

## 1. Abstract

Train delay prediction using advanced AI/ML frameworks involves leveraging historical and real-time data to forecast potential delays accurately. By employing techniques like Random Forest and LSTM models, the system can analyze multiple features such as weather conditions, departure times, and historical delays. The model is trained on historical datasets and evaluated using metrics like MAE and RMSE. This predictive approach helps optimize train schedules, reduce passenger inconvenience, and improve operational efficiency. The project integrates data preprocessing, feature engineering, model training, and performance evaluation for a comprehensive solution.