
SpaceX Falcon-9 Success Landing Prediction



Executive Summary

- This presentation encapsulates the analysis and prediction of SpaceX Falcon 9 first stage landing success



Introduction

SpaceX, founded by Elon Musk, aims to make spaceflight a common reality



Data Collection and Wrangling

Data was collected from the SpaceX API and Falcon 9 launch records on Wikipedia

Task 1: Request and parse the SpaceX launch data using the GET request

To make the requested JSON results more consistent, we will use the following static response object for this project:

```
9]: static_json_url='https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DS0321EN-SkillsNetwork/da
```

We should see that the request was successful with the 200 status response code

```
.0]: response.status_code
```

```
.0]: 200
```

Now we decode the response content as a Json using `.json()` and turn it into a Pandas dataframe using `.json_normalize`

```
.6]: # Use json_normalize meethod to convert the json result into a dataframe
      respjson = response.json()
      data = pd.json_normalize(respjson)
```

Data Collection and Wrangling

Data was collected from the SpaceX API and Falcon 9 launch records on Wikipedia

Print the page title to verify if the `BeautifulSoup` object was created properly

```
In [7]: # Use soup.title attribute
        soup.title
```

```
Out[7]: <title>List of Falcon 9 and Falcon Heavy launches - Wikipedia</title>
```

TASK 2: Extract all column/variable names from the HTML table header

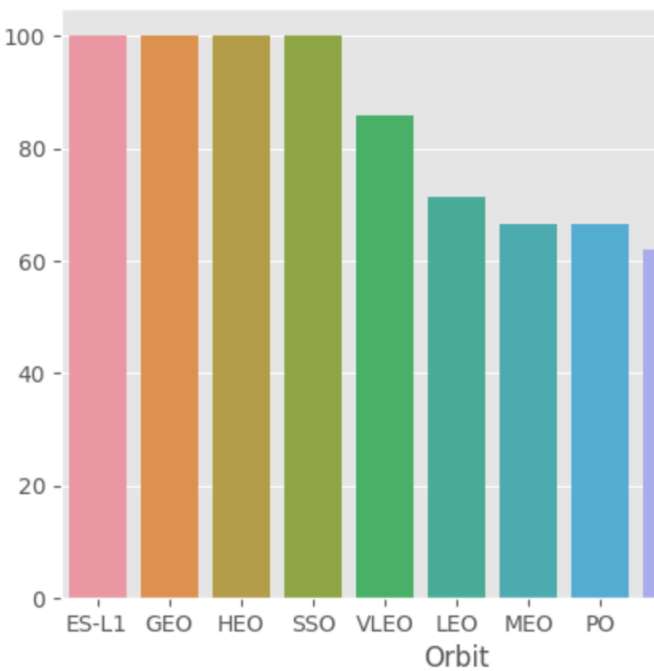
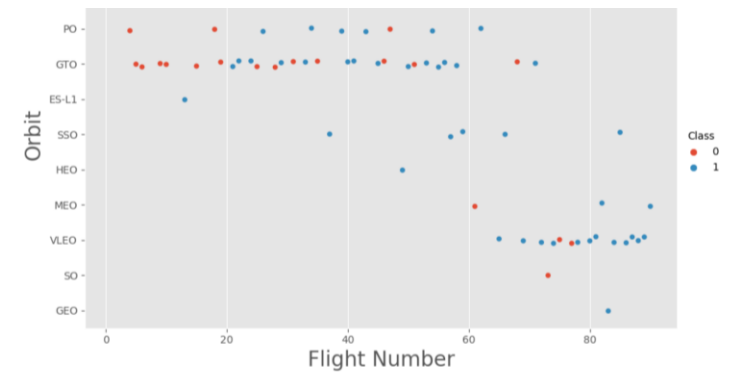
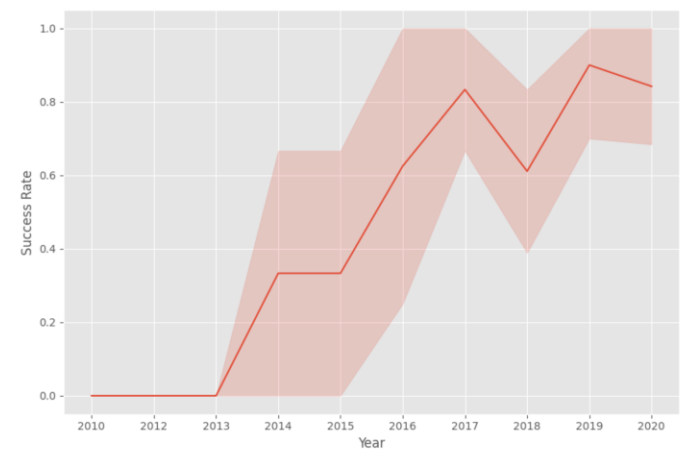
Next, we want to collect all relevant column names from the HTML table header

Let's try to find all tables on the wiki page first. If you need to refresh your memory about `BeautifulSoup`, please check the external reference link towards the end of this lab

```
In [10]: # Use the find_all function in the BeautifulSoup object, with element type `table`
        # Assign the result to a list called `html_tables`
```

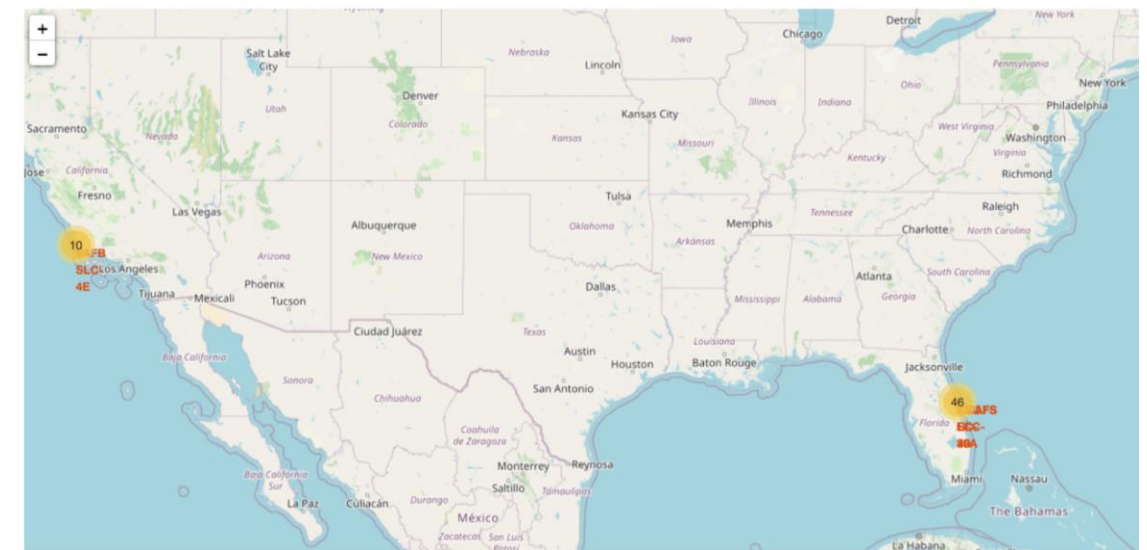
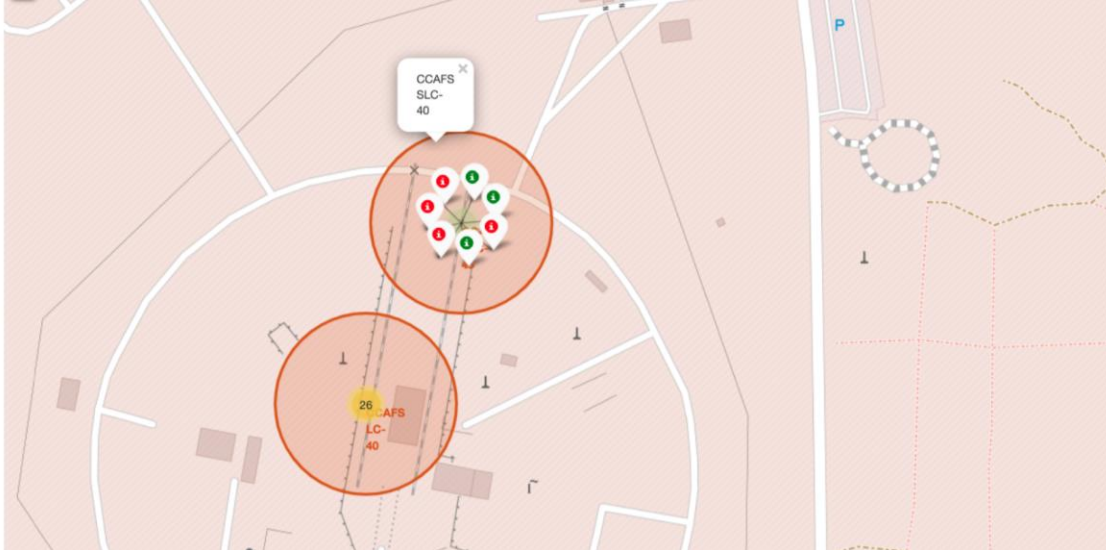
Exploratory Data Analysis

EDA was performed using SQL to uncover patterns and insights in the data



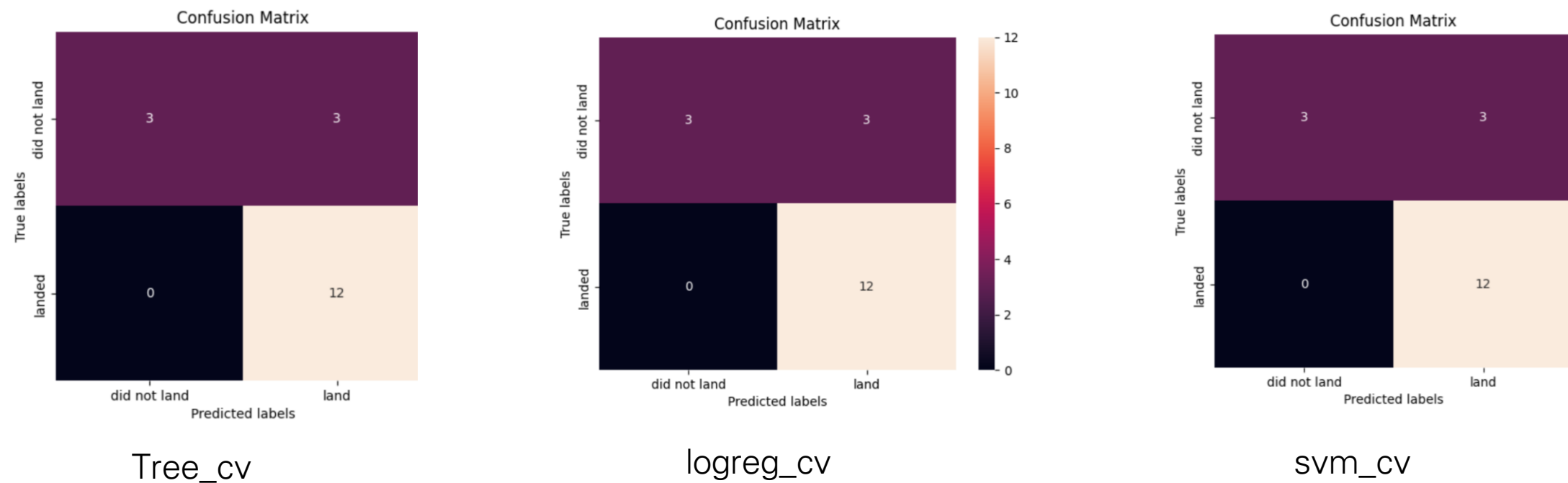
Interactive Visual Analytics and Dashboards

- An interactive dashboard was created using Plotly Dash to allow users to explore the data in a user-friendly manner



Predictive Analysis

A machine learning model was trained to predict SpaceX Falcon 9 first stage landing success



Conclusion

The project successfully analyzed and predicted SpaceX Falcon 9 first stage landing success



Creativity and Innovation

- The project went beyond the basic requirements by creating an interactive dashboard and using machine learning for prediction

