IST 2017

IEEE International Conference on Imaging Systems and Techniques

Beihang University, Beijing, China / October 18-20, 2017

IEEE

IEEE INSTRUMENTATION & MEASUREMENT SOCIETY

Sponsored by IEEE Instrumentation and Measurement Society, and TC 19 Technical Committee on Imaging Systems
In conjunction with the IEEE International School of Imaging

Call For Papers

The IEEE International Conference on Imaging Systems and Techniques will take place jointly with the IEEE International School of Imaging in Beijing, China, October 18-20, 2017. The Institute of Electrical and Electronics Engineers (IEEE) is the world's largest professional association, with nearly 500,000 members, dedicated to advancing technological innovation and excellence for the benefits of humanity.

The scope of the IST is to explore, advance, and generate new knowledge on multifaceted design principles, systems, and techniques, and applications of imaging, increase the understanding of imaging informatics, pathophysiology and metabolism and measure therapeutic efficacy; that would lead ultimately to novel devices and technologies, standards and metrology, and systems with unsurpassable image quality, scalability, reconfigurability, and miniaturization capabilities; developing data analytics solutions utilizing medical imaging to assist clinicians and healthcare providers to bring big data to personalized medicine;

In a rapidly changing global economy, experiencing an unparalleled integration of science and technology, the multifaceted field of imaging requires drastic adaptation to the rapid changes of our society, economy, environment, and technological revolution; there is an urgent need to address and propose dynamic and innovative solutions to problems which tend to be either complex or static or rapidly evolving with a large number of unknowns. The complexity of the involved imaging scenarios, and demanding design parameters such as speed, signal-to noise ratio, high specificity, high contrast and spatial resolution, high-scatter rejection, complex background, harsh environment, necessitates the development of multifunctional, scalable, and efficient imaging suite of sensors, solutions driven by innovation, operating on diverse detection and imaging principles. Artificial neural networks combined with pattern recognition techniques such as classification, clustering, feature selection, texture analysis, segmentation, image compression, color representation and several other aspects of image processing promise the solution of challenging technical problems, under complex imaging scenarios, with applications in medical imaging, remote sensing, aerospace, radars, defense, and homeland security applications.

Engineers, and scientists from industry, government, academia, and healthcare who want to report novel scientific results, technological and clinical advances in the multidisciplinary areas of imaging systems and medical diagnostic device industry with emphasis on sensors and detectors, data acquisition systems, metrology, big data analysis, machine learning, deep learning, bioinformatics, image processing, bioinspired robotic vision, spectroscopy, cybersecurity, and Internet of the Things (IoT), are invited to attend the IST Conference and interact with major worldwide experts.

July 30, 2017
Initial Full Paper Deadline

August 15, 2017
Notification of Acceptance

September 5, 2017
Full Paper Deadline

THE INITIAL FULL PAPER DEADLINE IS JULY 30, 2017 *see next page for IST 2017 objectives & instructions*

Manuscripts must be limited to 6 pages in IEEE 8.5x11 format. The IST Proceedings are indexed in the WEB of Science and Scopus and will be published in IEEE Xplore. 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 Papers will be published in ISI Journals, following a peer-review process, as done in the past.

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IST 2017 OBJECTIVES

The objectives of IST 2017 are but not limited to:

Imaging Informatics

- Image processing and pattern recognition
- Big Data Analytics
- Machine Learning
- Deep Learning
- Data Mining
- Integration of Imaging Informatics and Bioinformatics

Medical Diagnostics & Imaging to Biology

- Big Data Analysis and imaging
- 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

- Optical polarimetric reflectance spectroscopy
- Optical multispectral imaging,
- Narrow band imaging.
- Laser Acoustics
- Raman scattering, laser acoustics,
- High magnification bronchovideoscopy,
- Fluorescence and autofluorescence
- Optical coherence tomography (OCT),
- MRI, PET, SPECT, CT,
- Surgical guidance imaging

Medical Image Analysis, Processing, & Image Visualization

- Image analysis
- Wavelets and fractals
- Deep learning
- Image registration
- Image Segmentation
- Pattern Recognition
- Feature Extraction
- Texture Analysis
- Applications of medical image processing
- Exploratory data analysis and big data
- ET, MRI, CT, SPECT, microscopy.
- Optical coherence tomography (OCT)

Imaging Devices and Techniques

- Imaging sensors and detectors
- Cameras, microscopy, spectroscopy, displays, device miniaturization
- Computer graphics and imaging.
- Imaging, machine learning, and GPU processors
- Tomographic Scanners: ECT, Inverse scattering, Industrial Scanners
- Image processing and pattern recognition
- Emerging imaging trends
- Web-based remote diagnosis
- Internet of the Things (IoT) and Imaging
- Cloud Computing, Imaging, and mobile Platforms
- Cybersecurity and Imaging

Remote Sensing & Unmanned Autonomous Vehicles

- Remote sensing, ladars & lidars
- Autonomous aerial and underwater imaging systems
- 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

Imaging Tools

- Texture Analysis
- Image quality Assessment
- Image restoration
- Super-resolution Imaging
- Human visual system based Imaging
- Compressive sensing for imaging
- Image enhancement

Multimedia Retrieval in Spectral Imaging

- Content-based retrieval in hyper/multi-spectral domain
- Summarization tools in hyper/multi-spectral 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

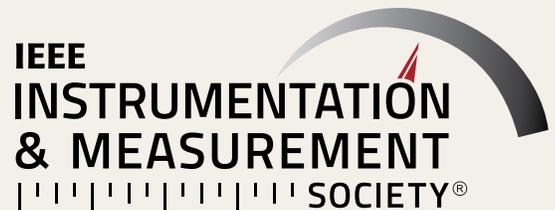## Mobile Platforms, Wireless Image Transmission & Cybersecurity

- Embedded imaging, mobile and communication applications
- Web-based remote diagnosis

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

About Beijing

Beijing is the capital of China and one of the most populous cities in the world. It is the nation's political, cultural, and educational centre. It is also the home to the headquarters of most of China's largest state-owned companies, and it is a major hub for the national highway, railway and high-speed rail networks, while Beijing Capital International Airport is the second busiest in the world in terms of passenger traffic. Beijing offers a variety of cultural events together with thriving night life scene and top class events. Beijing is a perfect walking city, stroll along the streets, exploring the mixture of old and new architecture. Soak up the urban vibe, speak to people of the city and expect a warm welcome, this is a city that embraces all its visitors. Beijing is easy to get to and perfectly positioned to discover all of China's North Country.

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