Research School for Operations
Management and Logistics

Excellent Maintenance Planning & Prediction Optimized With Effective Rescheduling

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The assembly lines are subject to many interventions, some of which are expected, others unexpected. The expected interventions may or may not disturb the production process of the assembly line. This depends on the moment at which the intervention is initiated since the status of all machines and buffers in the assembly-line heavily impacts this disturbance. Quick decision making, proper and fast data collection and accurate prediction of future assembly line status is required to optimally initiate the interventions and thereby increasing machine utilization and assembly-line performance. The unexpected interventions may be transformed to expected interventions by combining and analyzing multiple data sources, such as machine state data, machine sensor data, SAP maintenance data and spare part replacement data. Extensive research is required to determine the usefulness and effectiveness of these data sources. The goal is to apply prediction algorithms such as neural networks to predict these unexpected interventions. Decision making in the form of strategies must be implemented to optimally initiate expected interventions. With the use of a digital twin, optimum strategies for each scenario of assembly line status may be derived. Reinforcement learning may be a part of determining the best strategy for a given situation of assembly line status.