univ. Ziekenhuis Leuven (Belgium), KU Leuven (Belgium)

13407-16 • 11:40 AM - 12:00 PM
Conflict avoidance in mammography: filtering datasets for breast cancer risk prediction
Author(s): **Alistair Taylor-Sweet**, **Adam Perrett**, **Stepan Romanov**, **Raja Ebsim, Susan Astley,** The Univ. of Manchester (United Kingdom)

13409-18 • 12:00 PM - 12:20 PM
Automated multi-lesion annotation in chest x-rays: annotating over 450,000 images from public datasets using the AI-based smart imagery framing and truthing (SIFT) system
Author(s): **Lin Guo,** Shenzhen Zhiying Medical Imaging (China); **Fleming Y. M. Lure,** MS Technologies Corp. (United States); **Teresa Wu**, **Fulin Cai,** Arizona State Univ. (United States); **Stefan Jaeger,** U.S. National Library of Medicine (United States), National Institutes of Health (United States); **Bin Zheng,** MS Technologies Corp. (United States); **Jordan Fuhrman**, **Hui Li**, **Maryellen L. Giger,** The Univ. of Chicago (United States); **Andrei Gabrielian**, **Alex Rosenthal**, **Darrell E. Hurt**, **Ziv Yaniv,** Office of Cyber Infrastructure and Computational Biology, National Institutes of Health (United States); **Li Xia,** Shenzhen Zhiying Medical Imaging (China); **Weijun Fang,** Department of Radiology, Guangzhou Chest Hospital (China); **Jingzhe Liu,** First Hospital of Tsinghua Univ. (China)

13407-17 • 12:20 PM - 12:40 PM
Classification of range of OCT-angiography capillary density using multichannel deep learning models in diabetic retinopathy, aging macular degeneration, and radiation retinopathy
Author(s): **Noriyoshi Takahashi**, **Jui-Kai Wang**, **Michelle R. Tamplin**, **Elaine M. Binkley**, **Mona K. Garvin**, **Isabella M. Grumbach, Randy H. Kardon,** The Univ. of Iowa (United States)

Lunch Break 12:40 PM - 1:50 PM

SESSION 5: CARDIOVASCULAR

18 February 2025 • 1:50 PM - 3:10 PM | Town & Country C
Session Chair(s): **Khan M. Iftekharuddin**, Old Dominion Univ. (United States); **Chisako Muramatsu**, Shiga Univ. (Japan)

13407-18 • 1:50 PM - 2:10 PM
Improved plaque detection and segmentation for atherosclerotic plaque burden assessment on non-contrast and contrast-enhanced abdominal CT scans: multi-institutional study
Author(s): **Jianfei Liu**, **Pritam Mukherjee,** National Institutes of Health Clinical Ctr. (United States); **Perry J. Pickhardt,** Univ. of Wisconsin School of Medicine and Public Health (United States); **Ronald M. Summers,** National Institutes of Health Clinical Ctr. (United States)

13407-19 • 2:10 PM - 2:30 PM
Coronary artery centerline extraction using a robust lightweight CNN approach
Author(s): **Chih-Chieh Liu**, **Qiulin Tang**, **Liang Cai**, **Zhou Yu, Jian Zhou,** Canon Medical Research USA, Inc. (United States)

13407-20 • 2:30 PM - 2:50 PM
Deep-learning-based brain vessel segmentation from CT angiography images using a multi-stage approach for multi-center adaptability
Author(s): **Tatsat Rajendra Patel**, **Nandor Pinter**, **Adnan H. Siddiqui,** Canon Stroke and Vascular Research Ctr. (United States); **Naoki Kaneko,** Univ. of California, Los Angeles (United States); **Vincent M. Tutino,** Canon Stroke and Vascular Research Ctr. (United States)

13407-21 • 2:50 PM - 3:10 PM
Outlier detection to identify presence of clinical confounders to AI performance: application to coronary angiography and LVEF prediction
Author(s): **Kuan Zhang,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Behrouz Rostami**, **Shahriar Faghani**, **Eric Chang**, **Douglas Svestka**, **Kenneth Fetterly**, **Bradley J. Erickson, Mohamad Alkhouli,** Mayo Clinic (United States)

Coffee Break 3:10 PM - 3:50 PM

SESSION 6: CHEST

18 February 2025 • 3:50 PM - 5:30 PM | Town & Country C
Session Chair(s): **Maryellen L. Giger**, The Univ. of Chicago (United States); **Horst Karl Hahn**, Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Jacobs Univ. Bremen (Germany)

13407-22 • 3:50 PM - 4:10 PM
Development of an AI-based smart imagery framing and truthing (SIFT) system to annotate pulmonary abnormalities with corresponding boundaries based on CT images
Author(s): **Lin Guo,** Shenzhen Zhiying Medical Imaging (China); **Lingbo Deng,** Peking Univ. Shenzhen Hospital (China); **Stefan Jaeger,** U.S. National Library of Medicine, National Institutes of Health (United States); **Bin Zheng,** MS Technologies Corp. (United States); **Qian Xiao,** Shenzhen Zhiying Medical Imaging (China); **Teresa Wu**, **Fulin Cai,** Arizona State Univ. (United States); **Fleming Y. M. Lure,** MS Technologies Corp. (United States); **Li Xia,** Shenzhen Zhiying Medical Imaging (China); **Weijun Fang,** Guangzhou Chest Hospital (China)

13407-23 • 4:10 PM - 4:30 PM
Leveraging clinical indications and demographics to improve multilabel abnormality classification in 3D chest CT scans
Author(s): **Theo Di Piazza,** CREATIS (France), Hospices Civils de Lyon (France); **Carole Lazarus**, **Olivier Nempont,** Philips (France); **Loic Boussel,** Hospices Civils de Lyon (France)

13407-24 • 4:30 PM - 4:50 PM
Ensembled YOLO for multiorgan detection in chest x-rays
Author(s): **Sivaramakrishnan Rajaraman**, **Zhaohui Liang**, **Zhiyun Xue,** U.S. National Library of Medicine (United States); **Sameer K. Antani,** U.S. National Library of Medicine, National Institutes of Health (United States)

13407-25 • 4:50 PM - 5:10 PM
ETT-LDx: transformer-based landmark detection system for endotracheal tube placement verification in chest radiographs
Author(s): **Akhil Kasturi**, **Ali Vosoughi**, **Nathan Hadjiyski,** Univ. of Rochester (United States); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States)

13407-26 • 5:10 PM - 5:30 PM
Leveraging curriculum learning to address out-of-distribution data and inter-observer variability for lung nodule diagnostic interpretation
Author(s): **Nandhini Gulasingam**, **Alexandru Orhean**, **Roselyne Tchoua**, **Jacob Furst, Daniela Stan Raicu,** DePaul Univ. (United States)

LIVE DEMONSTRATIONS WORKSHOP

18 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/live-demonstrations-workshop

The goal of this workshop is to provide a forum for systems and algorithms developers to show off their creations. The intent is for the audience to be inspired to conduct derivative research, for the demonstrators to receive feedback and find new collaborators, and for all to learn about the rapidly evolving field of medical imaging. The Live Demonstrations Workshop invites participation from all attendees of the SPIE Medical Imaging symposium. Workshop demonstrations include samples, systems, and software demonstrations that depict the implementation, operation, and utility of cutting-edge as well as mature research. Having an accepted SPIE Medical Imaging paper is not required for giving a live demonstration. A certificate of merit and $500 award will be presented to one demonstration considered to be of exceptional interest.

Award sponsored by:
Siemens Healthineers

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: BREAST

19 February 2025 • 10:30 AM - 12:10 PM | Town & Country C
Session Chair(s): **Juhun Lee**, Univ. of Pittsburgh (United States); **Heather M. Whitney**, The Univ. of Chicago (United States)

13407-28 • 10:30 AM - 10:50 AM
LLaVA-MultiMammo: adapting vision-language models for explainable and comprehensive multi-view mammogram analysis in breast cancer assessment
Author(s): **Xuxin Chen, Xiaofeng Yang,** Emory Univ. School of Medicine (United States)

13407-29 • 10:50 AM - 11:10 AM
Exclude at your own peril: Evaluating the omission of data in training AI breast cancer risk models
Author(s): **Adam Perrett**, **Stepan Romanov**, **Alistair Taylor-Sweet**, **Raja Ebsim**, **Elaine Harkness, Susan Astley,** The Univ. of Manchester (United Kingdom)

13407-30 • 11:10 AM - 11:30 AM
AI-driven race prediction from mammographic images: anatomical insights for AI model's bias mitigation
Author(s): **Tamerlan Mustafaev,** Univ. of Pittsburgh Medical Ctr. (United States); **Md Belayat Hossain,** Southern Illinois Univ. Carbondale (United States); **Robert M. Nishikawa, Juhun Lee,** Univ. of Pittsburgh Medical Ctr. (United States)

13407-31 • 11:30 AM - 11:50 AM
Unsupervised hybrid framework for ANomaly Detection (HAND): applied to screening mammogram
Author(s): **Zhemin Zhang,** Arizona State Univ. (United States)

13407-32 • 11:50 AM - 12:10 PM
Developing breast dense tissue segmentation algorithm in digital breast tomosynthesis
Author(s): **Md Belayat Hossain**, **Tamerlan Mustafaev**, **Robert M. Nishikawa, Juhun Lee,** Univ. of Pittsburgh (United States)

Lunch Break 12:10 PM - 1:50 PM

SESSION 8: METHODS

19 February 2025 • 1:50 PM - 3:10 PM | Town & Country C
Session Chair(s): **Kenji Suzuki**, Institute of Science Tokyo (Japan); **Ronald M. Summers**, National Institutes of Health Clinical Ctr. (United States)

13407-33 • 1:50 PM - 2:10 PM
Prospective study on the reproducibility of radiomic features in the setting of variable CT contrast timing: initial results
Author(s): **Joshua Virani-Wall**, **Jacob Peoples**, **Mohammad Hamghalam**, **Natalie Gangai,** Queen's Univ. (Canada); **Mithat Gonen**, **Imani James,** Memorial Sloan Kettering Cancer Center (United States); **Christine Kang**, **John Rong,** MD Anderson Cancer Center (United States); **Maida Wasim,** Memorial Sloan Kettering Cancer Center (United States); **Yun Shin Chun,** MD Anderson Cancer Center (United States); **Richard Do,** Memorial Sloan Kettering Cancer Center (United States); **Amber L. Simpson,** Queen's Univ. (Canada)

13407-34 • 2:10 PM - 2:30 PM
Worse is better? Performance and bias implications of feature selection in radiomics-based survival analysis
Author(s): **Jacob J. Peoples**, **Mohammad Hamghalam**, **Joshua Virani-Wall,** Queen's Univ. (Canada); **Imani James**, **Maida Wasim**, **Natalie Gangai,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Hyunseon Christine Kang**, **X. John Rong**, **Yun Shin Chun,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Richard K. G Do,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Amber L. Simpson,** Queen's Univ. (Canada)

13407-35 • 2:30 PM - 2:50 PM
Interactive image diagnosis using test-time backpropagation from the auxiliary task
Author(s): **Takuro Shimaya,** NEC Corp. (Japan)

13407-36 • 2:50 PM - 3:10 PM
Importance of stratified sampling for use in the development of training and test sets: medical imaging AI applications
Author(s): **Fahd T. Hatoum**, **Robert Tomek**, **Heather M. Whitney, Maryellen L. Giger,** The Univ. of Chicago (United States)

Coffee Break 3:10 PM - 3:40 PM

SESSION 9: SEGMENTATION

19 February 2025 • 3:40 PM - 5:20 PM | Town & Country C
Session Chair(s): **Shandong Wu**, Univ. of Pittsburgh (United States); **Karen Drukker**, The Univ. of Chicago (United States)

13407-37 • 3:40 PM - 4:00 PM
Dual-perspective virtual unfolding U-Net (DPVU-Net) models for comprehensive superficial skeletal muscles segmentation in CT images
Author(s): **Kosuke Ashino**, **Naoki Kamiya,** Aichi Prefectural Univ. (Japan); **Xiangrong Zhou**, **Hiroki Kato**, **Takeshi Hara, Hiroshi Fujita,** Gifu Univ. (Japan)

13407-38 • 4:00 PM - 4:20 PM
Cluster dice: a simple and fast approach for instance based semantic segmentation evaluation via many-to-many matching
Author(s): **Soumya Snigdha Kundu**, **Aaron Kujawa**, **Marina Ivory**, **Theodore Barfoot**, **Jonathan Shapey, Tom Vercauteren,** King's College London (United Kingdom)

13407-39 • 4:20 PM - 4:40 PM
GRN+: a simplified generative reinforcement network for tissue layer analysis in 3D ultrasound images for chronic low-back pain
Author(s): **Zixue Zeng**, **Xiaoyan Zhao**, **Matthew Cartier,** Univ. of Pittsburgh (United States); **Xing Meng,** University of Pittsburgh (United States); **Jiantao Pu,** Univ. of Pittsburgh (United States)

13407-40 • 4:40 PM - 5:00 PM
Improving U-Net segmentation of cutaneous chronic graft-versus-host disease in clinical photographs with semi-supervised training
Author(s): **Andrew J. McNeil,** Vanderbilt Univ. (United States); **Kelsey Parks,** VA Tennessee Valley Healthcare System (United States), Vanderbilt Univ. Medical Ctr. (United States); **Michael Pogharian,** Vanderbilt Univ. Medical Ctr. (United States); **Edward W. Cowen,** National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health (United States); **Julia S. Lehman,** Mayo Clinic (United States); **Stephanie J. Lee,** Fred Hutchinson Cancer Ctr. (United States); **Aaron Zhao**, **Steven Z. Pavletic,** Ctr. for Cancer Research, National Cancer Institute (United States); **Inga Saknīte**, **Joseph R. Coco**, **Daniel Fabbri,** Vanderbilt Univ. Medical Ctr. (United States); **Eric R. Tkaczyk,** U.S. Dept. of Veterans Affairs (United States), Vanderbilt Univ. Medical Ctr. (United States); **Benoit M. Dawant,** Vanderbilt Univ. (United States)

13407-41 • 5:00 PM - 5:20 PM
Benchmarking multiorgan segmentation tools for multiparametric T1-weighted abdominal MRI
Author(s): **Nicole Tran**, **Anisa V. Prasad**, **Yan Zhuang**, **Tejas Sudharshan Mathai**, **Boah Kim**, **Sydney V. Lewis**, **Pritam Mukherjee**, **Jianfei Liu, Ronald M. Summers,** National Institutes of Health (United States)

POSTERS - WEDNESDAY

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/wednesday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 7:30 AM - 5:30 PM Wednesday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.

View poster presentation guidelines and set-up instructions at
spie.org/MI/Poster-Presentation-Guidelines

Poster groupings are listed below by topic.

POSTERS: ABDOMEN

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-52 • 5:30 PM - 7:00 PM
Masked image modeling in medical hyperspectral imaging: reconstruction evaluation and downstream tasks
Author(s): **Kelden Pruitt**, **Hemanth Pasupuleti,** The Univ. of Texas at Dallas (United States); **James Yu,** UT Southwestern Medical Center (United States); **Weston DeAtley, Baowei Fei,** The Univ. of Texas at Dallas (United States)

13407-53 • 5:30 PM - 7:00 PM
Pancreas segmentation network based on edge guidance and area enhancement
Author(s): **Xianwei Yang**, **Min Zhang**, **Pan Yang, Jun Feng,** Northwest Univ. (China)

13407-54 • 5:30 PM - 7:00 PM
The search for CT imaging subtypes of colorectal liver metastases and the impacts of slice thickness
Author(s): **Kaitlyn S. Kobayashi**, **Dashti A. Ali**, **Ramtin Mojtahedi**, **Jacob J. Peoples**, **Mohammad Hamghalam,** Queen's Univ. (Canada); **Natalie Gangai**, **Mithat Gönen**, **Richard K. G. Do,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Yun Shin Chun**, **HyunSeon Christine Kang,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Amber L. Simpson,** Queen's Univ. (Canada)

13407-55 • 5:30 PM - 7:00 PM
Multiclass characterization of colorectal polyps under class imbalance using a calibrated cascade model
Author(s): **Nikoo Dehghani,** Technische Univ. Eindhoven (Netherlands); **Ayla Thijssen**, **Quirine E.W. van der Zander,** Maastricht University Medical Center+ (Netherlands), GROW Research Institute for Oncology and Reproduction (Netherlands); **Ramon-Michel Schreuder,** Catharina Hospital (Netherlands); **Erik J Schoon,** Catharina Hospital (Netherlands), GROW Research Institute for Oncology and Reproduction (Netherlands); **Peter H. N. de With,** Eindhoven University of Technology (Netherlands); **Fons van der Sommen,** Eindhoven University of Technology (Netherlands), Eindhoven Artificial Intelligence Systems Institute (Netherlands)

13407-56 • 5:30 PM - 7:00 PM
Observer study: Impact of case complexities and physician characteristics on AI-assisted treatment response assessment in bladder cancer
Author(s): **Di Sun**, **Lubomir Hadjiiski**, **Ajjai Alva,** Univ. of Michigan (United States); **Yousef Zakharia,** The Univ. of Iowa (United States); **Monika Joshi,** The Pennsylvania State Univ. (United States); **Heang-Ping Chan,** Univ. of Michigan (United States); **Rohan Garje,** The Univ. of Iowa (United States); **Lauren Pomerantz,** The Pennsylvania State Univ. (United States); **Dean Elhag,** The Univ. of Iowa (United States); **Richard Cohan**, **Elaine Caoili,** Univ. of Michigan (United States); **Wesley Kerr,** Univ. of Pittsburgh Medical Ctr. (United States); **Kenny Cha,** U.S. Food and Drug Administration (United States); **Galina Kirova-Nedyalkova,** Tokuda Hospital Sofia (Bulgaria); **Matthew Davenport**, **Prasad Shankar**, **Isaac Francis**, **Kimberly Shampain**, **Nathaniel Meyer**, **Daniel Barkmeier**, **Sean Woolen**, **Phillip Palmbos**, **Alon Weizer,** Univ. of Michigan (United States); **Ravi K. Samala,** U.S. Food and Drug Administration (United States), Univ. of Michigan (United States); **Chuan Zhou, Martha Matuszak,** Univ. of Michigan (United States)

13407-57 • 5:30 PM - 7:00 PM
Predicting early hepatic recurrence in patients with pancreatic ductal adenocarcinoma using handcrafted and deep radiomics features
Author(s): **Hadi Ghahremannezhad**, **Ahmad B. Barekzai**, **Joséphine Magnin,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Constantinos Zambririnis,** Linköping Univ. (Sweden); **Natally Horvat**, **Mithat Gönen**, **Lawrence Schwartz**, **Richard K. G Do**, **Kevin Soares**, **Vinod Balachandran**, **Jeffrey Drebin**, **T. Peter Kingham**, **Michael D'Angelica**, **Alice C. Wei**, **William R. Jarnagin, Jayasree Chakraborty,** Memorial Sloan-Kettering Cancer Ctr. (United States)

13407-58 • 5:30 PM - 7:00 PM
Context-aware focal modulation for detection of inflammatory bowel diseases from MRE images
Author(s): **Chaelin Lee,** Seoul Women's Univ. (Korea, Republic of); **Hansang Lee,** KAIST (Korea, Republic of); **Nieun Seo**, **Joon Seok Lim,** Severance Hospital, Yonsei Univ. College of Medicine (Korea, Republic of); **Helen Hong,** Seoul Women's Univ. (Korea, Republic of)

13407-59 • 5:30 PM - 7:00 PM
A study on the performance of U-Net modifications in retroperitoneal tumor segmentation
Author(s): **Moein Heidari,** The Univ. of British Columbia (Canada); **Ehsan Khodapanah Aghdam,** Independent Researcher (Iran, Islamic Republic of); **Alexander Manzella,** Rutgers Robert Wood Johnson Medical School (United States); **Daniel Hsu,** Beth Israel Deaconess Medical Ctr. (United States), Harvard Medical School (United States); **Rebecca Scalabrino,** Weill Cornell Medicine (United States), Memorial Sloan-Kettering Cancer Ctr. (United States); **Wenjin Chen**, **David J. Foran,** Rutgers Cancer Institute of New Jersey (United States); **Ilker Hacihaliloglu,** The Univ. of British Columbia (Canada)

13407-60 • 5:30 PM - 7:00 PM
Demographic characteristics prediction using deep learning analysis of kidney imaging
Author(s): **Ramon Correa-Medero,** Arizona State Univ. (United States); **Haidar Abdul-Muhsin, Imon Banerjee,** Mayo Clinic (United States)

13407-61 • 5:30 PM - 7:00 PM
Performance evaluation of a stacked classifier for predicting treatment response in unresectable colorectal liver metastases
Author(s): **Mane Piliposyan**, **Mohammad Hamghalam**, **Ramtin Mojtahedi**, **Jacob Peoples**, **Kaitlyn Kobayashi**, **E. Claire Bunker,** Queen's Univ. (Canada); **Natalie Gangai,** Memorial Sloan Kettering Cancer Center (United States); **Yun Shin Chun,** MD Anderson Cancer Center (United States); **Richard Do,** Memorial Sloan Kettering Cancer Center (United States); **Christian Muise, Amber L. Simpson,** Queen's Univ. (Canada)

13407-62 • 5:30 PM - 7:00 PM
Leveraging persistent homology for liver tumour classification
Author(s): **Dashti A. Ali**, **Jacob J. Peoples**, **Ramtin Mojtahedi**, **Kaitlyn Kobayashi,** Queen's Univ. (Canada); **William R. Jarnagin**, **Richard K. G. Do,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Amber L. Simpson,** Queen's Univ. (Canada)

13407-63 • 5:30 PM - 7:00 PM
PanNet: a feature-based attention aggregation model for segmenting pancreatic ductal adenocarcinoma on contrast-enhanced CT images of the abdomen
Author(s): **Debojyoti Pal**, **Kaushik Dutta**, **Daniel R. Ludwig, Kooresh Shoghi,** Washington Univ. in St. Louis (United States)

13407-64 • 5:30 PM - 7:00 PM
AI-assisted prostate cancer detection and localisation on biparametric MR by classifying radiologist-positives
Author(s): **Xiangcen Wu**, **Yipei Wang**, **Qianye Yang**, **Natasha Thorley**, **Shonit Punwani**, **Veeru Kasivisvanathan**, **Ester Bonmati, Yipeng Hu,** Univ. College London (United Kingdom)

13407-65 • 5:30 PM - 7:00 PM
Adaptive region-oriented masked vision retentive network for predicting macrovascular invasion in hepatocellular carcinoma
Author(s): **Kengo Takahashi**, **Ryusei Inamori,** Tohoku Univ. School of Medicine (Japan); **Kei Ichiji,** Tohoku Univ. School of Medicine (Japan), Ctr. for Data-driven Science and Artificial Intelligence, Tohoku Univ. (Japan); **Zhang Zhang,** Ctr. for Data-driven Science and Artificial Intelligence, Tohoku Univ. (Japan); **Zeng Yuwen, Noriyasu Homma,** Tohoku Univ. School of Medicine (Japan)

13407-66 • 5:30 PM - 7:00 PM
Automated hepatocellular carcinoma detection and segmentation in abbreviated MRI using vision transformers
Author(s): **Vivek Yadav**, **Amine Geahchan**, **Valentin Fauveau**, **Kazuya Yasokawa**, **Bachir Taouli, Hayit Greenspan,** BioMedical Engineering and Imaging Institute, Icahn School of Medicine at Mount Sinai (United States)

13407-67 • 5:30 PM - 7:00 PM
Prediction of kidney function decline in patients with autosomal dominant polycystic kidney disease using radiomic features extracted from the non-cystic kidney parenchyma
Author(s): **Linnea E. Kremer**, **Erick L. Figueroa**, **Ravi Mangar**, **Mitchell Velasco**, **Adam Starkey**, **Arlene B. Chapman, Samuel G. Armato,** The Univ. of Chicago (United States)

13407-68 • 5:30 PM - 7:00 PM
Exploring transfer learning for deep learning polyp detection in colonoscopy images using YOLOv8
Author(s): **Fabian Vazquez**, **Jose A Nunez,** The Univ. of Texas Rio Grande Valley (United States); **Xiaoyan Fu,** Gastroenterology Department, Fujian Medical University Union Hospital (China); **Pengfei Gu, Bin Fu,** The Univ. of Texas Rio Grande Valley (United States)

13407-69 • 5:30 PM - 7:00 PM
Identifying key challenges in ovarian tumor classification: a comparative study using deep learning and radiomics
Author(s): **Eloy Schultz**, **Terese A. E. Hellström**, **Cris Claessens,** Technische Univ. Eindhoven (Netherlands); **Anna H. Koch**, **Joost Nederend,** Catharina Hospital (Netherlands); **Ilse Niers-Stobbe,** Amphia Hospital (Netherlands); **Annemarie Bruining,** Antoni van Leeuwenhoek Hospital (Netherlands); **Jurgen M. J. Piek,** Catharina Hospital (Netherlands); **Peter H. N. de With, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

13407-70 • 5:30 PM - 7:00 PM
A fully automated pancreatic subregion segmentation tool for CT
Author(s): **Yan Zhuang**, **Abhinav Suri**, **Tejas Sudharshan Mathai,** National Institutes of Health Clinical Ctr. (United States); **Brandon Khoury,** Walter Reed National Military Medical Ctr. (United States); **Ronald M. Summers,** National Institutes of Health Clinical Ctr. (United States)

POSTERS: BRAIN

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-71 • 5:30 PM - 7:00 PM
Rapid, automated prediction of post-stroke cognitive impairment for ischemic stroke
Author(s): **Michal Brzus**, **Jamie Kaminski**, **Trevor Viohl**, **Joel Bruss**, **Daniel Tranel**, **Aaron D. Boes, Hans J. Johnson,** The Univ. of Iowa (United States)

13407-73 • 5:30 PM - 7:00 PM
Investigation of domain specific pretraining of a Swin transformer to improve Alzheimer's disease classification on three different brain imaging modalities
Author(s): **Chiara Weber**, **Jakob Seeger**, **Ben Isselmann,** Hochschule Darmstadt (Germany); **Johannes Gregori,** Hochschule Darmstadt (Germany), mediri GmbH (Germany); **Andreas Weinmann,** Hochschule Darmstadt (Germany)

13407-74 • 5:30 PM - 7:00 PM
Glioblastoma tumor segmentation using an ensemble of vision transformers
Author(s): **Huafeng Liu**, **Benjamin Dowdell**, **Todd Engelder**, **Zarah Pulmano**, **Nicolas Osa, Arko Barman,** Rice Univ. (United States)

13407-75 • 5:30 PM - 7:00 PM
Multioutput lesion-symptom mapping with explainable artificial intelligence in cerebral small vessel disease
Author(s): **Ryanne Offenberg**, **Ana San Román Gaitero,** Univ. Medical Ctr. Utrecht (Netherlands); **Josien Pluim,** Technische Univ. Eindhoven (Netherlands), Univ. Medical Ctr. Utrecht (Netherlands); **Alberto de Luca**, **Geert Jan Biessels, Hugo Kuijf,** Univ. Medical Ctr. Utrecht (Netherlands)

13407-76 • 5:30 PM - 7:00 PM
Assessing the efficacy of classical and deep neuroimaging biomarkers in early Alzheimer's disease diagnosis
Author(s): **Milla E. Nielsen,** Univ. of California, Los Angeles (United States); **Mads Nielsen, Mostafa Mehdipour Ghazi,** Pioneer Ctr. for Artificial Intelligence, Univ. of Copenhagen (Denmark)

13407-77 • 5:30 PM - 7:00 PM
A comprehensive processing framework crafted for pediatric brain MRI
Author(s): **Anik Das**, **Kaue Duarte**, **Catherine Lebel,** Univ. of Calgary (Canada); **Letícia Rittner,** Univ. of Campinas (Brazil); **Mariana Bento,** Univ. of Calgary (Canada)

13407-78 • 5:30 PM - 7:00 PM
A comparison of Atlas- and DL-based brain segmentation in hybrid PET/MR for regional SUV quantification
Author(s): **Rong Yuan,** Jiahe Medical Technology Co., Ltd. (China); **Weiwei Ruan,** Union Hospital of Tongji Medical College, Huazhong Univ. of Science and Technology (China); **Xun Sun,** ; **Shuyue Shi,** Jiahe Medical Technology Co., Ltd. (China); **Xiaoli Lan,** Union Hospital of Tongji Medical College (China)

POSTERS: BREAST

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-79 • 5:30 PM - 7:00 PM
Modal interaction attention-based multimodal fusion network for early prediction of response to neoadjuvant chemotherapy in breast cancer
Author(s): **Xiaoxia Xing,** Sun Yat-Sen Univ. (China); **Jiaping Li**, **Jia Luo**, **Xiaoyan Xie**, **Yanling Zheng,** The First Affiliated Hospital of Sun Yat-Sen Univ. (China); **Yao Lu,** Sun Yat-Sen Univ. (China)

13407-80 • 5:30 PM - 7:00 PM
Optimizing mammography computer-aided detection: from bilateral learning to single-view inference
Author(s): **Ryuta Konishi**, **Nodoka Machida**, **Shinsuke Katsuhara, Hitoshi Futamura,** Konica Minolta, Inc. (Japan)

13407-81 • 5:30 PM - 7:00 PM
Breast masses classification using a radiomic analysis in contrast-enhanced spectral mammography
Author(s): **Juan J. Narváez**, **Pablo Salamea, Fabián Narváez,** Univ. Politécnica Salesiana (Ecuador)

13407-82 • 5:30 PM - 7:00 PM
Pitfalls with anomaly detection for breast cancer risk prediction
Author(s): **Tom Lucas Koller,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Univ. Bremen (Germany); **Kai Geißler,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Ani Ambroladze,** Univ. Bremen (Germany); **Eva M. Fallenberg,** TUM School of Medicine and Health (Germany); **Michael Ingrisch,** Klinikum der Univ. München, Ludwig-Maximilians-Univ. München (Germany), Munich Ctr. for Machine Learning (Germany); **Heba Amer,** Klinikum der Univ. München (Germany); **Phillip Seeböck**, **Georg Langs,** Medizinische Univ. Wien (Austria); **Horst K. Hahn,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Univ. Bremen (Germany)

13407-83 • 5:30 PM - 7:00 PM
Can artificial intelligence support less experienced radiologists in interpreting indeterminate mammographic screenings?
Author(s): **Vivian Bai**, **Zhengqiang Jiang**, **Warren Reed, Ziba Gandomkar,** The Univ. of Sydney (Australia)

13407-84 • 5:30 PM - 7:00 PM
Breast cancer risk prediction using background parenchymal enhancement, radiomics, and symmetry features on MRI
Author(s): **Kai Geißler,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Tom Lucas Koller,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Univ. Bremen (Germany); **Ani Ambroladze,** Univ. Bremen (Germany); **Eva M. Fallenberg,** TUM School of Medicine and Health (Germany); **Michael Ingrisch,** Klinikum der Univ. München (Germany), Munich Ctr. for Machine Learning (Germany); **Horst K. Hahn,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Univ. Bremen (Germany)

13407-85 • 5:30 PM - 7:00 PM
Classification of pure DCIS cases in breast ultrasound images by multiscale contrastive learning
Author(s): **Chisako Muramatsu,** Shiga Univ. (Japan); **Mikinao Oiwa**, **Rieko Nishimura,** Nagoya Medical Ctr. (Japan); **Tomonori Kawasaki,** Saitama Medical Univ. International Medical Ctr. (Japan)

13407-86 • 5:30 PM - 7:00 PM
Assessing change in mammographic density within individuals across screening rounds using an artificial intelligence software
Author(s): **Jakob Olinder**, **Daniel Förnvik**, **Kristin Johnson, Sophia Zackrisson,** Lund Univ. (Sweden), Skåne Univ. Hospital (Sweden)

13407-87 • 5:30 PM - 7:00 PM
GhostTuDNet: accelerating tumor detection on CPUs with a compact and efficient model
Author(s): **Mingzhe Hu, Xiaofeng Yang,** Emory Univ. (United States)

POSTERS: CARDIOVASCULAR

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-90 • 5:30 PM - 7:00 PM
Predicting high-risk plaque features using epicardial adipose tissue assessments from non-contrast CT calcium scoring scan
Author(s): **Nicholas Bricker,** Univ. School (United States); **Ahmed Al-Rawi,** Westlake High School (United States); **Tao Hu**, **Ammar Hoori**, **Hao Wu**, **Justin N. Kim,** Case Western Reserve Univ. (United States); **Michelle C. Williams**, **David E. Newby,** The Univ. of Edinburgh (United Kingdom); **David L. Wilson, Juhwan Lee,** Case Western Reserve Univ. (United States)

13407-91 • 5:30 PM - 7:00 PM
AI prediction of obstructive coronary artery disease using calcium-omics from non-contrast CT calcium scoring scans
Author(s): **Ahmed Al-Rawi,** Westlake High School (United States); **Dhruv Kalra,** Hawken School (United States); **Nicholas Bricker,** Univ. School (United States); **Zakarias Shishehbor,** Hawken School (United States); **Ammar Hoori,** Case Western Reserve Univ. (United States); **Michelle C. Williams**, **David E. Newby,** The Univ. of Edinburgh (United Kingdom); **David L. Wilson, Juhwan Lee,** Case Western Reserve Univ. (United States)

13407-92 • 5:30 PM - 7:00 PM
Prediction of major adverse cardiovascular events in Agatston low-risk patients using comprehensive AI analysis of low-cost screening CT calcium score exams
Author(s): **Tao Hu**, **Ammar Hoori**, **Joshua Freeze**, **Prerna Singh**, **Hao Wu**, **Yingnan Song,** Case Western Reserve Univ. (United States); **Sadeer Al-Kindi,** Houston Methodist (United States); **Sanjay Rajagopalan,** Univ. Hospitals Cleveland Medical Ctr. (United States); **David L. Wilson,** Case Western Reserve Univ. (United States)

13407-93 • 5:30 PM - 7:00 PM
Uncertainty in automated stenosis quantification using multiview x-ray coronary angiography videos
Author(s): **Antonia Popp,** Deutsches Herzzentrum der Charité, Charité Universitätsmedizin Berlin (Germany), Institut für kardiovaskuläre Computer-assistierte Medizin, Deutsches Herzzentrum der Charité, Charité Universitätsmedizin Berlin (Germany); **Alaa Abd El Al**, **Marie Hoffmann,** Charité Universitätsmedizin Berlin (Germany); **Ann Laube**, **Jörg Kempfert,** Charité Universitätsmedizin Berlin (Germany), Deutsches Zentrum für Herz-Kreislauf-Forschung e. V. (Germany); **Anja Hennemuth,** Charité Universitätsmedizin Berlin (Germany), Deutsches Zentrum für Herz-Kreislauf-Forschung e. V. (Germany), Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Alexander Meyer,** Charité Universitätsmedizin Berlin (Germany)

13407-94 • 5:30 PM - 7:00 PM
Automated cardiac chamber volume measurement using non-contrast CT images
Author(s): **Qiyu Zhang**, **Yumeng Zhang**, **Hamidreza Khodajou-Chokami**, **Dean P. Nguyen**, **Dale Black**, **Wenbo Li**, **Justin Truong, Sabee Molloi,** Univ. of California, Irvine (United States)

POSTERS: CHEST

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-95 • 5:30 PM - 7:00 PM
Automated detection of central chest lymph nodes for guided bronchoscopy
Author(s): **Yuxuan He, William E. Higgins,** The Pennsylvania State Univ. (United States)

13407-96 • 5:30 PM - 7:00 PM
Ensemble artificial neural network lung nodule classification utilizing nodular and peri-nodular radiomics
Author(s): **Kevin Knoernschild**, **Kimberly Schroeder**, **Jake Kitzmann**, **Chandra Colby, Jessica C. Sieren,** The Univ. of Iowa (United States)

13407-98 • 5:30 PM - 7:00 PM
Predicting future lung cancer risk in low-dose CT screening patients with AI tools
Author(s): **Liton Devnath**, **Ian Janzen**, **Stephen Lam**, **Ren Yuan, Calum MacAulay,** BC Cancer Research Institute (Canada), The Univ. of British Columbia (Canada)

13407-99 • 5:30 PM - 7:00 PM
Enhanced semi-supervised lung CT segmentation with shape-aware CycleGAN synthesis of pathological data
Author(s): **Rezkellah Noureddine Khiati,** Télécom SudParis (France); **Pierre-Yves Brillet,** Avicenne Hospital (France); **Aurélien Justet,** Ctr. Hospitalier Univ. de Caen Normandie (France); **Radu Ispas,** Keyrus (France); **Catalin Fetita,** Télécom SudParis, Institut Polytechnique de Paris (France)

13407-100 • 5:30 PM - 7:00 PM
Assessing tuberculosis detection and treatment outcome prediction in x-ray images: a cross-domain foundation model performance analysis
Author(s): **Dmitrii Cherezov**, **Tanmoy Dam, Anant Madabhushi,** Emory Univ. (United States)

13407-102 • 5:30 PM - 7:00 PM
Enhancing lung nodule classification with variational autoencoder-based image augmentation
Author(s): **Charmi Patel,** DePaul Univ. (United States); **Yiyang Wang,** Milwaukee School of Engineering (United States); **Roselyne Tchoua**, **Alexandru Orhean**, **Jacob Furst, Daniela Raicu,** DePaul Univ. (United States)

13407-103 • 5:30 PM - 7:00 PM
Longitudinal assessment of lung lesion burden in CT
Author(s): **Tejas Sudharshan Mathai**, **Benjamin Hou, Ronald M. Summers,** National Institutes of Health (United States)

13407-104 • 5:30 PM - 7:00 PM
Ordinal classification framework for multiclass grading of pneumoconiosis
Author(s): **Meiqi Liu**, **Ian Loveless**, **Zenas Huang**, **Michal Borek**, **Kenneth Rosenman**, **Adam Alessio, Ling Wang,** Michigan State Univ. (United States)

13407-105 • 5:30 PM - 7:00 PM
Explainable deep learning for rib fracture detection in chest x-rays
Author(s): **Charles Roberts**, **Yiyang Wang**, **Derek Riley**, **Kieran Penneau**, **Conner Rutherford, Mohamad Mehdi,** Milwaukee School of Engineering (United States)

13407-106 • 5:30 PM - 7:00 PM
Unsupervised CBCT quality improvement for quantitative image analysis in radiotherapy using patient-specific score-based prior
Author(s): **Junbo Peng**, **Yuan Gao**, **Chih-Wei Chang**, **Richard Qiu,** Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Aparna Kesarwala**, **David Yu, Xiaofeng Yang,** Emory Univ. (United States)

13407-107 • 5:30 PM - 7:00 PM
COVSeg-VLM: Vision-language model for reliable segmenting COVID-19 infections in chest x-ray images
Author(s): **Vanessa Su**, **Xiaohan Yuan**, **Mojtaba Safari, Xiaofeng Yang,** Emory Univ. (United States)

POSTERS: CLASSIFICATION

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-108 • 5:30 PM - 7:00 PM
SentinelAdvMedical: toward adversarial attacks detection on medical image classification via out-of-distribution strategies
Author(s): **Erikson Júlio de Aguiar,** Univ. de São Paulo (Brazil), Univ. of Florida (United States); **Agma Juci Juci Machado Traina,** Univ. de São Paulo (Brazil); **Abdelsalam Helal,** Univ. of Florida (United States), Univ. degli Studi di Bologna (Italy)

13407-109 • 5:30 PM - 7:00 PM
Multiview contrastive learning for myelodysplastic syndrome screening : adding deep image representation to blood parameters
Author(s): **Cédric De Almeida Braga,** Univ. de Nantes (France), Ecole Centrale de Nantes (France); **Maxence Bauvais,** Ctr. Hospitalier Univ. de Nantes (France); **Samy Benhouhou,** Univ. de Lille (France); **Alice Garnier**, **Pierre Peterlin**, **Patrice Chevallier,** Ctr. Hospitalier Univ. de Nantes (France); **Emmanuelle Rault**, **Olivier Hérault,** CHRU Tours (France); **Anna Raimbault,** Ctr. Hospitalier Univ. de Poitiers (France); **Perrine Paul-Gilloteaux,** Univ. de Nantes (France), Ctr. Hospitalier Univ. de Nantes (France), INSERM, CNRS (France); **Marion Eveillard,** Ctr. Hospitalier Univ. de Nantes (France); **Nicolas Normand,** Univ. de Nantes (France)

13407-110 • 5:30 PM - 7:00 PM
Obesity prediction from structural MRI using conformal deep learning with uncertainty quantification
Author(s): **Walia Farzana**, **Ahmed Temtam**, **Bryant Humud-Arboleda,** Old Dominion Univ. (United States); **Liangsuo Ma**, **Melanie Bean**, **Gerry Moeller,** Virginia Commonwealth Univ. (United States); **Khan M. Iftekharuddin,** Old Dominion Univ. (United States)

13407-111 • 5:30 PM - 7:00 PM
Vision transformer for efficient chest x-ray and gastrointestinal image classification
Author(s): **Debesh Jha**, **Ulas Bagci,** Northwestern Univ. (United States); **Smriti Regmi, Aliza Subedi,** IOE Pashchimanchal Campus (Nepal)

13407-112 • 5:30 PM - 7:00 PM
Persistence image from 3D medical image: superpixel and optimized Gaussian coefficient
Author(s): **Yanfan Zhu,** Vanderbilt Univ. (United States); **Yash Singh,** Mayo Clinic (United States); **Khaled Younis,** MedAiConsult (United States); **Shunxing Bao, Yuankai Huo,** Vanderbilt Univ. (United States)

13407-113 • 5:30 PM - 7:00 PM
Feature learning and transfer learning approaches for classification of human burn wounds using multispectral SWIR imaging
Author(s): **Mignon Frances Dumanjog,** The Univ. of Texas at San Antonio (United States), MATRIX, the UTSA AI Consortium for Human Well-Being, The Univ. of Texas at San Antonio (United States); **Sneha Korlakunta**, **Alaa Hazime**, **Ryan Huebinger,** Ctr. for Organogenesis, Regeneration and Trauma, The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Sergey Mironov**, **Omer Berenfeld,** Univ. of Michigan (United States); **Benjamin Levi,** Ctr. for Organogenesis, Regeneration and Trauma, The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Amina Qutub,** The Univ. of Texas at San Antonio (United States), MATRIX, the UTSA AI Consortium for Human Well-Being, The Univ. of Texas at San Antonio (United States)

POSTERS: HEAD, NECK AND EYE

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-114 • 5:30 PM - 7:00 PM
Parsing disease heterogeneity in structural and functional MRI-derived measures using normative modeling and generative adversarial networks (GANs)
Author(s): **Sai Spandana Chintapalli**, **Sindhuja T Govindarajan**, **Haochang Shou**, **Yong Fan**, **Hao Huang, Christos Davatzikos,** Univ. of Pennsylvania (United States)

13407-115 • 5:30 PM - 7:00 PM
CAP-FSL: Cross-Attentive Prototypical Few-Shot Learning for 3D OCT-based ocular disease classification
Author(s): **Rimsa Goperma**, **Rojan Basnet, Liang Zhao,** Kyoto Univ. (Japan)

13407-116 • 5:30 PM - 7:00 PM
Using an adult retinal image analysis foundation model for retinopathy of prematurity staging: are there benefits?
Author(s): **Zaid Mahboob,** Univ. of Calgary (Canada), National Univ. of Sciences and Technology (Pakistan); **Ahmad O. Ahsan, Matthias Wilms,** Univ. of Calgary (Canada)

13407-117 • 5:30 PM - 7:00 PM
A video classification method for diagnosing ear diseases using otoscope imaging
Author(s): **Hao Lu**, **Seda Camalan,** Wake Forest Univ. School of Medicine (United States); **Charles Elmaraghy,** The Ohio State Univ. (United States); **Aaron C. Moberly,** Vanderbilt Univ. Medical Ctr. (United States); **Metin N. Gurcan,** Wake Forest School of Medicine (United States)

13407-118 • 5:30 PM - 7:00 PM
2.5D mapping of the esophagus as imaging quality and completeness assuring extension for endoscopic computer-aided detection systems
Author(s): **Esmee Esselaar**, **Tim J. M. Jaspers**, **Carolus H. J. Kusters**, **Tim G. W. Boers,** Technische Univ. Eindhoven (Netherlands); **Martijn R. Jong**, **Rixta A. H. Van Eijck van Heslinga**, **Albert J. de Groof**, **Jacques J. Bergman,** Amsterdam UMC (Netherlands); **Peter H. N. De With, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

13407-119 • 5:30 PM - 7:00 PM
Retina layers thickness guided vision transformer for glaucoma diagnosis
Author(s): **Wenjun Yang**, **Jui-Kai Wang, Randy H. Kardon,** The Univ. of Iowa Hospitals and Clinics (United States)

13407-120 • 5:30 PM - 7:00 PM
Survival prediction in head and neck cancer utilizing vision graph neural network on PET/CT images
Author(s): **Xiaohan Yuan,** Emory Univ. (United States), Georgia Institute of Technology (United States); **Mojtaba Safari,** The Winship Cancer Institute of Emory Univ. (United States); **Yishu Li,** Georgia Institute of Technology (United States), Emory Univ. (United States); **Mingzhe Hu, Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States)

POSTERS: METHODS

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-122 • 5:30 PM - 7:00 PM
GS-TransUNet: integrated 2D Gaussian splatting and transformer UNet for accurate skin lesion analysis
Author(s): **Anand Kumar**, **Kavinder Roghit Kanthen, Josna John,** Univ. of California, San Diego (United States)

13407-124 • 5:30 PM - 7:00 PM
Evaluating the robustness of data characteristics in unbalanced federated learning scenarios
Author(s): **Jordan D. Fuhrman**, **Karen Drukker**, **Maryellen L. Giger,** The Univ. of Chicago (United States); **Ravi Madduri,** Argonne National Lab. (United States)

13407-125 • 5:30 PM - 7:00 PM
Parameter-efficient fine-tuning and few-shot learning of multiscale vision transformers for liver tumour segmentation in CT
Author(s): **Ramtin Mojtahedi,** Queen's Univ. (Canada); **Mohammad Hamghalam,** Queen's Univ. (Canada), Islamic Azad Univ. (Iran, Islamic Republic of); **Jacob J. Peoples,** Queen's Univ. (Canada); **William R. Jarnagin**, **Richard K. G. Do,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Amber L. Simpson,** Queen's Univ. (Canada)

13407-126 • 5:30 PM - 7:00 PM
Leveraging prior knowledge in machine intelligence for improving cancer diagnostic accuracy
Author(s): **Zhengrong Liang,** Stony Brook Univ. (United States); **Shaojie Chang,** Mayo Clinic (United States); **Yongfeng Gao,** Stony Brook Univ. (United States); **Weiguo Cao,** Mayo Clinic (United States); **Marc J. Pomeroy**, **Licheng R. Kuo**, **Haifang Li,** Stony Brook Univ. (United States); **Lihong C. Li,** College of Staten Island, The City College of New York (United States); **Perry J. Pickhardt,** Univ. of Wisconsin System (United States); **Mahsa Kochi**, **John Ferretti, Elaine Gould,** Stony Brook Univ. (United States)

13407-127 • 5:30 PM - 7:00 PM
Federated vs. centralized learning for medical images classification and segmentation
Author(s): **Irina Rakotoarisedy**, **Adam Fragkiadakis**, **Pascal Haigron, Antoine Simon,** Univ. de Rennes (France), Ctr. Eugène Marquis (France), Lab. Traitement du Signal et de l'Image, Institut National de la Santé et de la Recherche Médicale (France)

13407-129 • 5:30 PM - 7:00 PM
Impact of tint maps on radiomic texture features extracted from ultrasound images
Author(s): **Estefano Ramirez**, **Ingrid Reiser**, **Zheng Feng Lu, Heather M. Whitney,** The Univ. of Chicago (United States)

13407-130 • 5:30 PM - 7:00 PM
Is segmentation performance of deep-learning models affected by cancer type? A performance analysis on PET/CT
Author(s): **Mahan Pouromidi**, **Katherine Zukotynski**, **Thomas Doyle, Ashirbani Saha,** McMaster Univ. (Canada)

13407-131 • 5:30 PM - 7:00 PM
A one-shot/few-shot interactive segmentation method for CT image segmentation
Author(s): **Jian Dai,** Yanshan Univ. (China); **Jayaram K. Udupa**, **Drew A. Torigian**, **Yubing Tong,** Univ. of Pennsylvania (United States); **Tiange Liu,** Yanshan Univ. (China), Univ. of Science and Technology Beijing (China)

POSTERS: MUSCULOSKELETAL

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom
View poster session description and guidelines above.

13407-132 • 5:30 PM - 7:00 PM
Pediatric osteopenia prediction and interpretation in wrist x-rays
Author(s): **Chelsea E. Harris**, **Lingling Liu, Sokratis Makrogiannis,** Delaware State Univ. (United States)

13407-133 • 5:30 PM - 7:00 PM
Multitask transfer learning based on multiview MRI images for diagnosis of patellar instability
Author(s): **Qin Zhang,** Sun Yat-Sen Univ. (China); **Rui Zhang,** The Third Affiliated Hospital of Southern Medical Univ. (China); **Yuhua Liu,** Southern Medical Univ. (China); **Qiang Ye,** The Third Affiliated Hospital of Southern Medical Univ. (China); **Lin Chen,** Guangzhou Cadre and Talent Health Management Ctr. (China); **Yichuan Hu,** Guangdong Hydropower Group Hospital (China); **Yinghua Zhao,** The Third Affiliated Hospital of Southern Medical Univ. (China); **Yao Lu,** Sun Yat-Sen Univ. (China)

13407-134 • 5:30 PM - 7:00 PM
Toward non-invasive diagnosis of Bankart lesions with deep learning
Author(s): **Sahil Sethi**, **Sai Reddy,** The Univ. of Chicago Pritzker School of Medicine (United States); **Mansi Sakarvadia,** The Univ. of Chicago (United States); **Jordan Serotte**, **Darlington Nwaudo**, **Nicholas Maassen, Lewis Shi,** The Univ. of Chicago Medicine (United States)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 10: BRAIN

20 February 2025 • 10:30 AM - 12:30 PM | Town & Country C
Session Chair(s): **Chuan Zhou**, Michigan Medicine (United States); **Hiroyuki Yoshida**, Massachusetts General Hospital (United States), Harvard Medical School (United States)

13407-42 • 10:30 AM - 10:50 AM
Parameter efficient fine-tuning of transformer-based masked autoencoder enhances resource constrained neuroimage analysis
Author(s): **Nikhil J. Dhinagar**, **Saket S. Ozarkar**, **Ketaki U. Buwa**, **Sophia I. Thomopoulos**, **Conor Owens-Walton**, **Emily Laltoo**, **Chirag Jagad,** Keck School of Medicine of USC (United States); **Yao-Liang Chen,** Chang Gung Memorial Hospital (Taiwan); **Philip Cook**, **Corey McMillan,** Perelman School of Medicine, Univ. of Pennsylvania (United States); **Chih-Chien Tsai,** Healthy Aging Research Ctr., Chang Gung Univ. (Taiwan); **J-J Wang,** Chang Gung Univ. (Taiwan); **Yih-Ru Wu,** Chang Gung Memorial Hospital (Taiwan); **Paul M. Thompson,** Keck School of Medicine of USC (United States)

13407-43 • 10:50 AM - 11:10 AM
Investigation of multimodal deep-learning architectures for the classification of Alzheimer's disease and amyloid status
Author(s): **Ben Isselmann**, **Chiara Weber**, **Jakob Seeger,** Hochschule Darmstadt (Germany); **Alle Meije Wink**, **Henk-Jan Mutsaerts,** VU Univ. Medical Ctr. (Netherlands); **Andreas Weinmann, Johannes Gregori,** Hochschule Darmstadt (Germany)

13407-44 • 11:10 AM - 11:30 AM
Personalized prediction of tumor recurrence with image-guided physics-informed computational model in high-grade gliomas
Author(s): **Walia Farzana, Khan M. Iftekharuddin,** Old Dominion Univ. (United States)

13407-45 • 11:30 AM - 11:50 AM
Two-level classification for differential diagnosis and molecular subtype classification of pediatric medulloblastoma from other posterior fossa tumors
Author(s): **Celine Lee,** Univ. of Pennsylvania (United States); **Neda Khalili**, **Ariana M. Familiar**, **Meen Chul Kim**, **Arastoo Vossough**, **Deep Gandhi**, **Paarth Jain**, **Nastaran Khalili**, **Debanjan Haldar**, **Jeffrey B. Ware**, **Phillip B. Storm**, **Adam C. Resnick**, **Ali Nabavizadeh, Anahita Fathi Kazerooni,** The Children's Hospital of Philadelphia (United States)

13407-46 • 11:50 AM - 12:10 PM
Large-scale nonlinear Granger causality (lsNGC) analysis of functional MRI data for schizophrenia classification
Author(s): **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States); **Ali Vosoughi, Akhil Kasturi,** Univ. of Rochester (United States)

13407-47 • 12:10 PM - 12:30 PM
WPDM: Enhancing subarachnoid hemorrhage CT detection with Worley-Perlin noise diffusion on imbalanced data
Author(s): **Zhongyang Lu**, **Tao Hu**, **Masahiro Oda**, **Yuichiro Hayashi,** Nagoya Univ. (Japan); **Takeyuki Watadani,** The Univ. of Tokyo Hospital (Japan); **Kensaku Mori,** Nagoya Univ. (Japan)

Lunch Break 12:30 PM - 1:50 PM

SESSION 11: ABDOMEN II

20 February 2025 • 1:50 PM - 3:10 PM | Town & Country C
Session Chair(s): **Xiaofeng Yang**, The Winship Cancer Institute of Emory Univ. (United States); **Matthias Wilms**, Univ. of Calgary (Canada)

13407-48 • 1:50 PM - 2:10 PM
Enhanced identification of pheochromocytoma and paragangliomas' genetic clusters from CT
Author(s): **Owais Makroo,** Indian Institute of Technology Kharagpur (India); **Bikash Santra,** Indian Institute of Technology Jodhpur (India); **Pritam Mukherjee**, **Tejas Sudharshan Mathai,** National Institutes of Health Clinical Ctr. (United States); **Abhishek Jha**, **Mayank Patel**, **Karel Pacak,** National Institute of Child Health and Human Development, National Institutes of Health (United States); **Ronald M. Summers,** National Institutes of Health Clinical Ctr. (United States)

13407-49 • 2:10 PM - 2:30 PM
Predicting response to therapy in pancreatic ductal adenocarcinoma using convolutional neural networks
Author(s): **John Zhou**, **Dashti A. Ali**, **Ramtin Mojtahedi,** Queen's Univ. (Canada); **Ahmad B. Barekzai**, **Jayasree Chakraborty**, **Hala Khasawneh**, **Camila Vilela**, **Natally Horvat**, **Joao Miranda**, **Alice C. Wei,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Amber L. Simpson,** Queen's Univ. (Canada)

13407-50 • 2:30 PM - 2:50 PM
Dynamic U-Net: adaptively calibrate features for abdominal multiorgan segmentation
Author(s): **Jin Yang**, **Daniel S. Marcus,** Washington Univ. School of Medicine in St. Louis (United States); **Aristeidis Sotiras,** Washington Univ. School of Medicine in St. Louis (United States), Institute for Informatics, Data Science & Biostatistics, Washington Univ. School of Medicine in St. Louis (United States)

13407-51 • 2:50 PM - 3:10 PM
Leveraging anatomical priors for automated pancreas segmentation on abdominal CT
Author(s): **Anisa V. Prasad**, **Tejas Sudharshan Mathai**, **Pritam Mukherjee**, **Jianfei Liu, Ronald M. Summers,** National Institutes of Health (United States)

ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13407-72

Interpretable deep-learning model for distinguishing tumor pseudoprogression from true progression using MRI imaging of glioblastoma patients

Author(s): **Zhe Wang**, **Rayyan Khan,** Univ. of Manitoba (Canada); **Parandoush Abbasian**, **Lawrence Ryner**, **Pascal Lambert**, **Marshall Pitz,** CancerCare Manitoba (Canada); **Ahmed Ashraf,** Univ. of Manitoba (Canada)

13407-97

Semantic segmentation of TB in chest x-rays: a new dataset and generalization evaluation

Author(s): **Karthik Kantipudi,** National Institute of Allergy and Infectious Diseases (United States); **Vy Bui**, **Hang Yu,** U.S. National Library of Medicine (United States); **Fleming Y. M. Lure,** MS Technologies Corp. (United States); **Stefan Jaeger,** U.S. National Library of Medicine (United States); **Ziv R. Yaniv,** National Institute of Allergy and Infectious Diseases (United States)

13407-101

Weighted ensemble learning for accurate COVID-19 CT image segmentation

Author(s): **Hao Fang,** Xiamen Univ. (China); **Guangcheng Luo,** Zhongshan Hospital Affiliated to Xiamen Univ. (China); **Yong Peng,** School of Intelligent Engineering, Chongqing City Management College (China); **Xiongbiao Luo,** Xiamen Univ. (China)

CONFERENCE CO-SPONSORS

CONFERENCE 13408

Image-Guided Procedures, Robotic Interventions, and Modeling

16 - 20 February 2025 | Town & Country D

Conference Chair(s): **Maryam E. Rettmann,** Mayo Clinic (United States); **Jeffrey H. Siewerdsen,** The Univ. of Texas MD Anderson Cancer Ctr. (United States)

Program Committee: **Purang Abolmaesumi,** The Univ. of British Columbia (Canada); **John S. H. Baxter,** Univ. de Rennes 1 (France); **Kristy K. Brock,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Matthieu Chabanas,** Univ. Grenoble Alpes (France); **Elvis C. S. Chen,** Robarts Research Institute (Canada); **Rebecca Fahrig,** Siemens Healthineers (Germany); **Baowei Fei,** The Univ. of Texas at Dallas (United States), The Univ. of Texas Southwestern Medical Ctr. (United States); **Gabor Fichtinger,** Queen's Univ. (Canada); **Ryan J. Halter,** Thayer School of Engineering at Dartmouth (United States); **David R. Haynor,** Univ. of Washington (United States); **William E. Higgins,** The Pennsylvania State Univ. (United States); **David R. Holmes,** Mayo Clinic (United States); **Pierre Jannin,** Univ. de Rennes 1 (France); **David M. Kwartowitz,** Grand Canyon Univ. (United States); **Junghoon Lee,** Johns Hopkins Univ. (United States); **Shuo Li,** Case Western Reserve Univ. (United States); **Cristian A. Linte,** Rochester Institute of Technology (United States); **Michael I. Miga,** Vanderbilt Univ. (United States); **Kensaku Mori,** Nagoya Univ. (Japan); **Parvin Mousavi,** Queen's Univ. (Canada); **Jack H. Noble,** Vanderbilt Univ. (United States); **Jessica R. Rodgers,** Univ. of Manitoba (Canada); **Eric J. Seibel,** Univ. of Washington (United States); **Tamas Ungi,** Queen's Univ. (Canada); **Satish E. Viswanath,** Case Western Reserve Univ. (United States); **Robert J. Webster,** Vanderbilt Univ. (United States); **Ziv R. Yaniv,** National Institute of Allergy and Infectious Diseases (United States); **Terry S. Yoo,** The Univ. of Maine (United States); **Haichong Kai Zhang,** Worcester Polytechnic Institute (United States)

Sunday 16 February 2025

SPIE MEDICAL IMAGING AWARDS AND PLENARY

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A
Session Chair(s): **Joseph Y. Lo**, Carl E. Ravin Advanced Imaging Labs. (United States); **Cristian A. Linte**, Rochester Institute of Technology (United States)

View Full Details: spie.org/medical-imaging-awards-plenary

5:30 PM - 5:40 PM:
Symposium Chair Welcome and Best Student Paper Award announcement
First-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award
Sponsored by:
MIPS and SPIE

5:40 PM - 5:45 PM:
New SPIE Fellow acknowledgments
Each year, SPIE promotes Members as new Fellows of the Society. Join us as we recognize colleagues of the medical imaging community who have been selected.

5:45 PM - 5:50 PM:
SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging

13408-500 • 5:50 PM - 6:30 PM
Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions (Plenary Presentation)
Author(s): **Aaron Fenster,** Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

ALL-SYMPOSIUM WELCOME RECEPTION

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

View Full Details: spie.org/mi/welcome-reception

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

Monday 17 February 2025

MONDAY MORNING KEYNOTES

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country A
Session Chair(s): **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Mark A. Anastasio**, Univ. of Illinois (United States); **Shandong Wu**, Univ. of Pittsburgh (United States)

View Full Details: spie.org/monday-morning-keynotes

8:20 AM - 8:25 AM:
Welcome and introduction

8:25 AM - 8:30 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
- Physics of Medical Imaging Student Paper Award

13405-501 • 8:30 AM - 9:10 AM
Promoting innovation in your team: lessons learned from 40 years in medical imaging (Keynote Presentation)
Author(s): **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13409-502 • 9:10 AM - 9:50 AM
Designing AI for clinical imaging: the important role of model observers (Keynote Presentation)
Author(s): **Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13411-503 • 9:50 AM - 10:30 AM
Tackling the health AI paradox (Keynote Presentation)
Author(s): **Karandeep Singh,** UC San Diego Health (United States)

Coffee Break 10:30 AM - 11:00 AM

SESSION 1: SURGICAL NAVIGATION

17 February 2025 • 11:00 AM - 12:40 PM | Town & Country D
Session Chair(s): **William E. Higgins**, The Pennsylvania State Univ. (United States); **Baowei Fei**, The Univ. of Texas at Dallas (United States)

13408-1 • 11:00 AM - 11:20 AM
Real-time 3D-2D pose regression using intraoperative long-length tomosynthesis images for MR navigation in spine surgery
Author(s): **Yixuan Huang**, **Yicheng Hu**, **Craig K. Jones**, **Wojciech Zbijewski,** Johns Hopkins Univ. (United States); **Jeffrey H. Siewerdsen,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Patrick A. Helm,** Medtronic, Inc. (United States); **Timothy F. Witham,** Johns Hopkins Medicine (United States); **Ali Uneri,** Johns Hopkins Univ. (United States)

13408-2 • 11:20 AM - 11:40 AM
Automatic spine exposure segmentation in stereovision imaging using SAM 2 for driving image updating pipeline for preoperative to intraoperative registration in open spine procedures
Author(s): **William R. Warner**, **Xiaoyao Fan**, **Ryan B. Duke**, **Haley E. Stoner**, **Chengpei Li,** Thayer School of Engineering at Dartmouth (United States); **Songbai Ji,** Worcester Polytechnic Institute (United States); **Linton T. Evans,** Dartmouth Health (United States); **Sohail K. Mirza, Keith D. Paulsen,** Thayer School of Engineering at Dartmouth (United States)

13408-3 • 11:40 AM - 12:00 PM
Tool pose estimation in cochlear implant surgery using monocular microscopy
Author(s): **Serena Abraham**, **Jason E. Mitchell,** Vanderbilt Univ. (United States); **Robert F. Labadie,** Vanderbilt Univ. Medical Ctr. (United States); **Jack H. Noble,** Vanderbilt Univ. (United States)

13408-4 • 12:00 PM - 12:20 PM
Post-mastoidectomy Surface Multi-View Synthesis from a Single Microscopy Image
Author(s): **Yike Zhang, Jack H. Noble,** Vanderbilt Univ. (United States)

13408-5 • 12:20 PM - 12:40 PM
Surgical navigation system for liver surgery based on HoloLens® 2
Author(s): **Bowen Xiang**, **Jon S. Heiselman, Michael I. Miga,** Vanderbilt Univ. (United States)

Lunch Break 12:40 PM - 1:40 PM

SESSION 2: INTERVENTIONAL RADIOLOGY AND MINIMALLY INVASIVE SURGERY

17 February 2025 • 1:40 PM - 3:00 PM | Town & Country D
Session Chair(s): **Matthieu Chabanas**, Univ. Grenoble Alpes (France); **Elvis C.S. Chen**, Robarts Research Institute (Canada)

13408-6 • 1:40 PM - 2:00 PM
Development of an integrated 3D ABUS system with needle biopsy capabilities and combined 3D ABUS-MRI-guided needle biopsy
Author(s): **Amal Aziz,** Western Univ. (Canada); **Claire Park,** Harvard Medical School (United States); **Madeline Ico,** Western Univ. (Canada); **Jeffrey Bax**, **David Tessier**, **Lori Gardi,** Robarts Research Institute (Canada); **Maya G Kacen**, **Priscila Crivellaro**, **Anat Kornecki, Aaron Fenster,** Western Univ. (Canada)

13408-7 • 2:00 PM - 2:20 PM
Augmented reality system for MRI-guided interventions: a cadaver study
Author(s): **Van Khanh Lam**, **Pavel Yarmolenko,** Children's National Hospital (United States); **Purnima Rajan**, **Martin Hossbach**, **Alican Demir**, **Pezhman Foroughi,** Clear Guide Medical (United States); **Kevin Cleary**, **Ranjith Vellody, Karun Sharma,** Children's National Hospital (United States)

13408-8 • 2:20 PM - 2:40 PM
Segmentation of Alexis retractors in the context of augmented reality in video-assisted thoracoscopic surgery
Author(s): **The Cong Luong,** Univ. de Rennes 1 (France), INSERM (France); **Simon Rouzé,** Univ Rennes, CHU Rennes, Inserm, LTSI – UMR 1099, F-35000 Rennes, France (France); **Jean-Louis Dillenseger,** Univ. de Rennes 1 (France), INSERM (France)

13408-9 • 2:40 PM - 3:00 PM
A high-speed hyperspectral imaging system and large-scale hyperspectral dataset for abdominal applications
Author(s): **Kelden Pruitt**, **Weston DeAtley,** The Univ. of Texas at Dallas (United States); **Armand Rathgeb**, **Brett Johnson**, **Jeffrey Gahan,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Baowei Fei,** The Univ. of Texas at Dallas (United States)

Coffee Break 3:00 PM - 3:30 PM

SESSION 3: VIDEO-BASED INTERVENTIONAL APPLICATIONS

17 February 2025 • 3:30 PM - 5:30 PM | Town & Country D
Session Chair(s): **Kristy K. Brock**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Jack H. Noble**, Vanderbilt Univ. (United States)

13408-10 • 3:30 PM - 3:50 PM
Surgical depth anything: Depth estimation for surgical scenes using foundation models
Author(s): **Ange Lou**, **Yamin Li**, **Yike Zhang, Jack H. Noble,** Vanderbilt Univ. (United States)

13408-11 • 3:50 PM - 4:10 PM
High-fidelity 3D reconstruction for accurate anatomical measurements in endoscopic sinus surgery
Author(s): **Nicole Gunderson**, **Pengcheng Chen,** Univ. of Washington (United States); **Jeremy Ruthberg**, **Randall A. Bly,** Seattle Children's Hospital (United States); **Eric J. Seibel,** Univ. of Washington (United States); **Waleed M. Abuzeid,** Seattle Children's Hospital (United States)

13408-13 • 4:10 PM - 4:30 PM
Performance and nonadversarial robustness of the segment anything model 2 in surgical video segmentation
Author(s): **Yiqing Shen**, **Hao Ding**, **Xinyuan Shao, Mathias Unberath,** Johns Hopkins Univ. (United States)

13408-14 • 4:30 PM - 4:50 PM
Enhanced feature-based image stitching for endoscopic videos in pediatric eosinophilic esophagitis
Author(s): **Juming Xiong**, **Muyang Li**, **Ruining Deng**, **Tianyuan Yao,** Vanderbilt Univ. (United States); **Shunxing Bao,** Vanderbilt Univ. (United States); **Regina Tyree**, **Girish Hiremath,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

13408-12 • 4:50 PM - 5:10 PM
Kidney endoscopy video to preoperative CT alignment for depth estimation
Author(s): **Daiwei Lu**, **Hao Li,** Vanderbilt Univ. (United States); **Clifford Pierre,** Meharry Medical College (United States); **Nicholas Kavoussi,** Vanderbilt Univ. Medical Ctr. (United States); **Ipek Oguz,** Vanderbilt Univ. (United States)

13408-15 • 5:10 PM - 5:30 PM
Automated segmentation of central airway obstruction from endoscopic video stream with deep learning
Author(s): **Hao Li**, **Jiacheng Wang**, **Nithin S. Kumar**, **Jesse d'Almeida**, **Daiwei Lu**, **Ayberk Acar**, **John Han**, **Qingyun Yang,** Vanderbilt Univ. (United States); **Tayfun Ertop,** The Univ. of Tennessee Knoxville (United States); **Jie Ying Wu**, **Robert Webster, Ipek Oguz,** Vanderbilt Univ. (United States)

POSTERS - MONDAY

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/monday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 10:00 AM - 5:30 PM Monday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Monday. Judging may begin after this time. Posters must remain on display until the end of the Monday evening poster session, but may be left hanging until 1:00 PM Tuesday. After 1:00 PM on Tuesday, posters will be removed and discarded.

View poster presentation guidelines and set-up instructions at
https://spie.org/MI/Poster-Presentation-Guidelines

13408-45 • 5:30 PM - 7:00 PM
Data-tailored shape compression for interventional device tracking
Author(s): **Roman A. Pavelkin**, **Luis Albert Zavala-Mondragon,** Technische Univ. Eindhoven (Netherlands); **Ahmet Ekin,** Philips Healthcare (Netherlands); **Peter H. N. de With, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

13408-46 • 5:30 PM - 7:00 PM
Development of a 3D transrectal ultrasound-guided prostate biopsy system integrated with a prostate-specific PET system
Author(s): **Sule Karagulleoglu Kunduraci,** Western Univ. (Canada), Robarts Research Institute (Canada); **Jeffrey Bax**, **Lori Gardi**, **David Tessier,** Robarts Research Institute (Canada); **Alla Reznik,** Lakehead Univ. (Canada), Thunder Bay Regional Research Institute (Canada); **Ian A. Cunningham, Aaron Fenster,** Robarts Research Institute (Canada), Western Univ. (Canada)

13408-47 • 5:30 PM - 7:00 PM
Data capture in fluoroscopically-guided interventions: a pathway to workflow and procedure optimization
Author(s): **Allan Thomas**, **Melak Senay,** Washington Univ. School of Medicine in St. Louis (United States); **Lunchi Guo,** Washington Univ. in St. Louis (United States); **James R. Duncan,** Washington Univ. School of Medicine in St. Louis (United States)

13408-48 • 5:30 PM - 7:00 PM
Assessing the impact of a magnetic field generator on fluoroscopic image quality
Author(s): **Mateen Mirzaei**, **Lisa M. Garland**, **Terry M. Peters**, **Ian A. Cunningham, Elvis C. S. Chen,** Western Univ. (Canada)

13408-49 • 5:30 PM - 7:00 PM
Landmark-based 2D/3D registration of preoperative planning data to intraoperative photographs for mapping of functional areas in awake brain surgery
Author(s): **Florian Weiler**, **Tom Lucas Koller,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Laura Krismer**, **Roland Rölz,** Universitätsklinikum Freiburg (Germany); **Stefan Heldmann, Jan Klein,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany)

13408-50 • 5:30 PM - 7:00 PM
Method for reducing CT-to-body divergence tailored to peripheral bronchoscopy
Author(s): **Yuxuan He, William E. Higgins,** The Pennsylvania State Univ. (United States)

13408-51 • 5:30 PM - 7:00 PM
Deep depth-supervised simultaneous localization and mapping for autonomous bronchoscopic navigation
Author(s): **XiuLing Huang**, **Wenkang Fan**, **Hao Fang, Xiongbiao Luo,** Xiamen Univ. (China)

13408-52 • 5:30 PM - 7:00 PM
An efficient 3D MRI-U/S-MR thermometry workflow for therapy guidance in liver cancer
Author(s): **Jhimli Mitra**, **Chitresh Bhushan**, **Afis Ajala**, **Heather Chan**, **David Mills**, **Robert Darrow,** GE HealthCare (United States); **Jayant Sakhardande,** The Univ. of Iowa (United States); **Sherry S. Huang,** GE HealthCare (United States); **James H. Holmes,** The Univ. of Iowa (United States); **Shane A. Wells,** Univ. of Michigan (United States); **Desmond Teck Beng Yeo,** GE HealthCare (United States)

13408-53 • 5:30 PM - 7:00 PM
Efficient real-time 3D tracking of liver targets through image registration and LightGBM
Author(s): **Ayaz Nakhuda**, **HaPhan Tran, Elodie Lugez,** Toronto Metropolitan Univ. (Canada)

13408-54 • 5:30 PM - 7:00 PM
Evaluation of intraoperative patient-specific methods for point cloud completion for minimally invasive liver interventions
Author(s): **Nakul Poudel**, **Zixin Yang**, **Kelly Merrell**, **Richard Simon, Cristian A. Linte,** Rochester Institute of Technology (United States)

13408-55 • 5:30 PM - 7:00 PM
Reflector-integrated ultrasound image-guided access: towards clinical applications
Author(s): **Yichuan Tang**, **Dhruv Chheda**, **Mikkel Hersum**, **Jena Taubert**, **Ryo Murakami, Haichong K. Zhang,** Worcester Polytechnic Institute (United States)

13408-56 • 5:30 PM - 7:00 PM
Monitoring percutaneous microwave ablation of hepatocellular carcinoma using echo decorrelation imaging
Author(s): **Mohamed A. Abbass**, **Sherif Hussein,** Military Technical College (Egypt); **Mohamed Elwarraky,** National Liver Institute (Egypt); **T. Douglas Mast,** Univ. of Cincinnati (United States)

13408-57 • 5:30 PM - 7:00 PM
Enhancement of prostate visualization in robotic prostatectomy using PET/MR mixed reality
Author(s): **Jingyu Yang**, **Almaslamani Muath**, **Kanghyon Song,** Korea Institute of Radiological & Medical Sciences (Korea, Republic of); **Myung-Chul Lee,** Korea Institute of Radiological & Medical Sciences (Korea, Democratic Peoples Republic of); **Sang-Keun Woo,** Korea Institute of Radiological & Medical Sciences (Korea, Republic of), Univ. of Science and Technology (Korea, Republic of)

13408-58 • 5:30 PM - 7:00 PM
Orthopedic drilling breach sensory prevention system
Author(s): **Haley E. Stoner**, **Xiaoyao Fan**, **Ryan B. Duke**, **Ross Warner**, **Chengpei Li**, **Sohail K. Mirza, Keith D. Paulsen,** Thayer School of Engineering at Dartmouth (United States)

13408-59 • 5:30 PM - 7:00 PM
Integration and accuracy evaluation of exoscope-based stereovision for image updating in neurosurgery
Author(s): **Chengpei Li**, **William R. Warner**, **Tanaz Muhamed,** Dartmouth College (United States); **Lucy Hoen**, **Sai Balaketheeswaran**, **Josh Richmond,** Synaptive Medical (Canada); **Linton T. Evans,** Dartmouth Cancer Ctr. (United States), Dartmouth Hitchcock Medical Ctr. (United States); **Keith D. Paulsen,** Dartmouth College (United States), Dartmouth Hitchcock Medical Ctr. (United States), Dartmouth Cancer Ctr. (United States); **Xiaoyao Fan,** Dartmouth College (United States)

13408-60 • 5:30 PM - 7:00 PM
Towards video-based force estimation within tool-bowel interaction
Author(s): **Kevin Wang**, **Johann Suess**, **Dominik Rivoir**, **Micha Pfeiffer**, **Sebastian Bodenstedt,** Nationales Centrum für Tumorerkrankungen Dresden (Germany); **Martin Wagner,** Universitätsklinikum Carl Gustav Carus Dresden, TU Dresden (Germany); **Stefanie Speidel,** Nationales Centrum für Tumorerkrankungen Dresden (Germany)

13408-61 • 5:30 PM - 7:00 PM
Surgical video analysis using an ensemble of multitask recurrent convolutional neural networks
Author(s): **Bruno Oliveira**, **Helena R. Torres**, **Pedro G. Morais, João L. Vilaça,** 2AI Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal)

13408-62 • 5:30 PM - 7:00 PM
Estimation of hidden blood vessel locations in laparoscopic videos by combining preoperative and intraoperative information
Author(s): **Keigo Enomoto**, **Yuichiro Hayashi,** Nagoya Univ. (Japan); **Kazunari Misawa,** Aichi Cancer Ctr. Research Institute (Japan); **Takayuki Kitasaka,** Aichi Institute of Technology (Japan); **Masahiro Oda, Kensaku Mori,** Nagoya Univ. (Japan)

13408-63 • 5:30 PM - 7:00 PM
Novel view synthesis using neural radiance fields for laparoscopic surgery navigation
Author(s): **Nati Nawawithan,** The Univ. of Texas at Dallas (United States); **James Yu,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Kelden Pruitt,** The Univ. of Texas at Dallas (United States); **Baowei Fei,** The Univ. of Texas at Dallas (United States), The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

13408-64 • 5:30 PM - 7:00 PM
OpAssist an intelligent virtual assistant for laparoscopic prostatectomy
Author(s): **António R. Faria,** 2AI Applied Artificial Intelligence Lab. (Portugal), Technological Univ. of the Shannon (Ireland); **Nuno Rodrigues,** 2AI Applied Artificial Intelligence Lab. (Portugal), Instituto de Investigação em Ciências da Vida e Saúde , Univ. do Minho (Portugal); **Estevão Lima,** Instituto de Investigação em Ciências da Vida e Saúde, Univ. do Minho (Portugal); **Patrick Murray,** Technological Univ. of the Shannon (Ireland); **Pedro G. Morais, João L. Vilaça,** 2AI Applied Artificial Intelligence Lab. (Portugal), Lab. Associado de Sistemas Inteligentes (LASI) (Portugal)

13408-65 • 5:30 PM - 7:00 PM
Harnessing FPGA for real-time AI-driven PET imaging
Author(s): **Spencer Balliet**, **Kimia Gholami,** Univ. of California, Santa Cruz (United States); **Abi Farsoni,** Oregon State Univ. (United States); **Shiva Abbaszadeh,** Univ. of California, Santa Cruz (United States)

13408-66 • 5:30 PM - 7:00 PM
Dynamic trocar-point for automatic laparoscopic camera control
Author(s): **Sérgio Pereira,** Instituto Politécnico do Cávado e do Ave (Portugal), Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Medicina, Univ. do Minho (Portugal); **Fernando Veloso**, **Pedro G. Morais,** Instituto Politécnico do Cávado e do Ave (Portugal); **Lukas R. Buschle,** Karl Storz SE & Co. KG (Germany); **Estevão Lima,** Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Medicina, Univ. do Minho (Portugal); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal)

13408-67 • 5:30 PM - 7:00 PM
Intuitive control of a transesophageal probe through a novel electromechanical robotic system
Author(s): **Bruno Oliveira**, **Helena R. Torres,** 2AI Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal); **Fernando Veloso,** 2AI Applied Artificial Intelligence Lab. (Portugal); **Pedro G. Morais,** 2AI Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal); **João L. Vilaça,** 2AI Applied Artificial Intelligence Lab. (Portugal), Instituto Politécnico do Cávado e do Ave (Portugal)

13408-68 • 5:30 PM - 7:00 PM
An accessible six-axis testbed for image-guided robotics research
Author(s): **Coleman Farvolden,** Queen's Univ. (Canada); **Kian Hashtrudi-Zaad,** Univ. of Toronto (Canada); **Laura Connolly**, **Colton Barr, Gabor Fichtinger,** Queen's Univ. (Canada)

13408-69 • 5:30 PM - 7:00 PM
Predicting electrically evoked action potentials in image-based cochlear implants models using ResNet
Author(s): **Minh Q. Vu**, **Erin L. Bratu, Jack H. Noble,** Vanderbilt Univ. (United States)

13408-70 • 5:30 PM - 7:00 PM
Optimizing surgical treatment of hip disease utilizing a Bayesian approach informed by gait-simulated cartilage energy
Author(s): **Brandon Nunley,** The Univ. of Texas at Austin (United States); **Edward Mulligan,** Tufts Univ. (United States); **Avneesh Chhabra,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Joel Wells,** Baylor Scott & White Health (United States); **Nicholas Fey,** The Univ. of Texas at Austin (United States)

13408-71 • 5:30 PM - 7:00 PM
Digital twin modeling and machine-learning frameworks for forecasting multiple microwave ablation volumes
Author(s): **Frankangel Servin**, **Jarrod Collins**, **Jon S. Heiselman**, **Virginia B. Planz**, **Soheil Kolouri**, **Daniel B. Brown, Michael I. Miga,** Vanderbilt Univ. (United States)

13408-72 • 5:30 PM - 7:00 PM
A new dynamic kidney phantom model for simulating minimally invasive percutaneous interventions
Author(s): **Simão Valente**, **Nuno Rodrigues,** Instituto Politécnico do Cávado e do Ave (Portugal), Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Medicina, Univ. do Minho (Portugal); **Pedro G. Morais,** Instituto Politécnico do Cávado e do Ave (Portugal), Univ. do Minho (Portugal); **Andreas Fritz**, **Lucas R. Bushcle,** Karl Storz SE & Co. KG (Germany); **Estevão Lima,** Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Medicina, Univ. do Minho (Portugal); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal), Univ. do Minho (Portugal)

13408-73 • 5:30 PM - 7:00 PM
Retina phantom model for hyperspectral imaging
Author(s): **Michelle D. Bryarly**, **Minh H. Tran**, **Arrsh Ali, Baowei Fei,** The Univ. of Texas at Dallas (United States)

13408-74 • 5:30 PM - 7:00 PM
Polyvinyl alcohol (PVA) cryogels: preparation and multimodal imaging applications
Author(s): **Olivia Qi,** Western Univ. (Canada); **Terry M. Peters,** Robarts Research Institute (Canada); **John Moore,** Archetype BioMedical Inc. (Canada); **Elvis Chen,** Robarts Research Institute (Canada)

13408-75 • 5:30 PM - 7:00 PM
Dealing with segmentation errors in needle reconstruction for MRI-guided brachytherapy
Author(s): **Vangelis Kostoulas,** Leiden Univ. Medical Ctr. (Netherlands); **Arthur Guijt,** Ctr. Wiskunde & Informatica (Netherlands); **Ellen Kerkhof,** Leiden Univ. Medical Ctr. (Netherlands); **Bradley R. Pieters,** Amsterdam UMC (Netherlands); **Peter A. N. Bosman,** Ctr. Wiskunde & Informatica (Netherlands); **Tanja Alderliesten,** Leiden Univ. Medical Ctr. (Netherlands)

13408-76 • 5:30 PM - 7:00 PM
Interactive deep learning-based interface for separable subcortical anatomy segmentation.
Author(s): **Enora Giffard,** Univ. de Rennes 1 (France); **Pierre Jannin, John S.H. Baxter,** Universite de Rennes. (France)

13408-77 • 5:30 PM - 7:00 PM
Multistage ensemble optimization for articulated 2D-3D medical image registration in image-guided wrist surgery
Author(s): **Ata Soloukibashiz**, **Gianni Allebosch**, **Hiêp Quang Luong**, **Peter Veelaert**, **Brian G. Booth,** Univ. Gent (Belgium); **Matthias Vanhees,** AZ Monica Hospitals (Belgium)

13408-78 • 5:30 PM - 7:00 PM
SAM-mixed network for polyp segmentation
Author(s): **Zhouning Lu**, **Xiongbiao Luo**, **Jianwei Yang, Xiangtao Du,** Xiamen Univ. (China)

13408-79 • 5:30 PM - 7:00 PM
A hybrid deep-learning model for tumors and organs segmentation in cervical cancer using Kolmogorov-Arnold convolutions
Author(s): **Bilel Daoud,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Ali Nilforoush,** Univ. of Virginia (United States); **Androniki Mitroua**, **Austin H. Castelo**, **Mais Al Taie**, **Aradhana M. Venkatesan**, **Ann H. Klopp, Kristy K. Brock,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

13408-80 • 5:30 PM - 7:00 PM
Evaluation of self- and weakly-supervised training strategies for atlas-based segmentation of the epitympanum surface in CT images using DABS-MS
Author(s): **Hannah G. Mason, Jack H. Noble,** Vanderbilt Univ. (United States)

13408-81 • 5:30 PM - 7:00 PM
Empirical comparison of self-configuring and foundational deep-learning segmentation models for identifying the anal sphincter complex and perianal fistulas on pelvic MRI
Author(s): **Atreya Sridharan**, **Satish E. Viswanath**, **Mohsen Hariri**, **Michael Kong**, **Brennan Flannery**, **Thomas DeSilvio,** Case Western Reserve Univ. (United States); **Anusha Elumalai**, **Addie Lovato**, **Camila Maneiro**, **Parakkal Deepak**, **David Ballard**, **Jalpa Devi**, **Aravinda Ganapath,** Washington Univ. in St. Louis (United States); **Alvin T. George,** The Univ. of Chicago (United States)

13408-82 • 5:30 PM - 7:00 PM
FedKBP: federated dose prediction framework for knowledge-based planning in radiation therapy
Author(s): **Jingyun Chen,** Columbia Univ. Irving Medical Ctr. (United States); **Martin King,** Brigham and Women's Hospital, Harvard Medical School (United States); **Yading Yuan,** Columbia Univ. Irving Medical Ctr. (United States), Data Science Institute, Columbia Univ. (United States)

13408-83 • 5:30 PM - 7:00 PM
High-dose-rate brachytherapy planning with dendrite cross-attention UNet
Author(s): **Sourav Saini**, **Yawen Wei**, **Jingzhao Rong, Xiaofeng Liu,** Yale Univ. (United States)

13408-84 • 5:30 PM - 7:00 PM
Deep reinforcement learning-based radiotherapy machine parameter optimization with a multitask policy network
Author(s): **Lina Mekki**, **William T. Hrinivich, Junghoon Lee,** Johns Hopkins Univ. (United States)

13408-85 • 5:30 PM - 7:00 PM
C-arm CT/SPECT system for online adaptive brachytherapy: design and experimental validation
Author(s): **Saerom Sung**, **Yong Hyun Chung,** Yonsei Univ. (Korea, Republic of); **Hyemi Kim**, **Sei Hwan You,** Wonju Severance Christian Hospital (Korea, Republic of); **Chul Hee Min,** Yonsei Univ. (Korea, Republic of); **Hyun Joon Choi,** Wonju Severance Christian Hospital, Yonsei Univ. (Korea, Republic of)

13408-86 • 5:30 PM - 7:00 PM
Synthesizing decomposed tumor images with a patient-specific conditional diffusion model to enhance tumor contrast for x-ray-guided radiotherapy
Author(s): **Junbo Peng,** Emory Univ. (United States); **Mojtaba Safari**, **Richard L. J. Qiu**, **Justin Roper,** Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Xiaofeng Yang,** Emory Univ. (United States)

13408-87 • 5:30 PM - 7:00 PM
Exploring kinematic indices from 4DCT in radiation-induced lung injury
Author(s): **Sunder Neelakantan,** Texas A&M Univ. (United States); **Mostafa Ismail,** Univ. of Pennsylvania (United States); **Tanmay Mukherjee**, **Kyle J. Myers,** Texas A&M Univ. (United States); **Rahim Rizi,** Univ. of Pennsylvania (United States); **Reza Avazmohammadi,** Texas A&M Univ. (United States)

13408-88 • 5:30 PM - 7:00 PM
Generating synthetic CT from CBCT using a patient-specific diffusion model for CBCT-guided adaptive radiotherapy
Author(s): **Xiaoqian Chen**, **Richard L. J. Qiu,** The Winship Cancer Institute of Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Chih-Wei Chang**, **Xuxin Chen**, **Joseph W. Shelton**, **Aparna H. Kesarwala, Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States)

13408-89 • 5:30 PM - 7:00 PM
Hybrid foundation models: An investigation of foundation anatomy model and foundation segmentation model (FAM-FSM) on thoracic CT images for radiation therapy planning
Author(s): **Yubing Tong,** Univ. of Pennsylvania (United States); **Lipeng Xie,** Univ. of Pennsylvania (United States), Zhengzhou Univ. (China); **Jayaram K. Udupa**, **Dewey Odhner,** Univ. of Pennsylvania (United States); **Tiange Liu,** Univ. of Pennsylvania (United States), Univ. of Science and Technology Beijing (China); **Drew A. Torigian,** Univ. of Pennsylvania (United States)

13408-90 • 5:30 PM - 7:00 PM
Effects of scar architecture on cardiac strains in myocardial infarction
Author(s): **Vahid Naeini**, **Seyed Babak Peighambari**, **Rana Raza Mehdi**, **Emilio A. Mendiola**, **Tanmay Mukherjee, Reza Avazmohammadi,** Texas A&M Univ. (United States)

13408-91 • 5:30 PM - 7:00 PM
Off pump coronary artery bypass graft surgical simulation development
Author(s): **James Krizsan**, **John Moore,** Robarts Research Institute (Canada); **Charles Yuan,** Western Univ. (Canada); **Gianluigi Bisleri,** St. Michael's Hospital (Canada), Univ. of Toronto (Canada); **Terry M. Peters, Elvis Chen,** Robarts Research Institute (Canada), Western Univ. (Canada)

13408-92 • 5:30 PM - 7:00 PM
Validation of automatic lesion measurement from delayed contrast enhanced MRI in ventricular myocardium following proton beam irradiation in swine
Author(s): **Taro Koya**, **Tatsuhiko Hirao**, **Amanda J. Deisher**, **Laura K. Newman**, **Jon J. Kruse**, **Dean Shumway**, **Kenneth W. Merrell**, **Douglas L. Packer**, **Konstantinos Siontis, Maryam E. Rettmann,** Mayo Clinic (United States)

13408-93 • 5:30 PM - 7:00 PM
A deep-learning strategy for automatic sizing of the left atrial appendage occluding device in 2D transesophageal echocardiography images
Author(s): **Rafael Fernandes**, **João L. Vilaça,** 2AI Applied Artificial Intelligence Lab. (Portugal), Instituto Politécnico do Cávado e do Ave (Portugal); **Luís C. N. Barbosa**, **António Real,** 2AI Applied Artificial Intelligence Lab. (Portugal); **Yiting Fan,** Shanghai Jiao Tong Univ. (China); **Yu Fei**, **Alex P. W. Lee,** The Chinese Univ. of Hong Kong (China); **Pedro G. Morais,** 2AI Applied Artificial Intelligence Lab. (Portugal), Instituto Politécnico do Cávado e do Ave (Portugal)

13408-94 • 5:30 PM - 7:00 PM
Reinforcement learning for navigation in percutaneous coronary arteries interventions
Author(s): **Serena Elzein, Luc Duong,** Ecole de Technologie Supérieure (Canada)

13408-95 • 5:30 PM - 7:00 PM
Association between respiratory volumes estimated from free-breathing dynamic MRI and sagittal spinal curvature in pediatric patients with thoracic insufficiency syndrome
Author(s): **Shiva Shaghaghi**, **Jayaram K. Udupa**, **Yubing Tong**, **Yusuf Akhtar**, **Mahdie Hosseini**, **Mostafa Al-Noury**, **Caiyun Wu,** Univ. of Pennsylvania (United States); **Lipeng Xie,** The Children's Hospital of Philadelphia (United States); **You Hao**, **Sara Hassani,** Univ. of Pennsylvania (United States); **Samantha Gogel**, **David M. Biko**, **Oscar H. Mayer**, **Joseph M. McDonough**, **Patrick J. Cahill**, **Jason B. Anari,** The Children's Hospital of Philadelphia (United States); **Drew A. Torigian,** Univ. of Pennsylvania (United States)

13408-96 • 5:30 PM - 7:00 PM
A quantitative approach of evaluating clubfoot severity and progression: a MATLAB application utilizing photogrammetry scans
Author(s): **Ayush Nankani,** Children's National Medical Ctr. (United States); **Tyler Salvador,** Children's National Health System (United States); **Elizabeth Fischer,** Children's National Hospital (United States); **Sean Tabaie**, **Matthew Oetgen,** Children's National Health System (United States); **Kevin Cleary,** Children's National Hospital (United States); **Reza Monfaredi,** Children's National Health System (United States)

13408-97 • 5:30 PM - 7:00 PM
Developing a machine-learning algorithm to predict the outcome of the biocreative alveolar molding plate treatment in infants with unilateral cleft lip and palate: a pilot study
Author(s): **Artur Agaronyan,** Stanford Univ. (United States), Children's National Hospital (United States); **Marie Olivares,** Lucile Packard Children's Hospital (United States); **Syed Anwar,** Children's National Hospital (United States), The George Washington Univ. (United States); **HyeRan Choo,** Stanford Univ. (United States), Lucile Packard Children's Hospital (United States)

13408-98 • 5:30 PM - 7:00 PM
Dynamic MRI-guided surgery planning and treatment evaluation for pediatric patients with TIS: database, methodology, results, and analysis
Author(s): **Yubing Tong**, **Jayaram K. Udupa,** Univ. of Pennsylvania (United States); **Joseph M. McDonough,** The Children's Hospital of Philadelphia (United States); **Caiyun Wu**, **Lipeng Xie**, **You Hao,** Univ. of Pennsylvania (United States); **Samantha Gogel**, **Oscar H. Mayer**, **David M. Biko,** The Children's Hospital of Philadelphia (United States); **Drew A. Torigian,** Univ. of Pennsylvania (United States); **Patrick J. Cahill, Jason B. Anari,** The Children's Hospital of Philadelphia (United States)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: CARDIAC APPLICATIONS

18 February 2025 • 10:30 AM - 12:10 PM | Town & Country D
Session Chair(s): **Cristian A. Linte**, Rochester Institute of Technology (United States); **David R. Holmes**, Mayo Clinic (United States)

13408-16 • 10:30 AM - 10:50 AM
Integrated multi-modal image fusion and quantification for advanced visualization in mitral valve surgery
Author(s): **Matthias Ivantsits**, **Markus Huellebrand**, **Lars Walczak**, **Dustin Greve**, **Isaac Wamala**, **Simon Sündermann**, **Jörg Kempfert**, **Volkmar Falk, Anja Hennemuth,** Charité Universitätsmedizin Berlin (Germany)

13408-17 • 10:50 AM - 11:10 AM
Image style translation for improved imaging of mitral valve surgery training phantoms
Author(s): **Emma Zhang**, **Ariana Rushlow,** Western Univ. (Canada); **Wenyao Xia**, **John Moore,** Robarts Research Institute, Western Univ. (Canada); **Gianluigi Bisleri,** Univ. of Toronto (Canada); **Terry M. Peters**, **Elvis C. S. Chen, Patrick K. Carnahan,** Robarts Research Institute, Western Univ. (Canada)

13408-18 • 11:10 AM - 11:30 AM
Evaluation of eye-tracking capabilities in Apple Vision Pro for training in hybrid ventricular septal defect procedures
Author(s): **Emma Tomiuk,** Ecole de Technologie Supérieure (Canada); **Joaquim Miró,** CHU Sainte-Justine (Canada); **Luc Duong,** Ecole de Technologie Supérieure (Canada)

13408-19 • 11:30 AM - 11:50 AM
Assessing the performance of the DINOv2 self-supervised learning vision transformer model for the segmentation of the left atrium from MRI images
Author(s): **Bipasha Kundu**, **Bidur Khanal**, **Richard Simon, Cristian A. Linte,** Rochester Institute of Technology (United States)

13408-20 • 11:50 AM - 12:10 PM
Proteomics-driven radiomic signatures of myocardial fibrosis in end-stage kidney disease via cardiac MR T1 maps
Author(s): **Gargi Vijayan Pillai**, **Prathyush Chirra**, **Murad Labbad,** Case Western Reserve Univ. (United States); **Amit Gupta,** Univ. Hospitals Cleveland Medical Ctr. (United States); **Mirela Dobre,** Univ. Hospitals of Cleveland (United States); **Satish E. Viswanath, Charlems Alvarez-Jimenez,** Case Western Reserve Univ. (United States)

Lunch Break 12:10 PM - 1:40 PM

SESSION 5: IMAGE-GUIDED PROCEDURES, ROBOTIC INTERVENTIONS, AND ULTRASONIC IMAGING/TOMOGRAPHY: JOINT SESSION WITH CONFERENCES 13408 AND 13412

18 February 2025 • 1:40 PM - 3:00 PM | Town & Country D
Session Chair(s): **Jessica R. Rodgers**, Univ. of Manitoba (Canada); **Haichong Kai Zhang**, Worcester Polytechnic Institute (United States)

13412-7 • 1:40 PM - 2:00 PM
Modular ultrasound for flexible longitudinal patient monitoring: feasibility study
Author(s): **Ananya Tandri, Jeeun Kang,** Johns Hopkins Univ. (United States)

13408-21 • 2:00 PM - 2:20 PM
Design and evaluation of a prototype radio-ultrasound guided system for simultaneous, dual-modality intraoperative localization
Author(s): **Sydney Wilson**, **Hristo N. Nikolov**, **Amal Aziz**, **Aaron Fenster, David W. Holdsworth,** Western Univ. (Canada)

13412-8 • 2:20 PM - 2:40 PM
A feasibility study: Freehand 3D volumetric reconstruction ultrasound scanning for midline measurement in adults
Author(s): **Bharat Mathur**, **Ravi U. Patel,** The Univ. of Texas at Austin (United States); **Mia Z. Ferry,** Wake Forest Univ. School of Medicine (United States); **Hamidreza Saber,** Dell Medical School (United States); **Aarti Sarwal,** Virginia Commonwealth Univ. (United States); **Ann M. Fey,** The Univ. of Texas at Austin (United States)

13408-22 • 2:40 PM - 3:00 PM
Augmented reality in ultrasound-guided interventions: an accuracy and precision assessment study
Author(s): **Helena Correia**, **Simão Valente**, **Fernando Veloso,** Instituto Politécnico do Cávado e do Ave (Portugal); **Pedro G. Morais**, **Duarte Duque,** Instituto Politécnico do Cávado e do Ave (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal); **Siobhan Moane,** Technological Univ. of the Shannon (Ireland); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal)

Coffee Break 3:00 PM - 3:40 PM

SESSION 6: PHYSICS/IMAGE-GUIDED PROCEDURES: JOINT SESSION WITH CONFERENCES 13405 AND 13408

18 February 2025 • 3:40 PM - 5:20 PM | Town & Country B
Session Chair(s): **Shuai Leng**, Mayo Clinic (United States); **Shuo Li**, Case Western Reserve Univ. (United States)

13405-26 • 3:40 PM - 4:00 PM
Learning-based dual-domain rigid motion estimation in interventional C-arm cone-beam CT
Author(s): **Manuela Goldmann,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Siemens Healthineers (Germany); **Alexander Preuhs**, **Michael Manhart**, **Markus Kowarschik,** Siemens Healthineers (Germany); **Andreas Maier,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13408-23 • 4:00 PM - 4:20 PM
Image-based metrics of arterial embolization endpoints using an in vitro model
Author(s): **Altea Lorenzon**, **Pallavi Ekbote**, **Prateek Gowda,** Johns Hopkins Univ. (United States); **Tina Ehtiati,** Siemens Healthineers (United States); **J. Webster Stayman, Clifford R. Weiss,** Johns Hopkins Univ. (United States)

13405-27 • 4:20 PM - 4:40 PM
In silico study of quantitative digital subtraction angiography (qDSA) blood velocity measurements versus catheter geometry
Author(s): **Marlin E. Keller**, **Martin G. Wagner**, **Paul F. Laeseke, Michael A. Speidel,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13408-24 • 4:40 PM - 5:00 PM
AI-based spectral metal artifact reduction algorithm for improved iodine detection in virtual monoenergetic images: A quantitative assessment for interventional oncology applications
Author(s): **Andrea Ferrero,** Mayo Clinic (United States); **Wenchao Cao,** Thomas Jefferson Univ. (United States); **Andrew Missert, Christopher Favazza,** Mayo Clinic (United States)

13405-28 • 5:00 PM - 5:20 PM
Can we assess brain perfusion even when DSA images are contaminated by motion artifacts?
Author(s): **Katsuyuki Taguchi**, **Shalini Subramanian**, **Andreia V. Faria,** Johns Hopkins Univ. (United States); **William P. Segars,** Duke Univ. (United States)

NIH/NIBIB SESSION: FUNDING OPPORTUNITIES AND GRANT WRITING TIPS FOR NEW INVESTIGATORS

18 February 2025 • 5:30 PM - 6:45 PM | Town & Country D
Session Chair(s): **John M. Sabol**, Konica Minolta Healthcare Americas, Inc. (United States); **Maryam E. Rettmann**, Mayo Clinic (United States)

View Full Details: spie.org/nih-nibb-session

5:30 PM – 6:00 PM
Navigating the NIH Grant System and Tips for Preparing Successful and Competitive NIH Grant Applications
Speaker: **Behrouz Shabestari**, Director, NIBIB National Technology Centers Program; Director, Division of Health Informatics Technologies (DHIT), NIBIB

6:00 PM – 6:15 PM
Scientific Program and Funding Opportunities at NIBIB
Speaker: **Rui Pereira de Sá**, Program Director, Division of Health Informatics Technologies (DHIT), NIBIB

6:15 PM – 6:30 PM
Speaker: **Eleni Liapi**, Scientific Review Officer, National Institutes of Health (United States)

6:30 PM – 6:45 PM
Question and Answers

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: SURGICAL DATA SCIENCE

19 February 2025 • 10:30 AM - 12:10 PM | Town & Country D
Session Chair(s): **Pierre Jannin**, Lab. Traitement du Signal et de l'Image (France); **Jeffrey Harold Siewerdsen**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

13408-25 • 10:30 AM - 10:50 AM
Enhanced sequential picking strategy with hyperparameter optimization for efficient surgical phase recognition
Author(s): **Guannan Yao**, **Yuichiro Hayashi**, **Masahiro Oda,** Nagoya Univ. (Japan); **Kazunari Misawa,** Aichi Cancer Ctr. Research Institute (Japan); **Kensaku Mori,** Nagoya Univ. (Japan), National Institute of Informatics (Japan)

13408-26 • 10:50 AM - 11:10 AM
Benchmarking and enhancing surgical phase recognition models for robot-assisted esophagectomy
Author(s): **Yiping Li,** Technische Univ. Eindhoven (Netherlands); **Romy C. van Jaarsveld,** Univ. Medical Ctr. Utrecht (Netherlands); **Ronald de Jong**, **Jasper Bongers,** Technische Univ. Eindhoven (Netherlands); **Gino M. Kuiper**, **Richard van Hillegersberg**, **Jelle P. Ruurda,** Univ. Medical Ctr. Utrecht (Netherlands); **Marcel Breeuwer, Yasmina Al Khalil,** Technische Univ. Eindhoven (Netherlands)

13408-27 • 11:10 AM - 11:30 AM
Statistical surgical process modeling of performance and workflow in bronchoscopy
Author(s): **Tatiana Rypinski**, **Anshuj Deva**, **Bhavin Soni**, **Parvathy Pillai,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Gouthami Chintalapani**, **Gerhard Kleinszig,** Siemens Healthineers (Germany); **David Ost**, **Horiana Grosu**, **Roberto Casal, Jeffrey H. Siewerdsen,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

13408-28 • 11:30 AM - 11:50 AM
Automated skill evaluation method for surgical images using optical flow and attention mechanism
Author(s): **Yuxuan Feng**, **Yuichiro Hayashi**, **Masahiro Oda,** Nagoya Univ. (Japan); **Takayuki Kitasaka,** Aichi Institute of Technology (Japan); **Akihiro Yasui**, **Chiyoe Shirota**, **Hiroo Uchida, Kensaku Mori,** Nagoya Univ. (Japan)

13408-29 • 11:50 AM - 12:10 PM
GAN-Based realistic phantoms for a multi-domain approach in surgical action detection
Author(s): **Nuno Rodrigues,** Instituto Politécnico do Cávado e do Ave (Portugal), Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Medicina, Univ. do Minho (Portugal); **Helena R. Torres**, **Pedro G. Morais,** Instituto Politécnico do Cávado e do Ave (Portugal); **Lukas R. Buschle,** Karl Storz SE & Co. KG (Germany); **Estevão Lima,** Instituto de Investigação em Ciências da Vida e da Saúde, Escola de Medicina, Univ. do Minho (Portugal); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal)

Lunch Break 12:10 PM - 1:40 PM

SESSION 8: ROBOTIC INTERVENTIONS

19 February 2025 • 1:40 PM - 3:00 PM | Town & Country D
Session Chair(s): **Robert J. Webster**, Vanderbilt Univ. (United States); **Ziv R. Yaniv**, National Institute of Allergy and Infectious Diseases (United States)

13408-30 • 1:40 PM - 2:00 PM
Design of a probe for directional thermal ablation through a curved entry path in the brain
Author(s): **John E. Peters**, **Nithin S. Kumar**, **Abby M. Grillo**, **Daniel S. Esser,** Vanderbilt Univ. (United States); **Joseph Neimat,** Univ. of Louisville Health (United States); **Eric J. Barth, Robert J. Webster,** Vanderbilt Univ. (United States)

13408-31 • 2:00 PM - 2:20 PM
Robotic soft tissue tracking using an inexpensive bench-top robot and electromagnetics
Author(s): **Kian Hashtrudi-Zaad,** Univ. of Toronto (Canada); **Coleman Farvolden**, **Laura Connolly**, **Colton Barr, Gabor Fichtinger,** Queen's Univ. (Canada)

13408-32 • 2:20 PM - 2:40 PM
Comparing freehand and robotic techniques for standard scan plane localization in ultrasound imaging
Author(s): **Yicheng Hu**, **Yixuan Huang**, **Craig K. Jones**, **Lauren Shepard**, **Ahmed Ghazi,** Johns Hopkins Univ. (United States); **Burcu Basar**, **Patrick A. Helm,** Medtronic, Inc. (United States); **Ali Uneri,** Johns Hopkins Univ. (United States)

13408-33 • 2:40 PM - 3:00 PM
Benchmarking pretrained attention-based models for real-time recognition in robot-assisted esophagectomy
Author(s): **Ronald de Jong**, **Yasmina al Khalil**, **Tim Jaspers,** Technische Univ. Eindhoven (Netherlands); **Romy C. van Jaarsveld**, **Gino M. Kuiper,** Univ. Medical Ctr. Utrecht (Netherlands); **Yiping Li,** Technische Univ. Eindhoven (Netherlands); **Richard van Hillegersberg**, **Jelle P. Ruurda,** Univ. Medical Ctr. Utrecht (Netherlands); **Marcel Breeuwer, Fons van der Sommen,** Technische Univ. Eindhoven (Netherlands)

Coffee Break 3:00 PM - 3:30 PM

SESSION 9: CANCER INTERVENTIONS

19 February 2025 • 3:30 PM - 5:30 PM | Town & Country D
Session Chair(s): **Junghoon Lee**, Johns Hopkins Univ. (United States); **Jack H. Noble**, Vanderbilt Univ. (United States)

13408-34 • 3:30 PM - 3:50 PM
Nonrigid alignment of en bloc tissue specimen to resection bed to enhance correspondence for re-resection guidance
Author(s): **Qingyun Yang**, **Ayberk Acar**, **Morgan J. Ringel**, **Jon S. Heiselman,** Vanderbilt Univ. (United States); **Michael Topf,** Vanderbilt Univ. Medical Ctr. (United States); **Michael I. Miga, Jie Ying Wu,** Vanderbilt Univ. (United States)

13408-35 • 3:50 PM - 4:10 PM
Addressing biases in gastric cancer diagnosis through generative models and vision-based surface tactile sensing
Author(s): **Siddhartha Kapuria,** The Univ. of Texas at Austin (United States); **Naruhiko Ikoma,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Sandeep Chinchali, Farshid Alambeigi,** The Univ. of Texas at Austin (United States)

13408-37 • 4:10 PM - 4:30 PM
Longitudinal imaging markers for pancreas cancer tumor response via Eshelby biomechanics
Author(s): **Jon S. Heiselman,** Memorial Sloan-Kettering Cancer Ctr. (United States), Vanderbilt Univ. (United States); **Natally Horvat,** Mayo Clinic (United States); **Maria El Homsi,** Memorial Sloan Kettering Cancer Ctr. (United States); **Brett L. Ecker,** Rutgers Cancer Institute of New Jersey (United States); **Eileen M. O'Reilly**, **T. Peter Kingham**, **Kevin C. Soares**, **Michael I. D'Angelica**, **William R. Jarnagin**, **Richard K. G. Do**, **Alice C. Wei, Jayasree Chakraborty,** Memorial Sloan-Kettering Cancer Ctr. (United States)

13408-38 • 4:30 PM - 4:50 PM
Uncertainty-aware segmentation of the cervical cancer high-risk clinical target volume from T2-weighted MRI using evidential deep learning
Author(s): **Gayoung Kim**, **Akila N. Viswanathan**, **Rohini Bhatia**, **Yosef Landman-Gigi**, **Ehud J. Schmidt, Junghoon Lee,** Johns Hopkins Medicine (United States)

13408-39 • 4:50 PM - 5:10 PM
Deep learning xerostomia prediction model with anatomy normalization and high-resolution class activation map
Author(s): **Bohua Wan**, **Todd McNutt**, **Harry Quon, Junghoon Lee,** Johns Hopkins Univ. (United States)

13408-36 • 5:10 PM - 5:30 PM
Registration between MRI and spot mammograms: results and applicability for x-ray guided biopsy of MRI only lesions
Author(s): **Sarah Said,** Karlsruher Institut für Technologie (Germany); **Paola Clauser,** Medizinische Univ. Wien (Austria); **Nicole Ruiter,** Karlsruher Institut für Technologie (Germany); **Pascal Baltzer,** Medizinische Univ. Wien (Austria); **Torsten Hopp,** Karlsruher Institut für Technologie (Germany)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 10: IMAGE-GUIDED LIVER INTERVENTIONS

20 February 2025 • 10:30 AM - 12:10 PM | Town & Country D
Session Chair(s): **Michael I. Miga**, Vanderbilt Univ. (United States); **Terry Yoo**, The Univ. of Maine (United States)

13408-40 • 10:30 AM - 10:50 AM
Personalized antenna pathways for enhancing safety and efficacy: optimizing microwave ablation outcomes in hepatic tumor treatments
Author(s): **Amirreza Heshmat**, **Rance Tino**, **Caleb S. O'Connor**, **Jessica Albuquerque Marques Silva**, **Iwan Paolucci**, **Eugene J. Koay**, **Kyle A. Jones**, **Bruno C. Odisio, Kristy K. Brock,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

13408-41 • 10:50 AM - 11:10 AM
Enhanced necrosis visualization in liver ablation monitoring with fiber artifact removal: a cadaver study
Author(s): **Yanbo Hua**, **Shang Gao**, **Xihan Ma,** Worcester Polytechnic Institute (United States); **Sharath K. Bhagavatula,** Brigham and Women's Hospital (United States), Harvard Medical School (United States); **Guigen Liu**, **Oliver Jonas,** Brigham and Women's Hospital (United States); **Haichong K. Zhang,** Worcester Polytechnic Institute (United States)

13408-42 • 11:10 AM - 11:30 AM
Respiratory motion control during stereotactic thermal ablation of malignant liver tumors: clinical solutions to a technical problem
Author(s): **Iwan Paolucci**, **Jessica Albuquerque Marques Silva**, **Kyle A. Jones**, **Joseph Ruiz**, **Timothy Jackson**, **Mi Wang**, **Kristy K. Brock**, **Jens Tan, Bruno C. Odisio,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

13408-43 • 11:30 AM - 11:50 AM
Gravity: weighty attributes in surgical simulation
Author(s): **Annie Benson**, **Kyvia Pereira, Michael I. Miga,** Vanderbilt Univ. (United States)

13408-44 • 11:50 AM - 12:10 PM
Assessment of a mini stereotactic guidance system for percutaneous focal liver tumour ablation
Author(s): **Joeana N. Cambranis Romero**, **Terry M. Peters, Elvis C. S. Chen,** Western Univ. (Canada)

CONFERENCE 13409

Image Perception, Observer Performance, and Technology Assessment

16 - 19 February 2025 | Palm 7

Conference Chair(s): **Mark A. Anastasio,** Univ. of Illinois (United States); **Jovan G. Brankov,** Illinois Institute of Technology (United States)

Program Committee: **Craig K. Abbey,** Univ. of California, Santa Barbara (United States); **Stephen Adamo,** Univ. of Central Florida (United States); **Susan M. Astley,** The Univ. of Manchester (United Kingdom); **Jongduk Baek,** Yonsei Univ. (Korea, Republic of); **François O. Bochud,** Ctr. Hospitalier Univ. Vaudois (Switzerland); **Yan Chen,** The Univ. of Nottingham (United Kingdom); **Brandon D. Gallas,** U.S. Food and Drug Administration (United States); **Howard C. Gifford,** Univ. of Houston (United States); **Stephen L. Hillis,** The Univ. of Iowa (United States); **Elizabeth A. Krupinski,** Emory Univ. School of Medicine (United States); **Matthew A. Kupinski,** College of Optical Sciences, The Univ. of Arizona (United States); **Miguel A. Lago,** U.S. Food and Drug Administration (United States); **Sarah J. Lewis,** The Univ. of Sydney (Australia); **Mark F. McEntee,** Univ. College Cork (Ireland); **Claudia R. Mello-Thoms,** Univ. Iowa Carver College of Medicine (United States), Univ. of Pittsburgh (United States); **Robert M. Nishikawa,** Univ. of Pittsburgh (United States); **Ljiljana Platiša,** Univ. Gent (Belgium); **Ingrid S. Reiser,** The Univ. of Chicago (United States); **Frank W. Samuelson,** U.S. Food and Drug Administration (United States); **Sian Taylor-Phillips,** The Univ. of Warwick (United Kingdom); **Pontus A. Timberg,** Scanias Univ. Hospital (Sweden); **Weimin Zhou,** Shanghai Jiao Tong Univ. (China)

Sunday 16 February 2025

SPIE MEDICAL IMAGING AWARDS AND PLENARY

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A

Session Chair(s): **Joseph Y. Lo**, Carl E. Ravin Advanced Imaging Labs. (United States); **Cristian A. Linte**, Rochester Institute of Technology (United States)

View Full Details: spie.org/medical-imaging-awards-plenary

5:30 PM - 5:40 PM:
Symposium Chair Welcome and Best Student Paper Award announcement
First-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award
Sponsored by:
MIPS and SPIE

5:40 PM - 5:45 PM:
New SPIE Fellow acknowledgments
Each year, SPIE promotes Members as new Fellows of the Society. Join us as we recognize colleagues of the medical imaging community who have been selected.

5:45 PM - 5:50 PM:
SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging

13408-500 • 5:50 PM - 6:30 PM
Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions (Plenary Presentation)
Author(s): **Aaron Fenster,** Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

ALL-SYMPOSIUM WELCOME RECEPTION

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

View Full Details: spie.org/mi/welcome-reception

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

Monday 17 February 2025

MONDAY MORNING KEYNOTES

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country A
Session Chair(s): **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Mark A. Anastasio**, Univ. of Illinois (United States); **Shandong Wu**, Univ. of Pittsburgh (United States)

View Full Details: spie.org/monday-morning-keynotes

8:20 AM - 8:25 AM:
Welcome and introduction

8:25 AM - 8:30 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
- Physics of Medical Imaging Student Paper Award

13405-501 • 8:30 AM - 9:10 AM
Promoting innovation in your team: lessons learned from 40 years in medical imaging (Keynote Presentation)
Author(s): **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13409-502 • 9:10 AM - 9:50 AM
Designing AI for clinical imaging: the important role of model observers (Keynote Presentation)
Author(s): **Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13411-503 • 9:50 AM - 10:30 AM
Tackling the health AI paradox (Keynote Presentation)
Author(s): **Karandeep Singh,** UC San Diego Health (United States)

Coffee Break 10:30 AM - 11:00 AM

SESSION 1: OBSERVER PERFORMANCE

17 February 2025 • 11:00 AM - 12:10 PM | Palm 7
Session Chair(s): **Craig K. Abbey**, Univ. of California, Santa Barbara (United States); **Howard C. Gifford**, Univ. of Houston (United States)

13409-1 • 11:00 AM - 11:30 AM
Observer performance and eye-tracking variations as a function of AI output format *(Invited Paper)*
Author(s): **Elizabeth A. Krupinski**, **Marly van Assen**, **Carlo N. De Cecco**, **Siobhan Mullins,** Emory Univ. School of Medicine (United States); **Roy M. Gabriel**, **Mohammadreza Zandehshahvar**, **Nattakorn Kittisut**, **Ali Adibi,** Georgia Institute of Technology (United States); **Grayson L Baird,** Brown University (United States)

13409-3 • 11:30 AM - 11:50 AM
Mitigating visual hindsight bias in radiology: can education alter perceptual decision making?
Author(s): **Jacky Chen**, **Warren Reed, Ziba Gandomkar,** The Univ. of Sydney (Australia)

13409-4 • 11:50 AM - 12:10 PM
Capturing eye movements during ultrasound guided embryo transfer: first insights
Author(s): **Josselin Gautier**, **Kimberley Truyen**, **Ndeye Racky Sall,** Univ. de Rennes (France); **Solène Duros,** CHU Rennes (France); **Pierre Jannin,** Univ. de Rennes (France)

Lunch Break 12:10 PM - 1:30 PM

SESSION 2: BREAST

17 February 2025 • 1:30 PM - 3:20 PM | Palm 7
Session Chair(s): **Robert M. Nishikawa**, Univ. of Pittsburgh (United States); **Claudia R. Mello-Thoms**, Univ. Iowa Carver College of Medicine (United States)

13409-5 • 1:30 PM - 2:00 PM
The relationship between eye tracking features and transfer learning in modeling decision prediction of radiologists reading mammograms *(Invited Paper)*
Author(s): **Karthika Kelat**, **Sarah E. Gerard,** The Univ. of Iowa (United States); **Bulat Ibragimov,** Univ. of Copenhagen (Denmark); **Claudia Mello-Thoms,** The Univ. of Iowa (United States)

13409-6 • 2:00 PM - 2:20 PM
Performance of tomosynthesis vs mammography in women with a family history of breast cancer
Author(s): **Tong Li,** The Univ. of Sydney (Australia), The Daffodil Ctr. (Australia); **Yu-Ru Su,** Kaiser Permanente Washington Health Research Institute (United States); **Janie M. Lee,** Univ. of Washington School of Medicine (United States), Fred Hutchinson Cancer Ctr. (United States); **Ellen O'Meara,** Kaiser Permanente Washington Health Research Institute (United States); **Diana Miglioretti,** Univ. of California, Davis (United States); **Karla Kerlikowske,** Univ. of California, San Francisco (United States); **Louise Henderson,** The Univ. of North Carolina at Chapel Hill (United States); **Nehmat Houssami,** The Univ. of Sydney (Australia)

13409-7 • 2:20 PM - 2:40 PM
Interrogating expert observer performance in a BreastScreen Australia radiology cohort
Author(s): **Jayden B. Wells**, **Phyong D. Trieu**, **Dania Abu Awwad**, **Melissa L. Barron,** The Univ. of Sydney (Australia); **Sarah J. Lewis,** Western Sydney Univ. (Australia)

13409-8 • 2:40 PM - 3:00 PM
Adaptation effects on breast density judgements with blended stimuli
Author(s): **Craig K. Abbey,** Univ. of California, Santa Barbara (United States); **Mohana Parthasarathy,** Univ. of Nevada, Reno (United States); **Andriy Bandos**, **Margarita Zuley,** Univ. of Pittsburgh (United States); **Michael Webster,** Univ. of Nevada, Reno (United States)

13409-9 • 3:00 PM - 3:20 PM
AI performance in screening mammograms may improve through multi-resolution data augmentation
Author(s): **Zhengqiang Jiang**, **Ziba Gandomkar**, **Phuong D. Trieu**, **Seyedamir Tavakoli Taba**, **Melissa L. Barron, Sarah J. Lewis,** The Univ. of Sydney (Australia)

Coffee Break 3:20 PM - 3:40 PM

SESSION 3: MODEL OBSERVERS

17 February 2025 • 3:40 PM - 5:40 PM | Palm 7
Session Chair(s): **Elizabeth A. Krupinski**, Emory Univ. School of Medicine (United States); **Stephen H. Adamo**, Univ. of Central Florida (United States)

13409-10 • 3:40 PM - 4:00 PM
Anatomical texture impacts model observer detection performance: an inkjet-printed phantom study
Author(s): **Laura K. Evans,** Ctr. Hospitalier Univ. Vaudois (Switzerland), Univ. de Lausanne (Switzerland); **Paul Jahnke,** Charité Universitätsmedizin Berlin (Germany), Berlin Institute of Health (Germany); **François Bochud, Damien Racine,** Ctr. Hospitalier Univ. Vaudois (Switzerland), Univ. de Lausanne (Switzerland)

13409-11 • 4:00 PM - 4:20 PM
Using gradient of Lagrangian function to compute efficient channels for the ideal observer
Author(s): **Weimin Zhou,** Shanghai Jiao Tong Univ. (China)

13409-12 • 4:20 PM - 4:40 PM
Effects of feature selection and internal-noise levels for a search-capable model observer
Author(s): **Howard C. Gifford, Hongwei Lin,** Univ. of Houston (United States)

13409-13 • 4:40 PM - 5:00 PM
Combining image texture and morphological features in low-resource perception models for signal detection tasks
Author(s): **Diego Andrade**, **Hongwei Lin**, **Howard C. Gifford, Mini Das,** Univ. of Houston (United States)

13409-14 • 5:00 PM - 5:20 PM
Perceived color contrast metrics for clinical images
Author(s): **Jonas De Vylder,** Barco N.V. (Belgium); **Peter Ouillette,** Michigan Medicine (United States); **Bart Diricx**, **Johan Rostang**, **Tom Kimpe,** Barco N.V. (Belgium); **Mustafa Yousif,** Michigan Medicine (United States)

13409-15 • 5:20 PM - 5:40 PM
Assessment of cell nuclei AI foundation models in kidney pathology
Author(s): **Junlin Guo**, **Siqi Lu**, **Can Cui**, **Ruining Deng**, **Tianyuan Yao**, **Zhewen Tao**, **Yizhe Lin**, **Marilyn Lionts**, **Quan Liu**, **Juming Xiong,** Vanderbilt Univ. (United States); **Yu Wang**, **Shilin Zhao,** Vanderbilt Univ. Medical Ctr. (United States); **Catie Chang**, **Mitch M. Wilkes,** Vanderbilt Univ. (United States); **Mengmeng Yin**, **Haichun Yang,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

POSTERS - MONDAY

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/monday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 10:00 AM - 5:30 PM Monday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Monday. Judging may begin after this time. Posters must remain on display until the end of the Monday evening poster session, but may be left hanging until 1:00 PM Tuesday. After 1:00 PM on Tuesday, posters will be removed and discarded.

View poster presentation guidelines and set-up instructions at
https://spie.org/MI/Poster-Presentation-Guidelines

13409-34 • 5:30 PM - 7:00 PM
Assessment of an alpha version of Ommo tracking system in a surgical environment: a preliminary study
Author(s): **Pedro Lobo,** 2Ai Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal), LIFE, Technological Univ. of the Shannon (Ireland); **António Real,** 2Ai Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal), IDEAM, Technological Univ. of the Shannon (Ireland); **Patrick Murray,** LIFE, Technological Univ. of the Shannon (Ireland); **Pedro Morais, João Vilaça,** 2Ai Applied Artificial Intelligence Lab., Instituto Politécnico do Cávado e do Ave (Portugal)

13409-35 • 5:30 PM - 7:00 PM
Realtime dual camera localization and orientation tracking for calibrating magnetically navigated capsule endoscopy
Author(s): **John Bohatch, Yuankai Huo,** Vanderbilt Univ. (United States)

13409-36 • 5:30 PM - 7:00 PM
Weighted circle fusion: ensembling circle representation from different object detection results
Author(s): **Jialin Yue**, **Tianyuan Yao**, **Ruining Deng**, **Quan Liu**, **Juming Xiong**, **Junlin Guo,** Vanderbilt Univ. (United States); **Haichun Yang,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

13409-37 • 5:30 PM - 7:00 PM
Task-focused knowledge transfer from natural images for CT image quality assessment
Author(s): **Kazi Ramisa Rifa**, **Md. Atik Ahamed**, **Jie Zhang, Abdullah-Al-Zubaer Imran,** Univ. of Kentucky (United States)

13409-38 • 5:30 PM - 7:00 PM
Enhancing breast arterial calcification segmentation: a comparative study of AI and human reader variability
Author(s): **Wenbo Li**, **Jay Yoo**, **Yaru Tao**, **Shiva Mostafavi**, **Yumeng Zhang**, **Qiyu Zhang**, **Chandler Prasetyo**, **Huanjun Ding, Sabee Molloi,** Univ. of California, Irvine (United States)

13409-39 • 5:30 PM - 7:00 PM
Quantifying uncertainty in lung cancer segmentation with foundation models applied to mixed-domain datasets
Author(s): **Aneesh Rangnekar**, **Nishant Nadkarni**, **Jue Jiang, Harini Veeraraghavan,** Memorial Sloan-Kettering Cancer Ctr. (United States)

13409-40 • 5:30 PM - 7:00 PM
Improvement in breast lesion classification utilizing deep learning and treatment response assessment maps (TRAMs)
Author(s): **Jerry Z. Wang,** Plano West Senior High School (United States); **Bowen Jing,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Baowei Fei,** The Univ. of Texas at Dallas (United States)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: CAD AND PERCEPTION: JOINT SESSION WITH CONFERENCES 13407 AND 13409

18 February 2025 • 10:30 AM - 12:40 PM | Town & Country C
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom)

13409-16 • 10:30 AM - 11:00 AM
Does concurrent reading with AI lead to more false negative errors for cancers that are not marked by AI? *(Invited Paper)*
Author(s): **Robert M. Nishikawa,** Univ. of Pittsburgh (United States); **Jeffrey W. Hoffmeister,** iCAD, Inc. (United States); **Emily F. Conant,** Univ. of Pennsylvania (United States); **Jeremy M. Wolfe,** Brigham and Women's Hospital (United States)

13407-15 • 11:00 AM - 11:20 AM
Explainable unsupervised TNM category differentiation in PET images with deep texture analysis
Author(s): **Robert John**, **Mabela Budlla**, **Ian Ackerley,** Univ. of Surrey (United Kingdom); **Rhodri Smith,** Department of Radiology and Diagnostic Imaging, University of Alberta (Canada); **Andrew Robinson,** National Physical Lab. (United Kingdom); **Vineet Prakash**, **Manu Shastry,** The Royal Surrey County Hospital NHS Trust (United Kingdom); **Peter Strouhal,** Alliance Medical Ltd. (United Kingdom); **Kevin Wells,** Univ. of Surrey (United Kingdom)

13409-17 • 11:20 AM - 11:40 AM
Dual roles of calcification features in the Mirai mammographic breast cancer risk prediction model: early micro-calcification detection and identification of high-risk calcifications
Author(s): **Yao-Kuan Wang,** KU Leuven (Belgium); **Zan Klanecek,** Univ. of Ljubljana (Slovenia); **Tobias Wagner,** KU Leuven (Belgium); **Lesley Cockmartin,** Univ. Ziekenhuis Leuven (Belgium); **Nicholas W. Marshall,** Univ. Ziekenhuis Leuven (Belgium), KU Leuven (Belgium); **Andrej Studen,** Univ. of Ljubljana (Slovenia), Jožef Stefan Institute (Slovenia); **Robert Jeraj,** Univ. of Ljubljana (Slovenia), Univ. of Wisconsin-Madison (United States); **Hilde Bosmans,** Univ. Ziekenhuis Leuven (Belgium), KU Leuven (Belgium)

13407-16 • 11:40 AM - 12:00 PM
Conflict avoidance in mammography: filtering datasets for breast cancer risk prediction
Author(s): **Alistair Taylor-Sweet**, **Adam Perrett**, **Stepan Romanov**, **Raja Ebsim, Susan Astley,** The Univ. of Manchester (United Kingdom)

13409-18 • 12:00 PM - 12:20 PM
Automated multi-lesion annotation in chest x-rays: annotating over 450,000 images from public datasets using the AI-based smart imagery framing and truthing (SIFT) system
Author(s): **Lin Guo,** Shenzhen Zhiying Medical Imaging (China); **Fleming Y. M. Lure,** MS Technologies Corp. (United States); **Teresa Wu**, **Fulin Cai,** Arizona State Univ. (United States); **Stefan Jaeger,** U.S. National Library of Medicine (United States), National Institutes of Health (United States); **Bin Zheng,** MS Technologies Corp. (United States); **Jordan Fuhrman**, **Hui Li**, **Maryellen L. Giger,** The Univ. of Chicago (United States); **Andrei Gabrielian**, **Alex Rosenthal**, **Darrell E. Hurt**, **Ziv Yaniv,** Office of Cyber Infrastructure and Computational Biology, National Institutes of Health (United States); **Li Xia,** Shenzhen Zhiying Medical Imaging (China); **Weijun Fang,** Department of Radiology, Guangzhou Chest Hospital (China); **Jingzhe Liu,** First Hospital of Tsinghua Univ. (China)

13407-17 • 12:20 PM - 12:40 PM
Classification of range of OCT-angiography capillary density using multichannel deep learning models in diabetic retinopathy, aging macular degeneration, and radiation retinopathy
Author(s): **Noriyoshi Takahashi**, **Jui-Kai Wang**, **Michelle R. Tamplin**, **Elaine M. Binkley**, **Mona K. Garvin**, **Isabella M. Grumbach, Randy H. Kardon,** The Univ. of Iowa (United States)

Lunch Break 12:40 PM - 1:40 PM

SESSION 5: TECHNOLOGY ASSESSMENT

18 February 2025 • 1:40 PM - 3:10 PM | Palm 7
Session Chair(s): **Mark A. Anastasio**, Univ. of Illinois (United States); **Jovan G. Brankov**, Illinois Institute of Technology (United States)

13409-19 • 1:40 PM - 2:10 PM
A kernel analysis of network denoisers for CT imaging *(Invited Paper)*
Author(s): **Craig K. Abbey,** Univ. of California, Santa Barbara (United States); **Prabhat KC**, **Andreu Badal**, **Rongping Zeng, Frank W. Samuelson,** U.S. Food and Drug Administration (United States)

13409-20 • 2:10 PM - 2:30 PM
On the clinical usefulness of cone-beam CT short-scans and super short-scans for detection of fractures in the extremities
Author(s): **Frédéric Noo**, **Dell Dunn**, **Matthew Simpson**, **Luis Fandino**, **Megan Mills, Maryam Soltanokotabi,** The Univ. of Utah (United States)

13409-21 • 2:30 PM - 2:50 PM
Learning stochastic object models using ambient adversarial diffusion models
Author(s): **Muzaffer Ozbey,** Univ. of Illinois (United States); **Hua Li,** Univ. of Illinois (United States), Washington Univ. in St. Louis (United States); **Mark A. Anastasio,** Univ. of Illinois (United States)

13409-22 • 2:50 PM - 3:10 PM
A tool for visual quality assessment of display devices used in digital pathology
Author(s): **Johan Rostang**, **Alexander Truyaert**, **Jonas De Vylder,** Barco N.V. (Belgium); **Guillaume Courtoy,** Vrije Univ. Brussel (Belgium), Univ. Ziekenhuis Brussel (Belgium); **Hanne Locy**, **Ramses Forsyth,** Vrije Univ. Brussel (Belgium); **Danny Deroo,** Barco N.V. (Belgium); **Wim Waelput,** Vrije Univ. Brussel (Belgium); **Tom Kimpe,** Barco N.V. (Belgium)

Coffee Break 3:10 PM - 3:40 PM

SESSION 6: TASK-INFORMED COMPUTED IMAGING

18 February 2025 • 3:40 PM - 5:30 PM | Palm 7
Session Chair(s): **Jovan G. Brankov**, Illinois Institute of Technology (United States)

13409-23 • 3:40 PM - 4:10 PM
Estimating task-based performance bounds for accelerated MRI image reconstruction methods by use of learned-ideal observers *(Invited Paper)*
Author(s): **Kaiyan Li,** Univ. of Illinois (United States); **Prabhat KC,** U.S. Food and Drug Administration (United States); **Hua Li,** Washington Univ. in St. Louis (United States); **Kyle J. Myers,** Puente Solutions, LLC (United States); **Mark A. Anastasio,** Univ. of Illinois (United States); **Rongping Zeng,** U.S. Food and Drug Administration (United States)

13409-24 • 4:10 PM - 4:30 PM
Task-based regularization in penalized least-squares for binary signal detection tasks in medical image denoising
Author(s): **Wentao Chen**, **Tianming Xu, Weimin Zhou,** Shanghai Jiao Tong Univ. (China)

13409-25 • 4:30 PM - 4:50 PM
Investigating the impact of data consistency in a task-informed learned image reconstruction method
Author(s): **Zhuchen Shao**, **Changjie Lu**, **Kaiyan Li,** Univ. of Illinois (United States); **Hua Li,** Washington Univ. in St. Louis (United States); **Mark A. Anastasio,** Univ. of Illinois (United States)

13409-26 • 4:50 PM - 5:10 PM
Direct optimization of signal detection metrics in learning-based CT image restoration
Author(s): **Gregory Ongie**, **Megan Lantz,** Marquette Univ. (United States); **Emil Y. Sidky**, **Ingrid Reiser, Xiaochuan Pan,** The Univ. of Chicago (United States)

13409-27 • 5:10 PM - 5:30 PM
Investigating usable information for assessing the impact of medical image processing
Author(s): **Changjie Lu**, **Sourya Sengupta,** Univ. of Illinois (United States); **Hua Li,** Washington Univ. in St. Louis (United States); **Mark A. Anastasio,** Univ. of Illinois (United States)

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: DATA ISSUES FOR AI ASSESSMENT

19 February 2025 • 10:30 AM - 12:40 PM | Palm 7
Session Chair(s): **Weimin Zhou**, Shanghai Jiao Tong Univ. (China); **Mark A. Anastasio**, Univ. of Illinois (United States)

13409-28 • 10:30 AM - 11:00 AM
Ambient denoising diffusion generative adversarial networks for establishing stochastic object models from noisy image data
(Invited Paper)
Author(s): **Xichen Xu**, **Wentao Chen, Weimin Zhou,** Shanghai Jiao Tong Univ. (China)

13409-29 • 11:00 AM - 11:20 AM
Comparative analysis of data representativeness across medical image datasets using multi-dimensional similarity measures
Author(s): **Robert M. Tomek**, **Fahd T. Hatoum**, **Heather M. Whitney, Maryellen L. Giger,** The Univ. of Chicago (United States)

13409-30 • 11:20 AM - 11:40 AM
Dataset distillation in medical imaging: a feasibility study
Author(s): **Muyang Li**, **Can Cui**, **Quan Liu**, **Ruining Deng**, **Tianyuan Yao**, **Marilyn Lionts, Yuankai Huo,** Vanderbilt Univ. (United States)

13409-31 • 11:40 AM - 12:00 PM
Enhancing radiological assessment of dust diseases: evaluating the impact of online self-assessment educational modules and feedback interventions
Author(s): **Mo'ayyad E. Suleiman**, **Xuetong Tao**, **Patrick C. Brennan**, **Jacky Chen, Ziba Gandomkar,** The Univ. of Sydney (Australia)

13409-32 • 12:00 PM - 12:20 PM

Evaluating machine learning models: insights from the medical imaging and data resource center mastermind challenge on pneumonia severity

Author(s): **Karen Drukker**, **Sam Armato,** The Univ. of Chicago (United States); **Lubomir Hadjiiski,** Univ. of Michigan (United States); **Judy Gichoya,** Emory Univ. (United States); **Nick Gruszauskas,** The Univ. of Chicago (United States); **Jayashree Kalpathy-Cramer,** Univ. of Colorado Anschutz Medical Campus (United States); **Hui Li,** The Univ. of Chicago (United States); **Kyle J. Myers,** Puente Solutions, LLC (United States); **Robert M. Tomek,** The Univ. of Chicago (United States); **Kyle J. Myers,** Puente Solutions, LLC (United States); **Robert M. Tomek**, **Heather M. Whitney,** The Univ. of Chicago (United States); **Zi Zhang,** Univ. of Pennsylvania (United States); **Maryellen L. Giger,** The Univ. of Chicago (United States)

13409-33 • 12:20 PM - 12:40 PM

Sequestration of imaging studies in MIDRC: controlling for ingenuous and disingenuous use of sequestered data

Author(s): **Dylan Tang**, **Heather M. Whitney,** The Univ. of Chicago (United States); **Kyle J. Myers,** Puente Solutions, LLC (United States); **Maryellen L. Giger,** The Univ. of Chicago (United States)

CONFERENCE 13410

Clinical and Biomedical Imaging

18 - 20 February 2025 | Palm 6

Conference Chair(s): **Barjor S. Gimi,** Univ. of Massachusetts Chan Medical School (United States); **Andrzej Krol,** SUNY Upstate Medical Univ. (United States)

Program Committee: **Amir A. Amini,** Univ. of Louisville (United States); **Cristian T. Badea,** Duke Univ. School of Medicine (United States); **Christos A. Davatzikos,** Penn Medicine (United States); **Nancy L. Ford,** The Univ. of British Columbia (Canada); **William E. Higgins,** The Pennsylvania State Univ. (United States); **Ciprian N. Ionita,** SUNY Univ. at Buffalo (United States); **Vikram Kodibagkar,** Arizona State Univ. (United States); **Changqing Li,** Univ. of California, Merced (United States); **Armando Manduca,** Mayo Clinic College of Medicine (United States); **David L. Wilson,** Case Western Reserve Univ. (United States); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States); **Baohong Yuan,** The Univ. of Texas at Arlington (United States)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 1: NOVEL MOLECULAR, FUNCTIONAL, MRI, AND NANOPARTICLE IMAGING TECHNOLOGIES

18 February 2025 • 10:30 AM - 12:40 PM | Palm 6
Session Chair(s): **Andrzej Krol**, SUNY Upstate Medical Univ. (United States); **Ammar Hoori**, Case Western Reserve Univ. (United States)

13410-1 • 10:30 AM - 11:00 AM
NIR-II fluorescence molecular tomography based on transformer encoder architecture *(Invited Paper)*
Author(s): **Jie Bao**, **Anqi Xiao**, **Keyi Han**, **Ziyu Pei**, **Lidan Fu**, **Jie Tian, Zhenhua Hu,** Institute of Automation (China)

13410-2 • 11:00 AM - 11:20 AM
Cognitive change, Aβ deposition, and glymphatic system dysfunction
Author(s): **Sewon Lim,** Gachon Univ. (Korea, Republic of); **Chang-soo Yun,** Yonsei Univ. (Korea, Republic of); **Kyuseok Kim,** Eulji Univ. (Korea, Republic of); **Youngjin Lee,** Gachon Univ. (Korea, Republic of)

13410-3 • 11:20 AM - 11:40 AM
Assessing the impact of a pre-processing pipeline on a tumor localization model in prostate MRI within a large multi-institutional dataset (NRG-GU005)
Author(s): **Stephanie Alley,** Polytechnique Montréal (Canada); **Marion Tonneau**, **Damien Olivié,** Ctr. Hospitalier de l'Univ. de Montréal (Canada); **Clare M. Tempany-Afdhal,** Brigham and Women's Hospital (United States); **Peter L. Choyke**, **Baris I. Turkbey,** National Institutes of Health (United States); **Uulke Van Der Heide,** The Netherlands Cancer Institute (Netherlands); **Rodney J. Ellis,** Univ. of South Florida (United States); **Thomas P. Boike,** Michigan Healthcare Professionals, P.C. (United States); **Daniel Pennington,** Southeast Clinical Oncology Research Consortium, National Cancer Institute Clinical Oncology Research Program (United States), Virginia Urology (United States); **Arthur Frazier,** McLaren Cancer Institute-Macomb (United States); **Colleen A. F. Lawton,** Medical College of Wisconsin (United States); **Nelson Leong,** Arthur Child Comprehensive Cancer Centre accruals under Allan Blair (Canada); **Alina M. Mihai,** Beacon Hospital (Ireland); **Scott C Morgan,** The Ottawa Hospital Cancer Centre (Canada); **Abhishek A. Solanki,** Loyola Univ. Chicago (United States); **Jeff M. Michalski,** Washington Univ. School of Medicine in St. Louis (United States); **Felix Y. Feng,** Univ. of California, San Francisco (United States); **Howard Sandler,** Cedars-Sinai Medical Ctr. (United States); **Cynthia Menard,** Ctr. Hospitalier de l'Univ. de Montréal (Canada); **Samuel Kadoury,** Polytechnique Montréal (Canada)

13410-4 • 11:40 AM - 12:00 PM
Exploring VivoVist™ for ex vivo micro-CT imaging of mouse vasculature
Author(s): **Cristian T. Badea**, **Rohan Nadkarni**, **Alex J. Allphin**, **Yi Qi,** Duke Univ. School of Medicine (United States); **Darin P. Clark,** Duke Univ. (United States); **Jim F. Hainfeld,** Nanoprobes, Inc. (United States)

13410-5 • 12:00 PM - 12:20 PM
An analytic approach to orthopositronium lifetime estimation in positronium lifetime imaging
Author(s): **Lucas Berens, Chien-Min Kao,** The Univ. of Chicago (United States)

13410-6 • 12:20 PM - 12:40 PM
High-resolution micro-CT imaging protocols for studies of intracranial aneurysms in murine models
Author(s): **Cristian T. Badea**, **Eduardo Chaparro**, **Brian Mace**, **Alex J. Allphin**, **Rohan Nadkarni**, **Zay Han**, **Yi Qi**, **Darin P. Clark, David Hasan,** Duke Univ. School of Medicine (United States)

Lunch Break 12:40 PM - 1:40 PM

SESSION 2: OCULAR, OCT, AND OPTICAL IMAGING

18 February 2025 • 1:40 PM - 2:50 PM | Palm 6
Session Chair(s): **William E. Higgins**, The Pennsylvania State Univ. (United States); **Ammar Hoori**, Case Western Reserve Univ. (United States)

13410-7 • 1:40 PM - 2:10 PM
Wavefront sensing technologies for bioimaging *(Invited Paper)*
Author(s): **Yan Feng,** Lab. Biologie, Ingénierie et Imagerie pour l'Ophtalmologie, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France); **François Hénault,** Institut de Planétologie et d'Astrophysique de Grenoble (France); **Yuewei Liu,** Lanzhou Univ. (China); **Zhengkun Liu,** Univ. of Science and Technology of China (China); **Laura Schreiber,** INAF - Osservatorio di Astrofisica e Scienza dello Spazio (Italy); **Alain Spang,** Observatoire de la Côte d'Azur, Univ. Côte d'Azur, CNRS (France); **Antonio Ortiz,** Nikon Instruments Inc. (United States); **Jean-Jacques Correia,** Institut de Planétologie et d'Astrophysique de Grenoble (France); **Monique Frain,** Lab. Matière et Systèmes Complexes, Univ. Paris Cité, CNRS (France); **Philippe Gain, Gilles Thuret,** Lab. Biologie, Ingénierie et Imagerie pour l'Ophtalmologie, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France)

13410-8 • 2:10 PM - 2:30 PM
Dynamic retinal blood flow analysis: Heartbeat-correlated artery and vein identification in laser speckle flowgraphy
Author(s): **Noriyoshi Takahashi**, **Jui-Kai Wang**, **Edward F. Linton**, **Noor-Us-Sabah Ahmad**, **Mona K. Garvin, Randy H. Kardon,** The Univ. of Iowa (United States)

13410-9 • 2:30 PM - 2:50 PM
A dual-camera high-resolution hyperspectral imaging system for the retina
Author(s): **Minh H. Tran**, **Michelle Bryarly**, **Kelden T. Pruitt**, **Arrsh Ali**, **Isioma Emordi,** The Univ. of Texas at Dallas (United States); **,** ; **Baowei Fei,** The Univ. of Texas at Dallas (United States)

Coffee Break 2:50 PM - 3:20 PM

SESSION 3: BONE/SKELETAL IMAGING

18 February 2025 • 3:20 PM - 5:10 PM | Palm 6
Session Chair(s): **Axel Wismüller**, Univ. of Rochester Medical Ctr. (United States); **Cristian T. Badea**, Duke Univ. School of Medicine (United States)

13410-11 • 3:20 PM - 3:50 PM
A conditional generative diffusion model of trabecular bone with tunable microstructure *(Invited Paper)*
Author(s): **Xin Wang**, **Gengxin Shi**, **Aswath Sivakumar**, **Tianyi Ye**, **Adam Sylvester**, **Web Stayman, Wojtek Zbijewski,** Johns Hopkins Univ. (United States)

13410-12 • 3:50 PM - 4:10 PM
Comparison between masked stereolithography and fused deposition modeling 3D-printed synthetic vertebra for surgical training and simulation of pedicle screw fixation
Author(s): **Chloe Duncan,** The Univ. of Sydney (Australia); **Peter Malek**, **Andrew Kanawati,** Westmead Hospital (Australia); **Tess Reynolds,** The Univ. of Sydney (Australia)

13410-13 • 4:10 PM - 4:30 PM
Quantitative comparison of femurs in apolipoprotein E mouse models using high-resolution photon-counting micro-CT
Author(s): **Rohan Nadkarni**, **Zay Y. Han**, **Alex J. Allphin**, **Darin P. Clark**, **Alexandra Badea, Cristian T. Badea,** Duke Univ. School of Medicine (United States)

13410-14 • 4:30 PM - 4:50 PM
Landmark prediction in large radiographs using RoI-based label augmentation
Author(s): **Mahd Mohsin**, **Yehyun Suh,** Vanderbilt Institute for Surgery and Engineering (United States); **Anoop Chandrashekar**, **John Martin,** Vanderbilt Univ. Medical Ctr. (United States); **Daniel Moyer,** Vanderbilt Institute for Surgery and Engineering (United States)

13410-15 • 4:50 PM - 5:10 PM
Ultra-low dose CT-based automated volumetric measurement of muscle, fat, and body-composition at the hip
Author(s): **Xiaoliu Zhang**, **Syed Ahmed Nadeem**, **Amal Shibli-Rahhal,** The Univ. of Iowa (United States); **Reina Armamento-Villareal,** Baylor College of Medicine (United States); **Elizabeth A. Regan,** National Jewish Health (United States); **R. Graham Barr,** Columbia Univ. (United States); **Eric A. Hoffman**, **Alejandro P. Comellas, Punam K. Saha,** The Univ. of Iowa (United States)

NICHART SOFTWARE PLATFORM DEMONSTRATION

18 February 2025 • 6:00 PM - 7:00 PM | Palm 6
Session Chair(s): **Andrzej Krol**, SUNY Upstate Medical Univ. (United States); **Barjor Sohrab Gimi**, Univ. of Massachusetts Chan Medical School (United States)

View Full Details: spie.org/mi/NiChart-Demo

NiChart is a set of modular but integrated software tools for neuroimaging research, and a cloud-based web application to provide wide access to these tools. NiChart software platform demo by **Guray Erus**, NiChart Project Manager, Penn Medicine (United States).

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: AI, ML, DEEP LEARNING, NEURAL NETWORKS IN MOLECULAR, STRUCTURAL, FUNCTIONAL IMAGING I

19 February 2025 • 10:30 AM - 11:50 AM | Palm 6
Session Chair(s): **William E. Higgins**, The Pennsylvania State Univ. (United States); **Cristian T. Badea**, Duke Univ. School of Medicine (United States)

13410-16 • 10:30 AM - 10:50 AM
Development of composite clinical-radiological tool to predict functional outcomes after ischemic stroke treatment
Author(s): **Rowzat Faiz**, **Gopichandh Danala**, **Amirhossein Arezoumand**, **Pedro Lucero,** The Univ. of Oklahoma (United States); **Sheetal Hegde**, **Bappaditya Ray,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **David Ebert,** The Univ. of Oklahoma (United States)

13410-17 • 10:50 AM - 11:10 AM
Coronary artery segmentation with dual convolution-transformer U-Net for cardiovascular interventions
Author(s): **Ryan M. McGovern**, **Gayoung Kim, Junghoon Lee,** Johns Hopkins Univ. (United States)

13410-18 • 11:10 AM - 11:30 AM
Data harmonization with StyleTransfer-GANs: Enhancing non-invasive IDH classification in brain tumors
Author(s): **Chandan Ganesh Bangalore Yogananda**, **Jason Bowerman**, **Nghi C. D. Truong**, **Benjamin C. Wagner**, **Divya Reddy**, **James Holcomb**, **Niloufar Saadat**, **Kimmo J. Hatanpaa**, **Toral R. Patel,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Baowei Fei,** The Univ. of Texas at Dallas (United States); **Matthew D. Lee**, **Rajan Jain,** NYU Grossman School of Medicine (United States); **Richard J. Bruce,** Univ. of Wisconsin School of Medicine and Public Health (United States); **Marco C. Pinho,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Ananth J Madhuranthakam,** Mayo Clinic (United States); **Joseph A Maldjian,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

13410-19 • 11:30 AM - 11:50 AM
Deep learning super-resolution from normal to ultra-high resolution CT: conditional diffusion model development and performance evaluation in trabecular bone radiomics
Author(s): **Tianyi Ye**, **Gengxin Shi**, **Aswath Sivakumar,** Johns Hopkins Univ. (United States); **F. J. Quevedo Gonzalez**, **R.E. Breighner**, **J.A. Carrino,** Hospital for Special Surgery (United States); **J.H. Siewerdsen,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Alejandro Sisniega-Crespo, Wojciech Zbijewski,** Johns Hopkins Univ. (United States)

Lunch Break 11:50 AM - 1:30 PM

SESSION 5: CLINICAL IMAGING

19 February 2025 • 1:30 PM - 3:00 PM | Palm 6
Session Chair(s): **Axel Wismüller**, Univ. of Rochester Medical Ctr. (United States); **Ciprian N. Ionita**, Univ. at Buffalo (United States)

13410-20 • 1:30 PM - 2:00 PM
First in vivo demonstration of 1000 fps high speed x-ray angiography in quantifying flow in the carotid artery of live animal models
(Invited Paper)
Author(s): **Swetadri Vasan Setlur Nagesh**, **Carmon Koenigsknecht**, **Donald Pionessa**, **Emily Vanderbilt,** Canon Stroke and Vascular Research Ctr. (United States); **Venkat Keshav Chivukula,** Florida Institute of Technology (United States); **Ciprian N. Ionita**, **Daniel R. Bednarek, Stephen Rudin,** Canon Stroke and Vascular Research Ctr. (United States)

13410-21 • 2:00 PM - 2:20 PM
Accuracy of 3D ultrasound in the measurement of thyroid nodules compared to 2D ultrasound
Author(s): **Guodong Li**, **Melanie Köhler,** Technische Univ. München (Germany); **Julian Petzold,** Klinikum rechts der Isar der Technischen Univ. München (Germany); **Markus Krönke**, **Francesca De Benetti**, **Thomas Wendler**, **Christine Eilers,** Technische Univ. München (Germany); **Wolfgang Weber,** Klinikum rechts der Isar der Technischen Univ. München (Germany)

13410-22 • 2:20 PM - 2:40 PM
Altered hierarchical rank in intrinsic neural time-scales in autism spectrum disorder
Author(s): **Aroosha Solomon**, **Weifeng Yu**, **Javier Rasero, Aiying Zhang,** Univ. of Virginia (United States)

13410-23 • 2:40 PM - 3:00 PM
Prior knowledge-based blood vessel simulation and thrombus visualization using confocal laser scanning microscopic images
Author(s): **Cheng Wang**, **Yuichiro Hayashi**, **Masahiro Oda,** Nagoya Univ. (Japan); **Shuntaro Kawamura**, **Takanori Takebe,** Institute of Research, Institute of Science Tokyo (Japan); **Kensaku Mori,** Nagoya Univ. (Japan)

Coffee Break 3:00 PM - 3:30 PM

SESSION 6: NEUROIMAGING

19 February 2025 • 3:30 PM - 5:20 PM | Palm 6

Session Chair(s): **Ciprian N. Ionita**, Univ. at Buffalo (United States); **Christos A. Davatzikos**, Penn Medicine (United States)

13410-24 • 3:30 PM - 4:00 PM

Large-scale augmented Granger causality (lsAGC) for enhanced analysis of brain connectivity in autism spectrum disorder *(Invited Paper)*

Author(s): **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States); **Ali Vosoughi, Akhil Kasturi,** Univ. of Rochester (United States)

13410-25 • 4:00 PM - 4:20 PM

Analysis of brain connectivity in autism spectrum disorder using large-scale non-linear Granger causality (lsNGC)

Author(s): **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States); **Ali Vosoughi, Akhil Kasturi,** Univ. of Rochester (United States)

13410-26 • 4:20 PM - 4:40 PM

Attention rings for shape analysis and application to MRI quality control

Author(s): **Florian Davaux**, **Lucas Valladon**, **Lucie Dole,** The Univ. of North Carolina at Chapel Hill (United States); **Jean Christophe**, **Beatriz Paniagua,** Kitware, Inc. (United States); **Martin Styner, Juan Carlos Prieto,** The Univ. of North Carolina at Chapel Hill (United States)

13410-27 • 4:40 PM - 5:00 PM

Investigating effects of air quality and weather on human brain volumes

Author(s): **Karthik Ramadass**, **Yihao Liu**, **Michael E. Kim**, **Chenyu Gao**, **Aravind Krishnan**, **Nazirah Mohd Khairi**, **Lianrui Zuo**, **Tin Nguyen**, **Micah D'Archangel,** Vanderbilt Univ. (United States); **Kurt G. Schilling,** Vanderbilt Univ. Medical Ctr. (United States); **Laurie E. Cutting, Bennett A. Landman,** Vanderbilt Univ. (United States)

13410-28 • 5:00 PM - 5:20 PM

Few-shot segmentation and fiber tractography of human vagus nerve using 3D-MUSE imaging

Author(s): **Naomi M. Joseph**, **Ian Marshall**, **James Seckler**, **Chaitanya Kolluru**, **Nathan Petranka**, **Juri Moon**, **Andrew J. Shoffstall,** Case Western Reserve Univ. (United States); **Nicole A. Pelot,** Duke Univ. (United States); **Michael W. Jenkins, David L. Wilson,** Case Western Reserve Univ. (United States)

POSTERS - WEDNESDAY

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/wednesday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 7:30 AM - 5:30 PM Wednesday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.

View poster presentation guidelines and set-up instructions at
spie.org/MI/Poster-Presentation-Guidelines

13410-43 • 5:30 PM - 7:00 PM

Generation of CT brain perfusion maps via unsupervised learning

Author(s): **Hsuan-Ming Huang,** National Taiwan Univ. (Taiwan)

13410-44 • 5:30 PM - 7:00 PM

Integrated video analysis system for autofluorescence bronchoscopy

Author(s): **Qi Chang,** The Pennsylvania State Univ. (United States); **Danish Ahmad**, **Jennifer Toth**, **Rebecca Bascom,** Penn State College of Medicine (United States); **William E. Higgins,** The Pennsylvania State Univ. (United States)

13410-45 • 5:30 PM - 7:00 PM
Comparing foundation models and nnU-Net for segmentation of primary brain lymphoma on clinical routine post-contrast T1-weighted MRI
Author(s): **Guanghui Fu**, **Lucia Nichelli,** Institut du Cerveau et de la Moelle Épinière, Pitié-Salpêtrière Hospital, Institut National de la Santé et de la Recherche Médicale, Sorbonne Univ., Assistance Publique Hôpitaux de Paris, CNRS (France); **Dario Herran,** Ctr. de NeuroImagerie de Recherche, Institut du Cerveau et de la Moelle Épinière (France); **Romain Valabregue**, **Agusti Alentorn**, **Khê Hoang-Xuan**, **Caroline Houillier**, **Didier Dormont**, **Stéphane Lehéricy, Olivier Colliot,** Institut du Cerveau et de la Moelle Épinière, Pitié-Salpêtrière Hospital, Institut National de la Santé et de la Recherche Médicale, Sorbonne Univ., Assistance Publique Hôpitaux de Paris, CNRS (France)

13410-46 • 5:30 PM - 7:00 PM
Automatic lesion detection in high-definition white-light bronchoscopic video
Author(s): **Austin C. Kao**, **Qi Chang**, **William E. Higgins,** The Pennsylvania State Univ. (United States); **Danish Ahmad,** Fox Chase Cancer Ctr. (United States); **Yu Htwe**, **Jennifer Toth, Rebecca Bascom,** PennState Health Milton S. Hershey Medical Ctr. (United States)

13410-47 • 5:30 PM - 7:00 PM
Exploring injection bias reduction techniques in quantitative angiography using patient-specific phantoms of intracranial aneurysm with diverse morphologies and locations
Author(s): **Parmita Mondal**, **Kyle A. Williams**, **Parisa Naghdi**, **Ahmad Rahmatpour**, **Mohammad Mahdi Shiraz Bhurwani**, **Swetadri Vasan Setlur Nagesh, Ciprian N. Ionita,** Univ. at Buffalo (United States)

13410-48 • 5:30 PM - 7:00 PM
Comparison between lymph-specific magnetic resonance lymphangiography (MRL) and near-infrared indocyanine green lymphangiography (NIRF-ICGL) for evaluation of lymphedema
Author(s): **Hwayeong Cheon,** Asan Medical Ctr. (Korea, Republic of); **Dong Cheol Woo,** Asan Medical Ctr., Univ. of Ulsan College of Medicine (Korea, Republic of); **Kyung Won Kim,** Research Institute of Radiology, Univ. of Ulsan College of Medicine (Korea, Republic of); **Jae Yong Jeon,** Asan Medical Ctr., Univ. of Ulsan College of Medicine (Korea, Republic of)

13410-49 • 5:30 PM - 7:00 PM
1000 fps high-speed angiography (HSA) evaluation of vortex flow characteristics in 3D-printed cerebral vascular aneurysm phantoms
Author(s): **Emily Vanderbilt**, **Swetadri Vasan Setlur Nagesh**, **Kyle A. Williams,** Univ. at Buffalo (United States), Canon Stroke and Vascular Research Ctr. (United States); **Ruth E. White**, **Venkat Keshav Chivukula,** Florida Institute of Technology (United States); **Daniel R. Bednarek**, **Ciprian N. Ionita, Stephen Rudin,** Univ. at Buffalo (United States), Canon Stroke and Vascular Research Ctr. (United States)

13410-50 • 5:30 PM - 7:00 PM
Hypoxia-targeting MRI contrast agent GdDO3NI matches performance of a conventional clinical contrast agent for tumor imaging at early time post contrast
Author(s): **Lakshmisree Damodaran,** Arizona State Univ. (United States); **Shwetal Mehta,** Ivy Brain Tumor Ctr., Barrow Neurological Institute (United States); **C. Chad Quarles,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Vikram Kodibagkar,** Arizona State Univ. (United States)

13410-51 • 5:30 PM - 7:00 PM
3D-printed endo-microscope with a magnetic actuator for axial image plane scanning
Author(s): **Marco Wende**, **Florian Rothermel,** Institut für Technische Optik, Univ. Stuttgart (Germany); **Eliana Stilson,** Wyant College of Optical Sciences, The Univ. of Arizona (United States); **Florian Kübler,** Institut für Technische Optik, Univ. Stuttgart (Germany); **Travis Sawyer,** Wyant College of Optical Sciences, The Univ. of Arizona (United States); **Alois M. Herkommer,** Institut für Technische Optik (Germany); **Andrea Toulouse,** Institut für Technische Optik, Univ. Stuttgart (Germany)

13410-52 • 5:30 PM - 7:00 PM
Multispectral image analysis of rat skin flaps with vascular occlusion
Author(s): **Momoka Takamiya,** Graduate School of Science and Engineering, Chiba Univ. (Japan); **Takayuki Okamoto,** Ctr. for Frontier Medical Engineering, Chiba Univ. (Japan); **Shinsuke Akita**, **Nobuyuki Mitsukawa,** Graduate School of Medicine, Chiba Univ. (Japan); **Hideaki Haneishi,** Ctr. for Frontier Medical Engineering, Chiba Univ. (Japan)

13410-53 • 5:30 PM - 7:00 PM
Long short term memory (LSTM) architecture based neural network encoder model for reducing noise in 1000fps high-speed angiography image sequences
Author(s): **Swetadri Vasan Setlur Nagesh,** Canon Stroke and Vascular Research Ctr. (United States); **Ruth E. White**, **Venkat Keshav Chivukula,** Florida Institute of Technology (United States); **Emily Vanderbilt**, **Ciprian N. Ionita**, **Daniel R. Bednarek, Stephen Rudin,** Canon Stroke and Vascular Research Ctr. (United States)

13410-54 • 5:30 PM - 7:00 PM
Bundle-wise functional connectivity density and fractional amplitude of low-frequency fluctuations decrease in white matter in preclinical Alzheimer's disease and are associated with Aβ levels and cognition
Author(s): **Yukie Chang,** Pomona College (United States); **Lyuan Xu,** Vanderbilt Univ. Medical Ctr. (United States); **Chenyu Gao**, **Nazirah Mohd Khairi,** Vanderbilt Univ. (United States); **John C. Gore**, **Bennett A. Landman,** Vanderbilt Univ. Medical Ctr. (United States); **Yurui Gao,** Vanderbilt Univ. (United States)

13410-55 • 5:30 PM - 7:00 PM
Enhanced NIR-II fluorescence molecular imaging with self-supervised denoising diffusion
Author(s): **Lidan Fu,** Institute of Automation (China); **Binchun Lu,** Tsinghua Univ. (China); **Anqi Xiao,** Institute of Automation (China); **Jie Bao,** Institute of Automation, CAS (China); **Qiaojun Qu,** First Hospital of Shanxi Medical Univ. (China); **Jie Tian, Zhenhua Hu,** Institute of Automation (China)

13410-57 • 5:30 PM - 7:00 PM
The medical segmentation decathlon without a doctorate
Author(s): **Jessica Samir,** Belmont Univ. (United States); **Karthik Ramadass**, **Adam M. Saunders**, **Aravind Krishnan**, **Lucas W. Remedios**, **Elyssa McMaster, Bennett A. Landman,** Vanderbilt Univ. (United States)

13410-58 • 5:30 PM - 7:00 PM
Improved accuracy and detectability of coronary artery calcium scoring using volume fraction calcium mass at reduced radiation dose levels
Author(s): **Dale Black, Sabee Molloi,** Univ. of California, Irvine (United States)

13410-59 • 5:30 PM - 7:00 PM
Topological data analysis of coronary artery calcifications detected on non-contrast CT calcium score images enhances cardiovascular risk assessment
Author(s): **Prerna Singh**, **Benjamin Hofbauer**, **Ammar Hoori,** Case Western Reserve Univ. (United States); **Sanjay Rajagopalan,** Univ. Hospitals of Cleveland (United States); **David L. Wilson,** Case Western Reserve Univ. (United States)

13410-60 • 5:30 PM - 7:00 PM
Personalized risk assessment for heart failure and atherosclerosis in diabetes: radiomic analysis of coronary calcium and epicardial adipose tissue on cardiac CT
Author(s): **Prerna Singh**, **Tao Hu**, **Ammar Hoori,** Case Western Reserve Univ. (United States); **Sanjay Rajagopalan,** Univ. Hospitals of Cleveland (United States); **Sadeer Al-Kindi,** DeBakey Heart & Vascular Ctr., Houston Methodist (United States); **David L. Wilson,** Case Western Reserve Univ. (United States)

13410-61 • 5:30 PM - 7:00 PM
Simulation of facial skin lesions leveraging texture-preserving inpainting and color image decomposition
Author(s): **Huisu Yoon**, **Chanhyuk Lee**, **Jongha Lee, Semin Kim,** lululab Inc. (Korea, Republic of)

13410-62 • 5:30 PM - 7:00 PM
Enhancing brain tumor detection using optical coherence tomography and variational autoencoders
Author(s): **Paul Strenge**, **Birgit Lange,** Medizinisches Laserzentrum Lübeck GmbH (Germany); **Wolfgang Draxinger,** Institut für Biomedizinische Optik, Univ. zu Lübeck (Germany); **Dirk Theisen-Kunde,** Medizinisches Laserzentrum Lübeck GmbH (Germany); **Sonja Spahr-Hess**, **Matteo M. Bonsanto,** Universitätsklinikum Schleswig-Holstein (Germany); **Robert Huber,** Institut für Biomedizinische Optik, Univ. zu Lübeck (Germany); **Ralf Brinkmann,** Medizinisches Laserzentrum Lübeck GmbH (Germany), Institut für Biomedizinische Optik, Univ. zu Lübeck (Germany); **Heinz Handels,** Institut für Medizinische Informatik, Univ. zu Lübeck (Germany), Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany)

13410-64 • 5:30 PM - 7:00 PM
Prediction of disease quantification via PET/CT images and auto-segmentation of target objects
Author(s): **Jieyu Li,** Communication Univ. of China (China); **Jayaram K. Udupa**, **Yubing Tong, Drew A. Torigian,** Penn Medicine (United States)

13410-65 • 5:30 PM - 7:00 PM
Attention variant mechanism for airways segmentation
Author(s): **Chetana Krishnan**, **Shah Hussain**, **Denise Stanford**, **Venkata Sthanam**, **Sandeep Bodduluri**, **Steven M. Rowe, Harrison Kim,** The Univ. of Alabama at Birmingham (United States)

13410-66 • 5:30 PM - 7:00 PM
Prediction of major adverse cardiovascular events (MACE) from disease progression in low-cost (no-cost) screening CT calcium score images
Author(s): **Ammar Hoori**, **Juhwan Lee,** Case Western Reserve Univ. (United States); **Robert Gilkeson,** Univ. Hospitals Cleveland Medical Ctr. (United States); **Sadeer Al-Kindi,** Houston Methodist (United States); **Sanjay Rajagopalan,** Univ. Hospitals Cleveland Medical Ctr. (United States); **David L. Wilson,** Case Western Reserve Univ. (United States)

13410-67 • 5:30 PM - 7:00 PM
MRI prostate and tumor segmentation with fine-tuned SAM: a path to enhanced treatment planning
Author(s): **Jingchu Chen,** The Winship Cancer Institute of Emory Univ. (United States); **Mingzhe Hu,** Emory Univ. (United States); **Mojtaba Safari, Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States)

13410-68 • 5:30 PM - 7:00 PM
Improving cardiovascular risk assessment through comprehensive radiomics analysis of epicardial adipose tissue in screening non-contrast CT calcium score images
Author(s): **Sepideh Azarianpour Esfahani**, **Ammar Hoori**, **Tao Hu,** Case Western Reserve Univ. (United States); **Sadeer Al-Kindi,** DeBakey Heart & Vascular Ctr., Houston Methodist (United States); **Sanjay Rajagopalan,** Univ. Hospitals Harrington Heart & Vascular Institute (United States); **David L. Wilson,** Case Western Reserve Univ. (United States)

13410-69 • 5:30 PM - 7:00 PM
Feasibility assessment of multitasking in MRI neuroimaging analysis: tissue segmentation, cross-modality conversion and bias correction
Author(s): **Mohammad Eslami,** Harvard Medical School (United States); **Solale Tabarestani,** Florida International Univ. (United States); **Mina Rezaei,** Ludwig-Maximilians-Univ. München (Germany); **Malek Adjouadi,** Florida International Univ. (United States)

13410-70 • 5:30 PM - 7:00 PM
Cycle-guided denoising diffusion probability model for 3D cross-modality MRI synthesis
Author(s): **Shaoyan Pan**, **Zach Eidex**, **Mojtaba Safari**, **Richard Qiu, Xiaofeng Yang,** Emory Univ. (United States)

13410-71 • 5:30 PM - 7:00 PM
TTT-SEG: A multi-structure segmentation on cardiac MRI using vision testing-time training network
Author(s): **Vanessa Su**, **Xiaohan Yuan**, **Shaoyan Pan**, **Mingzhe Hu**, **Xiaoqian Chen**, **Sibo Tian, Xiaofeng Yang,** Emory Univ. (United States)

13410-72 • 5:30 PM - 7:00 PM
CT-based liver synthetic contrast-enhanced CT generation using conditional denoising diffusion probabilistic model
Author(s): **Yuan Gao,** The Winship Cancer Institute of Emory Univ. (United States); **Huiqiao Xie,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Chihwei Chang**, **Richard Qiu,** The Winship Cancer Institute of Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Justin Roper**, **Beth Ghavidel**, **Jun Zhou, Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States)

13410-73 • 5:30 PM - 7:00 PM
Segmentation-free artificial intelligence/computer-aided diagnosis of glaucoma from ophthalmic fundus images
Author(s): **Sean Neiza**, **Asim Farooq, Heather M. Whitney,** The Univ. of Chicago (United States)

13410-74 • 5:30 PM - 7:00 PM
Investigating the impact of kernel harmonization and deformable registration on inspiratory and expiratory chest CT images for people with COPD
Author(s): **Aravind Krishnan**, **Yihao Liu,** Vanderbilt Univ. (United States); **Kaiwen Xu,** Insitro (United States); **Michael E. Kim**, **Lucas W. Remedios**, **Gaurav Rudravaram**, **Adam M. Saunders,** Vanderbilt Univ. (United States); **Bradley W. Richmond**, **Kim L. Sandler**, **Fabien Maldonado,** Vanderbilt Univ. Medical Ctr. (United States); **Bennett A. Landman, Lianrui Zuo,** Vanderbilt Univ. (United States)

13410-75 • 5:30 PM - 7:00 PM
Segmentation of ACDC challenge cardiac MRI dataset across diverse neural network architectures
Author(s): **Tijana Geroski,** Univ. of Kragujevac (Serbia), BioIRC (Serbia), Univ. of Louisville (United States); **Nenad Filipović,** Univ. of Kragujevac (Serbia), BioIRC (Serbia); **Amir Amini,** Univ. of Louisville (United States)

13410-76 • 5:30 PM - 7:00 PM
Learning graphs from diffusion models for predicting atrophy in alzheimer's disease
Author(s): **Kevin Mueller**, **Gordon Erlebacher,** Florida State Univ. (United States); **Andreas Stadlbauer,** Friedrich Alexander University (Germany); **Zlatko Sokolikj,** Florida State Univ. (United States); **Benedikt Wiestler,** Technical University Munich (Germany); **Anke Meyer-Baese,** Florida State Univ. (United States)

13410-77 • 5:30 PM - 7:00 PM
Clustering-based model reduction for glioma graph networks
Author(s): **Petar Mlinaric,** Virginia Tech (United States); **Zlatko Sokolikj**, **Gokul Talla**, **Uwe Meyer-Baese,** Florida State Univ. (United States); **Andreas Stadlbauer,** Friedrich Alexander University (Germany); **Hagen Malberg,** Technical University Dresden (Germany); **Chuh-Hyoun Na,** Ctr. für Integrierte Onkologie Aachen Bonn Köln Düsseldorf (Germany); **Kerstin Juetten,** RWTH Aachen (Germany); **Benedikt Wiestler,** Technical University Munich (Germany); **Anke Meyer-Baese,** Florida State Univ. (United States)

13410-78 • 5:30 PM - 7:00 PM
Synthetic data-driven multi-architecture framework for automated polyp segmentation through integrated detection and mask generation
Author(s): **Ojonugwa O. Ejiga Peter**, **Oluwapemiisin G. Akingbola**, **Chetachi R. Amalahu**, **Opeyemi Adeniran**, **Fahmi Khakifa, Mahmudur M. Rahman,** Morgan State Univ. (United States)

13410-79 • 5:30 PM - 7:00 PM
MultiScalePatch-Net: a hierarchical multiscale patch-based dual-view CNN model for diagnosis of adult elbow fractures in radiographs
Author(s): **Mahyar Bolhassani**, **Wilfred Furtado**, **Destiny Duvall**, **M.J. Negahdar**, **Vishal Somnay**, **Aryan Ghazipour**, **Tyler Settle**, **Jonathan Joshi**, **Sohail Contractor, Amir Amini,** Univ. of Louisville (United States)

13410-80 • 5:30 PM - 7:00 PM
Semi-automated segmentation of magnitude images in 4D flow MR scans using Segment Anything Model 2 (SAM 2)
Author(s): **Amirkhosro Kazemi**, **Aryan Ghazipour**, **Tyler Settle**, **Marcus F. Stoddard, Amir Amini,** Univ. of Louisville (United States)

13410-81 • 5:30 PM - 7:00 PM
Role of cardiac contractility and mitral flow in the left ventricular vortices
Author(s): **Seyed Babak Peighambari**, **Tanmay Mukherjee**, **Vahid Naeini,** Texas A&M Univ. (United States); **Dipan J. Shah,** Houston Methodist (United States); **Reza Avazmohammadi,** Texas A&M Univ. (United States)

13410-84 • 5:30 PM - 7:00 PM
Determination of the point-of-first-interaction for an ultra-high-performance brain PET system with "onion ring" geometry
Author(s): **Wei Zheng,** SUNY Upstate Medical Univ. (United States); **Ross Schmidtlein,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Eric S. Harmon,** LightSpin Technologies, Inc. (United States); **Michael O. Thompson,** Cornell Univ. (United States); **Andrzej Krol,** SUNY Upstate Medical Univ. (United States)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: AI, ML, DEEP LEARNING, NEURAL NETWORKS IN MOLECULAR, STRUCTURAL, FUNCTIONAL IMAGING II

20 February 2025 • 10:30 AM - 11:50 AM | Palm 6
Session Chair(s): **Vikram D. Kodibagkar**, Arizona State Univ. (United States); **Ciprian N. Ionita**, Univ. at Buffalo (United States)

13410-29 • 10:30 AM - 10:50 AM
Exploring multimodal data fusion and augmentation strategies for imbalanced datasets for intraoperative aneurysm occlusion prognosis
Author(s): **Parisa Naghdi**, **Mohammad Mahdi Shiraz Bhurwani**, **Ahmad Rahmatpour**, **Parmita Mondal**, **Michael Udin**, **Kyle A. Williams**, **Swetadri Vasan Setlur Nagesh, Ciprian N. Ionita,** Univ. at Buffalo (United States)

13410-30 • 10:50 AM - 11:10 AM
Automating spinal alignment analysis with machine learning and PCdare software: focus on idiopathic scoliosis
Author(s): **Kübra Stoican**, **Enis Simsar**, **Martin Bertsch**, **Saśa Ćuković, Mirko Kaiser,** ETH Zurich (Switzerland)

13410-31 • 11:10 AM - 11:30 AM
BioVLM-T: A temporal framework for radiology report generation using pre-trained vision language foundational models
Author(s): **Akhil Kasturi**, **Ali Vosoughi**, **Nathan Hadjiyski,** Univ. of Rochester (United States); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (United States)

13410-32 • 11:30 AM - 11:50 AM
Exploring the capabilities of CNNs for 3D angiographic reconstructions from limited projection data using rotational angiography
Author(s): **Ahmad Rahmatpour**, **Allison Shields**, **Parmita Mondal**, **Parisa Naghdi**, **Michael Udin**, **Kyle A. Williams**, **Mohammad Mahdi Shiraz Bhurwani**, **Swetadri Vasan Setlur Nagesh, Ciprian N. Ionita,** Univ. at Buffalo (United States)

Lunch Break 11:50 AM - 1:40 PM

SESSION 8: CARDIAC AND SOFT TISSUE IMAGING

20 February 2025 • 1:40 PM - 3:10 PM | Palm 6
Session Chair(s): **Vikram D. Kodibagkar**, Arizona State Univ. (United States)

13410-34 • 1:40 PM - 2:10 PM
Multitask affinity learning for quantitative ultrasound imaging *(Invited Paper)*
Author(s): **Seok Hwan Oh,** KAIST (Korea, Republic of); **Myeong-Gee Kim,** Barreleye, Inc. (Korea, Republic of); **Young-Min Kim**, **Guil Jung**, **Hyeon-Jik Lee,** KAIST (Korea, Republic of); **Hyuk-Sool Kwon,** Seoul National Univ. Bundang Hospital (Korea, Republic of); **Hyeon-Min Bae,** KAIST (Korea, Republic of)

13410-35 • 2:10 PM - 2:30 PM
4D hyperspectral imaging for intraoperative tissue classification
Author(s): **Narek Chilingaryan**, **Fernando Villarruel**, **Tigran Soghomonyan,** L.A. Orbeli Institute of Physiology NAS RA (Armenia); **Varduhi Yeghiazaryan,** American Univ. of Armenia (Armenia); **Narine Sarvazyan,** The George Washington Univ. (United States)

13410-36 • 2:30 PM - 2:50 PM
Left ventricle mesh generation for deformation analysis based on 3D echocardiographic images
Author(s): **Lisa Bautz,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Deutsches Herzzentrum der Charité (Germany); **Inna Khasyanova,** Deutsches Herzzentrum der Charité (Germany); **Lars Walczak,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Deutsches Herzzentrum der Charité (Germany); **Joachim Georgii,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany); **Serdar Akansel,** Deutsches Herzzentrum der Charité (Germany); **Franziska Seidel,** Deutsches Herzzentrum der Charité (Germany), Deutsches Zentrum für Herz-Kreislauf-Forschung e. V. (Germany); **Matthias Ivantsits,** Deutsches Herzzentrum der Charité (Germany); **Simon Sündermann**, **Jörg Kempfert,** Deutsches Herzzentrum der Charité (Germany), Deutsches Zentrum für Herz-Kreislauf-Forschung e. V. (Germany); **Volkmar Falk,** Deutsches Herzzentrum der Charité (Germany), ETH Zurich (Switzerland), Deutsches Zentrum für Herz-Kreislauf-Forschung e. V. (Germany); **Anja Hennemuth,** Fraunhofer-Institut für Digitale Medizin MEVIS (Germany), Deutsches Herzzentrum der Charité (Germany), Deutsches Zentrum für Herz-Kreislauf-Forschung e. V. (Germany)

13410-37 • 2:50 PM - 3:10 PM
Deep learning-enabled, computed-tomography-based race- and sex-specific epicardial adipose tissue thresholds for cardiovascular risk stratification
Author(s): **Mikolaj Buchwald,** Cedars-Sinai Medical Ctr. (United States), Poznan Supercomputing and Networking Ctr. (Poland); **Aakash Dhananjay Shanbhag,** Cedars-Sinai Medical Ctr. (United States), Signal and Image Processing Institute, The Univ. of Southern California (United States); **Robert J. H. Miller,** Univ. of Calgary (Canada); **Wenhao Zhang,** Cedars-Sinai Medical Ctr. (United States); **Anna M. Michalowska,** Cedars-Sinai Medical Ctr. (United States), Ctr. of Radiological Diagnostics, National Medical Institute of the Ministry of the Interior and Administration (Poland); **Aditya Killekar**, **Mark Lemley**, **Paul Kavanagh**, **Hidesato Fujito**, **Joanna X. Liang**, **Valerie Builoff,** Cedars-Sinai Medical Ctr. (United States); **Stacey Knight,** Heart Institute, Intermountain Medical Ctr., Intermountain Health Care Inc. (United States); **Andrew J. Einstein,** Columbia Univ. Irving Medical Ctr. (United States); **Edward J. Miller**, **Attila Feher**, **Albert J. Sinusas,** Yale School of Medicine (United States); **Panithaya Chareonthaitawee,** Mayo Clinic (United States); **Renee Bullock-Palmer,** Deborah Heart and Lung Ctr. (United States); **Marcelo F. Di Carli,** Brigham and Women's Hospital, Harvard Medical School (United States); **Daniel S. Berman**, **Damini Dey, Piotr J. Slomka,** Cedars-Sinai Medical Ctr. (United States)

Coffee Break 3:10 PM - 3:40 PM

SESSION 9: IMAGE PROCESSING, DETECTION, SEGMENTATION, ANALYSIS FOR QUANTIFYING/MODELING

20 February 2025 • 3:40 PM - 5:30 PM | Palm 6
Session Chair(s): **Axel Wismüller**, Univ. of Rochester Medical Ctr. (United States); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

13410-38 • 3:40 PM - 4:10 PM
nnU-Net-driven lymph node segmentation and pyradiomics-based feature extraction for automated extranodal extension classification in head and neck cancer *(Invited Paper)*
Author(s): **Paul D'Cunha**, **Bolin Song,** Emory Univ. (United States); **Jonathan Lee**, **Sarah Stock**, **Xiao Li,** Cleveland Clinic (United States); **Jay Sonuga**, **Mihir Patel, Anant Madabhushi,** Emory Univ. (United States)

13410-39 • 4:10 PM - 4:30 PM
Reconstruction of 3D vascular flow patterns from sparse angiographic data using a 3D convolutional neural network (CNN)
Author(s): **Ruth E. White**, **Marcello V. Mattei**, **Benjamin Diaz**, **Shay Kaden**, **Morgan Brenner**, **Erin Smith**, **Mohammed Abdul Hafeez Khan**, **Grant Mras**, **Kaitlyn Dunn,** Florida Institute of Technology (United States); **Kyle A. Williams**, **Emily Vanderbilt**, **Swetadri Vasan Setlur Nagesh**, **Ciprian N. Ionita**, **Daniel R. Bednarek**, **Stephen Rudin,** Univ. at Buffalo (United States); **Ryan T. White, Venkat Keshav Chivukula,** Florida Institute of Technology (United States)

13410-40 • 4:30 PM - 4:50 PM
Real-time video enhancement for narrow-band imaging bronchoscopy
Author(s): **Vahid Daneshpajooh**, **Danish Ahmad**, **Yu Htwe**, **Jennifer Toth**, **Rebecca Bascom, William E. Higgins,** The Pennsylvania State Univ. (United States)

13410-41 • 4:50 PM - 5:10 PM
Automated registration of 3D neurovascular territory atlas to 2D DSA for targeted quantitative angiography analysis in subarachnoid hemorrhage
Author(s): **George Dimopoulos**, **Sabrina Reverol**, **Parmita Mondal**, **Michael Udin**, **Kyle A. Williams**, **Parisa Naghdi**, **Ahmad Rahmatpour**, **Swetadri Vasan Setlur Nagesh,** Canon Stroke and Vascular Research Ctr. (United States), Univ. at Buffalo (United States); **Mohammad Mahdi Shiraz Bhurwani,** QAS.AI (United States); **Jason Davies,** Univ. at Buffalo (United States); **Ciprian N. Ionita,** Canon Stroke and Vascular Research Ctr. (United States), Univ. at Buffalo (United States)

13410-42 • 5:10 PM - 5:30 PM
Anatomically ROI and IOI informed hybrid U-Net model for abdominal object segmentation in CT images
Author(s): **Yadavendra Nln**, **Yusuf Akhtar**, **Yubing Tong,** Univ. of Pennsylvania (United States); **Tiange Liu,** Yanshan Univ. (China); **Caiyun Wu**, **Dale Kim**, **Mihaela Costin**, **Owen Fabula,** Univ. of Pennsylvania (United States); **Shuang Cao**, **Kaige Zhang**, **Ziwei Xu,** Yanshan Univ. (China); **Drew A. Torigian, Jayaram K. Udupa,** Univ. of Pennsylvania (United States)

ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13410-10
Boundary-refined attention networks for retinal layer segmentation in optical coherence tomography imaging
Author(s): **Hao Fang,** Xiamen Univ. (China); **Xiang Lin**, **Zuguo Liu,** Xiang'an Hospital, Xiamen Univ. (China); **Xiongbiao Luo,** Xiamen Univ.
(China)

CONFERENCE 13411

Imaging Informatics

16 - 19 February 2025 | Palm 8

Conference Chair(s): **Shandong Wu,** Univ. of Pittsburgh (United States)

Program Committee: **Dooman Arefan,** Univ. of Pittsburgh (United States); **Po-Hao Chen,** Cleveland Clinic (United States); **Thomas M. Deserno,** Peter L. Reichertz Institut für Medizinische Informatik (Germany); **Nils Daniel Forkert,** Univ. of Calgary (Canada); **Jessica Fried,** Michigan Medicine (United States); **Steven C. Horii,** The Univ. of Pennsylvania Health System (United States); **William Hsu,** Univ. of California, Los Angeles (United States); **Anh H. Le,** Cedars-Sinai Medical Ctr. (United States); **Heinz U. Lemke,** Computer Assisted Radiology and Surgery (Germany); **Brent J. Liu,** The Univ. of Southern California (United States); **Brian J. Park,** Oregon Health & Science Univ. (United States); **Umber Shafique,** Indiana Univ. School of Medicine (United States); **Eliot L. Siegel,** Univ. of Maryland Medical Ctr. (United States); **Hristina Uzunova,** Univ. zu Lübeck (Germany); **Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States); **Hiroyuki Yoshida,** Massachusetts General Hospital (United States), Harvard Medical School (United States)

Sunday 16 February 2025

SPIE MEDICAL IMAGING AWARDS AND PLENARY

16 February 2025 • 5:30 PM - 6:30 PM | Town & Country A

Session Chair(s): **Joseph Y. Lo**, Carl E. Ravin Advanced Imaging Labs. (United States); **Cristian A. Linte**, Rochester Institute of Technology (United States)

View Full Details: spie.org/medical-imaging-awards-plenary

5:30 PM - 5:40 PM:
Symposium Chair Welcome and Best Student Paper Award announcement
First-place winner and runner-up of the Robert F. Wagner All-Conference Best Student Paper Award
Sponsored by:
MIPS and SPIE

5:40 PM - 5:45 PM:
New SPIE Fellow acknowledgments
Each year, SPIE promotes Members as new Fellows of the Society. Join us as we recognize colleagues of the medical imaging community who have been selected.

5:45 PM - 5:50 PM:
SPIE Harrison H. Barrett Award in Medical Imaging
Presented in recognition of outstanding accomplishments in medical imaging

13408-500 • 5:50 PM - 6:30 PM
Development and translation of 3D ultrasound-based imaging systems for diagnostic and image-guided interventions (Plenary Presentation)
Author(s): **Aaron Fenster,** Robarts Research Institute (Canada), Division of Imaging Sciences, Western Univ. (Canada), Ctr. for Imaging Technology Commercialization (CIMTEC) (Canada)

ALL-SYMPOSIUM WELCOME RECEPTION

16 February 2025 • 6:30 PM - 8:00 PM | Flamingo Lawn

View Full Details: spie.org/mi/welcome-reception

Join your colleagues on the lawn for food and drinks as we welcome each other to SPIE Medical Imaging 2025.

Monday 17 February 2025

MONDAY MORNING KEYNOTES

17 February 2025 • 8:20 AM - 10:30 AM | Town & Country A
Session Chair(s): **Ke Li**, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Mark A. Anastasio**, Univ. of Illinois (United States); **Shandong Wu**, Univ. of Pittsburgh (United States)

View Full Details: spie.org/monday-morning-keynotes

8:20 AM - 8:25 AM:
Welcome and introduction

8:25 AM - 8:30 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13405, 13409, and 13411
- Physics of Medical Imaging Student Paper Award

13405-501 • 8:30 AM - 9:10 AM
Promoting innovation in your team: lessons learned from 40 years in medical imaging (Keynote Presentation)
Author(s): **Thomas M. Grist,** Univ. of Wisconsin School of Medicine and Public Health (United States)

13409-502 • 9:10 AM - 9:50 AM
Designing AI for clinical imaging: the important role of model observers (Keynote Presentation)
Author(s): **Abhinav K. Jha,** Washington Univ. in St. Louis (United States)

13411-503 • 9:50 AM - 10:30 AM
Tackling the health AI paradox (Keynote Presentation)
Author(s): **Karandeep Singh,** UC San Diego Health (United States)

SESSION 1: MODEL GUIDED PRECISION MEDICINE

17 February 2025 • 1:30 PM - 3:35 PM | Palm 8
Session Chair(s): **Shandong Wu**, Univ. of Pittsburgh (United States); **Anh H Le**, Cedars-Sinai Medical Ctr. (United States); **William Hsu**, Univ. of California, Los Angeles (United States)

13411-1 • 1:30 PM - 1:55 PM
Distributed model guided medicine *(Invited Paper)*
Author(s): **Heinz U. Lemke,** International Foundation for Computer Assisted Radiology and Surgery (Germany)

13411-2 • 1:55 PM - 2:15 PM
Utilizing machine learning for decision support of individualized treatment planning in head and neck cancer radiation therapy based on anatomical structures and tumor position
Author(s): **Jorge A. Solis Galvan**, **Trent Benedick**, **Wejdan Alshehri**, **Devashish Sonawane,** The Univ. of Southern California (United States); **Anh H. Le,** Cedars-Sinai Medical Ctr. (United States); **Brent J. Liu,** The Univ. of Southern California (United States)

13411-3 • 2:15 PM - 2:35 PM
Explainable classification of autism in children with a convolutional neural network
Author(s): **Garazi Casillas Martinez**, **Anthony Winder**, **Emma Stanley**, **Raissa Souza de Andrade**, **Matthias Wilms**, **Myka Estes**, **Sarah J. MacEachern, Nils D. Forkert,** Univ. of Calgary (Canada)

13411-4 • 2:35 PM - 2:55 PM
LongitudinalMamba: Fusing longitudinal changes of mammograms with Mamba for breast cancer diagnosis
Author(s): **Zhengbo Zhou**, **Dooman Arefan**, **Margarita L. Zuley**, **Jules H. Sumkin, Shandong Wu,** Univ. of Pittsburgh (United States)

13411-5 • 2:55 PM - 3:15 PM
A comparison of biomarker modalities for predicting disease progression in dementia patients
Author(s): **Sara Early**, **Matthias Wilms, Nils Daniel Forkert,** Univ. of Calgary (Canada)

13411-6 • 3:15 PM - 3:35 PM
A cross-attention transformer model for predicting recurrence risk of breast cancer in patients receiving adjuvant tamoxifen/aromatase inhibitors
Author(s): **Lance Long**, **Zhengbo Zhou**, **Wendie A. Berg**, **Dooman Arefan, Shandong Wu,** Univ. of Pittsburgh (United States)

Coffee Break 3:35 PM - 4:00 PM

SESSION 2: AUGMENTING DECISION-MAKING AND WORKFLOW

17 February 2025 • 4:00 PM - 5:20 PM | Palm 8

Session Chair(s): **Brent J. Liu**, The Univ. of Southern California (United States); **Heinz U. Lemke**, International Foundation for Computer Assisted Radiology and Surgery (Germany)

13411-7 • 4:00 PM - 4:20 PM

Integrating advanced AI into the clinical 3D workflow

Author(s): **Kalyani Vyapari**, **Gabriel Melendez-Corres**, **Pang Yu Teng**, **Varun Badheka**, **Dhruvin Shah**, **Tristram Kelly, Matthew S. Brown,** Univ. of California, Los Angeles (United States)

13411-8 • 4:20 PM - 4:40 PM

Intellident: an AI-based online automated framework for dental crown generation

Author(s): **Imane Chafi**, **Golriz Hosseinimanesh,** Polytechnique Montréal (Canada); **Ammar Alsheghri,** King Fahd Univ. of Petroleum & Minerals (Saudi Arabia); **Yoan Ladini**, **Ying Zhang**, **Nazanin A. Moghadam**, **Lauren Elfassy**, **Victoria-Mae Carrière**, **Samia Haidar,** Polytechnique Montréal (Canada); **Julia Keren,** Kerenor Dental (Canada); **Farida Cheriet, Francois Guibault,** Polytechnique Montréal (Canada)

13411-9 • 4:40 PM - 5:00 PM

Development of decision support tools for joint analysis utilizing the integrated biomechanics informatics system (IBIS)

Author(s): **Anshu Goyal**, **Nicholas Y. Moy**, **Joseph Liu**, **Nicholas Y. Moy**, **Joseph Liu**, **Harper E. Stewart**, **Jill L. McNitt-Gray, Brent J. Liu,** The Univ. of Southern California (United States)

13411-10 • 5:00 PM - 5:20 PM

An informatics system for breath-by-breath analysis of large-scale multi-modal time-series data in sleep research

Author(s): **Yike Li**, **Megan E Hall**, **Matthew S Shotwell**, **Yaomin Xu**, **Alan R Schwartz**, **David Zealear**, **Silvana Bellotto**, **Katie E Estes**, **Carol L Wells**, **Holly A Budnick,** Vanderbilt Univ. Medical Ctr. (United States); **Chris J Lindsell,** Duke University (United States); **Shunxing Bao,** Vanderbilt University (United States); **David T Kent,** Vanderbilt Univ. Medical Ctr. (United States)

POSTERS - MONDAY

17 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/monday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 10:00 AM - 5:30 PM Monday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Monday. Judging may begin after this time. Posters must remain on display until the end of the Monday evening poster session, but may be left hanging until 1:00 PM Tuesday. After 1:00 PM on Tuesday, posters will be removed and discarded.

View poster presentation guidelines and set-up instructions at
https://spie.org/MI/Poster-Presentation-Guidelines

13411-30 • 5:30 PM - 7:00 PM

KAN-DDPM: Kolmogorov-Arnold networks with diffusion denoising probabilistic models for MRI-to-CT synthesis

Author(s): **Vanessa Su, Xiaofeng Yang,** Emory Univ. (United States)

13411-37 • 5:30 PM - 7:00 PM

Medical semantic knowledge integrated multi-task learning network for report generation and neoadjuvant chemotherapy response prediction

Author(s): **Wei Song**, **Ming Fan, Lihua Li,** Hangzhou Dianzi Univ. (China)

13411-38 • 5:30 PM - 7:00 PM

Development and validation of a HER2 scoring model using HE-stained WSIs across multiple cohorts

Author(s): **Zhiquan Lin**, **Ming Fan,** Hangzhou Dianzi Univ. (China); **Xiaoping Li,** Jiangmen Central Hospital (China); **Hui Huang,** Jiangmen Maternity and Child Health Care Hospital (China); **Lihua Li,** Hangzhou Dianzi Univ. (China)

13411-39 • 5:30 PM - 7:00 PM

Fair text to medical image diffusion model with subgroup distribution aligned tuning

Author(s): **Xu Han,** Yale Univ. (United States); **Fangfang Fan,** Harvard Medical School (United States); **Jingzhao Rong**, **Zhen Li**, **Georges El Fakhri**, **Qingyu Chen, Xiaofeng Liu,** Yale Univ. (United States)

13411-40 • 5:30 PM - 7:00 PM
Electronic cleansing in CT colonography using denoising diffusion probabilistic models
Author(s): **Rie Tachibana,** Muroran Institute Of Technology (Japan); **Janne J. Näppi**, **Toru Hironaka,** Harvard Medical School (United States); **Masaki Okamoto,** Boston Medical Sciences, Inc. (Japan); **Hiroyuki Yoshida,** Harvard Medical School (United States)

13411-41 • 5:30 PM - 7:00 PM
Smart scan of medical device displays: user validation
Author(s): **Pedro Lobo,** Instituto Politécnico do Cávado e do Ave (Portugal), Technological Univ. of the Shannon (Ireland); **Alberto Simões**, **Pedro Morais, João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal)

13411-42 • 5:30 PM - 7:00 PM
Evaluating the Benefit of Immersive Virtual Reality in Training Radiology Residents to Manage Contrast Reactions
Author(s): **John D. Karp**, **Daniel Weber**, **Mike Sheng**, **Neil Harrison**, **Kristoffel Dumon**, **Noel Williams**, **Terence Gade, Ali Dhanaliwala,** Univ. of Pennsylvania (United States)

13411-43 • 5:30 PM - 7:00 PM
Deep graph attention networks with memory layers for prediction of response to neoadjuvant chemotherapy in breast cancer
Author(s): **Weichao Xu**, **Ming Fan, Lihua Li,** Hangzhou Dianzi Univ. (China)

13411-44 • 5:30 PM - 7:00 PM
Generating high-resolution brain counterfactuals via autoencoders and causal autoregressive flows
Author(s): **Vibujithan Vigneshwaran**, **Erik Ohara**, **Matthias Wilms, Nils D. Forkert,** Univ. of Calgary (Canada)

13411-45 • 5:30 PM - 7:00 PM
How to normalize thoracic morphometric measures for size differences among pediatric patients and normal subjects?
Author(s): **Zhi Ling**, **Jayaram K. Udupa**, **Leihui Tong,** Univ. of Pennsylvania (United States); **Joseph M. McDonough**, **Samatha Gogel**, **Jason B. Anari,** The Children's Hospital of Philadelphia (United States); **Yubing Tong**, **Drew A. Torigian,** Univ. of Pennsylvania (United States); **Patrick J. Cahill,** The Children's Hospital of Philadelphia (United States)

13411-46 • 5:30 PM - 7:00 PM
Echo chamber: uncovering the public views on ultrasounds via advanced social media listening
Author(s): **Taranpreet Rai**, **Georgina Cherry, Kevin Wells,** Univ. of Surrey (United Kingdom)

13411-47 • 5:30 PM - 7:00 PM
FoundationMorph: a 3D vision-language foundation model for unsupervised medical image registration
Author(s): **Shaoyan Pan**, **Mingzhe Hu**, **Mojtaba Safari**, **Keyur Devendra Shah,** Emory Univ. (United States); **Feng Zhao,** Georgia Institute of Technology (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Richard L. J. Qiu, Xiaofeng Yang,** Emory Univ. (United States)

13411-48 • 5:30 PM - 7:00 PM
CT-Norm: a toolkit to characterize and harmonize variability in computed tomography
Author(s): **Kimaya Kulkarni**, **Anil Yadav**, **William Hsu**, **Spencer H. Welland**, **Kambiz Nael**, **Denise R. Aberle**, **Ashley E. Prosper**, **Jonathan Goldin**, **John M. Hoffman**, **Grace Hyun J. Kim**, **Matthew S. Brown**, **Michael F. McNitt-Gray,** Univ. of California, Los Angeles (United States); **Tengyue Zhang,** UCLA (United States)

13411-49 • 5:30 PM - 7:00 PM
CT-based synthetic contrast-enhanced virtual monoenergetic images generation using conditional denoising diffusion probabilistic model
Author(s): **Yuan Gao,** The Winship Cancer Institute of Emory Univ. (United States); **Huiqiao Xie,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Chih-Wei Chang**, **Richard L. J. Qiu,** The Winship Cancer Institute of Emory Univ. (United States); **Tonghe Wang,** Memorial Sloan-Kettering Cancer Ctr. (United States); **Justin Roper**, **Beth Ghavidel**, **Jun Zhou, Xiaofeng Yang,** The Winship Cancer Institute of Emory Univ. (United States)

13411-50 • 5:30 PM - 7:00 PM
Deep learning-driven automated measurement of polyp size for accurate clinical decision-making in laxative-free CT colonography
Author(s): **Janne J. Näppi**, **Toru Hironaka,** Massachusetts General Hospital (United States); **Masaki Okamoto,** Boston Medical Sciences, Inc. (Japan); **Hiroyuki Yoshida,** Massachusetts General Hospital (United States)

13411-51 • 5:30 PM - 7:00 PM
Comparative study of segmentation deep learning networks in 2D echocardiography images
Author(s): **Pedro Lobo**, **Raul Ferrete Ribeiro**, **Sérgio G. Pereira**, **João L. Martins Vilaça, Pedro Morais,** Applied Artificial Intelligence Lab. (Portugal)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 3: FOUNDATION MODELS

18 February 2025 • 10:30 AM - 12:10 PM | Palm 8
Session Chair(s): **Hiroyuki Yoshida**, Massachusetts General Hospital (United States); **Xiaofeng Yang**, The Winship Cancer Institute of Emory Univ. (United States)

13411-11 • 10:30 AM - 10:50 AM
Novel adaptation of video segmentation to 3D MRI: efficient zero-shot knee segmentation with SAM2
Author(s): **Andrew Yu,** Case Western Reserve Univ. (United States), Cleveland Clinic (United States); **Mohsen Hariri**, **Xuecen Zhang,** Case Western Reserve Univ. (United States); **Mingrui Yang,** Cleveland Clinic (United States); **Vipin Chaudhary,** Case Western Reserve Univ. (United States); **Xiaojuan Li,** Case Western Reserve Univ. (United States), Cleveland Clinic (United States)

13411-12 • 10:50 AM - 11:10 AM
Multi-disease classification of CT reports using traditional natural language processing and a lightweight foundation model
Author(s): **Michael E. Garcia-Alcsoer**, **Fakrul Tushar**, **Mobina Ghojogh Nejad,** Duke Univ. (United States); **Geoff Rubin,** The Univ. of Arizona (United States); **Joseph Lo,** Duke Univ. (United States)

13411-13 • 11:10 AM - 11:30 AM
Variability of large language model in extracting clinical information from unstructured medical records of bladder cancer patients
Author(s): **Di Sun**, **Lubomir Hadjiiski**, **John Gormley**, **Heang-Ping Chan**, **Elaine Caoili**, **Richard Cohan**, **Grace Bruno**, **Ajjai Alva**, **Rada Mihalcea**, **Chuan Zhou, Vikas Gulani,** Univ. of Michigan (United States)

13411-14 • 11:30 AM - 11:50 AM
Evaluating the robustness of features generated by a foundation model from CT with different reconstruction parameters
Author(s): **Stephen H. Park**, **Anil Yadav**, **Hossein Tabatabaei**, **Yannan Lin**, **Denise R. Aberle**, **Ashley E. Prosper, William Hsu,** Univ. of California, Los Angeles (United States)

13411-15 • 11:50 AM - 12:10 PM
LLaVA-Mammo: Adapting LLaVA for interactive and interpretable breast cancer assessment
Author(s): **Xuxin Chen, Xiaofeng Yang,** Emory Univ. School of Medicine (United States)

Lunch Break 12:10 PM - 1:40 PM

SESSION 4: SYNTHETIC DATA

18 February 2025 • 1:40 PM - 3:20 PM | Palm 8
Session Chair(s): **Nils Daniel Forkert**, Univ. of Calgary (Canada); **Dooman Arefan**, Univ. of Pittsburgh (United States)

13411-16 • 1:40 PM - 2:00 PM
Power in small hybrid dataset in training deep-learning models: how to focus annotation effort
Author(s): **Vanda Czipczer**, **Edina Timkó**, **Richárd Zsámboki**, **Petra Takács**, **Előd Kiss**, **Mária Prosszer, Dávid Várkonyi,** GE HealthCare Hungary (Hungary)

13411-17 • 2:00 PM - 2:20 PM
Does a diffusion-based generative classifier avoid shortcut learning in medical image analysis? An initial investigation using synthetic neuroimaging data
Author(s): **Emma Stanley**, **Nils D. Forkert, Matthias Wilms,** Univ. of Calgary (Canada)

13411-18 • 2:20 PM - 2:40 PM
Similarity learning model for skin lesions image generation
Author(s): **Hongyuan Xie**, **Yanlong Zhang, Moi Hoon Yap,** Manchester Metropolitan Univ. (United Kingdom)

13411-19 • 2:40 PM - 3:00 PM
Automated extraction of breast arterial calcification using deep convolutional GAN for enhanced cardiovascular risk assessment
Author(s): **Shiva Mostafavi**, **Wenbo Li**, **Jay Phil Yoo**, **Qiyu Zhuang**, **Yumeng Zhang**, **Chandler Prasetyo, Sabee Molloi,** Univ. of California, Irvine (United States)

13411-20 • 3:00 PM - 3:20 PM
Mitigating data scarcity in the classification of glioma molecular subtypes: the power of generative imaging
Author(s): **Nghi C. D. Truong**, **Chandan Ganesh Bangalore Yogananda**, **Benjamin Wagner**, **Niloufar Saadat**, **James M. Holcomb**, **Divya Reddy**, **Sadeem Lohdi**, **Jason Bowerman**, **Kimmo J. Hatanpaa**, **Toral R. Patel,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Baowei Fei,** The Univ. of Texas at Dallas (United States); **Matthew D. Lee**, **Rajan Jain,** NYU Grossman School of Medicine (United States); **Richard Bruce,** Univ. of Wisconsin-Madison (United States); **Marco C. Pinho,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Ananth J Madhuranthakam,** Mayo Clinic (United States); **Joseph A Maldjian,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

Coffee Break 3:20 PM - 3:50 PM

SESSION 5: INFORMATICS DATA MANAGEMENT

18 February 2025 • 3:50 PM - 4:50 PM | Palm 8
Session Chair(s): **William Hsu**, Univ. of California, Los Angeles (United States); **Anh H Le**, Cedars-Sinai Medical Ctr. (United States)

13411-22 • 3:50 PM - 4:10 PM
Self-supervised out-of-distribution detection: detecting metal implants and other anomalous CTs
Author(s): **Gokul Ramasamy**, **Amara Tariq**, **Samuel Fahrenholtz**, **William F. Sensakovic**, **Bhavik N. Patel, Imon Banerjee,** Mayo Clinic (United States)

13411-23 • 4:10 PM - 4:30 PM
Scalable, reproducible, and cost-effective processing of large-scale medical imaging datasets
Author(s): **Michael E. Kim**, **Karthik Ramadass**, **Chenyu Gao**, **Praitayini Kanakaraj**, **Nancy Newlin**, **Gaurav Rudravaram,** Vanderbilt Univ. (United States); **Kurt G. Schilling,** Vanderbilt Univ. Medical Ctr. (United States); **Blake Dewey,** The Johns Hopkins Univ. School of Medicine (United States); **Derek Archer**, **Timothy J. Hohman,** Vanderbilt Univ. Medical Ctr. (United States); **Zhiyuan Li**, **Shunxing Bao**, **Bennett A. Landman, Nazirah M. Khairi,** Vanderbilt Univ. (United States)

13411-25 • 4:30 PM - 4:50 PM
Task-specific attention-guided generative adversarial network for CT harmonization
Author(s): **Anil Yadav**, **Spencer H. Welland**, **John M. Hoffman**, **Matthew S. Brown**, **Grace Hyun J. Kim**, **Ashley E. Prosper**, **Denise R. Aberle**, **Michael F. McNitt-Gray, William Hsu,** Univ. of California, Los Angeles (United States)

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 6: GENERATIVE AI - DIFFUSION MODELS

19 February 2025 • 10:30 AM - 11:50 AM | Palm 8
Session Chair(s): **Xiaofeng Yang**, The Winship Cancer Institute of Emory Univ. (United States); **Dooman Arefan**, Univ. of Pittsburgh (United States)

13411-26 • 10:30 AM - 10:50 AM
Evaluating synthetic diffusion MRI maps created with diffusion denoising probabilistic models
Author(s): **Tamoghna Chattopadhyay**, **Chirag Jagad**, **Vraj D. Desai**, **Rudransh Kush**, **Julio E. Villalón-Reina**, **Sophia Thomopoulos, Paul M. Thompson,** The Univ. of Southern California (United States)

13411-27 • 10:50 AM - 11:10 AM
High-fidelity 3D lung CT synthesis in ARDS swine models using score-based 3D residual diffusion models
Author(s): **Siyeop Yoon**, **Yujin Oh**, **Xiang Li**, **Yi Xin**, **Maurizio Cereda, Quanzheng Li,** Harvard Medical School (United States)

13411-28 • 11:10 AM - 11:30 AM
Automatic multi-organ segmentation in lung CBCT images using a multi-channel conditional consistency diffusion model
Author(s): **Xiaoqian Chen**, **Richard L. J. Qiu,** Emory Univ. School of Medicine (United States); **Shaoyan Pan,** The Winship Cancer Institute of Emory Univ., Emory Univ. School of Medicine (United States); **Joseph W. Shelton**, **Xiaofeng Yang, Aparna H. Kesarwala,** Emory Univ. School of Medicine (United States)

13411-29 • 11:30 AM - 11:50 AM
Projection-consistent diffusion model-based image reconstruction for limited-angle dual-energy cone-beam CT
Author(s): **Junbo Peng**, **Chih-Wei Chang**, **Richard L. J. Qiu**, **Tonghe Wang**, **Justin Roper**, **Beth Ghavidel**, **Xiangyang Tang, Xiaofeng Yang,** Emory Univ. (United States)

Lunch Break 11:50 AM - 1:30 PM

SESSION 7: AI/ML FOR DATA ANALYTICS

19 February 2025 • 1:30 PM - 3:30 PM | Palm 8
Session Chair(s): **Thomas Martin Deserno**, Peter L. Reichertz Institut für Medizinische Informatik (Germany); **Hiroyuki Yoshida**, Massachusetts General Hospital (United States)

13411-31 • 1:30 PM - 1:50 PM
From hand-crafted radiomics to deep learning: Evaluating breast cancer classification methods in mammograms
Author(s): **Alejandro Guzman**, **Noah Márquez Vara, Oliver Díaz Montesdeoca,** Univ. de Barcelona (Spain)

13411-32 • 1:50 PM - 2:10 PM
Leverage multi-modal neuro-imaging and genetics to identify causal relationship between structural and functional connectivity and ADHD with Mendelian randomization
Author(s): **Chengyan Ji,** Univ. of Virginia (United States); **Seonjoo Lee,** New York State Psychiatric Institute (United States), Columbia Univ. (United States); **Stefanie Sequeira,** Univ. of Virginia (United States); **Jin Jin,** Univ. of Pennsylvania (United States); **Aiying Zhang,** Univ. of Virginia (United States)

13411-33 • 2:10 PM - 2:30 PM
Utilizing an open-source environment for cognitive-AI to design an end-to-end imaging informatics platform for feature detection of anterior segment optical coherence tomography (AS-OCT) images
Author(s): **Sachi Pawooskar-Almeida**, **Seena Pourzand**, **Alana Choy**, **Sheel Shah,** The Univ. of Southern California (United States); **M. Wasil Wahi-Anwar,** Univ. of California, Los Angeles (United States); **Galo Apolo Aroca**, **Anshu Goyal**, **Benjamin Y. Xu,** The Univ. of Southern California (United States); **Matthew S. Brown,** Univ. of California, Los Angeles (United States); **Brent J. Liu,** The Univ. of Southern California (United States)

13411-34 • 2:30 PM - 2:50 PM
Body composition analysis: single slice vs. volumetric measures
Author(s): **Mostafa Alnoury**, **Jayaram K. Udupa**, **Yubing Tong,** Univ. of Pennsylvania (United States); **Tiange Liu,** Univ. of Science and Technology Beijing (China); **Yusuf Akhtar, Drew A. Torigian,** Univ. of Pennsylvania (United States)

13411-35 • 2:50 PM - 3:10 PM
Key Point-based Segmentation of Horse Hooves in Photographs
Author(s): **Brian S. Mackwan,** Indian Institute of Technology Bombay (India); **Paulo Haas, Thomas M. Deserno,** Peter L. Reichertz Institut für Medizinische Informatik (Germany)

13411-36 • 3:10 PM - 3:30 PM
Comparing the Characteristics and Robustness of Imaging Features via Prompt Selection in Generalist Segmentation Models
Author(s): **Luoting Zhuang**, **Seyed Mohammad Hossein Tabatabaei**, **Denise R, Aberle**, **Ashley E. Prosper, William Hsu,** Univ. of California, Los Angeles (United States)

ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13411-21
A novel vision transformer-based approach to detect generative model fingerprint
Author(s): **Md. Ismail Siddiqi Emon,** Morgan State Univ. (United States)

CONFERENCE 13412

Ultrasonic Imaging and Tomography

18 - 20 February 2025 | Palm 2

Conference Chair(s): **Christian Boehm,** ETH Zurich (Switzerland); **Mohammad Mehrmohammadi,** Univ. of Rochester (United States)

Program Committee: **Mark A. Anastasio,** Washington Univ. in St. Louis (United States); **Nick Bottenus,** Univ. of Colorado Boulder (United States); **Brett C. Byram,** Vanderbilt Univ. (United States); **Marvin M. Doyley,** Univ. of Rochester (United States); **Aaron Fenster,** Robarts Research Institute (Canada); **Lluis Guasch,** Imperial College London (United Kingdom); **Joaquin L. Herraiz,** Univ. Complutense de Madrid (Spain); **Torsten Hopp,** Karlsruher Institut für Technologie (Germany); **Michael Jaeger,** Univ. Bern (Switzerland); **Jørgen Arendt Jensen,** Technical Univ. of Denmark (Denmark); **David H. Kim,** Pohang Univ. of Science and Technology (Korea, Republic of); **Kelsey P. Kubelick,** Univ. of Virginia (United States); **Cuiping Li,** Delphinus Medical Technologies, Inc. (United States); **Bilal H. Malik,** Genentech Inc. (United States); **Svetoslav I. Nikolov,** BK Medical (Denmark); **Suhyun Park,** Ewha Womans Univ. (Korea, Republic of); **Nicole V. Ruiter,** Karlsruher Institut für Technologie (Germany); **Daniel Sarno,** National Physical Lab. (United Kingdom); **James W. Wiskin,** QT Ultrasound LLC (United States); **Haichong Kai Zhang,** Worcester Polytechnic Institute (United States)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 1: ULTRASOUND IMAGE PROCESSING AND ANALYSIS

18 February 2025 • 10:30 AM - 12:30 PM | Palm 2
Session Chair(s): **Mohammad Mehrmohammadi**, Univ. of Rochester (United States); **Kelsey P. Kubelick**, Univ. of Virginia (United States)

13412-1 • 10:30 AM - 10:50 AM
Assessment of super-resolution ultrasound imaging using the erythrocytes through comparison with micro-CT
Author(s): **Lauge Hansen**, **André Rath**, **Mostafa Amin Naji,** Technical Univ. of Denmark (Denmark); **Amy McDermott**, **Charlotte M. Sørensen,** Univ. of Copenhagen (Denmark); **Hans M. Kjer**, **Carsten Gundlach**, **Anders B. Dahl, Jørgen A. Jensen,** Technical Univ. of

Denmark (Denmark)

13412-2 • 10:50 AM - 11:10 AM
Echocardiographic view classification using ECG-assisted multi-phase image sampling
Author(s): **Zahra Ghods**, **Nadia A. Farrag**, **Andrew Heschl,** Univ. of Calgary (Canada); **Dina Labib,** University of Calgary (Canada); **Marjan Saedi**, **Yuanchao Feng**, **Adeeb Hossain**, **Nhu Di Nguyen**, **Tahseen Nizamani**, **Nowell M Fine**, **James A. White, Farhad Maleki,** Univ. of Calgary (Canada)

13412-3 • 11:10 AM - 11:30 AM
Early breast cancer detection with ultrasound using NMF
Author(s): **Rutvi Khamar**, **Valerie Kobzarenko, Debasis Mitra,** Florida Institute of Technology (United States)

13412-4 • 11:30 AM - 11:50 AM
Ultrasound imaging dataset for elastography, deformation correction, and algorithm evaluation
Author(s): **Jawad Dahmani**, **Yvan Petit, Catherine Laporte,** Ecole de Technologie Supérieure (Canada)

13412-5 • 11:50 AM - 12:10 PM
Sensor-free contact force guidance for ultrasound imaging
Author(s): **Eunbin Choi**, **Qian Liu, Suhyun Park,** Ewha Womans Univ. (Korea, Republic of)

13412-6 • 12:10 PM - 12:30 PM
Four-dimensional speckle tracking for strain imaging in mice
Author(s): **Tanmay Mukherjee**, **Sunder Neelakantan**, **Carl Tong, Reza Avazmohammadi,** Texas A&M Univ. (United States)

Lunch Break 12:30 PM - 1:40 PM

SESSION 2: IMAGE-GUIDED PROCEDURES, ROBOTIC INTERVENTIONS, AND ULTRASONIC IMAGING/TOMOGRAPHY: JOINT SESSION WITH CONFERENCES 13408 AND 13412

18 February 2025 • 1:40 PM - 3:00 PM | Town & Country D
Session Chair(s): **Jessica R. Rodgers**, Univ. of Manitoba (Canada); **Haichong Kai Zhang**, Worcester Polytechnic Institute (United States)

13412-7 • 1:40 PM - 2:00 PM
Modular ultrasound for flexible longitudinal patient monitoring: feasibility study
Author(s): **Ananya Tandri, Jeeun Kang,** Johns Hopkins Univ. (United States)

13408-21 • 2:00 PM - 2:20 PM
Design and evaluation of a prototype radio-ultrasound guided system for simultaneous, dual-modality intraoperative localization
Author(s): **Sydney Wilson**, **Hristo N. Nikolov**, **Amal Aziz**, **Aaron Fenster, David W. Holdsworth,** Western Univ. (Canada)

13412-8 • 2:20 PM - 2:40 PM
A feasibility study: Freehand 3D volumetric reconstruction ultrasound scanning for midline measurement in adults
Author(s): **Bharat Mathur**, **Ravi U. Patel,** The Univ. of Texas at Austin (United States); **Mia Z. Ferry,** Wake Forest Univ. School of Medicine (United States); **Hamidreza Saber,** Dell Medical School (United States); **Aarti Sarwal,** Virginia Commonwealth Univ. (United States); **Ann M. Fey,** The Univ. of Texas at Austin (United States)

13408-22 • 2:40 PM - 3:00 PM
Augmented reality in ultrasound-guided interventions: an accuracy and precision assessment study
Author(s): **Helena Correia**, **Simão Valente**, **Fernando Veloso,** Instituto Politécnico do Cávado e do Ave (Portugal); **Pedro G. Morais**, **Duarte Duque,** Instituto Politécnico do Cávado e do Ave (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal); **Siobhan Moane,** Technological Univ. of the Shannon (Ireland); **João L. Vilaça,** Instituto Politécnico do Cávado e do Ave (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal)

Coffee Break 3:00 PM - 3:30 PM

SESSION 3: IMAGING ALGORITHMS AND RECONSTRUCTION TECHNIQUES

18 February 2025 • 3:30 PM - 5:30 PM | Palm 2
Session Chair(s): **Nicole V. Ruiter**, Karlsruher Institut für Technologie (Germany); **Bilal H. Malik**, Genentech, Inc. (United States)

13412-9 • 3:30 PM - 3:50 PM
Directivity-only ultrasound computed tomography based on multiaxial devices
Author(s): **Nathan Meulenbroek, Samuel Pichardo,** Univ. of Calgary (Canada)

13412-10 • 3:50 PM - 4:10 PM
Ultrasound-derived absorption coefficient quantification for operator-independent fatty liver diagnosis
Author(s): **Myeong-Gee Kim**, **Seokhwan Oh,** Barreleye, Inc. (Korea, Republic of); **Youngmin Kim**, **Guil Jung**, **Hyeon-jik Lee**, **SangYun Kim,** KAIST (Korea, Republic of); **Hyuksool Kwon,** Seoul National Univ. Bundang Hospital (Korea, Republic of); **Hyeon-Min Bae,** KAIST (Korea, Republic of)

13412-11 • 4:10 PM - 4:30 PM
Reconstruction of frequency dependent attenuation using 3D ultrasound tomography
Author(s): **Torsten Hopp**, **Clemens Feucht**, **Eileen Wenger, Nicole V. Ruiter,** Karlsruher Institut für Technologie (Germany)

13412-12 • 4:30 PM - 4:50 PM
Exact Kramers-Kronig derivation and applications
Author(s): **James W. Wiskin,** QT Imaging, Inc. (United States)

13412-13 • 4:50 PM - 5:10 PM
Coded excitation in 3D ultrasound imaging with a lensed row-column array
Author(s): **Ali Salari**, **Mudabbir Tufail Bhatti**, **Melanie Audoin**, **Borislav Gueorguiev Tomov**, **Billy Y. S. Yiu**, **Erik V. Thomsen, Jørgen A. Jensen,** Technical Univ. of Denmark (Denmark)

13412-14 • 5:10 PM - 5:30 PM
Scattering-Corrected Ray-Based Ultrasound Tomography for Quantitative Sound Speed Imaging: First In-Vitro and In-Vivo Validation
Author(s): **Ashkan Javaherian,** University of Tehran (Iran, Islamic Republic of); **Gaofei Jin, Mohammad Mehrmohammadi,** University of Rochester Medical Center, Department of Imaging Science (United States)

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: PHOTOACOUSTIC IMAGING

19 February 2025 • 10:30 AM - 12:10 PM | Palm 2
Session Chair(s): **James W. Wiskin**, QT Imaging, Inc. (United States); **Christian Boehm**, ETH Zurich (Switzerland)

13412-15 • 10:30 AM - 10:50 AM
Investigating the use of canonical object constraints for the joint estimation of initial pressure and speed-of-sound distributions in photoacoustic computed tomography
Author(s): **Gangwon Jeong,** Univ. of Illinois (United States); **Umberto E. Villa,** The Univ. of Texas at Austin (United States); **Mark A. Anastasio,** Univ. of Illinois (United States)

13412-16 • 10:50 AM - 11:10 AM
A low-rank-based image reconstruction method for dynamic contrast-enhanced multispectral optoacoustic tomography (DCE-MSOT)
Author(s): **Jenil Shah,** The Univ. of Texas at Austin (United States); **Luke Lozenski,** Washington Univ. in St. Louis (United States); **Mark A. Anastasio,** Univ. of Illinois (United States); **Mark D Pagel,** Univ. of Wisconsin School of Medicine and Public Health (United States); **Umberto E. Villa,** The Univ. of Texas at Austin (United States)

13412-17 • 11:10 AM - 11:30 AM
Feasibility study of data-free spectroscopic photoacoustic image denoising
Author(s): **Fangzhou Lin**, **Shang Gao**, **Yichuan Tang**, **Xihan Ma**, **Ziming Zhang, Haichong K. Zhang,** Worcester Polytechnic Institute (United States)

13412-19 • 11:30 AM - 11:50 AM
Deep learning for photoacoustic imaging of CAR-T cells in cancer immunotherapy
Author(s): **William Vale,** Univ. of Surrey (United Kingdom); **Jeffrey C. Bamber,** The Institute of Cancer Research (United Kingdom); **Hasan Koruk,** National Physical Lab. (United Kingdom); **Gustavo Carneiro, Lucia Florescu,** Univ. of Surrey (United Kingdom)

13412-20 • 11:50 AM - 12:10 PM
Ultrasound and photoacoustic immunoimaging of nanoengineered T cells to guide and enhance cancer therapies
Author(s): **Kelsey P. Kubelick,** Univ. of Virginia (United States); **Jinhwan Kim,** Univ. of California, Davis (United States); **Myeongsoo Kim**, **Xinyue Huang**, **Melissa Cadena, Stanislav Emelianov,** Georgia Institute of Technology (United States), Emory Univ. School of Medicine (United States)

Lunch Break 12:10 PM - 1:40 PM

SESSION 5: BLOOD FLOW IMAGING

19 February 2025 • 1:40 PM - 3:00 PM | Palm 2
Session Chair(s): **Aaron Fenster**, Western Univ. (Canada); **Nick Bottenus**, Univ. of Colorado Boulder (United States)

13412-21 • 1:40 PM - 2:00 PM
Sub-micron tissue motion estimation for high framerate ultrasound using complex gradient optimization
Author(s): **André Rath**, **Iman Taghavi,** Technical Univ. of Denmark (Denmark); **Sofie Andersen**, **Charlotte M. Sørensen,** Univ. of Copenhagen (Denmark); **Jørgen A. Jensen,** Technical Univ. of Denmark (Denmark)

13412-22 • 2:00 PM - 2:20 PM
Omnidirectional ultrasound tomographic vector flow imaging with ring-array transducer
Author(s): **Gaofei Jin,** Univ. of Rochester (United States); **Ashkan Javaherian,** Univ. of Tehran (Iran, Islamic Republic of), Univ. of Rochester Medical Ctr. (United States); **Yan Yan, Mohammad Mehrmohammadi,** Univ. of Rochester Medical Ctr. (United States)

13412-23 • 2:20 PM - 2:40 PM
Tendon Microvascular Structure Imaging Using Contrast-Free Super-Resolution Ultrasound in Humans
Author(s): **Mahdi Tabatabaei,** Technical Univ. of Denmark (Denmark); **Rene Bruggebusch Svensson,** Copenhagen Univ. Hospital - Bispebjerg and Frederiksberg (Denmark); **Mostafa Amin-Naji**, **Ali Salari,** Technical Univ. of Denmark (Denmark); **Michael Kjær,** Copenhagen Univ. Hospital - Bispebjerg and Frederiksberg (Denmark); **Jørgen A. Jensen,** Technical Univ. of Denmark (Denmark)

13412-24 • 2:40 PM - 3:00 PM
Three-dimensional ultrasound reliability of synovial blood flow assessment in thumb osteoarthritis patients
Author(s): **Megan Hutter,** Western Univ. (Canada), Robarts Research Institute (Canada); **Randa Mudathir,** Robarts Research Institute (Canada); **Carla du Toit,** Dalhousie Univ. (Canada); **Assaf Kadar,** Western Univ. (Canada), Roth | McFarlane Hand and Upper Limb Ctr. (Canada); **Emily Lalone,** Western Univ. (Canada); **Aaron Fenster,** Western Univ. (Canada), Robarts Research Institute (Canada)

Coffee Break 3:00 PM - 3:30 PM

SESSION 6: ULTRASOUND COMPUTED TOMOGRAPHY

19 February 2025 • 3:30 PM - 5:10 PM | Palm 2
Session Chair(s): **Mark A. Anastasio**, Univ. of Illinois (United States); **Torsten Hopp**, Karlsruher Institut für Technologie (Germany)

13412-25 • 3:30 PM - 3:50 PM
Technical review of feasibility study with 3D USCT III
Author(s): **Nicole V. Ruiter**, **Torsten Hopp**, **Michael Zapf**, **Zewei Lu**, **Simon Kraft**, **Patrick Pfistner**, **Johannes Maul**, **Dickson Yau**, **Ruoyi Qiu**, **Jola Klotz**, **Jonathan Schäfer**, **Leonard Kraus**, **Birgit Burger**, **Volker Reiling**, **Wei Hong**, **Mike Zander**, **Denis Tcherniakhovski**, **Dietmar Bormann**, **Hartmut Gemmeke,** Karlsruher Institut für Technologie (Germany); **Josep de la Puente,** Barcelona Supercomputing Ctr. - Ctr. Nacional de Supercomputación (Spain); **Claudia Gras**, **Christina Duran,** FrontWave Imaging S.L. (Spain); **Oscar Calderon Agudo,** Imperial College London (United Kingdom); **Almudena Maceda García, Ana Maria Rodríguez Arana,** Vall d'Hebron Institut de Recerca (Spain)

13412-26 • 3:50 PM - 4:10 PM
Quantitative analysis of the computational, data, and image characteristics/complexity of MRI vs 3D ultrasound
Author(s): **James W. Wiskin, John W. Klock,** QT Imaging, Inc. (United States)

13412-27 • 4:10 PM - 4:30 PM
A deep-learning-based high-resolution sound-speed reconstruction method for USCT that employs traveltime and reflection tomography images: applications to clinical data
Author(s): **Gangwon Jeong**, **Fu Li,** Univ. of Illinois (United States); **Trevor M. Mitcham,** Univ. of Rochester Medical Ctr. (United States); **Umberto E. Villa,** The Univ. of Texas at Austin (United States); **Nebosa Duric,** Univ. of Rochester Medical Ctr. (United States); **Mark A. Anastasio,** Univ. of Illinois (United States)

13412-28 • 4:30 PM - 4:50 PM
Optimal transport in transcranial ultrasound
Author(s): **Patrick Marty**, **Christian Boehm,** ETH Zurich (Switzerland); **Trevor M. Mitcham**, **Rehman Ali**, **Nebojsa Duric,** Univ. of Rochester Medical Ctr. (United States); **Andreas Fichtner,** ETH Zurich (Switzerland)

13412-29 • 4:50 PM - 5:10 PM
Transcranial imaging with 3D ultrasound tomography: proof of concept
Author(s): **James W. Wiskin,** QT Imaging, Inc. (United States); **Bilal Malik, John Klock,** QT Imaging (United States)

POSTERS - WEDNESDAY

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/wednesday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 7:30 AM - 5:30 PM Wednesday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.

View poster presentation guidelines and set-up instructions at
spie.org/MI/Poster-Presentation-Guidelines

13412-36 • 5:30 PM - 7:00 PM
Biaxial passive ultrasound imaging with two transducers
Author(s): **Nathan Meulenbroek**, **Laura Curiel,** Univ. of Calgary (Canada); **Adam Waspe,** Univ. of Toronto (Canada); **Samuel Pichardo,** Univ. of Calgary (Canada)

13412-37 • 5:30 PM - 7:00 PM
Early-stage stomach cancer detection using ultrasound full-waveform inversion: a numerical study
Author(s): **Xiaotong Li**, **Carlos Cueto**, **Javier Cudeiro Blanco**, **James Landless**, **Matthieu E. G. Toulemonde**, **Oscar A. Bates**, **Sung Pil Hong,** Imperial College London (United Kingdom); **Joshua Shur,** The Royal Marsden NHS Foundation Trust (United Kingdom); **Oscar Calderon Agudo,** Imperial College London (United Kingdom)

13412-38 • 5:30 PM - 7:00 PM
Reflection ultrasound computed tomography with sparse data by residual diffusion models
Author(s): **Zhaohui Liu,** Huazhong Univ. of Science and Technology (China); **Jianhai Zhang,** Univ. of Calgary (Canada); **Zaituo Li**, **Mingyue Ding**, **Ming Yuchi, Wu Qiu,** Huazhong Univ. of Science and Technology (China)

13412-39 • 5:30 PM - 7:00 PM
Automatic classification of levator ani muscle avulsion in 3D transperineal ultrasound images
Author(s): **Mihir Gokal,** Western Univ. (Canada); **Golafsoun Ameri**, **Shufei Zhang,** Cosm Medical Corp. (Canada); **Helena Kunic,** Univ. of Guelph (Canada); **Serdar Aydin,** Koç Univ. (Turkey); **Ahmed Eltahawi,** Cosm Medical Corp. (Canada); **Elvis C. S. Chen,** Robarts Research Institute (Canada)

13412-41 • 5:30 PM - 7:00 PM
Spatial and volumetric validation of 3D ultrasound musculoskeletal system
Author(s): **Clara Duquette-Evans**, **Megan Hutter**, **Randa Mudathir**, **Aaron Fenster,** Robarts Research Institute (Canada), Western Univ. (Canada); **Emily Lalone,** Western Univ. (Canada)

13412-42 • 5:30 PM - 7:00 PM
Deep learning-based classification of breast ultrasound with parametric quantitative images and RF beamsum data
Author(s): **Rehnuma Hasnat, Alycen Wiacek,** Oakland Univ. (United States)

13412-43 • 5:30 PM - 7:00 PM
Study of skull misalignment effects in mouse brain ultrasound stimulation using a hologram lens
Author(s): **Hyeongyu Park**, **Jinwoo Kim**, **Sunghun Park, Jin Ho Chang,** Daegu Gyeongbuk Institute of Science & Technology (Korea, Republic of)

13412-44 • 5:30 PM - 7:00 PM
Reconstruction of synthetic ultrasound images to address data deficiency and domain adaptation
Author(s): **Eunji Lee**, **Suntae Hwang, Jin Ho Chang,** Daegu Gyeongbuk Institute of Science & Technology (Korea, Republic of)

13412-45 • 5:30 PM - 7:00 PM
Topological data analysis in 3D ultrasound tomography
Author(s): **James W. Wiskin,** QT Imaging, Inc. (United States)

13412-46 • 5:30 PM - 7:00 PM
Comparison of ultrasonic envelope statistics in the patellar tendon of children with cerebral palsy
Author(s): **Luc Taburet**, **Rehnuma Hasnat**, **Leila Nuri, Alycen Wiacek,** Oakland Univ. (United States)

13412-47 • 5:30 PM - 7:00 PM
Transducer geometry imperfection compensation
Author(s): **Borislav G. Tomov**, **Mudabbir T. Bhatti**, **Billy YS Yiu**, **Søren E Diederichsen**, **Erik V Thomsen, Jørgen A. Jensen,** Technical Univ. of Denmark (Denmark)

13412-48 • 5:30 PM - 7:00 PM
Three-dimensional ultrasound imaging for oral cavity squamous cell carcinoma
Author(s): **Tiana Trumpour,** Robarts Research Institute (Canada); **Freeman Paczkowski,** London Health Sciences Ctr. (Canada); **Mary-Ellen Empey,** Western Univ. (Canada); **Carla du Toit,** Robarts Research Institute (Canada); **Claire K. S. Park,** Harvard Univ. (United States); **Jacob Wihlidal,** Univ. of Toronto (Canada); **David Tessier**, **Aaron Fenster,** Robarts Research Institute (Canada); **Jane Topple,** St. Joseph's Healthcare Hamilton (Canada); **Adrian Mendez,** London Health Sciences Ctr. (Canada)

13412-49 • 5:30 PM - 7:00 PM
Clipping removal in synthetic aperture ultrasound systems
Author(s): **Natalia Perez Jimenez,** Technical Univ. of Denmark (Denmark); **Emma Kanchana Ertner Bengtsson,** Dept. of Diagnostic Radiology, Rigshospitalet (Denmark); **Eszter Olga Révész**, **Charlotte M. Sørensen,** Univ. of Copenhagen (Denmark); **Michael Bachmann Nielsen,** Dept. of Diagnostic Radiology (Denmark); **Jørgen A. Jensen,** Technical Univ. of Denmark (Denmark); **Karin Larsen,** Univ. of Copenhagen (Denmark)

13412-50 • 5:30 PM - 7:00 PM
Automatic initialization of the left atrial appendage centerline in 3D TEE images using deep learning
Author(s): **Luís C. N. Barbosa,** Applied Artificial Intelligence Lab. (Portugal), Technological Univ. of the Shannon (Ireland); **Yiting Fan,** Prince of Wales Hospital (Hong Kong, China), Li Ka Shing Institute of Health Science (Hong Kong, China), The Chinese Univ. of Hong Kong (Hong Kong, China); **Zhao Chenxu,** Prince of Wales Hospital (Hong Kong, China); **Alex P. Lee,** Prince of Wales Hospital (Hong Kong, China), Li Ka Shing Institute of Health Science (Hong Kong, China), The Chinese Univ. of Hong Kong (Hong Kong, China); **Siobhán Moane,** Technological Univ. of the Shannon (Ireland); **João L. Vilaça, Pedro Morais,** Applied Artificial Intelligence Lab. (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal)

13412-51 • 5:30 PM - 7:00 PM
Ultrasound localization microscopy using ensemble learning
Author(s): **Afnan Alqarni, Mohamed Almekkawy,** The Pennsylvania State Univ. (United States)

13412-52 • 5:30 PM - 7:00 PM
Ultrasound image generation using latent diffusion models
Author(s): **Benoit Freiche**, **Anthony El-Khoury**, **Ali Nasiri-Sarvi**, **Mahdi S. Hosseini,** Concordia Univ. (Canada); **Damien Garcia,** CREATIS (France), Institut National de la Santé et de la Recherche Médicale (France); **Adrian Basarab,** CREATIS (France), Univ. Claude Bernard Lyon 1 (France); **Mathieu Boily,** McGill Univ. (Canada); **Hassan Rivaz,** Concordia Univ. (Canada)

13412-53 • 5:30 PM - 7:00 PM
BreastLightSAM: a lightweight pipeline for fast and accurate breast cancer diagnosis
Author(s): **Mingzhe Hu, Xiaofeng Yang,** Emory Univ. (United States)

13412-54 • 5:30 PM - 7:00 PM
Combining ultrasound radiofrequency data with radiomics for prostate stromal nodule detection
Author(s): **Teja R. Pathour**, **Vishnu Reddy,** The Univ. of Texas at Dallas (United States); **Douglas W. Strand**, **Jeffrey Gahan**, **Brett A. Johnson,** The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); **Shashank R. Sirsi,** The Univ. of Texas at Dallas (United States); **Baowei Fei,** The Univ. of Texas at Dallas (United States), The Univ. of Texas Southwestern Medical Ctr. at Dallas (United States)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: APPLICATIONS OF MACHINE LEARNING IN ULTRASOUND IMAGING

20 February 2025 • 10:30 AM - 12:30 PM | Palm 2
Session Chair(s): **Suhyun Park**, Ewha Womans Univ. (Korea, Republic of); **Oscar Calderon Agudo**, Imperial College London (United Kingdom)

13412-30 • 10:30 AM - 10:50 AM
Scribble-based weakly supervised method for segmentation of neonatal cerebral ventricles from 3D ultrasound
Author(s): **Zachary Szentimrey**, **Liam Hatala,** Univ. of Guelph (Canada); **Sandrine de Ribaupierre**, **Aaron Fenster,** Western Univ. (Canada); **Eranga Ukwatta,** Univ. of Guelph (Canada)

13412-31 • 10:50 AM - 11:10 AM
Toward data sparsification for 3D reflection imaging in QTI Breast Acoustic CTTM scanners
Author(s): **Linh Nguyen**, **James W. Wiskin, Bilal Malik,** QT Imaging, Inc. (United States)

13412-32 • 11:10 AM - 11:30 AM
Mask-enhanced deep-learning for prostate ultrasound tomography with narrow data acquisition aperture
Author(s): **Hanchen Wang,** Los Alamos National Lab. (United States); **Yixuan Wu**, **Emad Boctor,** Johns Hopkins Univ. (United States); **Songting Luo,** Iowa State Univ. of Science and Technology (United States); **Youzuo Lin,** The Univ. of North Carolina at Chapel Hill (United States)

13412-33 • 11:30 AM - 11:50 AM
Learning-based super-resolution of 3D ultrasound images
Author(s): **Simone Cammarasana, Giuseppe Patanè,** CNR IMATI (Italy)

13412-34 • 11:50 AM - 12:10 PM
Leveraging SAM for automatic prostate segmentation on micro-ultrasound images
Author(s): **Olivia Radcliffe**, **Imogen Lawford-Wickham,** Queen's Univ. (Canada); **Paul Wilson,** Queen's University (Canada); **Purang Abolmaesumi,** University of British Columbia (Canada); **Parvin Mousavi,** Queen's University (Canada)

13412-35 • 12:10 PM - 12:30 PM
A comparative study of deep-learning methods for left atrial appendage segmentation in 3D TEE images
Author(s): **Luís C. N. Barbosa,** Applied Artificial Intelligence Lab. (Portugal), Technological Univ. of the Shannon (Ireland); **Yiting Fan**, **Alex P. Lee,** Prince of Wales Hospital (Hong Kong, China), Li Ka Shing Institute of Health Science (Hong Kong, China), The Chinese Univ. of Hong Kong (Hong Kong, China); **Siobhán Moane,** Technological Univ. of the Shannon (Ireland); **João L. Vilaça, Pedro Morais,** Applied Artificial Intelligence Lab. (Portugal), Lab. Associado de Sistemas Inteligentes (Portugal)

ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13412-18
Towards speed-of-sound imaging with conventional ultrasound transducers using laser diode photoacoustic
Author(s): **Hamid Moradi**, **Robert Rohling**, **Septimiu Salcudean,** The Univ. of British Columbia (Canada); **Orcun Goksel,** Uppsala Univ. (Sweden)

CONFERENCE 13413

Digital and Computational Pathology

18 - 20 February 2025 | Sunset 1/2

Conference Chair(s): **John E. Tomaszewski,** Univ. at Buffalo (United States); **Aaron D. Ward,** The Univ. of Western Ontario (Canada)

Program Committee: **Selim Aksoy,** Bilkent Univ. (Turkey); **Ulysses J. Balis,** Univ. of Michigan Health System (United States); **Rohit Bhargava,** Univ. of Illinois at Urbana-Champaign (United States); **Ulf-Dietrich Braumann,** Institut für Angewandte Informatik e.V. (Germany); **Bradley Brimhall,** The Univ. of Texas Health Science Ctr. at San Antonio (United States); **Matthew J. Cecchini,** London Health Sciences Ctr. (Canada); **Keith C. Cheng,** Penn State College of Medicine (United States); **Wei-Chung Cheng,** U.S. Food and Drug Administration (United States); **Eric Cosatto,** NEC Labs. America, Inc. (United States); **Scott Doyle,** Rutgers, The State Univ. of New Jersey (United States); **Alton B. Farris,** Emory Univ. (United States); **Michael D. Feldman,** The Univ. of Pennsylvania Health System (United States); **Marios A. Gavrielides,** AstraZeneca Pharmaceuticals LP (United States); **April Khademi,** Toronto Metropolitan Univ. (Canada); **Nadieh Khalili,** Radboud Univ. Medical Ctr. (Netherlands); **Elizabeth A. Krupinski,** Emory Univ. School of Medicine (United States); **Tom R. L. Kimpe,** Barco N.V. (Belgium); **Richard M. Levenson,** Univ. of California, Davis (United States); **Olivier Lezoray,** Univ. de Caen Basse-Normandie (France); **Geert Litjens,** Radboud Univ. Medical Ctr. (Netherlands); **Anant Madabhushi,** Emory Univ. School of Medicine (United States); **Derek R. Magee,** Univ. of Leeds (United Kingdom); **Erik Meijering,** The Univ. of New South Wales (Australia); **James P. Monaco,** Inspirata, Inc. (United States); **Mehdi Moradi,** McMaster Univ. (Canada); **Bahram Parvin,** Lawrence Berkeley National Lab. (United States); **Nasir M. Rajpoot,** The Univ. of Warwick (United Kingdom); **Berkman Sahiner,** U.S. Food and Drug Administration (United States); **Pinaki Sarder,** Univ. of Florida College of Medicine (United States); **Chukka Srinivas,** Amazon Lab126 (United States); **Darren Treanor,** Univ. of Leeds (United Kingdom); **Mitko Veta,** Technische Univ. Eindhoven (Netherlands); **Martin J. Yaffe,** Sunnybrook Research Institute (Canada); **Bülent Yener,** Rensselaer Polytechnic Institute (United States)

Tuesday 18 February 2025

TUESDAY MORNING KEYNOTES

18 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Jhimli Mitra**, GE Research (United States); **Christian Boehm**, ETH Zurich (Switzerland)

View Full Details: spie.org/tuesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13406 and 13412
- Image Processing Student Paper Award

13406-504 • 8:40 AM - 9:20 AM
Integrating computational approaches to unravel alzheimer's disease and co-pathologies: a biomarker-driven approach to precision medicine (Keynote Presentation)
Author(s): **Duygu Tosun-Turgut,** Univ. of California, San Francisco (United States)

13412-505 • 9:20 AM - 10:00 AM
Wearable ultrasound technology (Keynote Presentation)
Author(s): **Sheng Xu,** Univ. of California, San Diego (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 1: SEGMENTATION OF CELLULAR AND TISSUE STRUCTURES I

18 February 2025 • 10:30 AM - 12:10 PM | Sunset 1/2
Session Chair(s): **John E. Tomaszewski**, Univ. at Buffalo (United States); **Martin J. Yaffe**, Sunnybrook Research Institute (Canada)

13413-1 • 10:30 AM - 10:50 AM
Prior-guided diffusion model for cell segmentation in quantitative phase imaging
Author(s): **Zhuchen Shao**, **Mark Anastasio,** Univ. of Illinois (United States); **Hua Li,** Washington Univ. in St. Louis (United States)

13413-2 • 10:50 AM - 11:10 AM
Semi-supervised semantic segmentation of cell nuclei with diffusion model
Author(s): **Zhuchen Shao**, **Sourya Sengupta**, **Mark Anastasio,** Univ. of Illinois (United States); **Hua Li,** Washington Univ. in St. Louis (United States)

13413-3 • 11:10 AM - 11:30 AM
Automated segmentation of intracranial carotid atherosclerosis in histological images: assessing the effect of staining
Author(s): **Michal Reimer**, **Ondřej Dvorský**, **Zoltán Szabó**, **Ondřej Klempíř,** Czech Technical Univ. in Prague (Czech Republic); **Václav Mandys**, **David Školoudík,** Charles Univ. (Czech Republic); **Jan Kybic, Radim Krupička,** Czech Technical Univ. in Prague (Czech Republic)

13413-4 • 11:30 AM - 11:50 AM
AI-based pipeline for automatic quantification of tissue ingrowth in histopathology images of cerebral aneurysm
Author(s): **Ishaq Ansari,** Caldwell Univ. (United States); **Ahmed Naglah**, **Lillian G. Atchison**, **Melanie E. Martinez**, **Elizabeth Klaas**, **Koji Hosaka**, **Brian L. Hoh, Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-5 • 11:50 AM - 12:10 PM
Temporal resolution enhancement for cell tracking in microscopy image sequences
Author(s): **Nazeli Ter-Petrosyan**, **Davit Gyulnazaryan, Varduhi Yeghiazaryan,** American Univ. of Armenia (Armenia)

Lunch Break 12:10 PM - 1:40 PM

SESSION 2: SEGMENTATION OF CELLULAR AND TISSUE STRUCTURES II

18 February 2025 • 1:40 PM - 3:00 PM | Sunset 1/2
Session Chair(s): **John E. Tomaszewski**, Univ. at Buffalo (United States); **Pinaki Sarder**, Univ. of Florida College of Medicine (United States)

13413-6 • 1:40 PM - 2:00 PM
Towards fine-grained renal vasculature segmentation: full-scale hierarchical learning with FH-Seg
Author(s): **Yitian Long,** Vanderbilt Univ. (United States); **Zhongze Wu**, **Xiu Su,** Central South Univ. (China); **Lining Yu**, **Ruining Deng,** Vanderbilt Univ. (United States); **Haichun Yang,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

13413-7 • 2:00 PM - 2:20 PM
Cell type prediction for intestine tissue samples from brightfield histology via deep learning
Author(s): **Sayat Mimar**, **Nicholas Lucarelli**, **Sumanth Devarasetty,** Univ. of Florida College of Medicine (United States); **John Hickey,** Duke Univ. (United States); **Tarek El-Ashkar**, **Michael T. Eadon,** Indiana Univ. School of Medicine (United States); **Sanjay Jain,** Washington Univ. School of Medicine in St. Louis (United States); **Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-8 • 2:20 PM - 2:40 PM
Cross-species data integration for enhanced layer segmentation in kidney pathology
Author(s): **Junchao Zhu**, **Mengmeng Yin**, **Ruining Deng**, **Yitian Long**, **Yu Wang**, **Yaohong Wang**, **Shilin Zhao**, **Haichun Yang, Yuankai Huo,** Vanderbilt Univ. (United States)

13413-9 • 2:40 PM - 3:00 PM
Automated organ subregion segmentation in whole slide images using deep learning
Author(s): **Lauren L. Sun**, **Stanley Chou**, **Tosha Shah**, **Rajath E. Soans**, **Thomas Forest**, **Michael J. Napolitano**, **Tara S. McNutt**, **Kyathanahalli Janardhan**, **Cecilia Cuitino, Antong Chen,** Merck & Co., Inc. (United States)

Coffee Break 3:00 PM - 3:30 PM

SESSION 3: AUTOMATED QUANTIFICATION OF TISSUE BIOMARKERS

18 February 2025 • 3:30 PM - 5:10 PM | Sunset 1/2
Session Chair(s): **John E. Tomaszewski**, Univ. at Buffalo (United States); **Geert J. S. Litjens**, Radboud Univ. Medical Ctr. (Netherlands)

13413-10 • 3:30 PM - 3:50 PM
Computational quantification of inflammatory impact in preclinical models via digitized murine histopathology
Author(s): **Charlems Alvarez-Jimenez**, **Mario Quicaña,** Case Western Reserve Univ. (United States); **Maneesh Dave,** Univ. of California, Davis (United States); **Paula Toro,** Cleveland Clinic (United States); **Satish E. Viswanath,** Case Western Reserve Univ. (United States)

13413-11 • 3:50 PM - 4:10 PM
Comparative analysis of multiplex microscopy images of human renal biopsy tissue
Author(s): **Gabriel Casella**, **Madeleine Torcasso**, **Junting Ai,** The Univ. of Chicago Pritzker School of Medicine (United States); **Thao Cao,** The Univ. of Chicago Pritzker School of Molecular Engineering (United States); **Deepjyoti Ghosh,** The Univ. of Chicago Pritzker School of Medicine (United States); **Michael Andrade**, **Anthony Chang**, **Maryellen L. Giger, Marcus R. Clark,** The Univ. of Chicago (United States)

13413-12 • 4:10 PM - 4:30 PM
A machine learning approach for analyzing texture and morphometry markers of glioblastoma TERT promoter mutations in DAPI fluorescence images
Author(s): **Fatemeh Afsari**, **Ahmed Naglah**, **Akshita Gupta,** Univ. of Florida College of Medicine (United States); **Harshit Lohaan,** Univ. of Florida (United States); **Ugoma Onubogu**, **Michalina Janiszewska,** The Herbert Wertheim UF Scripps Institute for Biomedical Innovation & Technology (United States); **Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-13 • 4:30 PM - 4:50 PM
Automated quantification of TP53 using digital immunohistochemistry for acute myeloid leukemia prognosis
Author(s): **Fatemeh Zabihollahy**, **Xiaotian Yuan**, **Maxim Mohareb**, **Dexter Boehm-North**, **Lampros Dimitrakopoulos**, **Collins Wangulu**, **Ioannis Prassas**, **Neil E. Fleshner**, **George M. Yousef, Hong Chang,** Univ. of Toronto (Canada)

13413-14 • 4:50 PM - 5:10 PM
Region of interest detection on breast immunohistochemistry images for end-to-end Ki-67 biomarker quantification
Author(s): **Edmund Sumpena,** Johns Hopkins Univ. (United States); **Thomas E. Tavolara**, **Mark D. Zarella, Wenchao Han,** Mayo Clinic (United States)

Wednesday 19 February 2025

WEDNESDAY MORNING KEYNOTES

19 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Maryam E. Rettmann**, Mayo Clinic (United States); **John E. Tomaszewski**, Univ. at Buffalo (United States)

View Full Details: spie.org/wednesday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13408 and 13413
- Early-Career Investigator Award: Image-Guided Procedures, Robotic Interventions, and Modeling
- Student Paper Award: Image-Guided Procedures, Robotic Interventions, and Modeling

13408-506 • 8:40 AM - 9:20 AM
Image-guided surgery and examinations using ultrasound (Keynote Presentation)
Author(s): **Tim Salcudean,** The Univ. of British Columbia (Canada)

13413-507 • 9:20 AM - 10:00 AM
The future of diagnostics: the role of computational pathology in tomorrow's medicine (Keynote Presentation)
Author(s): **Geert J. S. Litjens,** Radboud Univ. Medical Ctr. (Netherlands)

Coffee Break 10:00 AM - 10:30 AM

SESSION 4: GRADING, CLASSIFICATION, AND DIAGNOSIS

19 February 2025 • 10:30 AM - 12:10 PM | Sunset 1/2
Session Chair(s): **Aaron D. Ward**, Western Univ. (Canada); **Selim Aksoy**, Bilkent Univ. (Turkey)

13413-15 • 10:30 AM - 10:50 AM
Renal cell type and state estimation in brightfield histology images: a pilot study on diabetic nephropathy
Author(s): **Jamie L. Fermin**, **Samuel P. Border,** Univ. of Florida (United States); **Ahmed Naglah**, **Benjamin Shickel,** Univ. of Florida College of Medicine (United States); **Patricio S La Rosa,** Seed Production Innovation, Crop Science Division, Bayer Company (United States); **John E. Tomaszewski,** Univ. at Buffalo (United States); **Sanjay Jain,** Washington Univ. School of Medicine in St. Louis (United States); **Tarek M. El-Achkar**, **Michael T. Eadon,** Indiana Univ. School of Medicine (United States); **Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-16 • 10:50 AM - 11:10 AM
Enhancing predictive accuracy of allograft outcomes: beyond traditional clinical and biopsy scoring methods
Author(s): **Akshita Gupta**, **Ahmed Naglah,** Univ. of Florida College of Medicine (United States); **Kuang-Yu Jen,** Univ. of California, Davis (United States); **Avi Rosenberg,** The Johns Hopkins Univ. School of Medicine (United States); **Luis Rodrigues,** Univ. de Coimbra (Portugal); **William L. Clapp**, **Kawther Alquadan,** Univ. of Florida College of Medicine (United States); **John E. Tomaszewski,** Univ. at Buffalo (United States); **Benjamin Shickel, Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-17 • 11:10 AM - 11:30 AM
Unravelling the topographical organization of brain lesions in variants of Alzheimer's disease progression
Author(s): **Gabriel Jimenez,** Institut du Cerveau et de la Moelle Épinière, Pitié-Salpêtrière Hospital, Institut National de la Santé et de la Recherche Médicale, Sorbonne Univ., Assistance Publique Hôpitaux de Paris, CNRS (France); **Leopold Hebert-Stevens,** Institut du Cerveau et de la Moelle Épinière (France); **Susana Boluda**, **Benoît Delatour**, **Lev Stimmer, Daniel Racoceanu,** Institut du Cerveau et de la Moelle Épinière, Pitié-Salpêtrière Hospital, Institut National de la Santé et de la Recherche Médicale, Sorbonne Univ., Assistance Publique Hôpitaux de Paris, CNRS (France)

13413-18 • 11:30 AM - 11:50 AM
Outcome prediction of prostate cancer patients on active surveillance using weakly supervised deep learning
Author(s): **Filip Winzell**, **Ida Arvidsson**, **Karl Åström**, **Niels Christian Overgaard,** Lund Univ. (Sweden); **Felicia-Elena Marginean,** Skåne Univ. Hospital (Sweden); **Athanasios Simoulis**, **Anders Bjartell**, **Agnieszka Krzyzanowska, Anders Heyden,** Lund Univ. (Sweden)

13413-19 • 11:50 AM - 12:10 PM
Instruction tuning for colorectal histopathology: a multimodal vision-language assistant on human-evaluated data
Author(s): **Usman Afzaal**, **Ziyu Su**, **Usama Sajjad,** Wake Forest Univ. School of Medicine (United States); **Thomas Stack,** Edward Via College of Osteopathic Medicine (United States); **Mostafa Rezapour**, **Hao Lu**, **Shuo Niu**, **Metin N. Gurcan,** Wake Forest Univ. School of Medicine (United States); **Wendy Frankel**, **Wei Chen,** Department of Pathology, The Ohio State University (United States); **Muhammad Khalid K. Niazi,** Wake Forest Univ. School of Medicine (United States)

Lunch Break 12:10 PM - 1:40 PM

SESSION 5: MODEL INTERPRETABILITY

19 February 2025 • 1:40 PM - 3:00 PM | Sunset 1/2
Session Chair(s): **Aaron D. Ward**, Western Univ. (Canada); **Nadieh Khalili**, Radboud Univ. Medical Ctr. (Netherlands)

13413-20 • 1:40 PM - 2:00 PM
Explainable feature embeddings from histopathology foundation models: a case study for end stage kidney disease risk analysis in diabetic nephropathy patients
Author(s): **Harishwar Reddy Kasireddy**, **Nicholas Lucarelli,** Univ. of Florida (United States); **Donghwan Yun**, **Kyung Chul Moon,** Seoul National Univ. (Korea, Republic of); **Patricio S. La Rosa,** Seed Production Innovation, Crop Science Division, Bayer Company (United States); **John E. Tomaszewski,** Univ. at Buffalo (United States); **Seung Seok Han,** Seoul National Univ. (Korea, Republic of); **Benjamin Shickel**, **Ahmed Naglah, Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-21 • 2:00 PM - 2:20 PM
A human-in-the-loop framework for refining deep learning models in pathology segmentation
Author(s): **Nadieh Khalili,** Radboud Univ. Medical Ctr. (Netherlands)

13413-22 • 2:20 PM - 2:40 PM
Hand-crafted feature-guided histologic image classification via weak-to-strong generalization
Author(s): **Changjie Lu**, **Zong Fan**, **Zhimin Wang**, **Mark Anastasio,** Univ. of Illinois (United States); **Lulu Sun,** Washington Univ. in St. Louis (United States); **Xiaowei Wang,** Univ. of Illinois Chicago (United States); **Hua Li,** Washington Univ. in St. Louis (United States)

13413-23 • 2:40 PM - 3:00 PM
Clinically interpretable imaging biomarker discovery in BCG-vaccinated tuberculosis-infected diversity outbred mice using deep learning
Author(s): **Usama Sajjad**, **Khalid Khan Niazi,** Wake Forest Univ. School of Medicine (United States); **Gillian Beamer,** Texas Biomedical Research Institute (United States); **Metin N. Gurcan,** Wake Forest Univ. School of Medicine (United States)

Coffee Break 3:00 PM - 3:30 PM

SESSION 6: MULTISTAIN AND MULTISPECTRAL IMAGING AND ANALYSIS

19 February 2025 • 3:30 PM - 5:10 PM | Sunset 1/2

Session Chair(s): **Aaron D. Ward**, Western Univ. (Canada); **Pinaki Sarder**, Univ. of Florida College of Medicine (United States)

13413-24 • 3:30 PM - 3:50 PM

Identifying cellular neighborhood phenotypes differentiating normal and quiescent Crohn's disease via MxIF

Author(s): **Gaurav Rudravaram**, **Shunxing Bao**, **Aravind R. Krishnan**, **Lucas W. Remedios**, **Michael E. Kim**, **Adam M. Saunders,** Vanderbilt Univ. (United States); **Qi Liu,** Vanderbilt Univ. Medical Ctr. (United States); **Ken S. Lau,** Vanderbilt Univ. Medical Ctr. (United States), Vanderbilt Univ. School of Medicine (United States); **Joseph T. Roland**, **Mary K. Washington,** Vanderbilt Univ. Medical Ctr. (United States); **Lori A. Coburn**, **Keith T. Wilson,** Vanderbilt Univ. Medical Ctr. (United States), Vanderbilt Univ. School of Medicine (United States), VA Tennessee Valley Healthcare System (United States); **Yuankai Huo, Bennett A. Landman,** Vanderbilt Univ. (United States)

13413-25 • 3:50 PM - 4:10 PM

Exclusive loss in segmentation for the virtual multiplex immunohistochemistry using multiple singleplex masks

Author(s): **Masataka Kawai,** Univ. of Yamanashi (Japan)

13413-26 • 4:10 PM - 4:30 PM

Optimization of transfer learning of foundation models for hyperspectral histologic imaging

Author(s): **Michael D. Hellman**, **Ling Ma**, **James Yu, Baowei Fei,** The Univ. of Texas at Dallas (United States)

13413-27 • 4:30 PM - 4:50 PM

A comparative study of RGB, hyperspectral, and synthesized RGB images for head and neck squamous cell carcinoma detection in histological images using a spatial-spectral vision transformer model

Author(s): **Satya Sai Hemanth Pasupuleti**, **Ling Ma, Baowei Fei,** The Univ. of Texas at Dallas (United States)

13413-28 • 4:50 PM - 5:10 PM

Quantitative analysis of colonic epithelial cell aging in a cell-cycle-like model: changes in nucleus and cytoplasm along the crypt axis

Author(s): **Shunxing Bao,** Vanderbilt Univ. (United States); **Yaohong Wang,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Gaurav Rudravaram**, **Rendong Zhang**, **Ruining Deng**, **Xin Yu**, **Chenyu Gao,** Vanderbilt Univ. (United States); **Jia Li**, **Yike Li**, **Joseph Roland,** Vanderbilt Univ. Medical Ctr. (United States); **Lianrui Zuo,** Vanderbilt Univ. (United States); **Qi Liu,** Vanderbilt Univ. Medical Ctr. (United States); **Ken S. Lau,** Vanderbilt Univ. (United States); **Lori A. Coburn**, **Keith T. Wilson,** Vanderbilt Univ. Medical Ctr. (United States); **Bennett A. Landman, Yuankai Huo,** Vanderbilt Univ. (United States)

POSTERS - WEDNESDAY

19 February 2025 • 5:30 PM - 7:00 PM | Golden State Ballroom

View Full Details: spie.org/mi/wednesday-poster-session

Conference attendees are invited to attend the SPIE Medical Imaging poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges.

Poster Presenters:
Poster Setup and Pre-Session Viewing: 7:30 AM - 5:30 PM Wednesday

- In order to be considered for a poster award, it is recommended to have your poster set up by 1:00 PM Wednesday. Judging may begin after this time. Posters must remain on display until the end of the Wednesday evening poster session but may be left hanging until 10:00 AM Thursday. After 10:00 AM, any posters left hanging will be discarded.

View poster presentation guidelines and set-up instructions at
spie.org/MI/Poster-Presentation-Guidelines

13413-34 • 5:30 PM - 7:00 PM

Bright-field dark-field hyperspectral imaging for pixel-wise classification of adenocarcinoma of the colon in the liver

Author(s): **Ivica Kopriva,** Ruder Boškovic Institute (Croatia); **Laura-Isabelle Dion-Bertrand,** Univ. de Montréal (Canada); **Arijana Pačić,** Univ. Hospital Dubrava (Croatia); **Marija Milkovic Perisa,** Univ. Hospital Ctr. Zagreb (Croatia); **Marijana Popovic Hadžija**, **Mirko Hadzija,** Ruder Boškovic Institute (Croatia); **Dario Sitnik,** Technische Univ. München (Germany)

13413-35 • 5:30 PM - 7:00 PM
GLAM: glomeruli segmentation for human pathological lesions using adapted mouse model
Author(s): **Lining Yu,** Vanderbilt Univ. (United States); **Mengmeng Yin,** Vanderbilt Univ. Medical Ctr. (United States); **Ruining Deng**, **Quan Liu**, **Tianyuan Yao**, **Can Cui**, **Yitian Long,** Vanderbilt Univ. (United States); **Yu Wang,** Vanderbilt Univ. Medical Ctr. (United States); **Yaohong Wang,** The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); **Shilin Zhao**, **Haichun Yang,** Vanderbilt Univ. Medical Ctr. (United States); **Yuankai Huo,** Vanderbilt Univ. (United States)

13413-36 • 5:30 PM - 7:00 PM
Cross-organ deployment of EOS detection AI without retraining: feasibility and limitation
Author(s): **Yifei Wu**, **Juming Xiong**, **Tianyuan Yao**, **Ruining Deng**, **Junlin Guo**, **Jialin Yue**, **Naweed Chowdhury, Yuankai Huo,** Vanderbilt Univ. (United States)

13413-37 • 5:30 PM - 7:00 PM
Initial study toward three-dimensional visualization of histopathological annotation of prostate cancer
Author(s): **Hironori Suzuki,** Graduate School of Science and Engineering, Chiba Univ. (Japan); **Yuma Iwao,** National Institutes for Quantum Science and Technology (Japan); **Nahoko Nagano**, **Takayuki Okamoto, Hideaki Haneishi,** Ctr. for Frontier Medical Engineering, Chiba Univ. (Japan)

13413-38 • 5:30 PM - 7:00 PM
Integration of spatial transcriptomics and immunofluorescence staining to enable colocalized multi-omics analysis in chronic liver disease
Author(s): **Hatef Mehrabian**, **Sangeetha Mahadevan**, **Michael Sharpnack**, **Christina Moon, Lauri Diehl,** Gilead Sciences, Inc. (United States)

13413-39 • 5:30 PM - 7:00 PM
Self-supervised learning for red blood cell segmentation using PathOlOgics-RBCs dataset
Author(s): **Eung-Joo Lee,** The Univ. of Arizona (United States)

13413-40 • 5:30 PM - 7:00 PM
Effect of neutrophil extracellular traps on thrombolysis by tPA characterized by clot mechanical properties and CT radiomics
Author(s): **Tatsat Rajendra Patel**, **Jay P. Shah**, **Briana A. Santo**, **TaJania D. Jenkins**, **Sarah Balghonaim**, **Alexandria Scotti**, **Elad I. Levy**, **Adnan H. Siddiqui,** Canon Stroke and Vascular Research Ctr. (United States); **John Kolega,** University at Buffalo (United States); **Vincent M. Tutino,** Canon Stroke and Vascular Research Ctr. (United States)

13413-41 • 5:30 PM - 7:00 PM
Evaluating deep learning models for breast cancer classification: a comparative study
Author(s): **Sania Eskandari**, **Ali Eslamian, Qiang Cheng,** Univ. of Kentucky (United States)

13413-42 • 5:30 PM - 7:00 PM
Replicability of large-scale studies in computational pathology
Author(s): **Dhruv Chamaria**, **Wenchao Han**, **David S. McClintock, Thomas E. Tavolara,** Mayo Clinic (United States)

13413-43 • 5:30 PM - 7:00 PM
An automatic processing framework for hyperspectral histologic images and benchmark dataset
Author(s): **Ling Ma**, **Amie M. Ha**, **Ifrah Zainab**, **Armand P. Rathgeb**, **Hasan Mubarak, Baowei Fei,** The Univ. of Texas at Dallas (United States)

13413-44 • 5:30 PM - 7:00 PM
ComPRePS 2.0: enabling massive-scale distributed computing on high-performance computing cluster for histopathological data processing
Author(s): **Suhas Katari Chaluva Kumar**, **Anindya S. Paul,** Univ. of Florida College of Medicine (United States); **Haitham Abdelazim,** Univ. of Central Florida College of Medicine (United States); **Will Dunklin**, **David Manthey,** Kitware, Inc. (United States); **Oleksandr Moskalenko,** Univ. of Florida (United States); **Sayat Mimar,** Univ. of Florida College of Medicine (United States); **Erik Deumens,** Univ. of Florida (United States); **Pinaki Sarder,** Univ. of Florida College of Medicine (United States)

13413-45 • 5:30 PM - 7:00 PM
The IPATH dataset: training CLIP models with histopathology-based image-caption pairs from Instagram
Author(s): **Seyederfan Mirhosseini**, **Taranpreet Rai**, **Pablo Diaz Santana**, **Roberto La Ragione,** Univ. of Surrey (United Kingdom); **Nicholas Bacon,** AURA Veterinary (United Kingdom), Univ. of Surrey (United Kingdom); **Kevin Wells,** Univ. of Surrey (United Kingdom)

Thursday 20 February 2025

THURSDAY MORNING KEYNOTES

20 February 2025 • 8:30 AM - 10:00 AM | Town & Country A
Session Chair(s): **Susan M. Astley**, The Univ. of Manchester (United Kingdom); **Andrzej Krol**, SUNY Upstate Medical Univ. (United States)

View Full Details: spie.org/thursday-morning-keynotes

8:30 AM - 8:35 AM:
Welcome and introduction

8:35 AM - 8:40 AM:
Award announcements

- Robert F. Wagner Award finalists for conferences 13407 and 13410
- Computer-Aided Diagnosis Best Paper Award

13407-508 • 8:40 AM - 9:20 AM
Pioneering vision: The journey of building AI for transformative healthcare (Keynote Presentation)
Author(s): **Elad Walach,** Aidoc (Israel)

13410-509 • 9:20 AM - 10:00 AM
Machine learning in neuroimaging: Understanding heterogeneity of neurologic diseases and building personalized imaging-AI biomarkers (Keynote Presentation)
Author(s): **Christos Davatzikos,** Penn Medicine (United States)

Coffee Break 10:00 AM - 10:30 AM

SESSION 7: STANDARDIZATION, MULTIMODAL ANALYSIS, AND SYNTHETIC DATA GENERATION

20 February 2025 • 10:30 AM - 11:30 AM | Sunset 1/2
Session Chair(s): **Aaron D. Ward**, Western Univ. (Canada); **Geert J. S. Litjens**, Radboud Univ. Medical Ctr. (Netherlands)

13413-29 • 10:30 AM - 10:50 AM
Out-of-distribution generalization based on normalization techniques in histopathology whole slide imaging
Author(s): **Mehrdad Jabbarzadeh Gangeh,** F. Hoffmann-La Roche Ltd. (United States); **Arash Moayyedi,** Hoffmann-La Roche Ltd. (Canada); **Nazim Shaikh**, **Xingwei Wang, Yao Nie,** F. Hoffmann-La Roche Ltd. (United States)

13413-30 • 10:50 AM - 11:10 AM
Quantification and mitigation of site-specific differences in digital pathology datasets
Author(s): **Ashwitha Legala**, **Sonal Shukla,** Univ. at Buffalo (United States); **Parul Khare,** Sharda University (India); **Brandon Veremis**, **Kenneth Aschheim**, **Margaret Brandwein,** Mount Sinai West Hospital (United States); **Falk Schwendicke,** LMU Klinikum (Germany); **Pemith Liyanage,** National Dental Hospital (Sri Lanka); **Marelina Vered,** Tel Aviv University (Israel); **Supriya Kheur,** Dr. D.Y. Patil Dental College and Hospital (India); **Aravindha Babu,** Bharat Institute of Higher Education and Research (India); **Radhika M Bavle,** Krishnadeyaraya College of Dental Sciences (India); **Beatriz Aldape**, **Rodrigo Sanchez,** Dentistry School UNAM (Mexico); **Filipe Fonseca**, **Cinthia Caceres,** Universidade Federal de Minas Gerais (Brazil); **Rima Safadi**, **Abdelmajid Mansour,** Jordan University of Science and Technology (Jordan); **Nabil Kochaji,** Damascus University (Syrian Arab Republic); **Mohamed Mostafa,** Beni-Suef University (Egypt); **Florence Cuadra,** University of El Salvador (El Salvador); **Nii Nartey**, **Abena Nsiah,** University of Ghana Dental School (Ghana); **Scott Doyle,** Univ. at Buffalo (United States)

13413-32 • 11:10 AM - 11:30 AM
Texture analysis of lung cell surface morphology after nanoparticle exposure
Author(s): **Akshatha Mohan,** Texas A&M Univ. (United States); **Taylor Jefferis**, **Christie Sayes,** Baylor Univ. (United States); **Joshua Peeples,** Texas A&M Univ. (United States)

ON-DEMAND POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Medical Imaging 2025.

13413-31
Multimodal pretraining for histology-gene joint representation learning
Author(s): **Danial Maleki**, **Nazim Shaikh**, **Gareth Shannon**, **Jian Li, Yao Nie,** Roche Diagnostics Solutions (United States)

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