Milestone 3 Documentation

Project: PrognosAI:AI-Driven Predictive Maintenance System Using Time-Series Sensor Data

Objective:
- Evaluate trained RUL prediction model
- Generate plots and PDF report
- Document workflow and results

1. Data Preparation

The CMAPSS FD001 dataset was preprocessed to generate rolling window sequences.

- Window size: 30 cycles
- Sensor features normalized
- RUL computed as remaining cycles
- Missing values handled by fillna(0)
- Processed data saved in NPZ format for model input

2. Model Evaluation

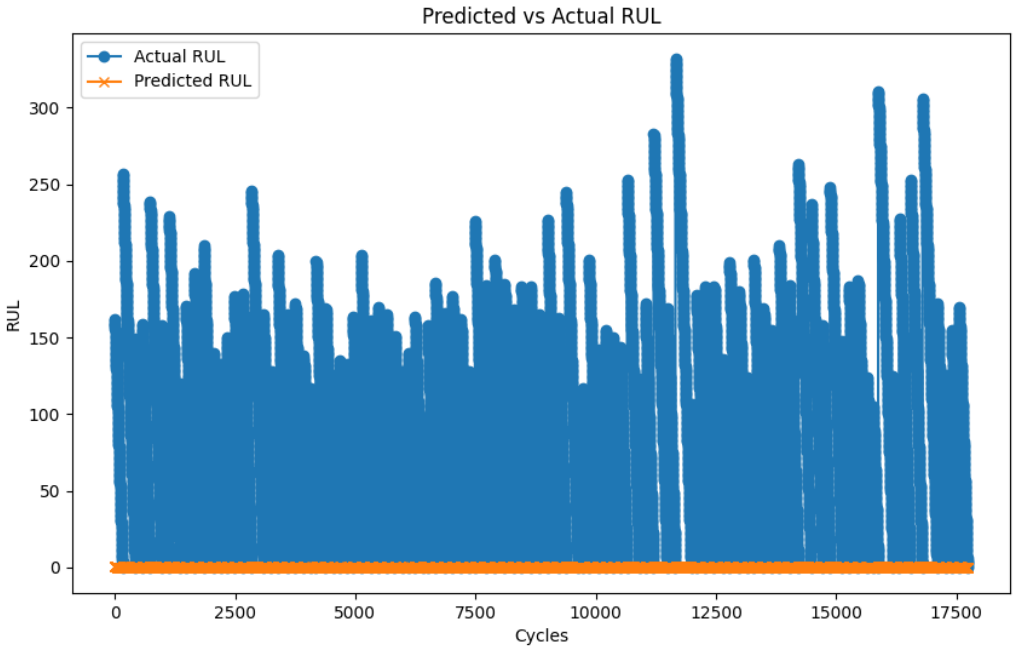
The trained Keras model was evaluated on the train set.

- Loss function: MSE

- Optimizer: Adam

- RMSE on train set calculated

Predicted vs Actual RUL Plot:



3. PDF Report Generation

A PDF report was generated automatically including:

- RMSE value
- Comparison plot of predicted vs actual RUL
- Summary of evaluation
- Saved at outputs/PDF file directory

4. Directory Structure

Project Directory Structure:

- data/: Contains raw and processed dataset files
- models/: Saved Keras model files
- outputs/Plots/: Generated plots
- outputs/PDF file/: Generated PDF reports
- src/: Python scripts for data preparation, model evaluation, and reporting