

Digital Twin Creation in an Automated Production System

Semester Thesis/Master's Thesis (SA/MA)

Lehrstuhl für Automatisierung und Informationssysteme
Technische Universität München
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Research Gap:

A new technological framework for production should enable the KI.FABRIK to manufacture various mechatronic products using fully modular, reconfigurable, highly automated, and integrated technologies. A significant difference from previous concepts is the direct physical interaction with the factory environment through robots and similar systems and the intuitive and transparent connection between humans and machines through wearable technology. The digital twin of the KI.FABRIK should be developed using engineering data and data from operations.

Research Goal:

A digital twin of a BMW and a Wittenstein use case will be implemented. All available life cycle information must be included by extracting data from different document formats. An information representation in the Asset Administration Shell (AAS) needs to be created. The model needs to be implemented in MS Azure with its visualization in Nvidia Omniverse. A concept for the information backflow from the digital twin to the real world should be elaborated. Finally, the digital twin in the thesis needs to be evaluated.

Requirement:

- A precise and structured approach to work
- Creativity and reliability
- Experienced in Python, capability of learning new tools and methods (e.g., AAS, MS Azure, Omniverse)
- Good German/English skills

In case of interest, please send your curriculum vitae and current grade transcripts to the contact below.

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