

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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- 1. What factors influence mission success rates?
- 2. How can predictive models optimize future launch planning?

Introduction
SpaceX's missions are critical
in making space exploration
more accessible. This project
examines historical launch
data to answer key questions
such as:

1. What factors influence

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
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Retrieved data from SpaceX's
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2. **Data Wrangling**:
Preprocessed datasets to
handle missing values and
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3. **Exploratory Analysis**:
Visualized patterns and

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.

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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.

 Predictions

Predictive Modeling
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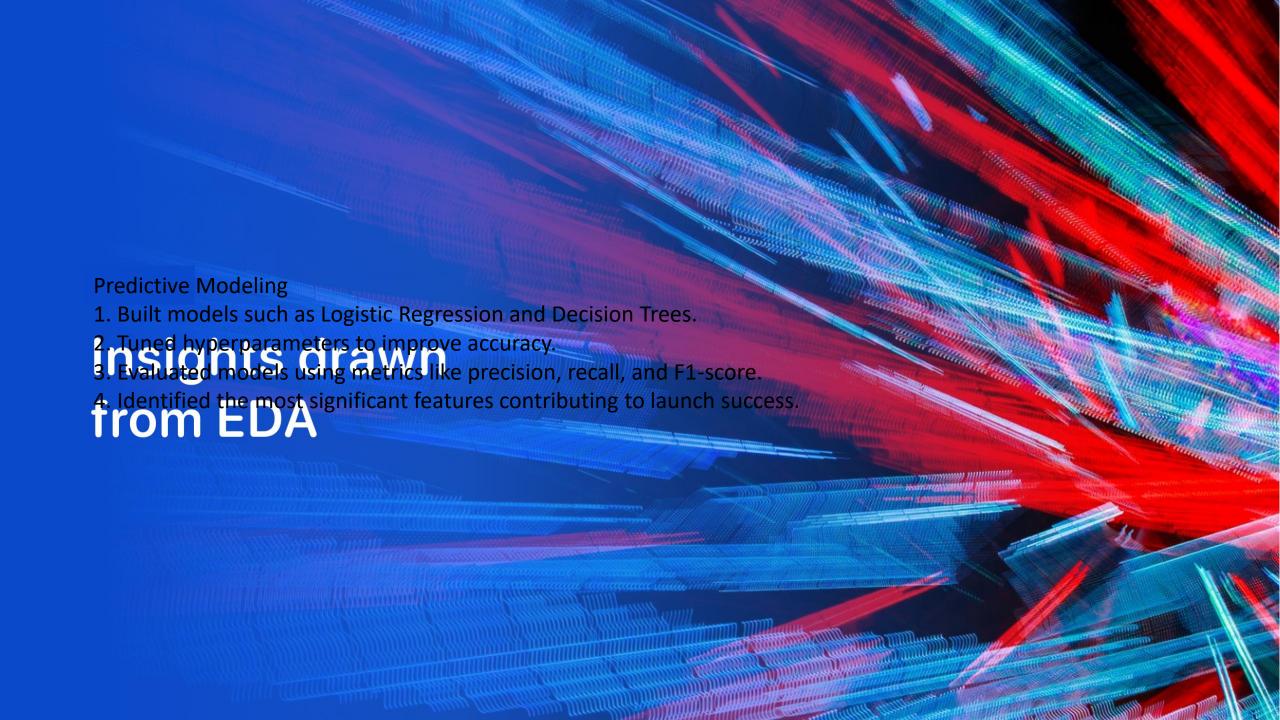
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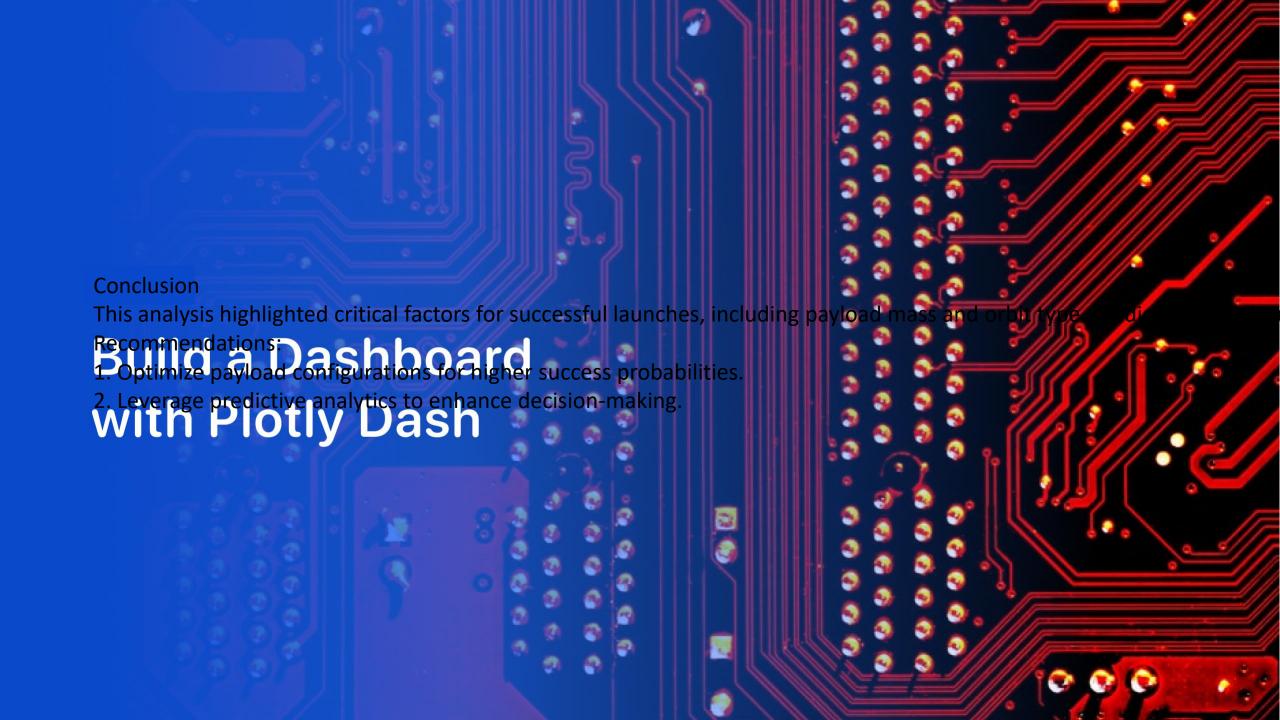
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