Special issue on
"MEASUREMENTS, SENSORS AND STANDARDS IN MODERN COMMUNICATION NETWORKS"

in IEEE Instrumentation & Measurement Magazine, to be published in September 2022

In the last years, communication networks have become a central piece for many applications in multiple domains, including commercial and industrial systems, personal care and medicine, modern vehicles and vehicular networks, and environmental and disaster early-warning monitoring, to cite a few examples. Each application field has specific constraints in terms of data-rate, connectivity, security, immunity to electromagnetic disturbances, coverage area, and power consumption. Therefore, designers and researchers are continuously engaged in new challenges for reaching the expected targets in terms of performance and actual applicability on the field, while taking into account the costs and requirements in the design of suitable architectures warranting scalability, required level of security, effective maintainability, and resilience.

In this context, network metrology and measurements play a fundamental role in addressing these challenges to meet the specific constraints and expected performance of network applications. For example, network measurements are essential to enable online autonomous fine-tuning of communication networks. However, monitoring, analysis, characterization and visualization of modern networks involve multiple research challenges in terms of performance, accuracy and scalability to cope with the ever-increasing link speeds, data rates, number of devices and users, and security threats. At the same time, modern sensor networks allow the implementation of smart applications based on sensors and edge-computing with advanced functions and capabilities supporting, for example, learning sensors and adaptive systems.

The standardization in these application areas is also a crucial aspect because it allows assuring common and reliable measurement procedures for characterization and benchmarking of systems and devices as well as the interoperability of the devices offered by different vendors.

The scope of this special issue covers aspects ranging from fundamental research to all kinds of advanced technologies. A special emphasis will not be only devoted to cover the current state-of-the-art, but also to the emerging trends, hot topics, and open issues.

Prospective authors are invited to submit tutorial-style papers by following the author guidelines of the Journal (https://ieee-ims.org/publication/ieee-imm/new-submissions), on topics related to Instrumentation and Measurement, Sensors, and Standards for modern Communication Networks including, but not limited to the following:

- Network traffic monitoring, analysis, characterization, visualization, and classification
- Measurements in 5G systems
- Measurements for human exposure to RF EMFs
- Performance assessment and characterization of modern computer networks and protocols
- Quality of Service (QoS) and Quality of Experience (QoE) measurements of network services
- Measurements for IoT and IIoT
- Coexistence and EMC in modern communication networks
- Standardization in modern communication and sensor networks
- Measurements in V2X
- Cyber Physical Systems and measurements for the Smart Industry

- Sensor networks for telemedicine
- Energy harvest for smart sensors
- Privacy aspects in network measurements and traffic analysis
- Measurements for cybersecurity
- Short range positioning and tracking
- Advances in Sensing, Processing and Transmission for IoT-Oriented Sensors Networks
- Wearable Devices and Sensors for Innovative Monitoring Systems in the 4.0 Era

Papers must address the Special Issue Topic, be properly framed in the Instrumentation and Measurement field and written for the general audience. General overviews on the topic and contributions dealing with Open Problems in IM are very welcome, also presenting challenging and ambitious solutions, which could be developed by current and advanced technology.

While drafting your paper to be submitted to IMM, you are strongly invited to take care that:
-The paper is properly framed in the field of Instrumentation and Measurement. This could be achieved by properly structuring the Review of the State of the Art and motivations of your work.
-In line with mission of the IEEE I&M Magazine, the paper aims to provide an overview of the topic addressed to the general I&M audience.
- The paper format is compliant with the IMM's author guidelines:
https://ieee-ims.org/publication/ieee-imm/new-submissions

In general, each paper should contain 3500-5000 words, and present 4-6 figures.
When your paper is ready, please submit it completely through
https://www.editorialmanager.com/IMM/default.aspx
We expect to receive your paper by January 15th, 2022 to begin the review and production process.

With your submission, please include a cover letter where you specify that the paper is submitted to this Special Issue.

Schedule:

Full-length paper submission:	January 15th, 2022
Revised manuscript due:	March 15th, 2022

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