

Name: Muhammad Nuril Huda

Batch Code: LISUM30

Submission date: 26 Feb 2024

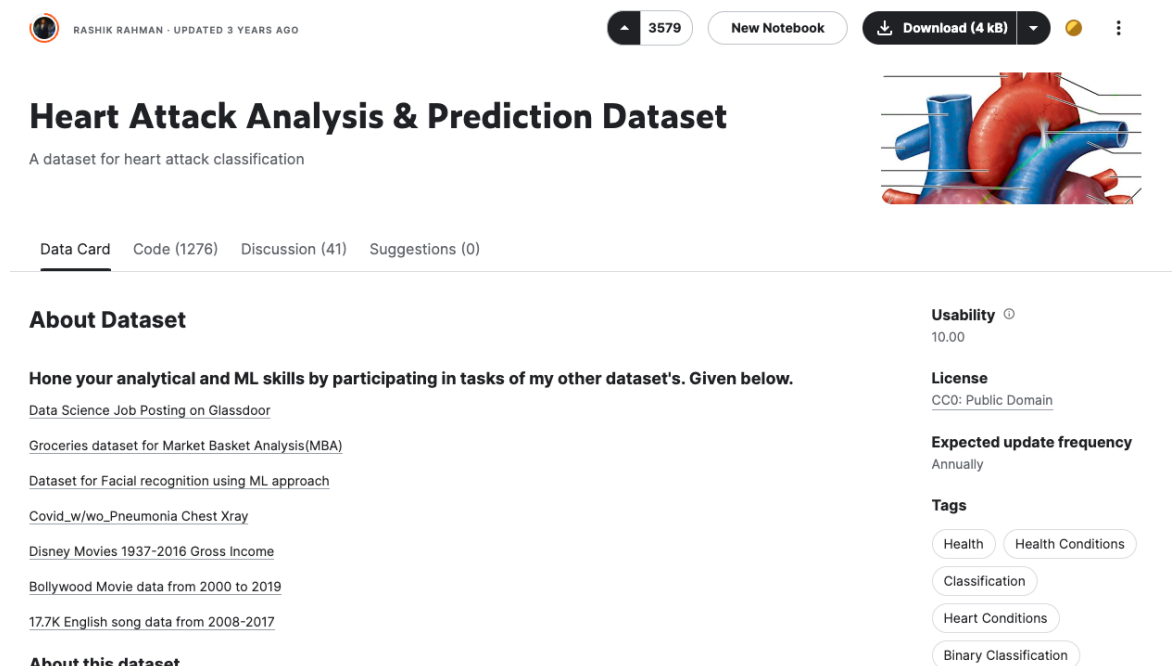
Submitted to: <https://github.com/MuhammadNurilHuda/Deploy---Heart-Attack>

Heart Attack Prediction Deployment

1. Prepare the dataset.

The dataset was downloaded from kaggle

(<https://www.kaggle.com/datasets/rashikrahmanpritom/heart-attack-analysis-prediction-dataset/data>).



The screenshot shows the Kaggle dataset page for 'Heart Attack Analysis & Prediction Dataset' by Rashik Rahman. The page includes a header with the dataset name, a description 'A dataset for heart attack classification', and a sidebar with navigation options like 'Data Card', 'Code (1276)', 'Discussion (41)', and 'Suggestions (0)'. The main content area is titled 'About Dataset' and lists various datasets created by the user, such as 'Data Science Job Posting on Glassdoor', 'Groceries dataset for Market Basket Analysis(MBA)', and 'Dataset for Facial recognition using ML approach'. On the right, there are sections for 'Usability' (10.00), 'License' (CC0: Public Domain), 'Expected update frequency' (Annually), and 'Tags' (Health, Health Conditions, Classification, Heart Conditions, Binary Classification).

Check this [Data Intake report](#) for the complete dataset information.

2. Train the ML model.

The dataset is good enough, so the only preprocessing method I use is MinMax normalization. The algorithm used is Logistic Regression. With that method, the accuracy is 85% and recall is 84%.

3. Web Application

The full HTML is on this [link](#) and css is on this [link](#). And here is the screenshot of UI of the website.

The screenshot shows a web browser window with the address bar displaying "127.0.0.1:5000". The page content is titled "Input Data:" and contains a form with the following fields and options:

- Age:
- Gender:
 - ☐ Male ☐ Female
- Chest Pain Type (cp):
 - ☐ Typical Angina ☐ Atypical Angina
 - ☐ Non-Anginal ☐ Asymptomatic
- Resting Blood Pressure (trtbps):
- Serum Cholesterol (chol):
- Fasting Blood Sugar (fbs) > 120 mg/dl: ☐ Yes ☐ No
- Resting Electrocardiographic Results (rest_ecg):
 - ☐ Normal ☐ Having ST-T Wave Abnormality ☐ Hypertrophy
- Maximum Heart Rate Achieved (thalach):
- Exercise Induced Angina (exng): ☐ Yes ☐ No
- Oldpeak:
- Slope of the Peak Exercise ST Segment (slp) :
 - ☐ Upsloping ☐ Flat ☐ Downsloping
- Number of Major Vessels Colored by Fluoroscopy (caa) 0-3:
- Thall:
 - ☐ Normal ☐ Fixed Defect ☐ Reversible Defect

A green "Submit" button is located at the bottom of the form.

4. Flask endpoint

The full flask code is on this [link](#). Here the snapshot

```

1 from flask import Flask, request, render_template, jsonify
2 import pickle
3 import numpy as np
4
5 app = Flask(__name__)
6 model = pickle.load(open('model.pkl', 'rb')) # Load the trained model (pickle file)
7 scaler = pickle.load(open('minmax_scaler.pkl', 'rb'))
8
9 @app.route('/')
10 def home():
11     return render_template('index.html')
12     # return jsonify({'Message': 'Hello, World!'})
13
14 @app.route('/predict', methods=['POST'])
15 def predict():
16     try:
17         feature = ['age', 'sex', 'cp', 'trtbps', 'chol', 'fbs', 'restecg', 'thalachh', 'exng', 'oldpeak', 'slp', 'caa', 'thall']
18         data = [float(request.form[f]) for f in feature]
19         data_array = np.array([data]).reshape(1, -1)
20         data_normalized = scaler.fit_transform(data_array)
21         prediction = model.predict(data_normalized)[0]
22
23         if prediction == 1:
24             msg = 'You have more chance of heart attack'
25         else:
26             msg = 'No heart attack expected'
27
28         response = {
29             'prediction': msg
30         }
31
32         return render_template('index.html', prediction = msg)
33         # return jsonify(response)
34
35     except Exception as e:
36         return jsonify({'error': str(e)})
37
38 if __name__ == "__main__":
39     app.run(debug=True)

```

5. Test the web app

After we insert the form, here is the output

← → ↻ 127.0.0.1:5000/predict

Input Data:

Age:

Gender:
☐ Male ☐ Female

Chest Pain Type (cp):
☐ Typical Angina ☐ Atypical Angina
☐ Non-Anginal ☐ Asymptomatic

Resting Blood Pressure (trtbps):

Serum Cholesterol (chol):

Fasting Blood Sugar (fbs) > 120 mg/dl: ☐ Yes ☐ No

Resting Electrocardiographic Results (rest_ecg):
☐ Normal ☐ Having ST-T Wave Abnormality ☐ Hypertrophy

Maximum Heart Rate Achieved (thalach):

Exercise Induced Angina (exng): ☐ Yes ☐ No

Oldpeak:

Slope of the Peak Exercise ST Segment (slp) :
☐ Upsloping ☐ Flat ☐ Downsloping

Number of Major Vessels Colored by Fluoroscopy (caa) 0-3:

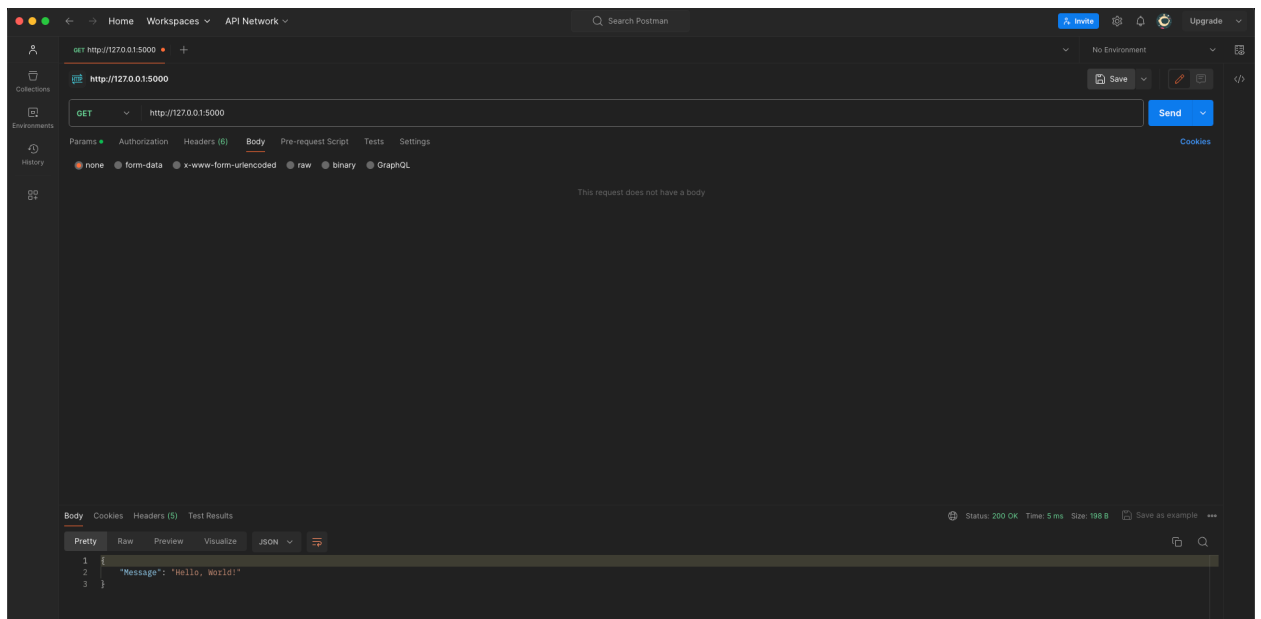
Thall:
☐ Normal ☐ Fixed Defect ☐ Reversible Defect

You have more chance of heart attack

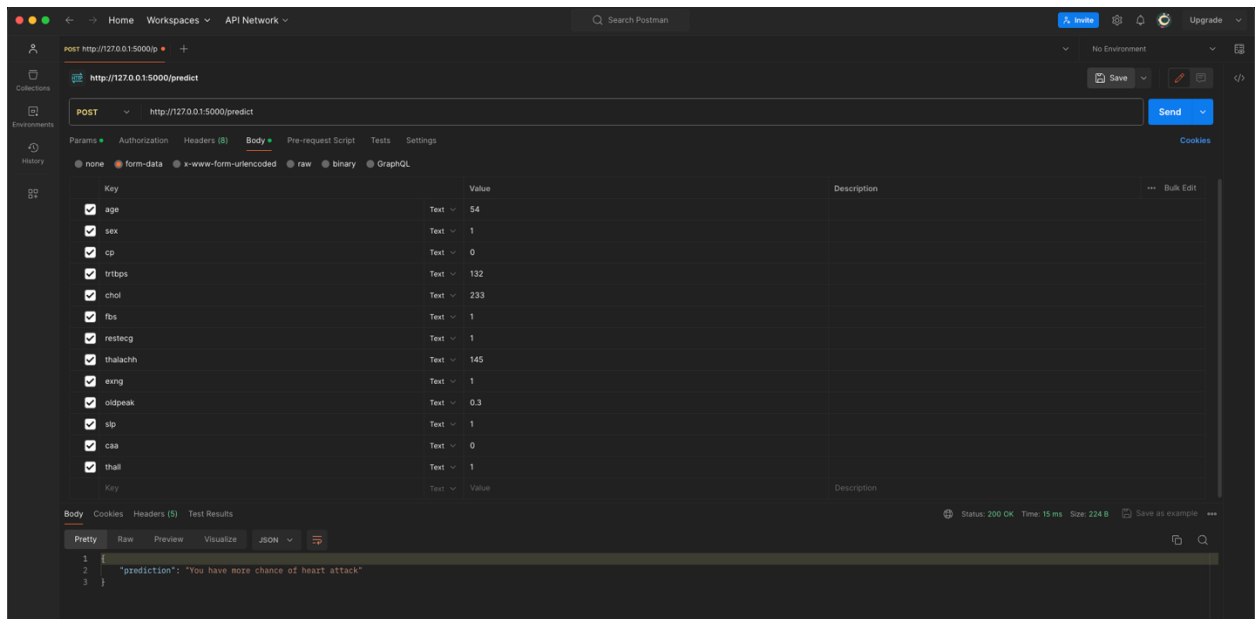
6. Postman test

By changing the return value of the function, I do the api test using postman, and here's the result.

main:



Predict:



It's working fine...