MILE STONE 5: RUL Prediction Dashboard Report

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Objective:

The objective of this code is to build an interactive dashboard that visualizes the Remaining Useful Life (RUL) predictions made by trained LSTM models for the NASA CMAPSS turbofan engine datasets (FD001–FD004).
It allows users to load models and test data, generate predictions, and view key evaluation metrics and plots in real time.

Libraries Used:

plotly.graph_objects, dash, dash_bootstrap_components – Interactive web dashboard and visualizations

Deliverables:

1. A Dash-based web app for RUL prediction visualization.
2. Interactive components:
    - Dataset selector (FD001–FD004)
    - Metric display (RMSE, MAE, R^2, sample count)
    - Predicted vs Actual scatter plot
    - Residual distribution histogram
    - Sample prediction summary table

Conclusion:

The dashboard provides a **simple and interpretable interface** to analyse RUL prediction performance.
It integrates model outputs and visual analytics into one environment, enabling users to quickly assess accuracy, bias, and reliability of predictive maintenance models for turbofan engines.