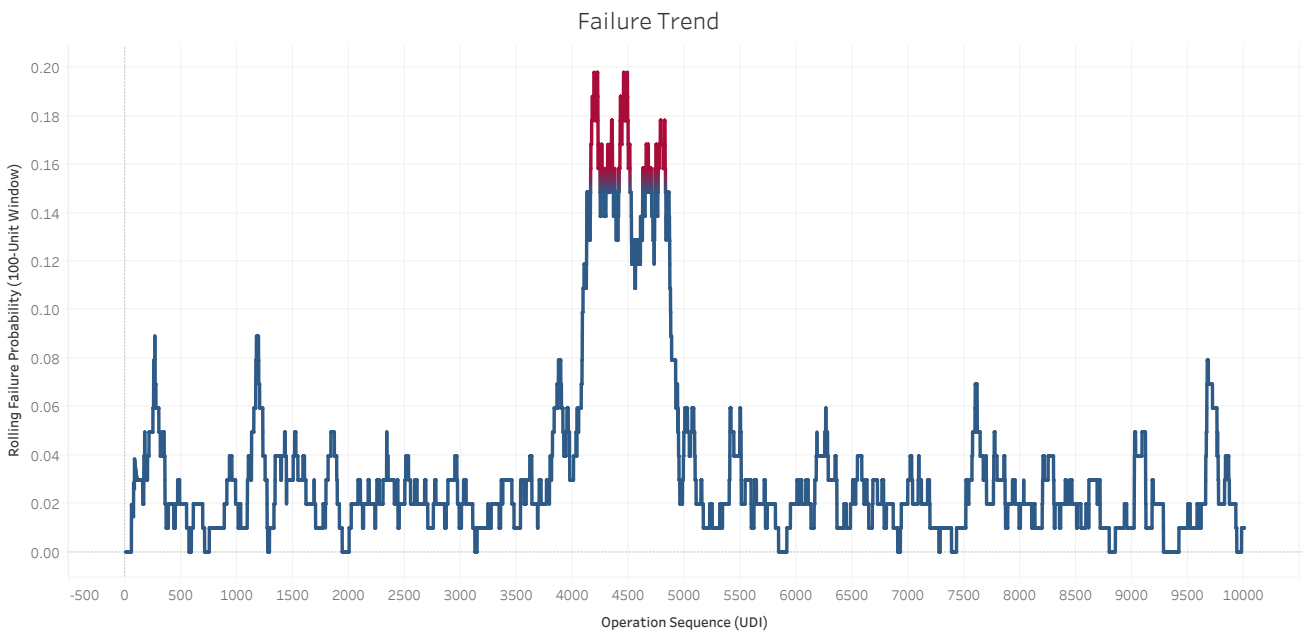
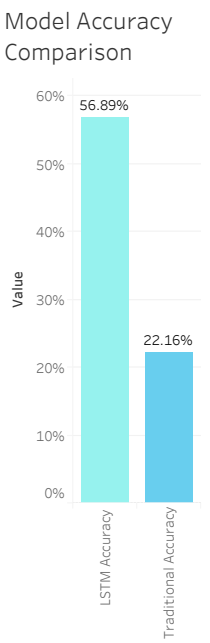
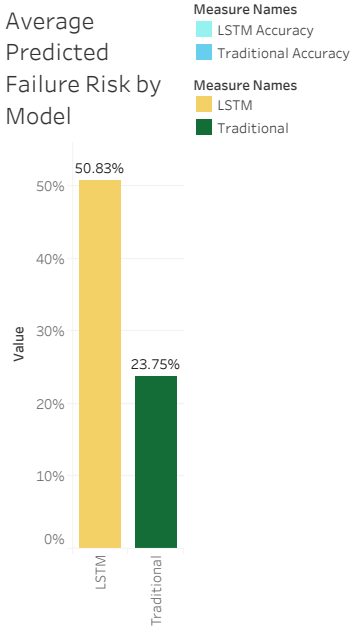
LSTM Model Significantly Outperforms Traditional Model in Predictive Maintenance

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

KPI_Total_Failures	KPI_Failure_Rate	KPI_Traditional_Predicted_Failures	KPI_LSTM_Predicted_Failures	KPI_Avg_Predicted_Risk
339	3.39%		97	50.83%







- 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.