Contribution ID: **126** Type: **not specified**

In-Process Quality Improvement: Concepts, Methodologies, and Applications

Monday, June 27, 2022 4:05 PM (1 hour)

This presentation will briefly discuss the concepts, methodologies, and applications of In-Process Quality Improvement (IPQI) in complex manufacturing systems. As opposed to traditional quality control concepts that emphasize process change detection, acceptance sampling, and offline designed experiments, IPQI focuses on integrating data science and system theory, taking full advantage of in-process sensing data to achieve process monitoring, diagnosis, and control. The implementation of IPQI leads to root cause diagnosis (in addition to change detection), automatic compensation (in addition to off-line adjustment), and defect prevention (in addition to defect inspection). The methodologies of IPQI have been developed and implemented in various manufacturing processes. This talk provides a brief historical review of the IPQI, summarizes the developments and applications of IPQI methodologies, and discusses some challenges and opportunities in the current data-rich manufacturing systems. The prospect for future work, especially on leveraging emerging machine learning tools for addressing quality improvements in data-rich advanced manufacturing processes, is discussed at the end of the presentation. More details can be found in the paper published in IISE Transactions: https://www.tandfonline.com/doi/citedby/10.1080/24725854.2022.2059725?scroll=top&needAccess=true

Keywords

Presenter: Dr SHI, Jianjun (Georgia Institute of Technology)

Session Classification: Award Session: George Box Award + Pandemic Box Award recipient ceremony

Track Classification: Box Award