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. For instance, the battle against the cancer, fight against the terror, exploration and management of the natural resources, remote sensing, underground and tunnel inspection, and environmental monitoring are some of the areas that need to be addressed with urgency. 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.

This special issue of MTAP journal invites papers coming from academia and the technical community to present their latest research findings, ideas, developments and applications in the wide area of multimedia research, such as imaging sensors, processing and pattern recognition, medical imaging, bio-informatics, computer vision, remote sensing, surveillance, inspection and monitoring, towards complex and real-world engineering and computer science applications. In particular, the special issue will include significantly expended versions of papers presented in the 2016 IEEE International Conference on Imaging Systems and Techniques (IST2016). Topics covered involve:

**Imaging modalities and pattern recognition**
- Imaging Devices, Modalities and Techniques
- Image processing and pattern recognition
- Emerging imaging trends
- Cameras, microscopy, spectroscopy, displays, device miniaturization
- Optical polarimetric reflectance spectroscopy, multispectral imaging, narrow band imaging, Raman scattering, laser acoustics, high magnification broncho-videoscopy
- Optical coherence tomography (OCT), MRI, PET, SPECT, CT, microwave and nano-imaging
- Electric Computed Tomography (ECT)

**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
Remote Sensing and Robotics
- Remote sensing, surveillance, ATR, ladars & lidars
- Electromagnetic Scattering
- Autonomous aerial and underwater imaging systems
- Advanced space instruments and satellite imaging
- Sensors for aerospace applications
- Image processing and pattern recognition
- Spectral registration
- High dimensional data reduction in spectral bands
- Bioinspired Robotic Vision Systems

Mobile Platforms and Wireless Image Transmission
- Embedded imaging, mobile and communication applications
- Internet of the Things and Imaging
- Cloud Computing, Imaging, and mobile Platforms
- Cybersecurity and Imaging

Visualization, Inspection, Characterization, and Manufacturing
- Robotics, and surgical guidance imaging
- Urban planning, civil engineering monitoring & transportation
- Homeland security, surveillance, inspection and monitoring
- Industrial Inspection and material characterization
- Pharmaceutical and food processing vision inspection systems
- Environmental monitoring & early detection of natural hazards
- Cultural heritage applications (restoration, large-scale/novel digitalization, material characterization)

Paper format and submission:
Prospective authors should visit the conference website http://ist2016.ieee-ims.org/ for information on paper submission.

Important Dates:
- Manuscript submission due: January 10, 2017
- First Review Results: February 28, 2017
- Final Revision: March 31, 2017
- Final Review and Decision: April 30, 2017

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Prof. Giakos is a Chairman and Professor, Electrical and Computer Engineering, Director of Graduate Program, Manhattan College, NYC. Dr. Giakos research is articulated in imaging technology innovation, through the integration of physics and engineering, towards the development of high performance imaging systems for visualization, imaging, and graphics, bioinspired vision robotics, bioinformatics, ladar and surveillance sensor platforms, multispectral polarimetry, nanophotonics, characterization and testing platforms, for healthcare, pharmaceutical, and industry sectors.

Dr. Giakos is an IEEE Fellow and an Office of Naval Research Distinguished Faculty Fellow. He has been recognized for "his leadership efforts in advancing the professional goals of IEEE" by receiving the 2014 IEEE-USA Professional Achievement Award, "in recognition of his efforts in strengthening links between industry, government and academia".

His research group was among the first in the US to pioneer the characterization of the detection and imaging characteristics of Cadmium Zinc Telluride semiconductor substrates for flat-panel digital radiography applications. He has fostered several breakthrough inventions which have been rewarded with fifteen (18) US and international Patent Awards and more than 200 peer-review articles and journal publications. He is a. He received numerous prestigious research faculty fellowship awards from the Department of the Air Force, NASA, National Academy of Sciences, and Naval Research Laboratory.


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