IST 2024
October 14-16 2024
Tokyo, Japan

IEEE INTERNATIONAL CONFERENCE ON IMAGING SYSTEMS & TECHNIQUES

Sponsored by:
IEEE Instrumentation and Measurement Society,
TC 19 Technical Committee on Imaging Systems, and
in conjunction with
the Waseda University, Tokyo. Japan and
IEEE International School of Imaging
To the honor of late Professor Matteo Pastorino University of Genoa, Italy

SHAPING THE FUTURE OF COMPUTER VISUALIZATION WITH GENERATIVE AI
CALL FOR PAPERS

IMPORTANT DATES

July 30, 2024
Full Paper Submission Deadline

August 15, 2024
Notification of Acceptance

August 30, 2024
Full Paper Deadline

Manuscripts must be prepared in 4 to 6 pages in IEEE 8.5 x 11 format. The IST Proceedings are indexed in the WEB of Science and Scopus and will be submitted to IEEE Xplore for publication. Submitted papers may not have been previously published in or under consideration for publication in another journal or conference. Manuscripts should be submitted as PDF files via EDAS.

High-quality, technically extended papers will be considered, following a peer review process, for possible publication in a Special Issue of IEEE Open Journal of Instrumentation and Measurement (IEEE OJIM) as well in other prestigious peer-reviewed journals.

Please visit:
ist2024.ieee-ims.org

Invitation from the Organizers

On behalf of the Technical and Local Committee of the 2024 IEEE International Conference on Imaging Systems and Techniques (IST 2024) and IEEE International School on Imaging, we welcome you to the IST conference, 14-16 October, Tokyo, Japan.

This year the IST2024 is dedicated to the honor of Professor Matteo Pastorino, a great scientist and human being, for his startling contributions to Microwave Imaging and Electromagnetic Inverse Scattering. Matteo was one of the first believers and co-organizers of the IST and his tireless efforts are highly recognized. Historically, this is the twenty-first consecutive year, following the successful IST events held previously in Stresa, Italy (2004), Niagara Falls, Canada (2005), Minori, Italy (2006), Krakow, Poland (2007), Chania, Greece (2008), Shenzhen, China (2009), Thessaloniki, Greece (2010), Penang Island, Malaysia (2011), Manchester, UK (2012), Beijing, China (2013),Santorini, Greece (2014), Macau, China (2015), Chania, Greece (2016), Beijing, China (2017), Krakow, Poland (2018), Abu Dhabi, UAE (2019), New York (virtual) (2021), Taiwan (Virtual) (2022), Copenhagen, Denmark (2023) where experts from all over the world meet to trigger an in-depth discussion of imaging methodologies and its applications shaping the future, and identifying emerging imaging trends.

This year, scientists and engineers from all over the world meet to explore the design principles, development and applications of new imaging technologies and computer visualization techniques. The use of machine learning and artificial intelligence to analyze and interpret maging data is rapidly changing the global economy, experiencing an unparalleled integration of science and technology with artificial intelligence and big data; let us see this event as unique opportunity not only to exchange and disseminate knowledge but also bridge multidisciplinary areas like engineering and science with medical diagnostic and theranostic imaging, robotics, autonomous navigation systems, quantum neuromorphic cognition, Space engineering and Industry 4.0.; AI-enabled diagnosis and personalized treatment of tumors; generating new knowledge while establishing global collaborative multidisciplinary opportunities, by tightening collaborations among industry, academia, and healthcare industry.

We would like to thank the TC-19 on Imaging Measurements and Systems Technical Committee, IEEE Instrumentation and Measurement Society, and the local Organizing Committee, the IST Organizing and Steering Committees, for their dedicated efforts towards the organization of the event. Special thanks Conference Catalysts, LLC, Administrators of the IST and the IEEE School of Imaging, for their outstanding and enthusiastic efforts to administrate and contribute to the success of these two major events.

We are cordially inviting you to join and honor with your presence the 2024 IEEE International Conference on Imaging Systems and Techniques (IST2024) and the IEEE International School on Imaging. This is a unique opportunity for the advancement of knowledge, I addition, it paves the way to generate exciting global collaborative opportunities among industry, academia, and healthcare professionals.

George K. Giakos, Fellow IEEE
General Chair
Manhattan College, New York, United States

Jiang Liu, Ph.D.
Local Organizer
Waseda University, Tokyo, Japan

IST 2024 Technical Scope

The objectives of IST 2024 are but not limited to:

Cognitive Vision and Artificial Intelligence

» Artificial intelligence (AI) Techniques mimicking the brain
» Human cognition and computer vision
» Bioinspired vision systems and techniques
» Neuromorphic detection and imaging
» Quantum computing and Machine Learning
» Quantum computing image processing
» Neuroscience and artificial intelligence-based computer vision
» Image recognition and artificial intelligence (AI)
» Neural network machine learning
» Predictive analytics and classification
» Regenerative AI and Big data
» Image processing
» Imaging Informatics and bioinformatics

Industry 4.

» Machine vision, inspection, and artificial intelligence
» Cognitive vision systems
» Industrial generative Artificial Intelligence
» Bioinspired robotic vision systems
» 2-d, 3-d, 4-d imaging
» Light Illumination architectures
» Medical surgical robotics
» Block chain and distributed robotic vision sensing
» Human visual system-based Imaging
» Mobile Robotic Vision
» Logistics and e-commerce

Imaging to Biology and Pharmaceutics

» Regenerative AI and Drug Discovery
» Bioinformatics and big data analytics
» Immunohistochemical digital imaging
» Translational imaging and theranostics
» Molecular imaging and biology, Omics, biomarkers, metabolites
» Virtual pathology
» Pharmaco-imaging in drugs and medicine, drug characterization
» Omics instrumentation and imaging

Medical Image Modalities

» Generative artificial intelligence for diagnostics and tumor treatment
» Digital Radiography
» Computed Tomography (CT)
» Magnetic Resonance Imaging (MRI)
» Nuclear Imaging-SPECT-PET
» Ultrasound Imaging
» Optical coherence tomography (OCT)
» Optical polarimetric reflectance spectroscopy
» Multispectral imaging
» Narrow band imaging
» Laser acoustics
» Raman scattering
» Fluorescence Imaging
» Surgical guidance imaging
» Lasers for Imaging and Theranostics
» Augmented Reality and intraoperative navigation in malignancies
» Real-time diagnosis and visualization of tumor margins

On chip signal or image processing

» Image sensors for 3D imaging
» Bio-inspired image sensor

Imaging, Visualization, Analysis and Processing

» Physics of image formation
» Image phenomenology and perception
» Global and local image analysis and processing
» Mutiresolution image analysis
» Machine learning and computer visualization
» Image registration and restoration techniques
» Clustering techniques for feature extraction and segmentation
» Filtering and Image segmentation techniques
» Neural networks and deep learning
» Bioinformatics and big data

Imaging Devices and Techniques

» Detector physics
» Imaging sensors and detectors
» Cameras, microscopy, spectroscopy, displays
» Device miniaturization
» Computer graphics and augmented reality
» Machine learning, and processors
» Data acquisition systems and techniques
» Electric impedance tomography (EIT)
» Electrical Resistivity Tomography (ERT)
» Inverse scattering tomography techniques
» Image processing and pattern recognition
» Artificial intelligence and imaging

Emerging imaging trends

» Web-based remote diagnosis
» Internet of the Things (IoT) and Imaging Autonomous navigation
» Cloud and edge computing, Imaging, and mobile Platforms
» Cybersecurity and Imaging
» Smart Cities and Imaging

Image sensors assessment and novel implementations or applications

» Hyperspectral image sensors or camera
» Image sensors for computational imaging
» Image sensors for automotive applications
» Image sensors used in integrated networks (internet of things)
» Image sensors for drones and autonomous vehicles
» Sensor fusion

Space & Unmanned Autonomous Vehicles

» Remote sensing, ladars & lidars
» Target Detection and classification
» Machine learning and deep learning techniques
» Autonomous systems, drones and vehicles
» Robots in Space
» Autonomous aerial and underwater imaging systems
» Nanosatellites, microsatellites
» Bioinspired robotic vision systems
» Electromagnetic scattering
» Advanced space instruments and satellite imaging
» Sensors for aerospace applications
» Image processing and pattern recognition
» Spectral registration
» High dimensional data reduction in spectral bands

IST 2024 Technical Scope

The objectives of IST 2024 are but not limited to:

Imaging Tools
» Texture Analysis
» Image quality assessment Image restoration
» Super-resolution Imaging
» Human visual system based Imaging
» Compressive sensing for imaging
» Image enhancement
» Image Processing

Multimedia Retrieval in Spectral Imaging
» Content-based retrieval in hyper/ multi-spectral domain
» Summarization tools in hyper/multispectral domain
» Relevance feedback techniques to assist experts in taking complex decisions
» Behavioral analysis and actions recognition for complex engineering applications
» 4D/5D image reconstruction
» Semantic representation and content enrichment

Mobile Platforms, Cloud Computing, Computer Vision & Cybersecurity
» Embedded imaging, mobile and communication applications
» Neuromorphic computing

Real life Imaging Applications & Challenges
» Homeland security, surveillance, inspection and monitoring
» Industrial Inspection and material characterization
» Semiconductor wafers, solar cells, nanomaterials, biomaterials and composites
» Pharmaceutical and food processing vision inspection system
» Image phenomenology and processing-active- passive sensors and illumination technologies
» Urban planning, civil engineering monitoring & transportation
» Environmental monitoring & early detection of natural hazards
» Cultural heritage applications

IST 2024 SPONSORS

Sponsored by IEEE Instrumentation & Measurement Society, and TC-19 Technical Committee on Imaging Signals and Systems in conjunction with Waseda University, Tokyo, Japan, and the The IEEE International School of Imaging

ANNOUNCEMENTS

A poster exhibition of STEM students will take place during the Conference. This STEM exhibition will address presentation of student artifacts, through capstone projects (senior design projects), from different countries.
Best Student presentation awards will be issued. Details will be released soon. Student abstracts after peer review process will be included to *IEEE Xplore*.

VENUE DETAILS

Waseda University
Waseda University, located in the heart of Tokyo, Japan, is set to host this year's edition of the IEEE International Conference on Imaging Systems & Techniques. Renowned for its academic excellence and vibrant campus life, Waseda offers an ideal venue for scholars and researchers from around the globe to convene and exchange insights on the latest advancements in imaging systems and techniques. With its rich history dating back to 1882, Waseda University boasts state-of-the-art facilities, world-class research centers, and a diverse student body, providing an inspiring backdrop for intellectual discourse and collaboration. Attendees can expect not only stimulating discussions and presentations but also the opportunity to immerse themselves in Tokyo's dynamic culture and technological innovation hub. Join us at Waseda University for an unforgettable conference experience at the forefront of imaging technology.

Exploring Tokyo
While attending IST 2024, we encourage you to explore the great city of Tokyo, Japan. There is an abundance of exciting activities to explore in this vibrant city. From experiencing the bustling energy of Shibuya Crossing and shopping in the trendy districts of Harajuku and Ginza to immersing themselves in traditional Japanese culture at the historic Asakusa Shrine and sampling delicious street food at Tsukiji Fish Market, Tokyo offers something for everyone. Additionally, visitors can marvel at the iconic architecture of Tokyo Skytree, unwind in the tranquil gardens of Shinjuku Gyoen, and indulge in the city's renowned culinary scene, featuring sushi, ramen, and izakaya dining experiences. With its blend of modernity and tradition, Tokyo promises an unforgettable cultural adventure for conference attendees during their stay.

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