***Machine Learning Model for Downtime & Business Impact Prediction***

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**Introduction**

Objective: To predict potential impacts ahead of time by using histroircal data to minimize loses

Business Problem: Minimize business impact where X minute of downtime $X in losses.

Scope: Define the limitations, assumptions, and expected outcomes of the project.

**Data Collection & Preprocessing**

Data Sources: Backlog, DTM, Weather, Manpower, Tooling

Data Cleaning: Explain how missing values, duplicates, and inconsistencies were handled.

Feature Engineering: Detail new features created (e.g., workload trends, staff availability).

**Model Development**

Model Selection: Describe the models considered (Regression, Random Forest, XGBoost, etc.).

Training Process: Explain how the model was trained (train-test split, cross-validation).

Evaluation Metrics: Define the metrics used (RMSE, MAE, Accuracy).

**Model Optimization & Validation**

Hyperparameter Tuning: Discuss techniques used to improve model performance.

Validation Process: Explain how the model was tested with new data.

**Deployment**

Implementation Strategy: Describe where and how the model will be deployed (Power BI, SharePoint, standalone app).

Integration: Explain how predictions are made available to end-users.

**Monitoring & Maintenance**

Performance Tracking: Outline how the model will be monitored for accuracy.

Updates & Improvements: Explain the process for retraining the model with new data.

**Business Impact & Future Improvements**

Business Benefits: Summarize how this model helps reduce downtime and financial impact.

Future Enhancements: List potential improvements (e.g., adding more data sources, using deep learning).

Money saved from in hous development

**Conclusion**

Summary of Findings: Recap key takeaways from the project.

Next Steps: Mention any additional steps required for full-scale implementation.

**References & Appendices**

Cite any external resources or documentation.

Include sample datasets, code snippets, and technical details if needed.