Data Science Capstone Project

This capstone project focuses on predicting SpaceX Falcon 9 first stage landings. It employs various data science methodologies to analyze historical data and make accurate predictions.

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Project Outline

1. **Executive Summary**
   Concise overview of project methodologies and key results.
2. **Introduction**
   Background information on SpaceX Falcon 9 and project objectives.
3. **Methodology**
   Detailed explanation of data collection, wrangling, and analysis techniques.
4. **Results**
   Presentation of findings from exploratory and predictive analyses.
5. **Conclusion**
   Summary of key insights and implications of the project.
6. **Appendix**
   Additional supporting materials and technical details.

Executive Summary

Methodologies

Data collection via API and web scraping. Data wrangling and exploratory analysis using SQL. Interactive visualizations with Folium and Plotly Dash. Predictive analysis using classification models.

Results

Key findings from exploratory data analysis. Interactive analytics showcasing geospatial data and trends. Predictive model performance metrics for Falcon 9 landing success.

Introduction

Project Focus

Predicting successful landing of SpaceX's Falcon 9 first stage.

Data Sources

SpaceX API and Wikipedia web scraping for comprehensive historical data.

Significance

Accurate predictions can optimize launch strategies and reduce costs.

Methodology

1

Data Collection

Utilized SpaceX REST API and web scraping techniques to gather comprehensive launch data.

2

Data Wrangling

Cleaned and preprocessed data, handling missing values and encoding for binary classification.

3

Exploratory Analysis

Employed SQL queries and visualization techniques to uncover patterns and insights.

4

Interactive Analytics

Developed Folium maps and Plotly Dash dashboards for dynamic data exploration.

5

Predictive Modeling

Applied classification models to predict Falcon 9 first stage landing success.

Results

Exploratory Analysis

Uncovered key factors influencing landing success through statistical analysis and visualizations.

Interactive Tools

Created dynamic maps and dashboards for intuitive exploration of launch data.

Predictive Models

Developed classification models with high accuracy for predicting Falcon 9 landing outcomes.