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Beer Style Predictor Web App Report
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The Beer Style Predictor web application is designed to predict the style of beer based on the user-provided data. This app uses a pre-trained kNN model to make predictions. The input is the brewery name and other beer characteristics from 1-5. This report discusses the modeling strategy (Section A), web app structure (Section B), and instructions for running predictions (Section C).

Section A. Modeling Strategy

Exploratory Data Analysis
After characterizing the data, below are the insights:

- Highly imbalanced data, there are minority beer style classes which needs to be
- There are a few instances with null **beer_abv** and **brewery_name** values. Imputation can be done, but for simplicity, these instances were omitted. It was reviewed that removing these instances won't affect the number of unique classes.

Feature Engineering
For feature engineering, there are only three methods performed: 1) filtering the null values of the dataset; 2) combining the minority **brewery_name values to `unknown/others`**; and 3) performing feature scaling and one-hot encoding.

Modeling
KNN modeling algorithm was used for simplicity. Due to the number of instances, other modeling strategies might require some sharding techniques or using machines with higher-specs. The model was only assessed through the accuracy metric – however, this should be assessed in other metrics for imbalanced data in the future. Different k values were examined, in the interest of time, only k=3 and k=5 were performed. The test accuracy was 0.61 and 0.6 for k=3 and k=5, respectively. The web app uses the model with k=3.

Section B. Web App Structure

The Beer Style Predictor Web App predicts the beer style from the following inputs:

- **Brewery name:** This is a list of breweries, if brewery is not found, the user can just select `unknown/others`
- **Beer abv:** The alcohol by volume value, range is from 0-95 – max value was based on the maximum abv.
- **Review appearance, palate, taste, and aroma:** review values ranging from 1-5

Below is a screenshot of the web app.

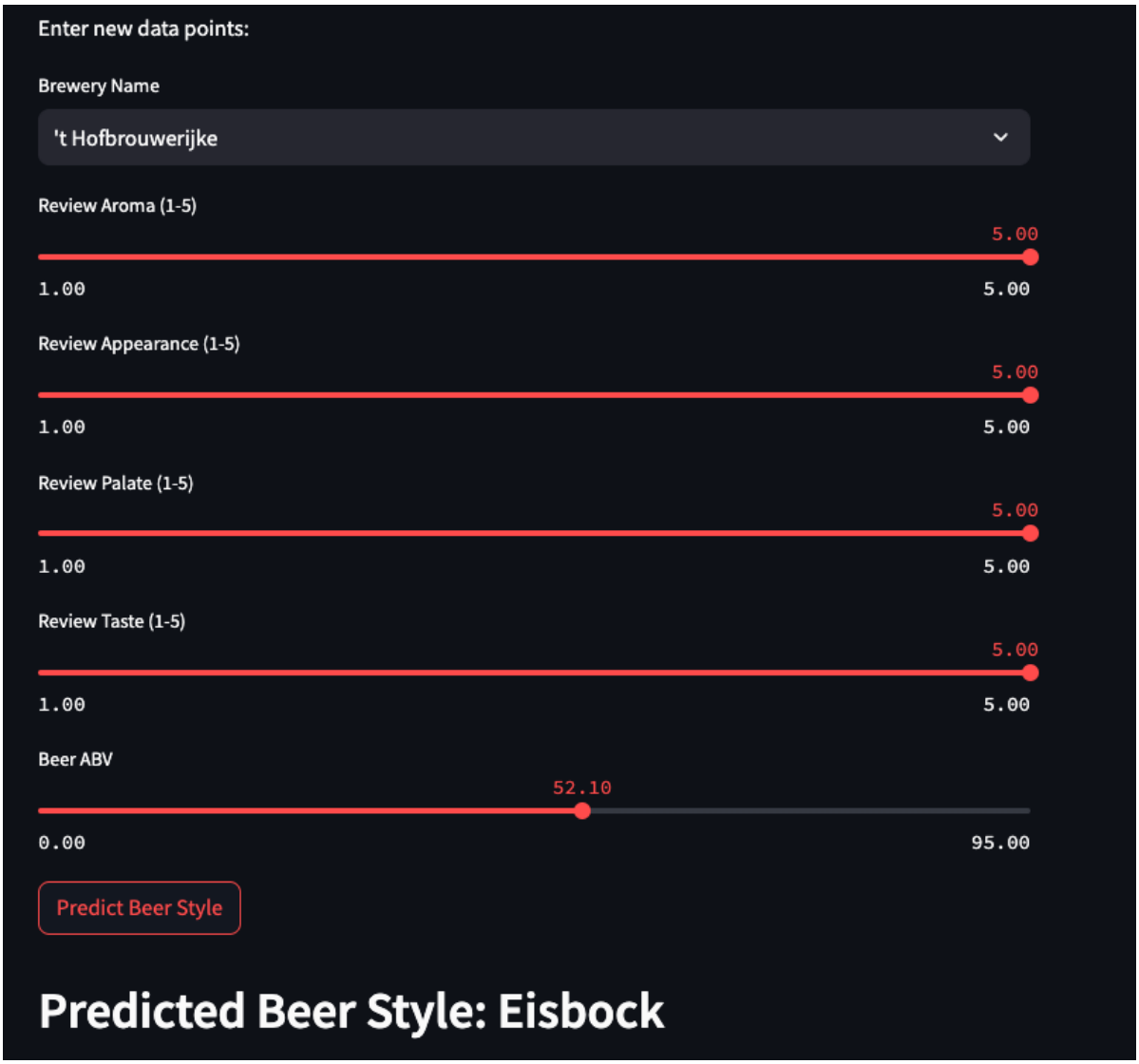
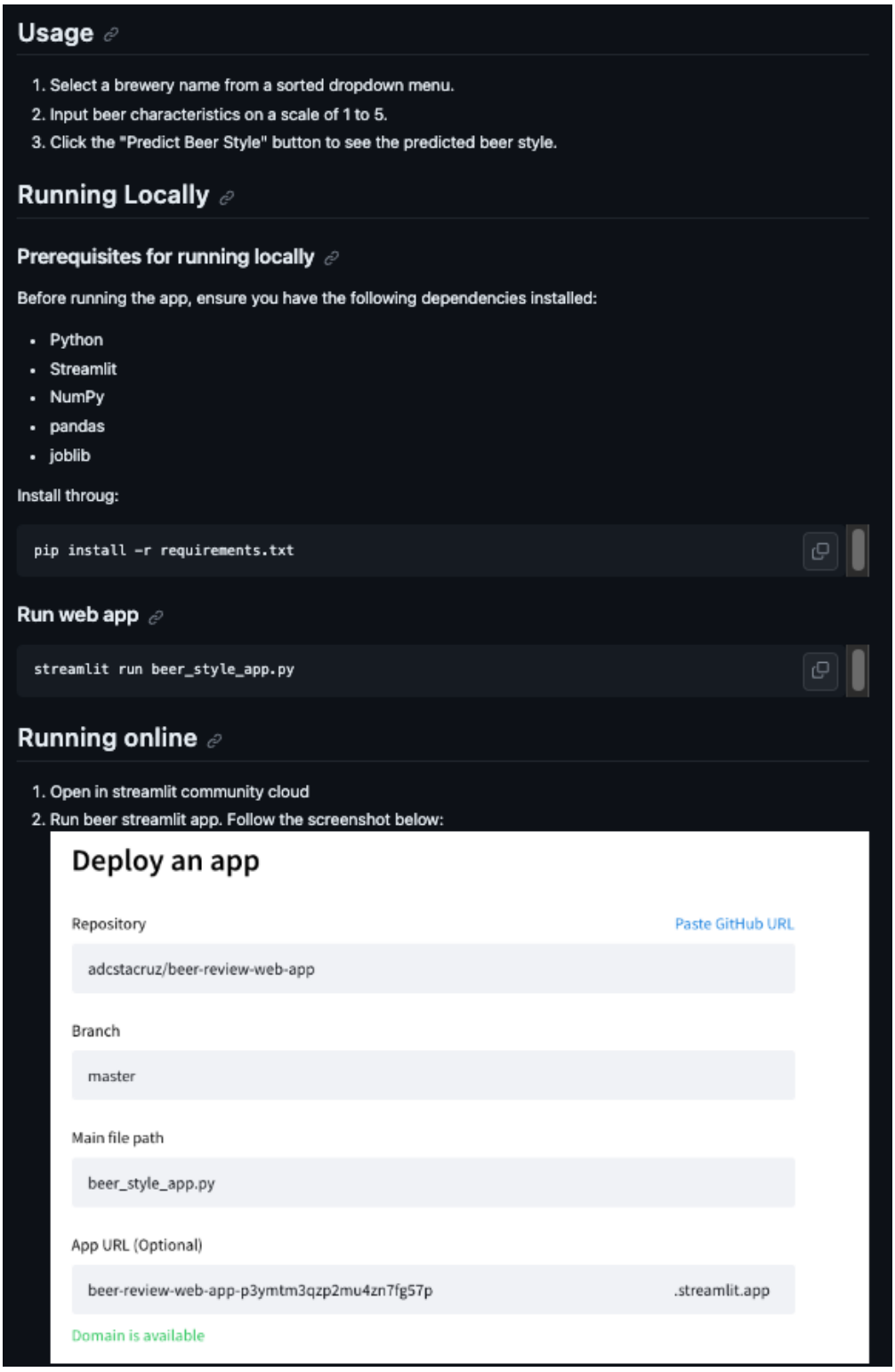


Fig. Beer Style Predictor Web App

Section C. Running the web app

This section is already covered in the README.md file. Below is the screenshot of the instructions from the file.



Usage

1. Select a brewery name from a sorted dropdown menu.
2. Input beer characteristics on a scale of 1 to 5.
3. Click the "Predict Beer Style" button to see the predicted beer style.

Running Locally

Prerequisites for running locally

Before running the app, ensure you have the following dependencies installed:

- Python
- Streamlit
- NumPy
- pandas
- joblib

Install throug:

```
pip install -r requirements.txt
```

Run web app

```
streamlit run beer_style_app.py
```

Running online

1. Open in streamlit community cloud
2. Run beer streamlit app. Follow the screenshot below: