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Predicting Unplanned employee Absenteeism

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Unplanned employee absenteeism presents a critical operational and financial challenge to organizations across industries, with U.S. employers losing approximately \$225.8 billion annually. This paper proposes a specialized cloud-native machine learning framework to forecast shift-level absenteeism 12-48 hours in advance. Our proposed approach would integrate diverse data sources including historical attendance patterns, shift metadata, weather conditions, traffic data, and holiday proximity to create a robust predictive model. This proposal details the significant business problem, specific tree-based modelling decisions, hyper parameter optimization strategies, and implementation considerations that could enable substantial performance gains in enterprise workforce management.