

# **Data analytics and artificial intelligence for quality and reliability assurance (Code:pf7m1)**

## **Goal:**

Quality and reliability are crucial competition factors for industrial automation. Appropriate design, monitoring, diagnosis, and prognosis of complex engineering systems ensure product quality, manufacturing process consistency, industrial process stability, and equipment safety. With the data-rich environment of the engineering systems, advanced data analytic methods and artificial intelligence approaches will substantially provide additions to quality and reliability engineering.

## **Topics:**

This special session focuses on quality and reliability assurance from an industrial automation perspective, collecting the latest advances in data science for the design, monitoring, diagnosis, and prognosis of complex engineering systems. By sharing the state-of-the-art statistical and machine learning methods in this session, the development of quality and reliability both at academic and industrial levels will be promoted. The topics include but are not limited to:

- 1) Data mining and statistical learning of complex engineering systems
- 2) Active learning for the design and optimization of complex engineering systems
- 3) Federated learning for quality and reliability assurance
- 4) Explainable artificial intelligence and machine learning for quality and reliability
- 5) Real-time process monitoring, control, and system evaluation
- 6) Data analytics on bit data or high-dimensional data in the manufacturing system
- 7) Advanced data-driven methods for diagnosis and prognosis of engineering systems

## **Contact the lead organizer:**

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