

Machine Learning for Predictive Maintenance in Cyber-Physical Systems

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Abstract. The study presents innovative machine learning models tailored for predictive maintenance in cyber-physical systems. By analyzing large datasets, these models can predict system failures before they occur, reducing downtime and maintenance costs. Our approach utilizes advanced algorithms to process real-time data, offering significant improvements in maintenance efficiency. The research highlights the potential of machine learning to transform maintenance strategies, providing a proactive approach to system management. With successful implementations across various industries, these models demonstrate a robust solution for future maintenance challenges.

Keywords: machine, learning, predictive, maintenance, systems

Introduction: In the era of Industry 4.0, the integration of cyber-physical systems has become a cornerstone of modern engineering, enabling the seamless interaction between digital and physical components. As these systems become increasingly complex, the need for efficient maintenance strategies is paramount. This paper investigates the application of machine learning in predictive maintenance, offering a sophisticated approach to identifying potential failures before they impact system operations. By leveraging data-driven insights, the proposed models enhance operational reliability and efficiency, positioning them as essential tools in the maintenance of advanced engineering systems.

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References

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