



**Special issue on
AI-based Industry Instrumentation and Measurement Application Technologies**

in *IEEE Instrumentation & Measurement Magazine*, to be published in May 2025

AI is one of the key enablers of the fourth industrial revolution. AI applications are changing our world and impacting everything from society, to the economy, living, working, and technology. In the field of instrumentation and measurement, AI has already had an impact. Artificial intelligence technology is an attractive tool for improving the efficiency, performance and functionality of equipment and Instrumentation. This is an application related to measurement, system identification, and control. Instrumentation and measurement are very interested in applying AI methods, techniques, and tools, in terms of measurement, calibration, and other challenges. They allow exchanging data easily and remotely for configuration, adjustments, calibration, and diagnostics. Digital transformation relies on a model-based system that's fed by real-time data.

Measurement and control of physical conditions are very relevant in many industrial and consumer applications. In today's fast-changing world of process automation, we can't keep up without constant innovation. In collaboration with research institutes, we develop sensor technologies that meet customer needs. Industrial communication technologies are crucial to preparing for digital transformation.

We invite authors from both industry and academia to submit original research and review articles, targeted to a wide audience that cover AI based Industry Instrumentation and Measurement Application Technologies, including, but not limited to, the following topic list:

- AI based Automation in Digital Instruments
- AI based digitalization of processes and tools
- AI in industry Instrumentation and Control Systems
- Digital Instrumentation Communication Interface
- AI based Remote Devices Communication System
- Local Area Network Extension for Instruments
- Digital Instrumentation Network
- AI based Devices Network Measurement
- AI based Process Automation Plants
- AI based Measurement Techniques for Industrial Communication Devices
- AI based Remote Devices Communication
- AI based measurement of Frequency, Time
- Digital Tachometer Working Principle
- AI based Microprocessor Based Instruments
- AI based Digital Capacitance Meter Block Diagram
- AI based Decade Counter Circuit
- AI based Medical Analyzing, Measuring Devices
- Digital Phase Meter Block Diagram and Working Principle
- AI based Digital Frequency Meter
- AI based Microprocessor Based Instruments
- AI based Digital Instrumentation Network and Industrial Communication Technologies
- Intelligent sensors and instrumentation
- Artificial Intelligence in Process Instrumentation
- AI based Advanced Sensing and Physical Measurement

Papers should present to the wide audience a general overview of one scientific subject of your interest fitting the Special Issue Topic and really framed in the Instrumentation and Measurement field. 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 *Instrumentation & Measurement Magazine*, you are strongly invited:

- to follow authors guidelines, both for styling and contents: <https://iee-ims.org/publication/iee-imm/new-submissions>
- to make sure your article 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.
- to draft the paper for the general I&M audience.

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>

With your submission, please include a cover letter where you specify that this paper has been submitted for the SI on AI-based Industry Instrumentation and Measurement Application Technologies.

Schedule:

Full-length paper submission:	September 2024
Revised manuscript due:	November 2024

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