

LSTM Model Significantly Outperforms Traditional Model in Predictive Maintenance

Dataset: AI4I 2020 Predictive Maintenance Dataset
Task: Binary Failure Prediction

KPI_Total_Failures

339

KPI_Failure_Rate

3.39%

KPI_Traditional_Predicted_Failures

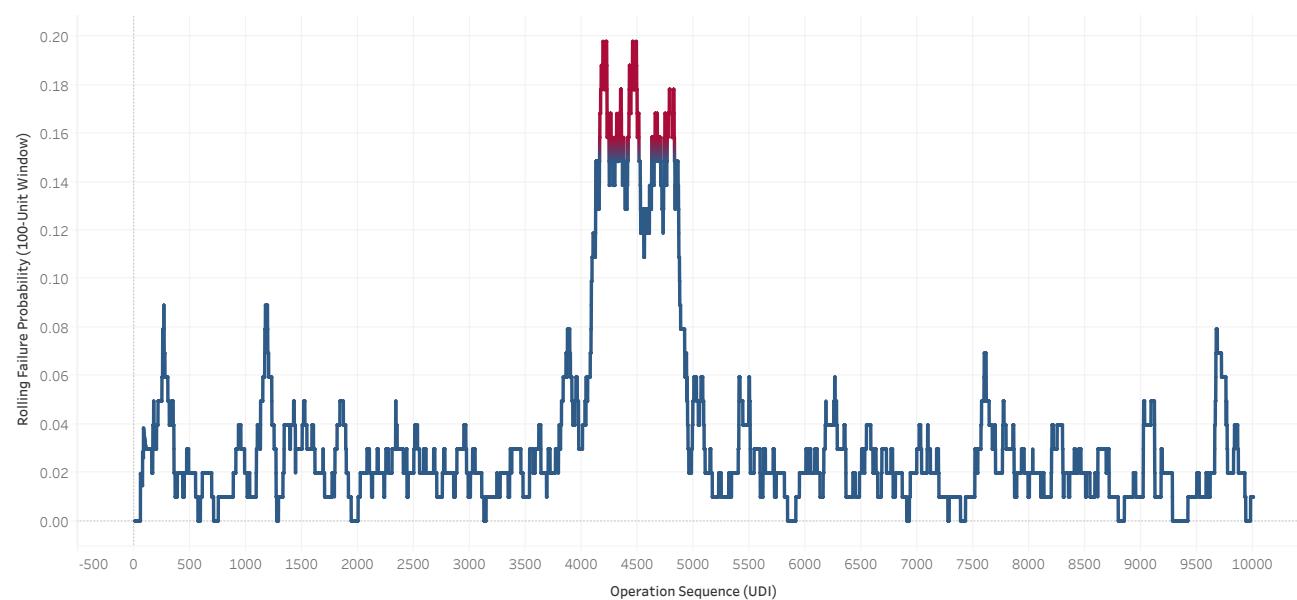
KPI_LSTM_Predicted_Failures

97

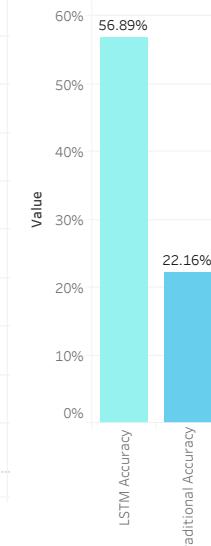
KPI_Avg_Predicted_Risk

50.83%

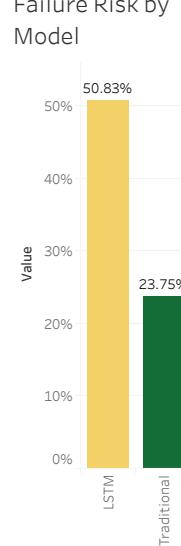
Failure Trend



Model Accuracy Comparison



Average Predicted Failure Risk by Model



Measure Names
LSTM Accuracy (Cyan)
Traditional Accuracy (Blue)

Measure Names
LSTM (Yellow)
Traditional (Green)

- LSTM accuracy (56.89%) is significantly higher than Traditional (22.16%).
- LSTM predicts more failures (97) than Traditional (31), indicating higher sensitivity.
- Failure probability spikes between UDI 4000–5000.
- LSTM model provides more reliable early warning detection.