Big data analytics and artificial intelligence for automated quality and reliability assurance (Code: 3u1gk)

<u>Goal:</u>

Quality and reliability are crucial competition factors for modern manufacturing systems. Automated design, modeling, monitoring, diagnosis, prognosis, and control 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 automated quality control and reliability improvement.

This special session focuses on quality control and reliability assurance from an industrial automation perspective, collecting the latest advances in data science for the design, monitoring, diagnosis, prognosis, and control of complex engineering systems. By sharing the state-of-the-art statistical and machine learning methods in this session, the development of quality control and reliability engineering both at academic and industrial levels will be promoted.

<u>Topics:</u>

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

<u>Contact the lead organizers:</u>

Yongxiang LI, PhD
Department of Industrial Engineering and Management
Shanghai Jiao Tong University
E-mail: yongxiangli@sjtu.edu.cn
Phone: +86-15816765105