

Workshop Modeling in (and for) Production

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The production domain is permeated by heterogeneous data sources, a variety of IT systems, and complex industrial use cases — aspects that offer a very exciting field for research. Modern production systems involve a large number of sensors for monitoring industrial plants which help to gain an insight into a system's state. Sensors over time create datasets, that may be very detailed, need to be preprocessed such as time reduced, quantitatively, and qualitatively reduced, e.g., black and white instead of colored pictures, and enriched with metadata. To be able to define the datasets needed, we have to handle all these dimensions.

Our approach to handle these dimensions is the concept of digital shadows. A digital shadow is a set of contextual data traces and their aggregation and abstraction collected for a specific purpose with respect to an original system. These digital shadows are then used by digital twins. For us, a digital twin is a set of models of the system, a set of digital shadows and their aggregation and abstraction collected from a system, and a set of services that allow using the data and models purposefully with respect to the original system. Within [Be21], a conceptual model to describe digital shadows, data structures tailored to exploit models and data in smart manufacturing, was presented through a metamodel and its notion space. Using models helps handle this complexity in real-world scenarios.

The MoPro 2022 Workshop is a platform for researchers and practitioners within the production domain to exchange modeling techniques, interesting use cases and challenges. MoPro 2022 was searching for three types of contributions: *Research Papers*, *Novel Directions Talk* and *Digital Shadow Use Case*. We received eight submissions and accepted two Research Papers, two Digital Shadow Use Cases and three Novel Directions Talks.

- *Semantic Reasoning for Automated Factory Planning* (Niklas Schäfer) discusses potentials and challenges in capacity planning of factories with semantic information models.
- *Modelling Pig Rearing as Digital Shadow* (Tobias Zimpel) demonstrates how digital shadows can help to model data traces to enhance animal welfare.
- *Modeling Digital Shadows in Manufacturing by Using Process Mining* (Tobias Brockhoff, Merih Seran Uysal and Wil van der Aalst) realizes performance-aware digital shadows that provide holistic views on shopfloor-level processes.

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- *Digital Shadows for Cross-Organizational Data Exchange* (István Koren) envisions a trade of production data to unlock new business models.
- *Enhancing Digital Shadows with Workflows* (Malte Heithoff, Judith Michael and Bernhard Rumpe) integrates human-machine-interactions to the modeling of digital shadows by utilizing workflows.
- *Modelling Human Factors in Cyber Physical Production Systems by the Integration of Human Digital Shadows* (Alexander Mertens, Philipp Brauner et al.) outlines an anthropocentric approach that considers human actors in production systems.
- *A Vision Towards Generated Assistive Systems for Supporting Human Interactions in Production* (Judith Michael) investigates how the software engineering processes of assistive systems in production can be improved.

Program Committee

We thank our program committee members for their work, adherence to deadlines and contribution to MoPro 2022.

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MoPro 2022 takes place on June 28 in Hamburg as part of the Modellierung'22 conference. Thus, a special thanks goes to the whole organizing team of the Modellierung'22 for their continued support.

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Bibliography

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