

Name: Cloud and API deployment
Report date: 03/06/2024
Internship Batch: LISUM30
Version: 1.0
Data intake by: FNU Mrinal Shasta Rajput

Select data (simple data)

Tabular data details:

Total number of observations	1436
Total number of files	1
Total number of features	5
Base format of the file	.csv
Size of the data	33 KB

The data contains information on the prices of used cars between the years 1998-2004. The price becomes our predicted value and we use distance covered (KM), Horse power (HP), Gear type (Automatic or Manual) and CC of the car to predict the price.

The model

I used a linear regression model to predict car price and saved the model by serializing using Pickle.

```
'''python
# Importing the libraries
import numpy as np
import pandas as pd
import pickle
from sklearn.linear_model import LinearRegression
'''
'''python
dataset = pd.read_csv('D:/DataGlacier/Used car data(1998-2004).csv')
'''
'''python
dataset.head
'''
'''python
x = dataset.drop(columns=['Price'])
y = dataset[['Price']]
'''
'''python
x.head
'''
'''python
y.head
'''
'''python
regressor = LinearRegression()
'''
'''python
#Fitting model with trainig data
regressor.fit(X, y)
'''
'''python
# Saving model to disk
pickle.dump(regressor, open('model.pkl','wb'))
'''
'''python
# Loading model to compare the results
model = pickle.load(open('model.pkl','rb'))
print(model.predict([[72000, 100, 1, 1000]]))
'''
[[9233.90967125]]
```

Deploy the model on flask (web app)

Below is the index file that I used:

```
<!DOCTYPE html>
<html >
<head>
  <meta charset="UTF-8">
  <title>ML API</title>
  <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
  <link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
  <link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
  <link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
  <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
</head>

<body>
  <div class="login">
    <h1>Predict Used Car Price</h1>

    <!-- Main Input For Receiving Query to our ML -->
    <form action="{{ url_for('predict') }}" method="post">
      <input type="text" name="KM" placeholder="Distance KM" required="required" />
      <input type="text" name="HP" placeholder="Horsepower" required="required" />
      <input type="text" name="Automatic" placeholder="Automatic 1(Yes)/0(No)" required="required" />
      <input type="text" name="CC" placeholder="CCs" required="required" />

      <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
    </form>

    <br>
    <br>
    {{ prediction_text }}

  </div>
  
</body>
</html>
```

App.py file:

```
```python
import numpy as np
from flask import Flask, request, render_template
import pickle
```

```python
app = Flask(__name__)
model = pickle.load(open('model.pkl', 'rb'))
```

```python
@app.route('/')
def home():
 return render_template('index.html')
```

```python
@app.route('/predict', methods=['POST'])
def predict():
    ```
    For rendering results on HTML GUI
    ```

 int_features = [int(x) for x in request.form.values()]
 final_features = [np.array(int_features)]
 prediction = model.predict(final_features)

 output = np.round(prediction[0], 2)

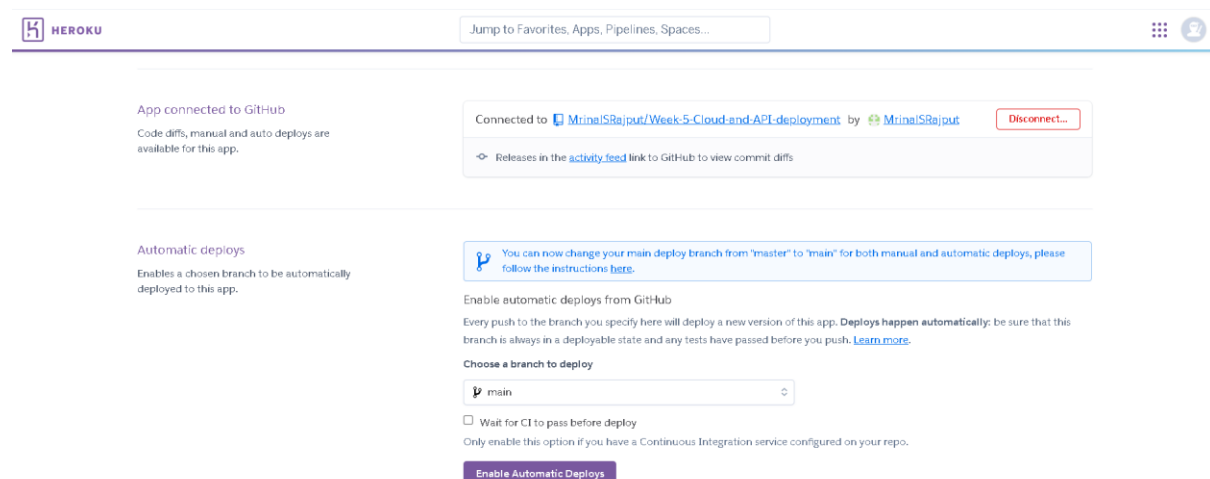
 return render_template('index.html', prediction_text='Price of used car $ {}'.format(output))

if __name__ == "__main__":
 app.run(debug=True)
```
```

Below in cmd app.py is ran and there we get the url (<http://127.0.0.1:5000>) to use in chrome:

```
D:\DataGlacier>python app.py
C:\Users\Mrinal Rajput\AppData\Local\Programs\Python\Python312\Lib\site-packages\sklea
on 1.4.1.post1. This might lead to breaking code or invalid results. Use at your own r
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limita
warnings.warn(
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
C:\Users\Mrinal Rajput\AppData\Local\Programs\Python\Python312\Lib\site-packages\sklea
on 1.4.1.post1. This might lead to breaking code or invalid results. Use at your own r
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limita
warnings.warn(
* Debugger is active!
* Debugger PIN: 940-799-733
127.0.0.1 - - [28/Feb/2024 21:26:44] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [28/Feb/2024 21:26:44] "GET /static/css/style.css HTTP/1.1" 304 -
127.0.0.1 - - [28/Feb/2024 21:26:44] "GET /static/images/Original.svg HTTP/1.1" 304 -
C:\Users\Mrinal Rajput\AppData\Local\Programs\Python\Python312\Lib\site-packages\sklea
warnings.warn(
127.0.0.1 - - [28/Feb/2024 21:26:52] "POST /predict HTTP/1.1" 200 -
127.0.0.1 - - [28/Feb/2024 21:26:52] "GET /static/css/style.css HTTP/1.1" 304 -
127.0.0.1 - - [28/Feb/2024 21:26:52] "GET /static/images/Original.svg HTTP/1.1" 304 -
```

Heroku:



The screenshot shows the Heroku dashboard for a connected application. At the top, there's a navigation bar with the Heroku logo and a search bar. The main content area is divided into two columns. The left column contains sections for 'App connected to GitHub' and 'Automatic deploys'. The right column contains a 'Connected to' section showing the repository 'MrinalSRajput/Week-5-Cloud-and-API-deployment' and a 'Releases in the activity feed' link. Below this, there's a section for 'Enable automatic deploys from GitHub' with a dropdown menu set to 'main' and a button to 'Enable Automatic Deploys'.

HEROKU

Jump to Favorites, Apps, Pipelines, Spaces...

App connected to GitHub

Code diffs, manual and auto deploys are available for this app.

Connected to [MrinalSRajput/Week-5-Cloud-and-API-deployment](#) by [MrinalSRajput](#) [Disconnect...](#)

Releases in the [activity feed](#) link to GitHub to view commit diffs

Automatic deploys

Enables a chosen branch to be automatically deployed to this app.

You can now change your main deploy branch from "master" to "main" for both manual and automatic deploys, please follow the instructions [here](#).

Enable automatic deploys from GitHub

Every push to the branch you specify here will deploy a new version of this app. **Deploys happen automatically**: be sure that this branch is always in a deployable state and any tests have passed before you push. [Learn more](#).

Choose a branch to deploy

☐ Wait for CI to pass before deploy

Only enable this option if you have a Continuous Integration service configured on your repo.

[Enable Automatic Deploys](#)


Manual deploy

Deploy the current state of a branch to this app.

Deploy a GitHub branch

This will deploy the current state of the branch you specify below. [Learn more](#).

Choose a branch to deploy

 main  [Deploy Branch](#)

Receive code from GitHub 

Build **main** 3799824e 

```
-----> Installing requirements with pip
-----> Discovering process types
Procfile declares types -> (none)
-----> Compressing...
Done: 151.0M
-----> Launching...
Released v5
https://week-5-cloud-and-api-deploye-1893ff947796.herokuapp.com/ deployed to Heroku
```

☒ Autoscroll with output

[View build log](#)

Release phase

Deploy to Heroku