

TC – 19 Annual Reporting 2024

TC-19 “Imaging Signals and Systems”

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1. Status of all standards developed or maintained by your committee.

- Bridging Cognitive Vision with Artificial Intelligence.
- Neuromorphic Detection.
- Ladar and Autonomous Systems
- Feature extraction and target motion recognition using cognitive-deep learning architectures and polarimetric principles.
- Polarimetric Imaging
- Underwater vision and imaging-variable illumination-spatial-temporal-frequency response.

2. Updating of all activities reports

- I. The TC-19 Committee organized together with the IEEE Instrumentation & Measurement Society, The 2024 International Conference on Imaging Systems and Techniques (IST). The IST2024 took place jointly with IEEE International School of Imaging in Tokyo, Japan, October 13-15, 2024. The IST has been extremely successful attracting many high-quality papers from all over the world. Several distinguished lectures were offered by keynote speakers as part of the IEEE International School of Imaging.
- II. The Committee have been actively involved in the recruitment, mentoring and promotion of leadership skills of young, enthusiastic engineers. As result, several leading positions are filled with young enthusiastic engineers as demonstrated by the organization of the IST Conferences and the International School of Imaging.
- III. The Committee has been involved in the peer-review of Proceedings and Transactions papers; assisted in the review process of papers relevant to other IM Conferences and Symposia.
- IV. Dr. Giakos, being Chair, of the New York Chapter of the IEEE Instrumentation and Measurement Society, has promoted several professional and STEM activities within the New York City.
- V. The Committee is actively involved towards the organization of the 2025 IST that will take place at INSA, Strasbourg, October 15-17 2025.

3. Future standardization work

Continuation of the efforts aimed bridging Cognitive Vision and Deep learning for Computer Visualization and Image Processing.

Existing support being provided by the committee to conferences

The committee provides support to the following events:

1. International Conference on Imaging Systems and Techniques (IST)
2. IEEE International School of Imaging.
3. NYC Local Chapter on Instrumentation and Measurement and other NYC local chapters.

4. Interaction with other societies in IEEE

Interaction with the following societies:

IEEE Engineering in Medicine and Biology Society (EMBS)
IEEE Power and Energy Society
IEEE Industrial Applications Society
IEEE Antenna and Propagation

5. Existing support being provided by the committee to conferences

The TC-19 Committee actively promotes the International Conference on Imaging Systems and Techniques (IST), a premier conference on Imaging and Computer Visualization, and the IEEE International School on Imaging. The scopes of the IST and the School are to explore multifaceted design principles and new applications of imaging that would lead ultimately to novel devices and technologies, standards and metrology, and systems with unsurpassable image quality, scalability, reconfigurability, and miniaturization capabilities; increase the understanding of pathophysiology and metabolism and measure therapeutic efficacy; bridge technology and clinical disciplines in the multidisciplinary areas of imaging, spectroscopy, machine learning, deep learning, aerospace, industry, and medical diagnostic device industry. The TC-19 provides support to the IMTC Technical conferences, by soliciting technical papers, organizing special sessions and reviewing submitted contributions.

6. Existing support being provided by the committee to publications (IMS Magazine and TIM)

A TC-19 contributing article was published on November 2020 issue.

Peer-review of Transactions and Conference Papers.

7. Industry links

Local companies from NYC area, leading efforts in Quantum Computing within the State of NY, Healthcare, Defense.

8. Succession plans

The TC-19 operates through a Committee-shared leadership model aimed at retaining and rewarding active members and high performers, while promoting scholarship and dissemination of new imaging principles. To meet this goals, several leading positions are filled with young enthusiastic engineers; as demonstrated by the organization of the IST Conferences and the International School of Imaging.

a) Main concerns and possible solutions

Increase efforts and incentives towards the recruitment and participation of STEM students to Society activities.

9. Development of initiatives / On the News

Many thanks to the organizers of the IST2024, Dr. Lijun Xu, Beihang University (China), Dr. Wuqiang Yang (UK), Dr. Antonios Gasteratos (Greece), Dr. Evangelos Boukas DTU (Denmark) for their outstanding contributions to the IST.

Respectfully

George Giakos, Ph.D.

Fellow of the IEEE

Distinguished Faculty Fellow Office of Naval Research

Chairman and Professor, Director of the Graduate Program

Manhattan College

Department of Electrical and Computer Engineering

Founding Director IEEE International School on Imaging

Chair, New York Chapter of the IEEE

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