Metrological Needs and Challenges in Industrial Sensor Networks

October 4 - November 15, 2023 - h. 10:00 - 12:00
Polo Ferrari 2, Via Sommarive 9, Trento - Seminar room

Speaker: Guglielmo Frigo
Federal Institute of Metrology (METAS) Switzerland

In the Internet-of-Things era, most industrial processes rely on distributed measurement infrastructures that shall satisfy stringent requirements in terms of accuracy, latency and reliability. In this context, metrology plays a crucial role. On one side, metrology is the science of measurement and indicates the most suitable and optimized methodologies to quantify and estimate the parameters of interest. On the other side, metrology allows us to evaluate the uncertainty associated to each measurement result and its propagation throughout the different stages of processing and control.

In recent years, the role of metrology has significantly evolved. Originally, it was restricted to the precise realization of the reference measurement units (e.g., the meter, the second). Nowadays, metrology is one of the main actors in the process of development and standardization of new instruments and devices, thus fostering the progress of both technology and quality levels. In this seminar series, we are going to explore different aspects of metrology influencing industrial processes and applications, with a specific focus on distributed sensor networks.

The series is organized as follows:

- Role of metrology in industry and quality processes 4/10/2023
- Uncertainty of synchronized distributed measurement systems 6/10/2023
- Parameter estimation in dynamic non-linear models 8/11/2023
- Autoregressive model for dynamic model forecasting 15/11/2023