MODEL DEPLOYMENT ON THE CLOUD HEROKU

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Batch Code: LISUM02

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Submitted to:

Model Deployment Stages

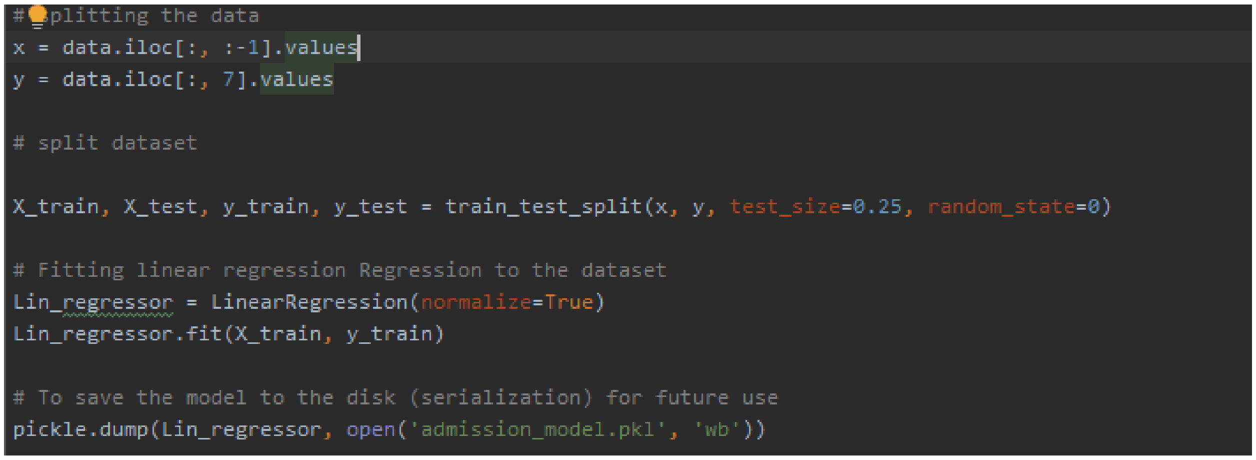
Stage1: Choosing a simple data

This is the data used for this project. The dataset contains several parameters which are considered important during the application for Masters Programs.
The parameters included are:

GRE Scores (out of 340)
TOEFL Scores (out of 120)
University Rating (out of 5)
Statement of Purpose and Letter of Recommendation Strength (out of 5)
Undergraduate GPA (out of 10)
Research Experience (either 0 or 1)
Chance of Admit (ranging from 0 to 1)

Stage2: Build and save a model using Flask

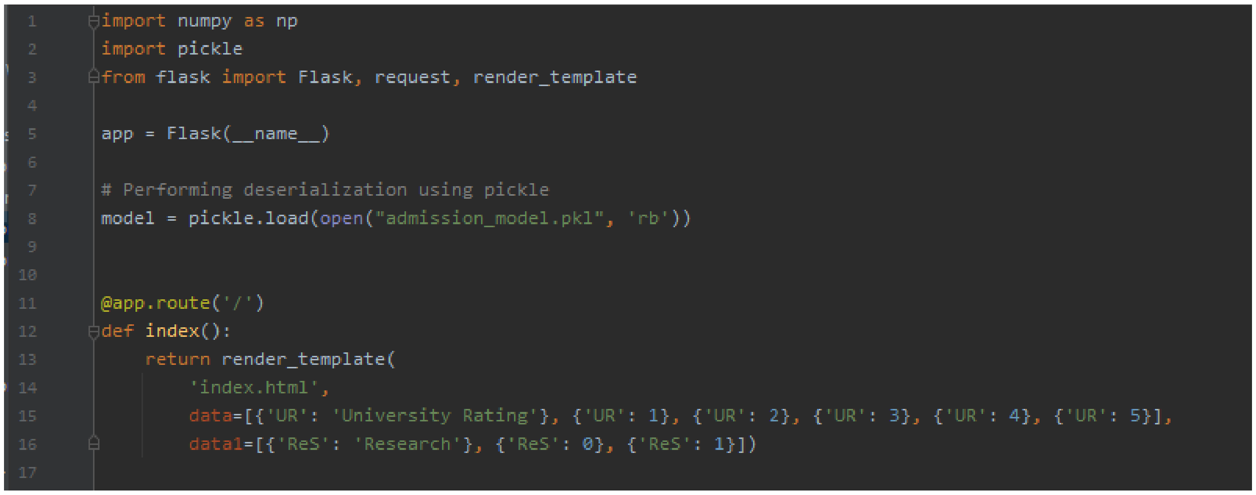
The model's goal is to predict the chance of a student to get admitted into a university. We used Pickle to serialize the model for future use in the admission_model.py file.



```
#splitting the data
x = data.iloc[:, :-1].values
y = data.iloc[:, 7].values

# split dataset

X_train, X_test, y_train, y_test = train_test_split(x, y, test_size=0.25, random_state=0)

# Fitting linear regression Regression to the dataset
Lin_regressor = LinearRegression(normalize=True)
Lin_regressor.fit(X_train, y_train)

# To save the model to the disk (serialization) for future use
pickle.dump(Lin_regressor, open('admission_model.pkl', 'wb'))
```

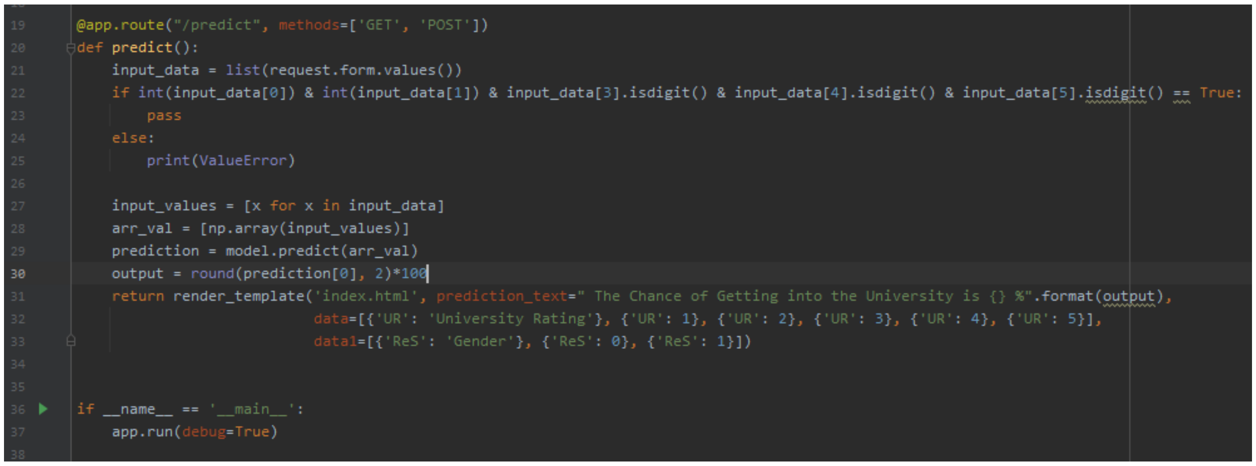
Stage3: Deployment using Flask

Firstly, App.py is built, a flask app that used the deserialized model to accept new data and predict a student percentage to get admission.



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

app = Flask(__name__)

# Performing deserialization using pickle
model = pickle.load(open("admission_model.pkl", 'rb'))


@app.route('/')
def index():
    return render_template(
        'index.html',
        data=[{'UR': 'University Rating'}, {'UR': 1}, {'UR': 2}, {'UR': 3}, {'UR': 4}, {'UR': 5}],
        data1=[{'ReS': 'Research'}, {'ReS': 0}, {'ReS': 1}])

```

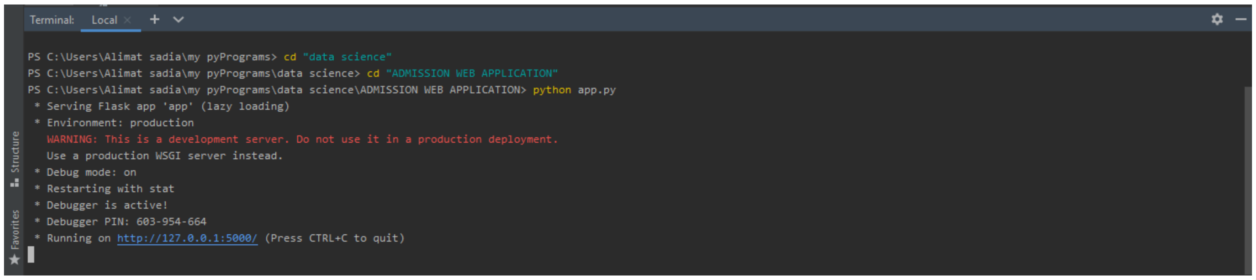
Now the function below accepts the data and return the predicted percentage



```python
@app.route("/predict", methods=['GET', 'POST'])
def predict():
    input_data = list(request.form.values())
    if int(input_data[0]) & int(input_data[1]) & input_data[3].isdigit() & input_data[4].isdigit() & input_data[5].isdigit() == True:
        pass
    else:
        print(ValueError)

    input_values = [x for x in input_data]
    arr_val = [np.array(input_values)]
    prediction = model.predict(arr_val)
    output = round(prediction[0], 2)*100
    return render_template('index.html', prediction_text=" The Chance of Getting into the University is {} %".format(output),
                           data=[{'UR': 'University Rating'}, {'UR': 1}, {'UR': 2}, {'UR': 3}, {'UR': 4}, {'UR': 5}],
                           data1=[{'ReS': 'Gender'}, {'ReS': 0}, {'ReS': 1}])


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

```

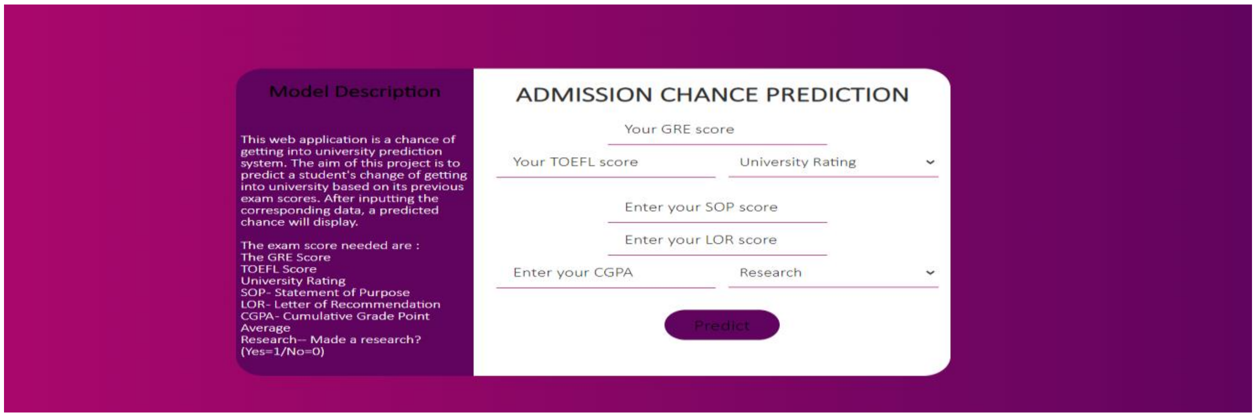
The index.html is a file that contains the structure of the web app design and AppStyle.css is used to beautify the web design.

Secondly, you have to write: “python app.py” in the terminal to run the flask application then a link will display.



```
PS C:\Users\Alimat sadia\my pyPrograms> cd "data science"
PS C:\Users\Alimat sadia\my pyPrograms\data science> cd "ADMISSION WEB APPLICATION"
PS C:\Users\Alimat sadia\my pyPrograms\data science\ADMISSION WEB APPLICATION> python app.py
 * Serving Flask app 'app' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: on
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 603-954-664
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

Thirdly, clicking on the link will direct you to the flask web application interface shown below.



Model Description

This web application is a chance of getting into university prediction system. The aim of this project is to predict a student's change of getting into university based on its previous exam scores. After inputting the corresponding data, a predicted chance will display.

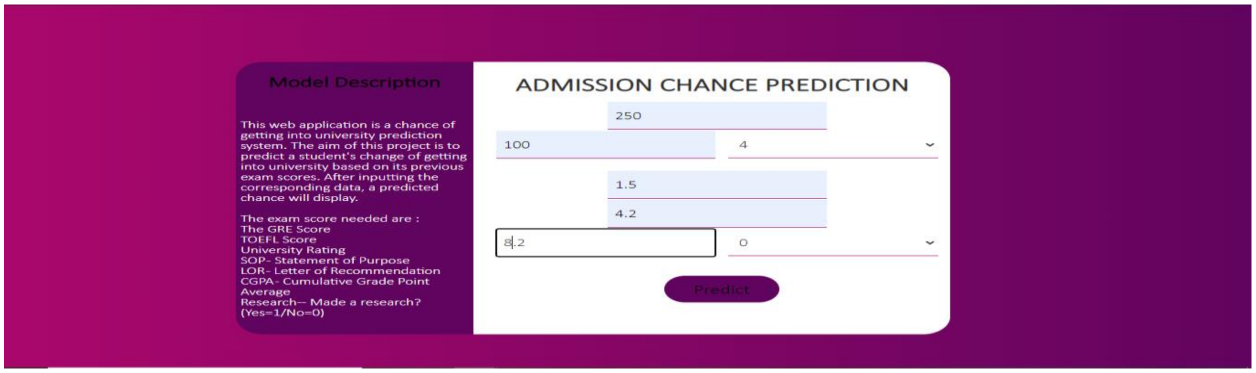
The exam score needed are :
The GRE Score
TOEFL Score
University Rating
SOP- Statement of Purpose
LOR- Letter of Recommendation
CGPA- Cumulative Grade Point Average
Research-- Made a research? (Yes=1/No=0)

ADMISSION CHANCE PREDICTION

Your GRE score
Your TOEFL score | University Rating
Enter your SOP score
Enter your LOR score
Enter your CGPA | Research

On this interface, a description of the web app's function is explained by the left and on the right there is the input section that collects the user's data.

This data will be fed into the deserialized model which will provide an output (percentage of change to get admitted) as illustrated below.



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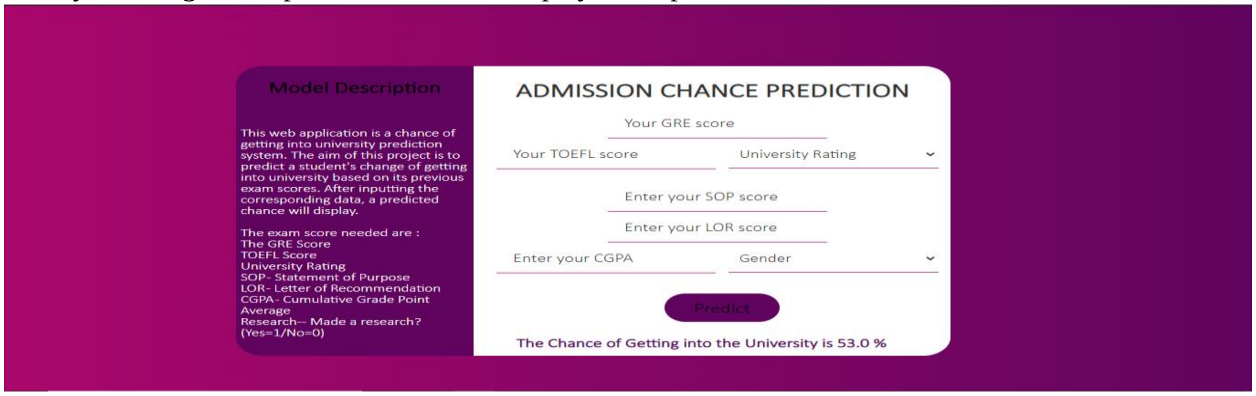
ADMISSION CHANCE PREDICTION

250
100 | 4
1.5
4.2
8.2 | 0

Finally, clicking on the predict button will displayed the predicted value as show below.



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ADMISSION CHANCE PREDICTION

Your GRE score
Your TOEFL score | University Rating
Enter your SOP score
Enter your LOR score
Enter your CGPA | Gender

The Chance of Getting into the University is 53.0 %

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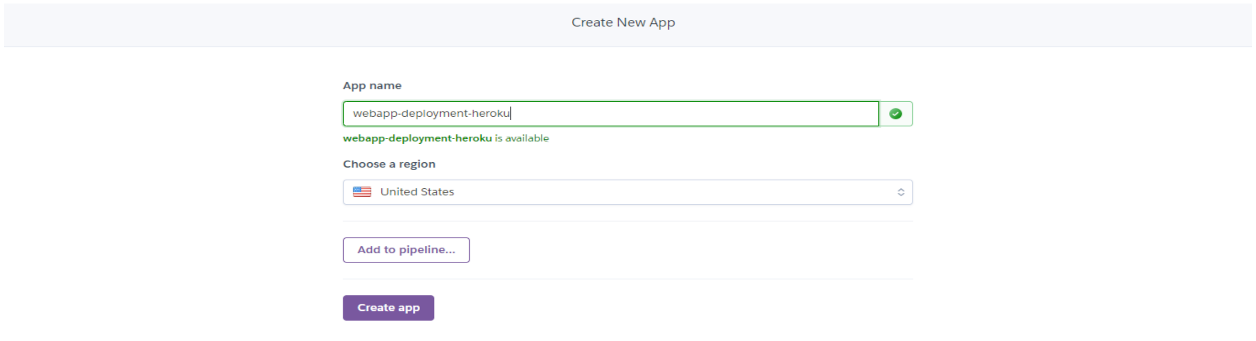
Step4: Deployment of the flask API on the cloud

I created a Heroku account after the login then by the right corner, I click on “New App” to create a new app to deploy.



Create New App

App name

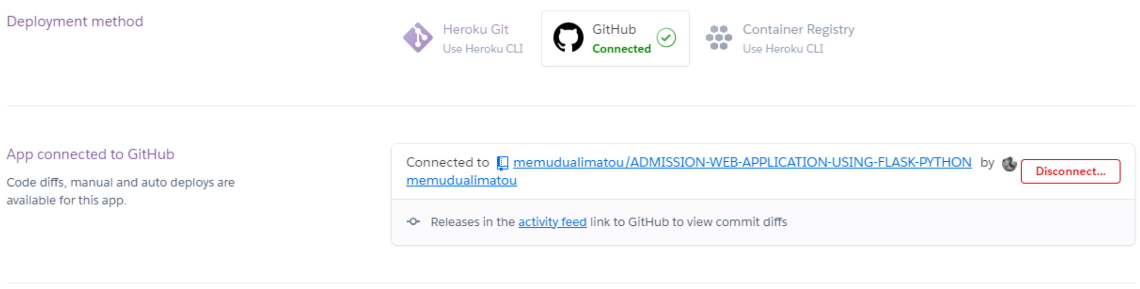
webapp-deployment-heroku

webapp-deployment-heroku is available

Choose a region

United States

After inserting the project name, I clicked on Create app then connected this project repository to the deployment method in Heroku.



Deployment method

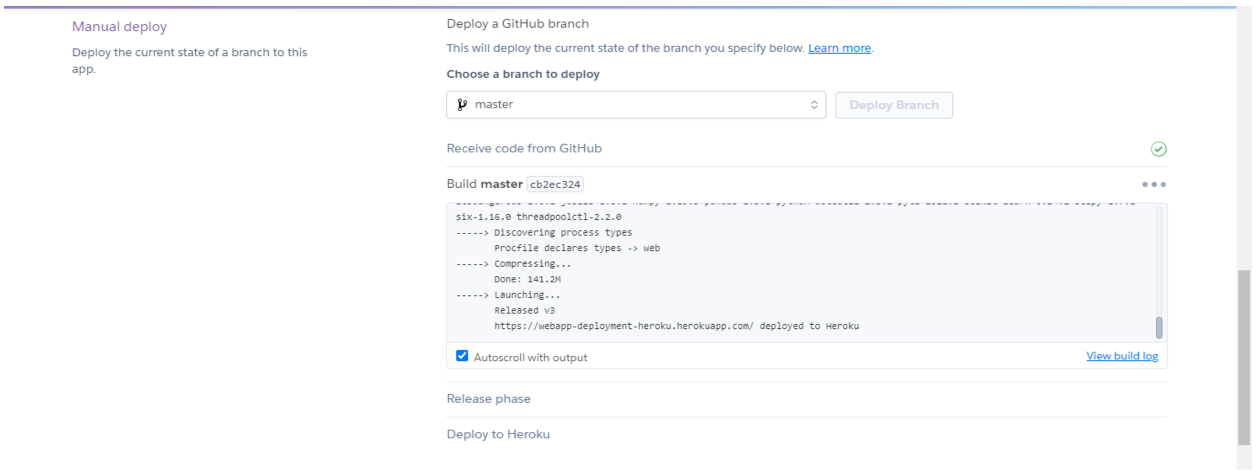
App connected to GitHub

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

Connected to memudualimatou/ADMISSION-WEB-APPLICATION-USING-FLASK-PYTHON by memudualimatou

Releases in the activity feed link to GitHub to view commit diffs

After a successful connection, I deployed the project manually, this step is all about the virtual installation of libraries required to run the web app. This project’s library dependencies and their different versions are listed in the requirements.txt file. The link presents in the Build master section below directs to the web app deployed in the cloud.



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

master

Receive code from GitHub

Build master cb2ec324

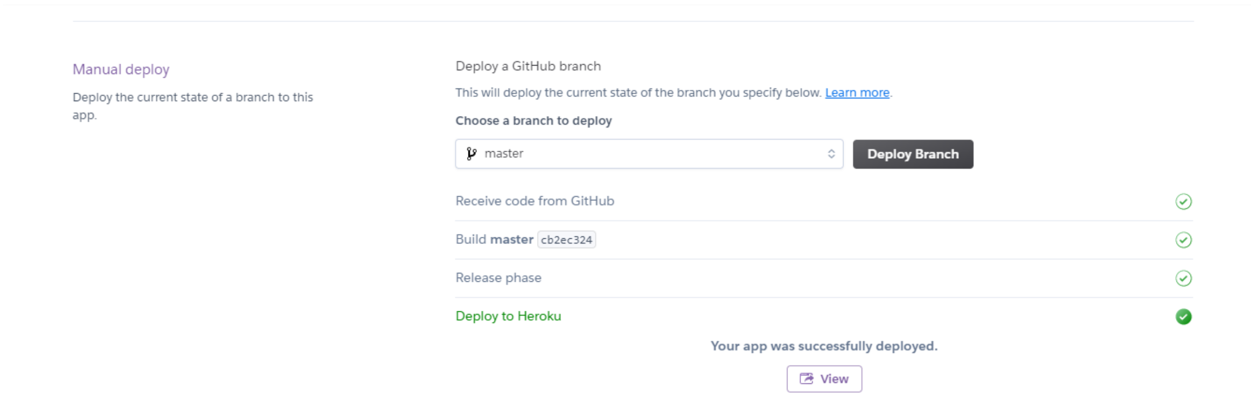
```
six-1.16.0 threadpoolctl-2.2.0
-----> Discovering process types
       Procfile declares types -> web
-----> Compressing...
       Done: 141.2M
-----> Launching...
       Released v3
       https://webapp-deployment-heroku.herokuapp.com/ deployed to Heroku
```

Autoscroll with output

Release phase

Deploy to Heroku

A deployment is garentee after a succesfull installation of all requirement libraries as shown below.



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Choose a branch to deploy

master

Receive code from GitHub ✓

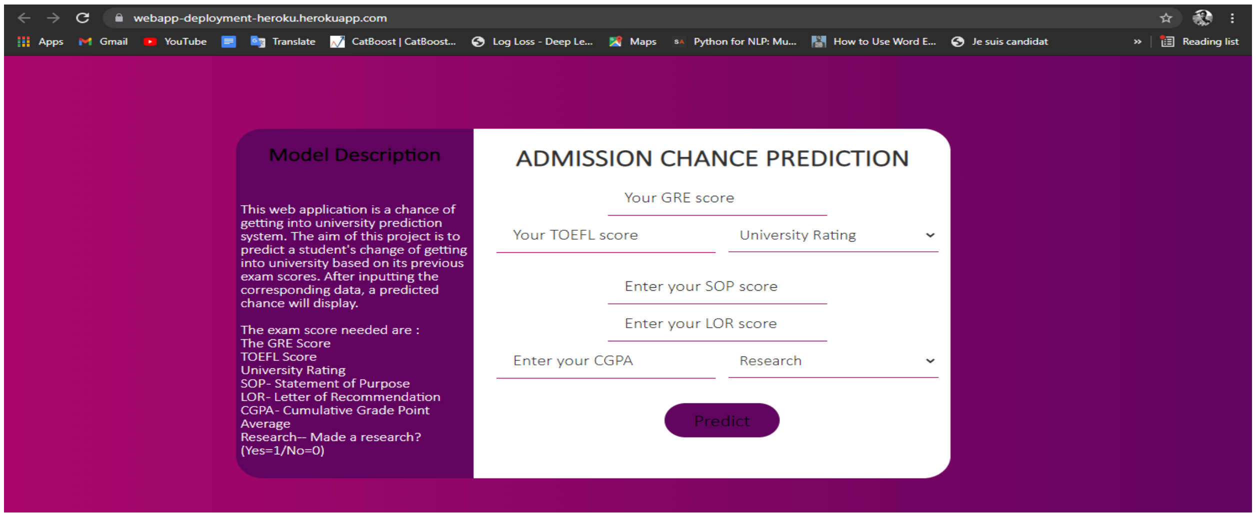
Build master cb2ec324 ✓

Release phase ✓

Deploy to Heroku ✓

Your app was successfully deployed.

Clicking on the "View" button directs to the deployed web app link. The admission Flask API will display. Check the URL section of my web browser the "webapp-deployment-heroku" has been successfully deployed into cloud using Heroku.



webapp-deployment-heroku.herokuapp.com

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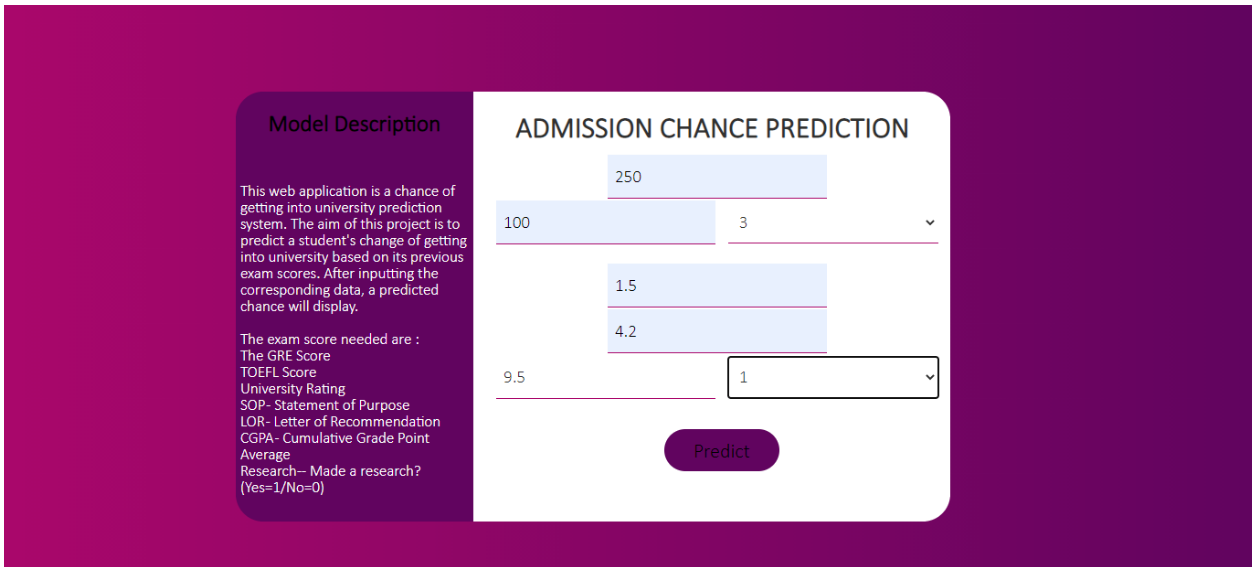
ADMISSION CHANCE PREDICTION

Testing the web app by inserting some data and view the result.



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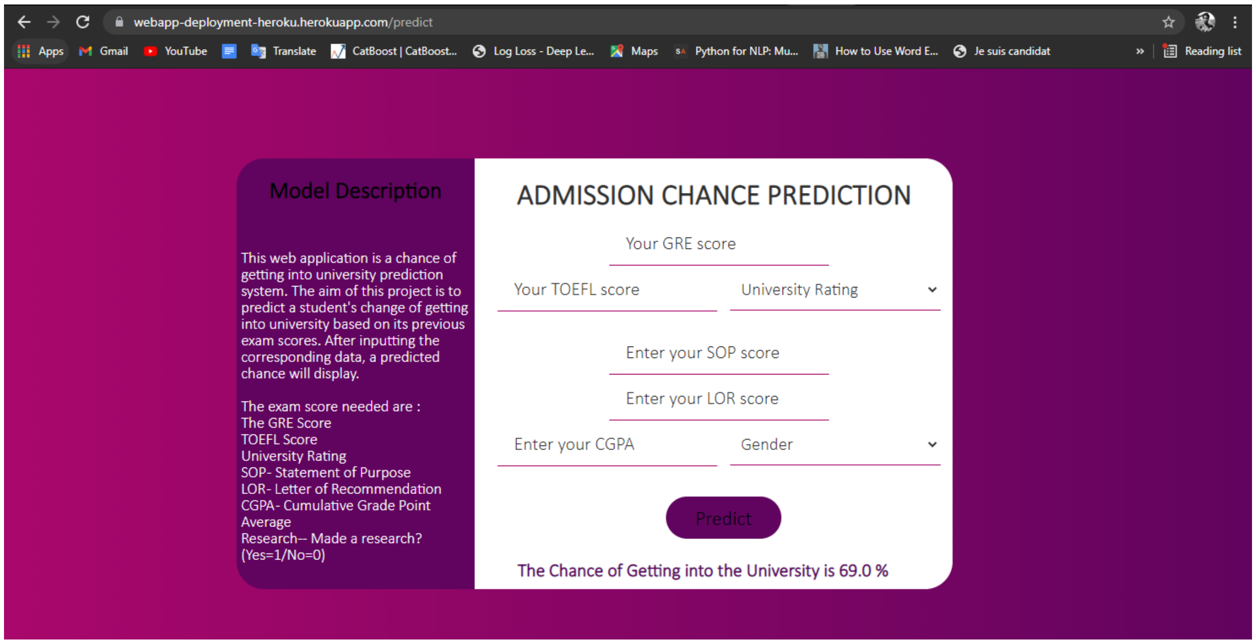
Research-- Made a research? (Yes=1/No=0)

ADMISSION CHANCE PREDICTION

250
100 | 3
1.5
4.2
9.5 | 1

The predicted chance of getting admitted into a university is displayed.



webapp-deployment-heroku.herokuapp.com/predict

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This web application is a chance of getting into university prediction system. The aim of this project is to predict a student's change of getting into university based on its previous exam scores. After inputting the corresponding data, a predicted chance will display.

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TOEFL Score
University Rating
SOP- Statement of Purpose
LOR- Letter of Recommendation
CGPA- Cumulative Grade Point Average
Research-- Made a research? (Yes=1/No=0)

ADMISSION CHANCE PREDICTION

Your GRE score
Your TOEFL score | University Rating
Enter your SOP score
Enter your LOR score
Enter your CGPA | Gender

The Chance of Getting into the University is 69.0 %

Project repository: https://github.com/memudualimatou/ADMISSION-WEB-APPLICATION-USING-FLASK-PYTHON

Deployed web app link: https://webapp-deployment-heroku.herokuapp.com