



2018  
**IST**

IEEE INTERNATIONAL CONFERENCE ON  
**IMAGING SYSTEMS AND TECHNIQUES**  
Kraków Poland / October 15-18, 2018



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 Kraków, Poland, October 15-18, 2018. 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.

**May 30, 2018**

Initial Full Paper Deadline

**June 15, 2018**

Notification of Acceptance

**July 15, 2018**

Full Paper Deadline

**THE INITIAL FULL PAPER DEADLINE IS MAY 30, 2018**

*see next page for IST 2018 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 2018 OBJECTIVES

The objectives of IST 2018 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

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## IST 2018 OBJECTIVES (continued)

The objectives of IST 2018 are but not limited to:

### 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 Kraków

*(Latin: Cracovia, French: Cracovie, German: Krakau, Kroke", also Cracow or Krakow)*

Kraków has always been, in many aspects, a charmed city. It's history dates back to the 4th century, Kraków has fortuitously avoided destruction since the pesky Mongols stopped bullying the area in the 13th century, growing into one of the most prominent cities in Central Europe.

The most important city in Poland not to come out of World War II destroyed. Even the Soviets failed to leave their mark on the enchanted city centre during 45 years of supervision, forced to erect their gray communist Utopia in the outlying suburb of Nowa Huta. As a result, Kraków is today one of the most beautiful showpieces of Eastern Europe – a claim validated by its historic centre's inclusion on the first ever UNESCO World Heritage List in 1978, along with the nearby Wieliczka Salt Mine and only ten other places in the world.

