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A Data Processing Platform for Predictive Maintenance in an Industrial Context

This study presents a digital twin-based data processing platform for predictive maintenance in an industrial context. The proposed platform aims for predictive maintenance using a data-driven solution enhanced with a model-driven approach based on a three-tier architecture. The platform developed is aligned with Big Data Value Reference Model and the Industrial Internet Reference Architecture (IIRA). With the use of new technologies and in particular through developments in operations technology and information technology, maintenance is increasingly moving towards a new concept. The new direction of maintenance is no longer merely related to the faults, but on the contrary, it is an end-to-end approach that begins from the concept stage and ends with cognitive predictions and maintenance recommendations. The predictive maintenance system developed exploits distributed data and machine learning algorithms for operation performance monitoring, evaluation, prediction of the health status, and decision-making support.

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