Flask Deployment Web App Document

Name: New York Housing Market App
Report date: 28/02/2024
Internship Batch: LISUM30
Version: 1.0
Data intake by: Konstantinos Soufleros
Data intake reviewer: Data Glacier
Data storage location: https://github.com/kostas696/DG_Intern

Tabular data details: NY-House-Dataset.csv

Total number of observations	4801
Total number of files	1
Total number of features	17
Base format of the file	.csv
Size of the data	1.27 MB

1. my_flask_app.py

```
from flask import Flask, render_template, request
import numpy as np
import pandas as pd
import pickle
from sklearn.preprocessing import StandardScaler

app = Flask(__name__)

# Set the static folder path
app.config['STATIC_FOLDER'] = 'static'

# Load the scaler
with open('scaler.pkl', 'rb') as scaler_file:
    scaler = pickle.load(scaler_file)

# Load the model
with open('gradient_boosting_model.pkl', 'rb') as model_file:
    model = pickle.load(model_file)

# Define the prediction route
@app.route('/', methods=['GET', 'POST'])
def predict():
    if request.method == 'POST':
        # Get the form data
        property_type = request.form['property_type']
        neighborhood = request.form['neighborhood']
        property_sqft = float(request.form['property_sqft'])
```

```
        bedrooms = int(request.form['bedrooms'])
        baths = int(request.form['baths'])

        # Load the column names of the encoded features
        with open('encoded_columns.pkl', 'rb') as f:
          encoded_columns = pickle.load(f)

        # Perform one-hot encoding for categorical variables
        type_encoded =
pd.get_dummies(pd.Series(property_type)).reindex(columns=encoded_column
s, fill_value=0)
        sublocality_encoded =
pd.get_dummies(pd.Series(neighborhood)).reindex(columns=encoded_columns
, fill_value=0)

        # Concatenate encoded features
        encoded_features = pd.concat([type_encoded,
sublocality_encoded], axis=1)

        # Scale the entire feature vector (both numerical and encoded
categorical features)
        input_features = np.array([[property_sqft, bedrooms,
baths]])  # Numerical features
        input_features_scaled =
scaler.transform(np.concatenate([input_features,
encoded_features.values], axis=1))

        # Make the prediction
        prediction = model.predict(input_features_scaled)
        output = round(prediction[0], 2)

        # Display the prediction result
        return render_template('index.html', prediction_text='House
price should be ${} '.format(output))

    return render_template('index.html')

if __name__ == '__main__':
    app.run(port=5000, debug=False)
```

2. index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>House Price Estimation in New York</title>
    <style>
        body {
            background-image: url('{{ url_for("static", filename="55443.jpg") }}');
            background-size: cover;
            background-repeat: no-repeat;
            background-attachment: fixed;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
        }
        .form-container {
            background-color: rgba(255, 255, 255, 0.8);
            padding: 20px;
            border-radius: 10px;
        }

    </style>
</head>
<body>
    <div class="form-container">
        <h1 style="text-align: center; color: #333;">House Price Estimation in New York</h1>
        <form id="prediction-form" style="text-align: center;">
            <label for="property-type">Type of Property:</label>
            <select id="property-type" name="property_type">
            <option value="Condo for sale">Condo for sale</option>
            <option value="House for sale">House for sale</option>
            <option value="Townhouse for sale">Townhouse for sale</option>
            <option value="Co-op for sale">Co-op for sale</option>
            <option value="Multi-family home for sale">Multi-family home for sale</option>
```

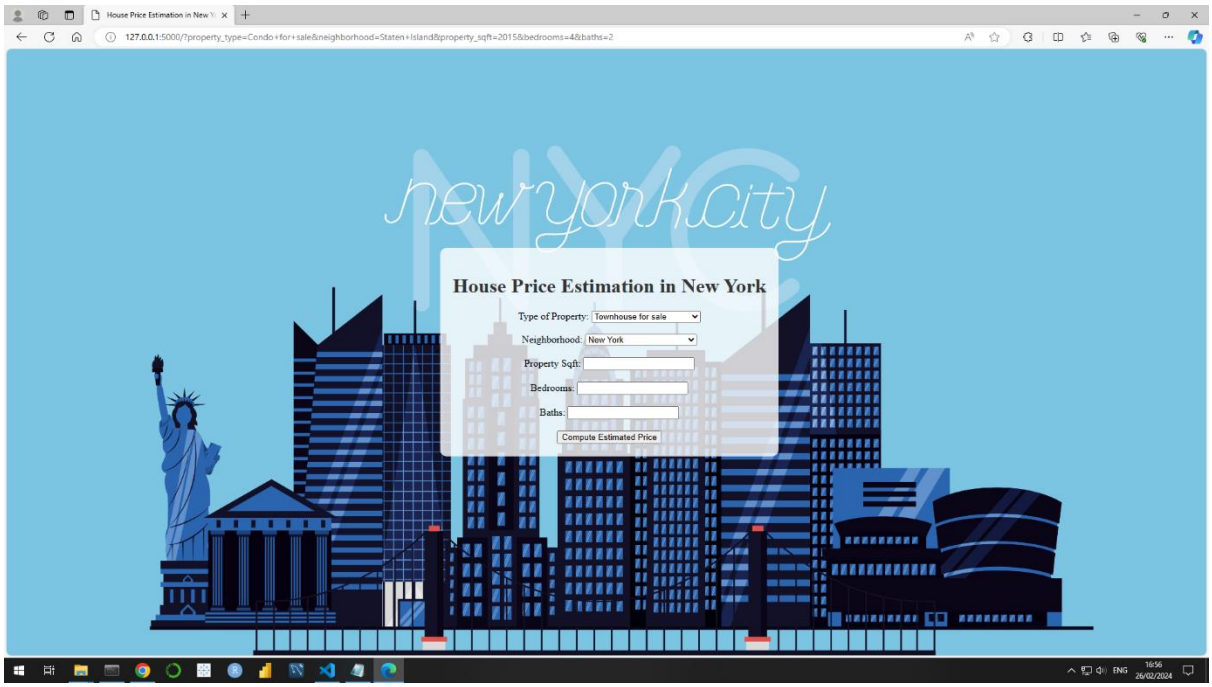
```
            <option value="For sale">For sale</option>
            <option value="Contingent">Contingent</option>
            <option value="Land for sale">Land for sale</option>
            <option value="Foreclosure">Foreclosure</option>
            <option value="Pending">Pending</option>
            <option value="Coming Soon">Coming Soon</option>
            <option value="Mobile house for sale">Mobile house for
   sale</option>
            <option value="Condop for sale">Condop for sale</option>
        </select>
        <br><br>
        <label for="neighborhood">Neighborhood:</label>
        <select id="neighborhood" name="neighborhood">
            <option value="New York">New York</option>
            <option value="Staten Island">Staten Island</option>
            <option value="Manhattan">Manhattan</option>
            <option value="Brooklyn">Brooklyn</option>
            <option value="Bronx">Bronx</option>
            <option value="Jackson Heights">Jackson Heights</option>
            <option value="Elmhurst">Elmhurst</option>
            <option value="Woodside">Woodside</option>
            <option value="Rego Park">Rego Park</option>
            <option value="Forest Hills">Forest Hills</option>
            <option value="Briarwood">Briarwood</option>
            <option value="Queens">Queens</option>
            <option value="Flushing">Flushing</option>
            <option value="Woodhaven">Woodhaven</option>
            <option value="Jamaica">Jamaica</option>
            <option value="Richmond Hill South">Richmond Hill
   South</option>
            <option value="Whitestone">Whitestone</option>
            <option value="Ridgewood">Ridgewood</option>
            <option value="Rosedale">Rosedale</option>
            <option value="Ozone Park">Ozone Park</option>
            <option value="Springfield Gardens">Springfield
   Gardens</option>
            <option value="Far Rockaway">Far Rockaway</option>
            <option value="Bellerose">Bellerose</option>
            <option value="Bayside">Bayside</option>
            <option value="Astoria">Astoria</option>
            <option value="Floral Park">Floral Park</option>
            <option value="Fresh Meadows">Fresh Meadows</option>
            <option value="Howard Beach">Howard Beach</option>
            <option value="Cambria Heights">Cambria Heights</option>
            <option value="Rockaway Park">Rockaway Park</option>
            <option value="East Elmhurst">East Elmhurst</option>
            <option value="Little Neck">Little Neck</option>
            <option value="Long Island City">Long Island City</option>
```

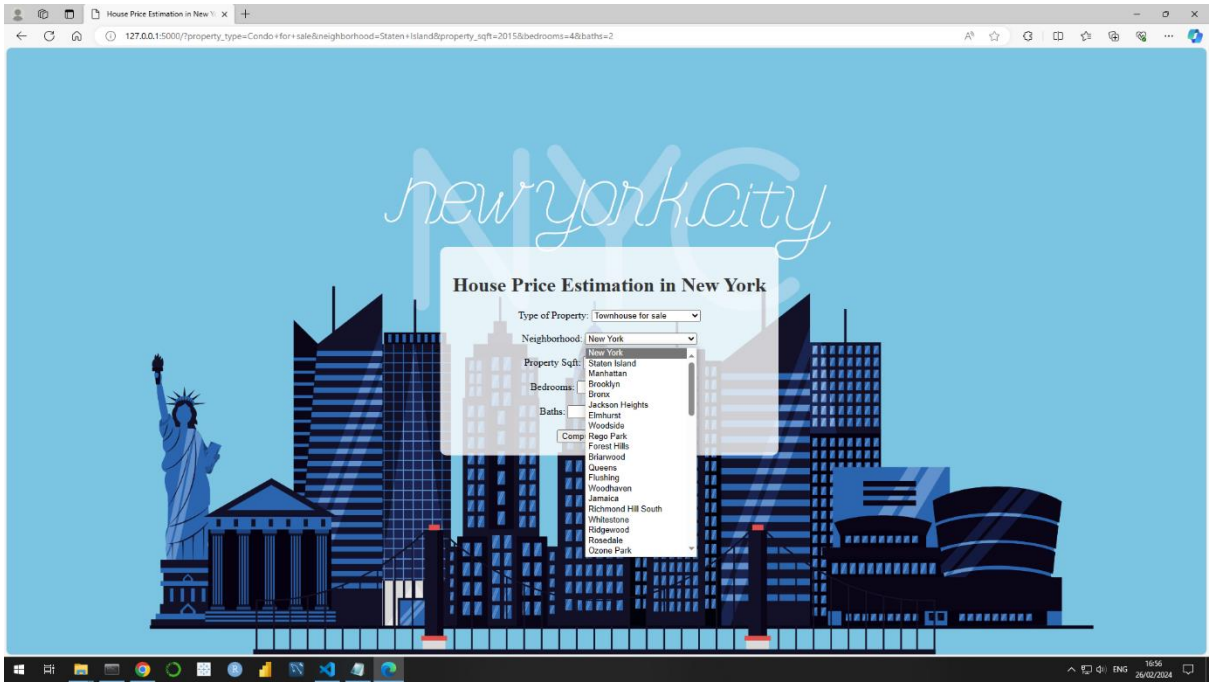
```
85.             <option value="Corona">Corona</option>
86.             <option value="Kew Gardens">Kew Gardens</option>
87.             <option value="Brownville">Brownville</option>
88.             <option value="Brooklyn Heights">Brooklyn Heights</option>
89.             <option value="Maspeth">Maspeth</option>
90.             <option value="Queens Village">Queens Village</option>
91.             <option value="Richmond Hill">Richmond Hill</option>
92.             <option value="Middle Village">Middle Village</option>
93.             <option value="Saint Albans">Saint Albans</option>
94.             <option value="Kensington">Kensington</option>
95.             <option value="South Ozone Park">South Ozone Park</option>
96.             <option value="Canarsie">Canarsie</option>
97.             <option value="College Point">College Point</option>
98.             <option value="Bedford Stuyvesant">Bedford
   Stuyvesant</option>
99.             <option value="Hollis">Hollis</option>
100.                <option value="Malba">Malba</option>
101.                <option value="Glen Oaks">Glen Oaks</option>
102.                <option value="Douglaston">Douglaston</option>
103.                <option value="Sunnyside">Sunnyside</option>
104.                <option value="Arverne">Arverne</option>
105.                <option value="Glendale">Glendale</option>
106.                <option value="New Hyde Park">New Hyde Park</option>
107.                <option value="Crown Heights">Crown Heights</option>
108.                <option value="Old Mill Basin">Old Mill
   Basin</option>
109.                <option value="Beechhurst">Beechhurst</option>
110.                <option value="Roosevelt Island">Roosevelt
   Island</option>
111.                <option value="Kew Gardens Hills">Kew Gardens
   Hills</option>
112.                <option value="Stuyvesant Heights">Stuyvesant
   Heights</option>
113.                <option value="Belle Harbor">Belle Harbor</option>
114.                <option value="East Flatbush">East Flatbush</option>
115.                <option value="Kew Garden Hills">Kew Garden
   Hills</option>
116.                <option value="Ditmas Park">Ditmas Park</option>
117.                <option value="Brighton Beach">Brighton
   Beach</option>
118.                <option value="Prospect Lefferts Gardens">Prospect
   Lefferts Gardens</option>
119.            </select>
120.            <br><br>
121.            <label for="property-sqft">Property Sqft:</label>
122.                <input type="number" id="property-sqft"
   name="property_sqft" min="0">
123.                <br><br>
```

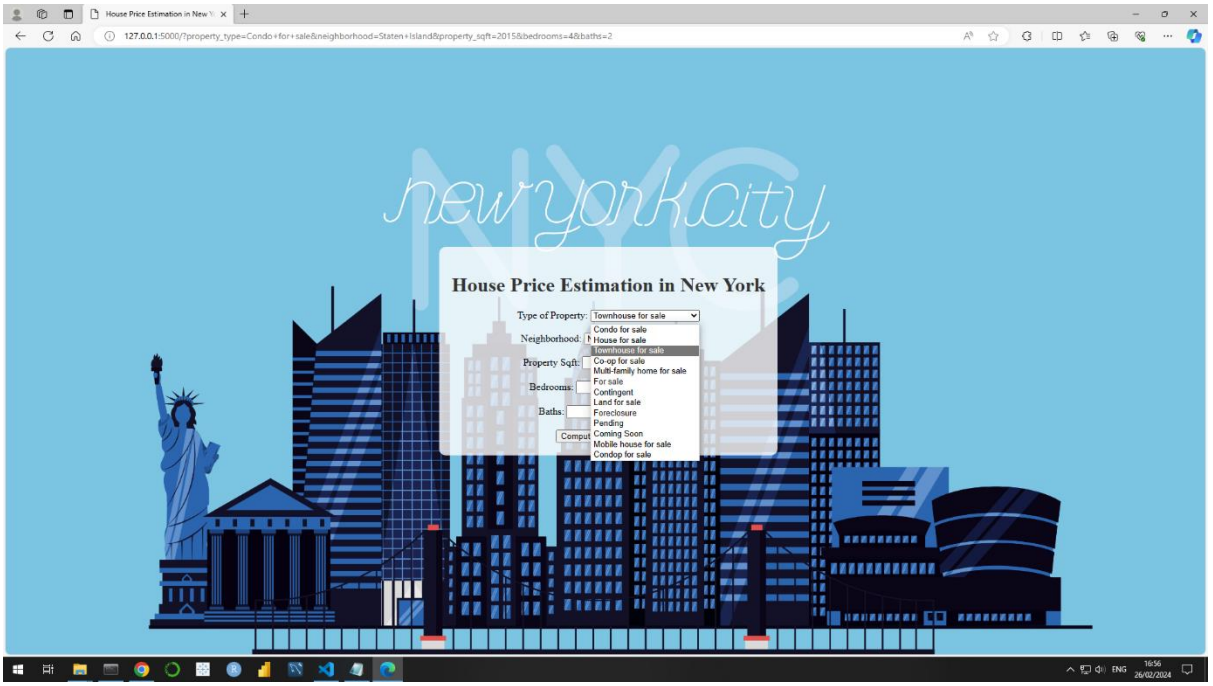
```
                <label for="bedrooms">Bedrooms:</label>
                <input type="number" id="bedrooms" name="bedrooms" min="0">
                <br><br>
                <label for="baths">Baths:</label>
                <input type="number" id="baths" name="baths" min="0">
                <br><br>
                <button type="submit">Compute Estimated Price</button>
            </form>
            <!-- Display prediction result here -->
            <div id="prediction-result"></div>
        </div>

        <script>
            const form = document.getElementById('prediction-form');

            form.addEventListener('submit', (event) => {
                event.preventDefault();

                // Get the form data
                const propertyType = document.getElementById('property-type').value;
                const neighborhood = document.getElementById('neighborhood').value;
                const propertySqft = document.getElementById('property-sqft').value;
                const bedrooms = document.getElementById('bedrooms').value;
                const baths = document.getElementById('baths').value;

                // Send the data to the server using a POST request
                fetch('/predict', {
                    method: 'POST',
                    headers: {
                        'Content-Type': 'application/json'
                    },
                    body: JSON.stringify({
                        property_type: propertyType,
                        neighborhood: neighborhood,
                        property_sqft: propertySqft,
                        bedrooms: bedrooms,
                        baths: baths
                    })
                })
                .then(response => response.json())
                .then(data => {
                    // Display the prediction result
```

```
                    document.getElementById('prediction-
    result').innerHTML = data.prediction_text;
                });
            });

        </script>
    </body>
    </html>
```

3. Result




House Price Estimation in New York
Type of Property:
Townhouse for sale
Neighborhood:
New York
Property Sqft:
Bedrooms:
Baths:
Comp
New York
Staten Island
Manhattan
Brooklyn
Bronx
Jackson Heights
Elmhurst
Woodside
Rego Park
Forest Hills
Briarwood
Queens
Flushing
Woodhaven
Jamaica
Richmond Hill South
Whitestone
Ridgewood
Rosedale
Ozone Park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