Flask

March 8, 2024

[1]:
```
!pip install pyngrok
```

```
Collecting pyngrok
  Downloading pyngrok-7.1.4-py3-none-any.whl.metadata (7.6 kB)
Requirement already satisfied: PyYAML>=5.1 in c:\users\mubashir
khan\appdata\local\programs\python\python312\lib\site-packages (from pyngrok)
(6.0.1)
Downloading pyngrok-7.1.4-py3-none-any.whl (22 kB)
Installing collected packages: pyngrok
Successfully installed pyngrok-7.1.4
```

[1]:
```
import os
import threading

from flask import Flask, render_template
from pyngrok import ngrok

app = Flask(__name__)
port = "5000"

# Set your ngrok authentication token
ngrok.set_auth_token("2dPFW8KhfBSRQBxDScmFMztqixm_2uX3UME4F15u5won8XLXb")

# Open a ngrok tunnel to the HTTP server
public_url = ngrok.connect(port).public_url
print(f"ngrok tunnel \"{public_url}\" -> \"http://127.0.0.1:{port}\"")

# Update any base URLs to use the public ngrok URL
app.config["BASE_URL"] = public_url

@app.route('/')
def index():
    return """
      <!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
    <title>California Housing Prices Dataset Project</title>
    <style>
        body {
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
            margin: 0;
            padding: 0;
            background-color: #f5f5f5;
            color: #333;
        }
        .container {
            max-width: 800px;
            margin: auto;
            padding: 20px;
            background-color: #fff;
            border-radius: 8px;
            box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
        }
        h1, h2 {
            color: #007bff; /* Blue color for headings */
        }
        p {
            line-height: 1.6;
        }
        .dataset-link {
            color: #28a745; /* Green color for links */
            text-decoration: none;
        }
        .dataset-link:hover {
            text-decoration: underline;
        }
        ul, ol {
            padding-left: 20px;
        }
        .steps {
            display: flex;
            flex-direction: column;
            gap: 20px;
        }
        .step {
            display: flex;
            gap: 10px;
            align-items: center;
        }
        .step-number {
            width: 40px;
            height: 40px;
            background-color: #dc3545; /* Red color for step numbers */
```

```
            color: #fff;
            font-size: 20px;
            border-radius: 50%;
            display: flex;
            justify-content: center;
            align-items: center;
        }
        .step-text {
            flex-grow: 1;
        }
    </style>
</head>
<body>
    <div class="container">
        <h1>California Housing Prices Dataset Project</h1>
        <p>Welcome to the California Housing Prices Dataset project. This␣
 ↪project aims to analyze and predict median housing prices in different␣
 ↪districts of California based on various features such as population, median␣
 ↪income, and others.</p>
        <h2 style="color: #17a2b8;">Dataset Description</h2> <!-- Turquoise␣
 ↪color for dataset description -->
        <p>The California Housing Prices Dataset is similar to the well-known␣
 ↪Boston Housing Dataset. It contains information about various districts in␣
 ↪California including features like population, median income, median housing␣
 ↪price, etc. The target variable in this dataset is the median house value.</
 ↪p>
        <p>You can access the dataset <a href="https://classroom.google.com/c/
 ↪NjQ4ODA5NTcxNDcy/m/NjU5MDE0ODI1Njcy/details" class="dataset-link"␣
 ↪target="_blank">here</a>.</p>
        <h2 style="color: #ffc107;">Project Goals</h2> <!-- Yellow color for␣
 ↪project goals -->
        <p>The primary goals of this project include:</p>
        <ul>
            <li>Analyzing the relationship between different features and the␣
 ↪median housing price.</li>
            <li>Building predictive models to estimate the median house value␣
 ↪based on the provided features.</li>
            <li>Evaluating and optimizing the performance of the predictive␣
 ↪models.</li>
        </ul>
        <h2 style="color: #28a745;">Project Workflow</h2> <!-- Green color for␣
 ↪project workflow -->
        <div class="steps">
            <div class="step">
                <div class="step-number" style="background-color: #17a2b8;">1</
 ↪div> <!-- Turquoise color for step number -->
```

```
                <div class="step-text">Data collection and exploration</div>
            </div>
            <div class="step">
                <div class="step-number" style="background-color: #dc3545;">2</
 ↪div> <!-- Red color for step number -->
                <div class="step-text">Data preprocessing and feature␣
 ↪engineering</div>
            </div>
            <div class="step">
                <div class="step-number" style="background-color: #ffc107;">3</
 ↪div> <!-- Yellow color for step number -->
                <div class="step-text">Model selection and training</div>
            </div>
            <div class="step">
                <div class="step-number" style="background-color: #28a745;">4</
 ↪div> <!-- Green color for step number -->
                <div class="step-text">Evaluation and optimization</div>
            </div>
        </div>
        <h2 style="color: #007bff;">Conclusion</h2> <!-- Blue color for␣
 ↪conclusion -->
        <p>This project aims to provide insights into housing prices in␣
 ↪California and develop accurate predictive models to assist stakeholders in␣
 ↪making informed decisions.</p>
        <p>For any inquiries or further information, please contact [Your␣
 ↪Contact Information].</p>
    </div>
</body>
</html>
"""


@app.route('/project')
def code():
  return """
           <!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Explaining Python Code and Visualizations</title>
  <style>
    /* CSS styles for better presentation */
    body {
      font-family: Arial, sans-serif;
      margin: 20px;
```

```
      background-color: #f8f8f8;
    }
    h1 {
      color: #333;
      background-color: #ffc107;
      padding: 10px;
      border-radius: 5px;
      box-shadow: 0 2px 4px rgba(0, 0, 0, 0.1);
    }
    h2 {
      color: #007bff;
      border-bottom: 2px solid #007bff;
      padding-bottom: 5px;
    }
    h3 {
      color: #28a745;
    }
    p {
      color: #666;
    }
    .output {
      margin-top: 20px;
      background-color: #fff;
      border-radius: 5px;
      box-shadow: 0 2px 4px rgba(0, 0, 0, 0.1);
      padding: 20px;
    }
    img {
      max-width: 100%;
      border-radius: 5px;
      box-shadow: 0 2px 4px rgba(0, 0, 0, 0.1);
      margin-bottom: 10px;
    }
  </style>
</head>
<body>
  <h1>Explaining Python Code and Visualizations</h1>

  <h2>Python Code Explanation</h2>
  <p>This Python code performs various tasks related to data analysis and␣
 ↪visualization using the California housing dataset.</p>
  <ul>
    <li>It reads the dataset from a CSV file.</li>
    <li>Performs data cleaning by dropping non-numeric columns and handling␣
 ↪missing values.</li>
    <li>Visualizes the data using pairplot and correlation heatmap.</li>
```

```
    <li>Builds a simple linear regression model to predict median house value␣
 ↪based on population.</li>
    <li>Evaluates the model and visualizes the results.</li>
    <li>Calculates and visualizes the median house value by ocean proximity.</
 ↪li>
  </ul>

  <h2>Graphical Outputs</h2>

 <div class="output">
    <h3>Pairplot of Housing Data</h3>
    <img src="https://drive.google.com/thumbnail?
 ↪id=1eCccH7LtIpphFWtCXSAbBpBBgi8Mbaxr&sz=w1000" alt="Pairplot of Housing␣
 ↪Data" style="display: block; margin: 0 auto; border: 2px solid black;">
    <p>This pairplot shows pairwise relationships in the dataset, with␣
 ↪different colors representing different categories of ocean proximity.</p>
</div>

<div class="output">
    <h3>Correlation Heatmap</h3>
    <img src="https://drive.google.com/thumbnail?
 ↪id=1Y_nSh1stizFG9ha-TS9zZtMYlzN2h8yq&sz=w1000" alt="Correlation Heatmap"␣
 ↪style="display: block; margin: 0 auto; border: 2px solid black;">
    <p>This heatmap visualizes the correlation between numerical features in␣
 ↪the dataset.</p>
</div>

<div class="output">
    <h3>Scatter Plot with Regression Line</h3>
    <img src="https://drive.google.com/thumbnail?
 ↪id=1o0l6I8Me_IEHCEUYlDLOOEw97zsMIsmy&sz=w1000" alt="Scatter Plot with␣
 ↪Regression Line" style="display: block; margin: 0 auto; border: 2px solid␣
 ↪black;">
    <p>This scatter plot displays the relationship between population and␣
 ↪median house value, with a regression line fitted to the data.</p>
</div>

<div class="output">
    <h3>Bar Plot of Median House Value by Ocean Proximity</h3>
    <img src="https://drive.google.com/thumbnail?
 ↪id=1K3mj-yCAZTHN2_0jXx2hztBRXF7pLPdT&sz=w1000" alt="Bar Plot of Median House␣
 ↪Value by Ocean Proximity" style="display: block; margin: 0 auto; border: 2px␣
 ↪solid black;">
    <p>This bar plot shows the median house value for each category of ocean␣
 ↪proximity.</p>
</div>
```

```
<div class="output">
    <h3>Population Distribution</h3>
    <img src="https://drive.google.com/thumbnail?
 ↪id=1AH8kOQHcdsHAMHZdNss_vuTnM9tmWb-s&sz=w1000" alt="Population Distribution"␣
 ↪style="display: block; margin: 0 auto; border: 2px solid black;">
    <p>This histogram shows the distribution of population in the dataset.</p>
</div>

<div class="output">
    <h3>Median House Value Distribution</h3>
    <img src="https://drive.google.com/thumbnail?
 ↪id=1IMUEoxGHZX0r4v2NESv8ymowzzT0dW4i&sz=w1000" alt="Median House Value␣
 ↪Distribution" style="display: block; margin: 0 auto; border: 2px solid black;
 ↪">
    <p>This histogram shows the distribution of median house values in the␣
 ↪dataset.</p>
</div>


</body>
</html>
"""
# Start the Flask server in a new thread
threading.Thread(target=app.run, kwargs={"use_reloader": False}).start()
```

```
ngrok tunnel "https://9b3d-219-91-178-117.ngrok-free.app" ->
"http://127.0.0.1:5000"
 * Serving Flask app '__main__'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
127.0.0.1 - - [08/Mar/2024 19:14:37] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Mar/2024 19:14:39] "GET /favicon.ico HTTP/1.1" 404 -
127.0.0.1 - - [08/Mar/2024 19:14:48] "GET /project HTTP/1.1" 200 -
```

[ ]: