

Big data mining for Industry 4.0: opportunities and challenges

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Fostered by *Industry 4.0*, complex and massive data sets are currently available in many industrial settings. On the one hand, the product quality is characterized by **free-form complex shapes**, measured via non-contact sensors and resulting in large unstructured 3D point clouds. On the other hand, in-situ and in-line data are available as multi-stream **signals, image and video-images**. In this framework, novel solutions for functional data monitoring, manifold learning, spatio-temporal modelling, statistical monitoring of multi-stream data are needed to face the current industrial challenges.

This session focuses on novel solutions for big data mining in the framework of Industry 4.0: an overview of methods and tools is presented and discussed to highlight opportunities and challenges in this new scenario.

Four contributions are specifically foreseen:

1) An Adaptive Sampling Strategy for Online Monitoring and Diagnosis of High-dimensional Streaming Data

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2) Extended Fabrication-aware Convolution Learning Framework for Predicting 3D Shape Deformation in Additive Manufacturing

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3) Real-time customer satisfaction evaluation and monitoring using online text mining and data fusion

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4) Spattering as a driver of process control in Additive manufacturing via spatio-temporal modeling of videoimages

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