



IBM Developer
SKILLS NETWORK

Winning Space Race with Data Science

Executive Summary

This Capstone Project focuses on analyzing SpaceX's launch data to uncover insights about the factors that contribute to successful missions. We utilized



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1. What factors influence mission success rates?

2. How can predictive models optimize future launch planning?

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Introduction

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1. What factors influence mission success rates?

2. ****Data Wrangling****: Preprocessed datasets to handle missing values and ensure consistency.

3. ****Exploratory Analysis****:

Visualized patterns and relationships using Python and SQL.

4. ****Predictive Modeling****: Built and evaluated classification models to predict success.

- 1. ****Data Collection****:

Retrieved data from SpaceX's API and web scraping.

- 2. ****Data Wrangling****:

Preprocessed datasets to handle missing values and ensure consistency.

- 3. ****Exploratory**

Methodology

1. ****Data Collection****:

Retrieved data from SpaceX's API and web scraping.

2. ****Data Wrangling****:

Preprocessed datasets to handle missing values and ensure consistency.

3. ****Exploratory Analysis****:

Visualized patterns and relationships using Python

by site and orbit type.
2. Mapped launch sites using Folium.
3. Analyzed payload trends and their
impact on mission outcomes.
4. Identified time-based patterns in
success rates.

- Exploratory Data Analysis
- 1. Visualized launch success rates by site and orbit type.
- 2. Mapped launch sites using Folium.
- 3. Analyzed payload trends and their impact on mission outcomes.
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Exploratory Data Analysis

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2. Tuned hyperparameters to improve accuracy.

3. Evaluated models using metrics like precision, recall, and F1-score.

4. Identified the most significant features contributing to launch success.

- Predictive Modeling

- 1. Built models such as Logistic Regression and Decision Trees.

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Recommendations:

1. Optimize payload configurations for higher success probabilities.

2. Leverage predictive analytics to enhance decision-making.

- Conclusion

This analysis highlighted critical factors for

successful launches, including payload mass and orbit type.

Predictive models achieved high accuracy, providing valuable insights for future mission planning.

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Build a Dashboard with Plotly Dash

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Predictive Analysis (Classification)

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Thank you!

