Report on

Predictive Model and Deploy It as a Web Application

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OBJECTIVE

To create a predictive model, perform exploratory data analysis, train and evaluate the model, and deploy it using Streamlit.

DATASETS

age: The age of the patient

sex: Gender of the patient (0: female, 1: male)

cp : chest pain type and there are 4 types.

0:typical angina.
1:atypical angina.
2:non-anginal pain.
3:asymptomatic

restecg: Resting blood pressure

0: normal.
1: have ST-T wave abnormality.
2: showing probable or definite left ventricular hypertrophy by Estes' criteria

thalach: max heart rate achieved

exang: exercise induced angina (1=yes, 0= no)

slope: slope of peak exercise ST segment 1:upsloping 2:flat 3:downsloping

ca:number of major vessels

thal:

3: normal

6 : fixed defect

7 : reversible defect

target :probability of having heart disease

0: less chance of heart attack

1: more chance of heart attack

DEPENDENCIES

Python 3.x

Pandas

NumPy

Matplotlib

Seaborn

Plotly

Scikit-learn

Streamlit

Pickle (built-in)

WORKFLOW

1.Data Loading: The dataset is loaded using pandas, and initial exploration (head, tail, shape, etc.) is performed to understand the structure.

2.Handling Duplicates: Duplicate rows in the dataset are dropped.

3.Categorical Feature Analysis: Plots are created using Seaborn to analyze categorical features with respect to the target variable.

4.Numerical Feature Analysis: Numerical features are analyzed using pair plots to understand relationships between variables.

5.Correlation Matrix: A correlation matrix is generated to examine the strength of relationships between features.

6.Modeling: Logistic regression is used for predicting the target variable (heart disease likelihood).

7.Load Model: The pre-trained model is loaded using pickle.

8.Input Data: The app allows users to input various health metrics.

9.Prediction: Upon clicking the "Heart Disease Test Result" button, the model predicts the likelihood of heart disease based on the provided inputs.

Running the Code

1.Clone the project

```
git clone https://github.com/yourusername/heart-disease-prediction.git
```

2.Go to the project directory

```
cd heart-disease-prediction
```

3.Run the code using Python environment (e.g., Jupyter Notebook, VSCode):

```
python heart_disease_prediction.py
```

4.Run the Streamlit app:

```
streamlit run app.py
```

5.Open your web browser and go to http://localhost:8501 to access the app.