Leveraging AI for Predictive Maintenance in Manufacturing Systems

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Abstract. This paper explores the role of artificial intelligence in predictive maintenance for manufacturing systems. By employing machine learning algorithms, we aim to predict equipment failures before they occur, thereby reducing downtime and maintenance costs. The study presents a detailed analysis of different AI models and their effectiveness in real-world manufacturing environments. Our findings suggest that AI-driven predictive maintenance can significantly enhance operational efficiency and equipment longevity. The implications of this research extend to various industries seeking to integrate AI for improved maintenance strategies.

Keywords: Predictive Maintenance, Machine Learning, Manufacturing Systems, Operational Efficiency, AI Models

Introduction

Predictive maintenance has emerged as a critical component in the efficient operation of manufacturing systems. With the advent of artificial intelligence, the ability to predict equipment failures has become more accurate and less intrusive. This article investigates the application of machine learning algorithms to predict maintenance needs in manufacturing settings. We analyze the performance of various AI models, focusing on their accuracy, computational efficiency, and adaptability to different industrial environments. The results demonstrate the potential of AI to revolutionize maintenance practices, offering substantial savings in both time and resources.

References

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