CoSma

Product and Production Cosimulation for Smart Manufacturing

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MOTIVATION & GOALS

Production of **complex products** requires many production steps. Detection of **deviations** t in early production steps and **prediction** of their impact on final **product quality** are key enablers to **skip obsolete work** on semi-finished, already broken products. Also, if possible, it is easier to fix problems by **reworking** directly after the deviation happened.

Following the main goals of the project

- Integrate several flows of measurement data
- Learn relationship between measurements and product quality
- Define and calibrate estimation models used for quality prediction
- Integrate quality prediction into production workflow

Project FactBox

Project Name CoSma
Project ID MFP II 2.2
Duration 30 Months

Area 2
Cognitive Robotics and Shop Floors

Project Lead
DI Michael Mayrhofer

APPROACH

Measurement data is stored to a single data warehouse to guarantee uniform access.
Machine learning, as well as statistical measures are employed to identify relations between measurement data and product quality.
Discovered **relations** are calibrated using numeric measurements to create a model for product quality in continuous space.

CONTRIBUTION

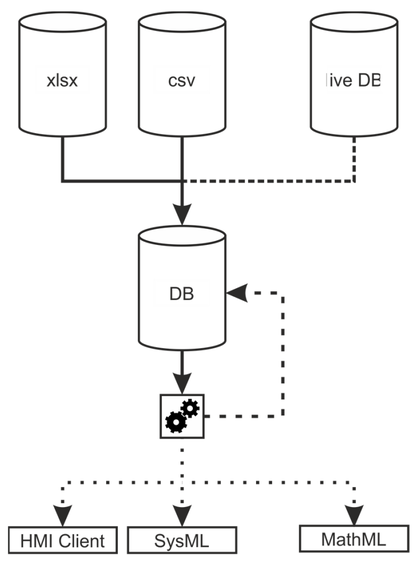
Scientific contribution

- Comparison of numeric methods against machine learning
- Combined use of mathematical modelling and machine learning
- Comparison of quality measures
- Use case for quality prediction

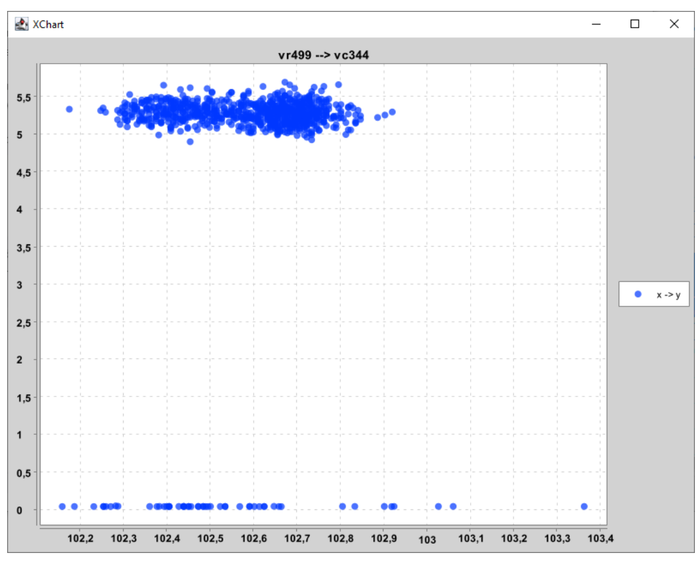
Economic contribution

- Feed-forward estimates allow to optimize testing schemes
- Feed-back to stations allows to deal with quality drifts
- Higher throughput und First-Pass-Yield
- Increased preservation of raw material

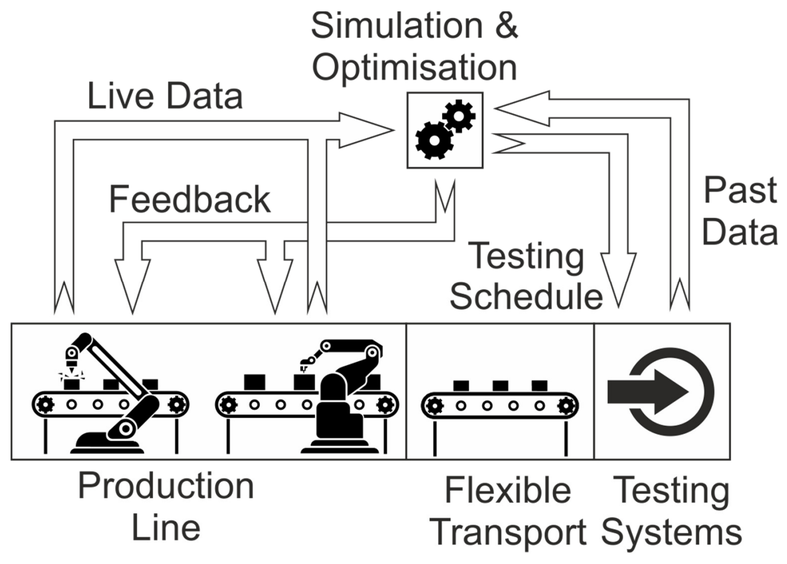
ONE FRAMEWORK ...



...to host measurement data



...to process data and visualise results



...to integrate evaluations with production

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