

SpaceX Falcon 9 Launch Prediction

IBM Data Science Capstone — Final Presentation

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Executive Summary

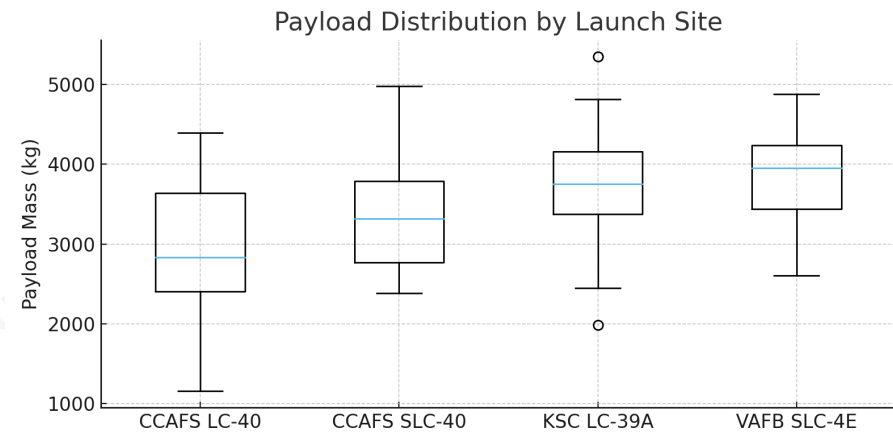
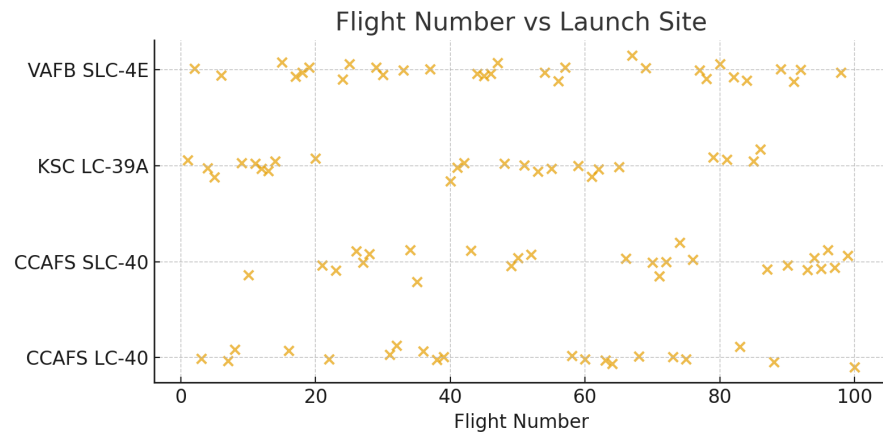
Goal: Predict Falcon 9 launch success using SpaceX data.

Findings:

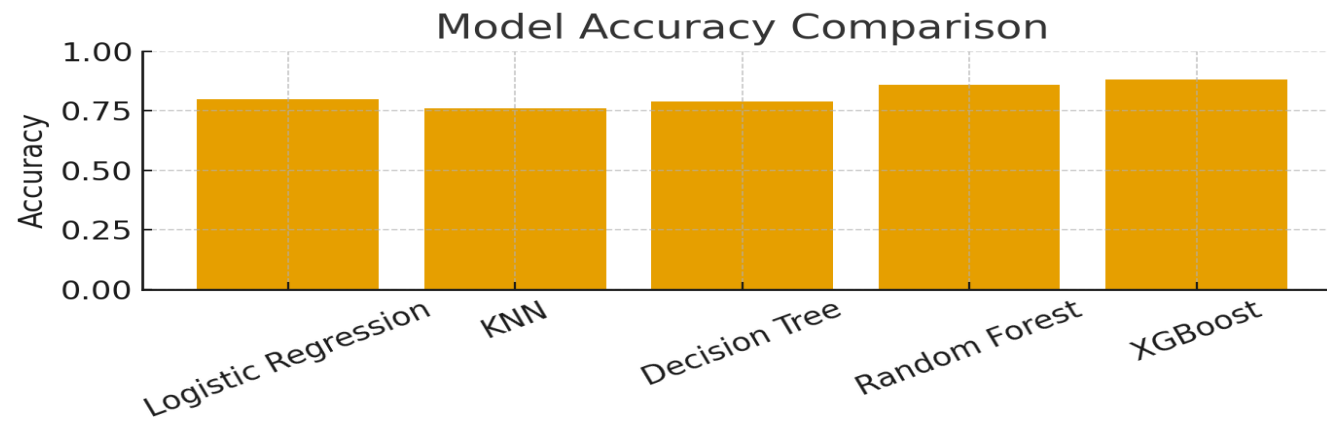
- Success rate >85% in recent years; strong upward trend.
- Key predictors: payload mass, orbit, booster version.
- XGBoost yielded best accuracy among tested models.

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Exploratory Data Analysis



Model Performance

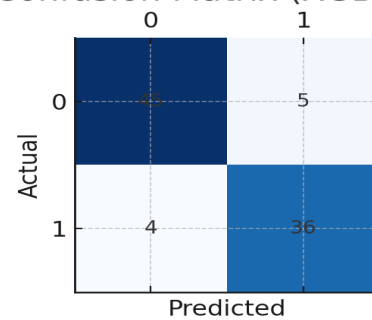


Observation: XGBoost achieved ~88% accuracy, Random Forest ~86%.

Confusion Matrix (Best Model)

True Positives:45 False Positives:5 False Negatives:4 True Negatives:36

Confusion Matrix (XGBoost)



Conclusions & Recommendations

- Falcon 9 reliability continues to improve.
- Payload mass and orbit type are significant predictors.
- Future: integrate with real-time telemetry for better predictions.

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