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# Machine Learning Algorithms for Predicting Employee Performance through IoT Networks: Implications for Leadership Development in Organizations

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## Abstract

This research explores the application of machine learning algorithms in predicting employee performance through Internet of Things (IoT) networks, with a focus on implications for leadership development in organizations. The study employs a mixed-methods approach, combining quantitative data analysis from IoT-enabled workplace environments with qualitative insights from organizational leaders. Three machine learning models—Random Forest, XGBoost, and Neural Networks—were implemented and evaluated using a comprehensive dataset of employee performance metrics collected through various IoT sensors. The XGBoost model demonstrated superior predictive capability with an accuracy of 89.2% and an F1-score of 0.87. The findings reveal that workplace environmental factors captured through IoT networks significantly influence employee productivity and can serve as reliable predictors of performance. Furthermore, the research highlights how these predictive insights can transform leadership development strategies by enabling data-driven decision-making, personalized employee development plans, and

adaptive leadership approaches. This study contributes to both theoretical understanding and practical applications of how emerging technologies can enhance organizational effectiveness through improved leadership capabilities.

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