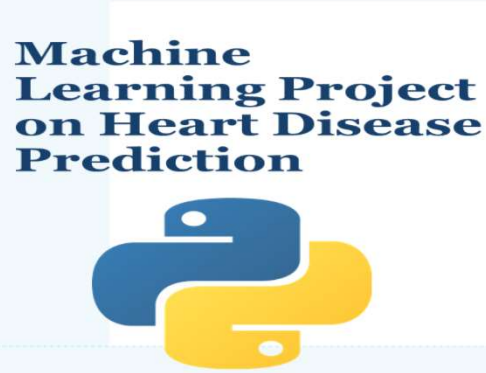
HACK INNOVISION

HEART ATTACK ANALYSIS AND PREDICTION MODEL :

A machine learning approach("Saving lives with early detection")

INTRODUCTION:

Cardiovascular disease is the leading cause of death worldwide , accounting for over 17.9 million death per year .Heart attacks ,in particular, are a major contributor to this staggering statistic . Early detection and prevention are crucial to saving lives . Traditional methods of heart attack prediction rely on manual analysis of medical data , which can be time-consuming and prone to errors . Machine learning offers a revolutionary solution to this problem.



By leveraging advanced algorithm and large datasets , we can build predictive models that identify high-risk patients with unprecedented accuracy . Our heart attack prediction model is designed to do just that- "harnessing the power of machine learning to prevent cardiovascular disease early and save lives."

- **SOURCES OF DATASET :** Kaggle (Heart attack analysis and prediction dataset).
- **NUMBER OF FEATURES:** 13(age , sex , cp , cholesterol ….etc)
- **TARGET VARIABLE :** Heart Attack(Yes/No)

FEATURE ENGINEERING & MODEL SELECTION :

- Handling missing values
- Data normalisation
- Feature selection
- Classification algorithm
- Decision trees , Random forest , XGBoost

MODEL TRAINING

(A).DECISION TREE CLASSIFIER : "A Simple yet Powerful classification technique".

RESULT:

1.WITH TOP 7 FEATURES:

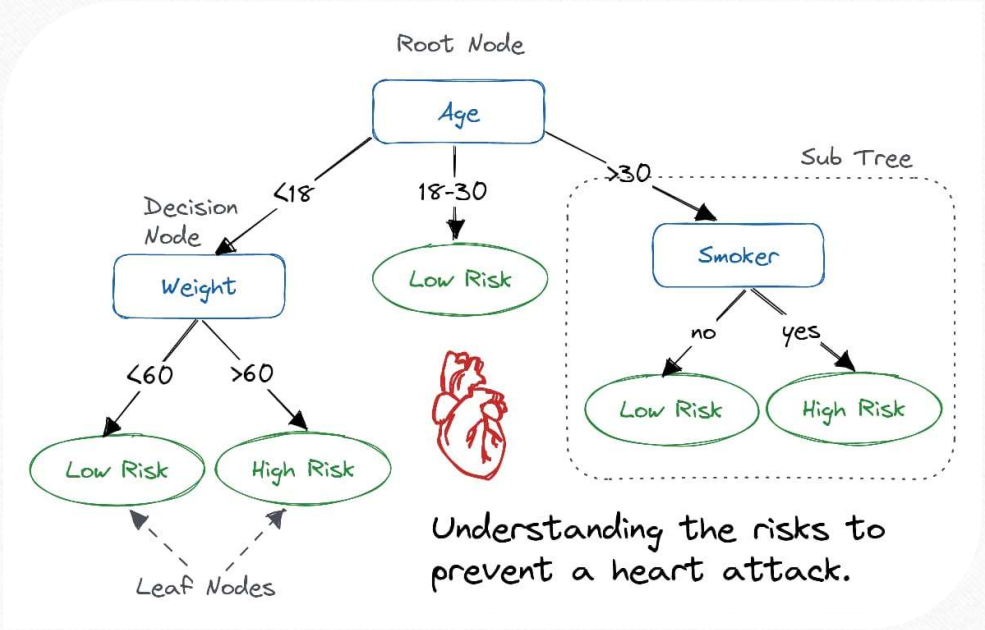
ACCURACY-70.49

AUC SCORE=0.70

2.WITH ALL FEATURES:

ACCURACY=77.05

AUC SCORE=0.77



(B).RANDOM FOREST CLASSIFIER : "An ensemble learning technique for classification".

RESULT:

1.WITH TOP 7 FEATURES:

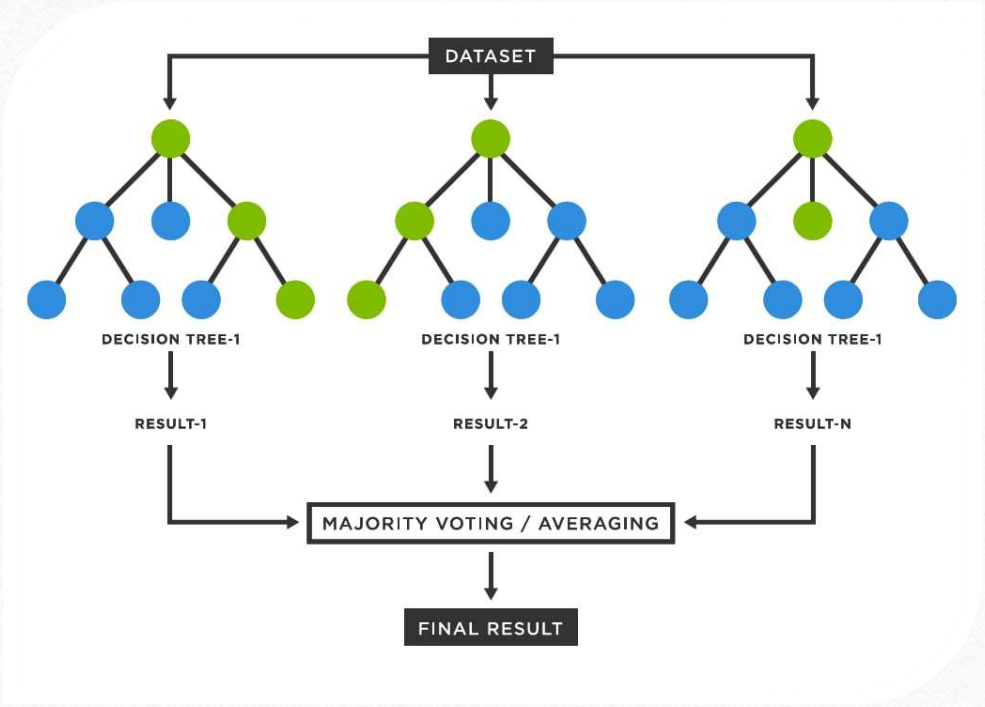
ACCURACY=85.25

AUC SCORE= 0.85

2.WITH ALL FEATURES:

ACCURACY=86.88

AUC SCORE=0.87



(C).XGBOOST CLASSIFIER :

XGBoost , or extreme gradient boosting , is an open source machine learning algorithm that is used for classification and regression.

RESULT:

1.WITH TOP 7 FEATURES:

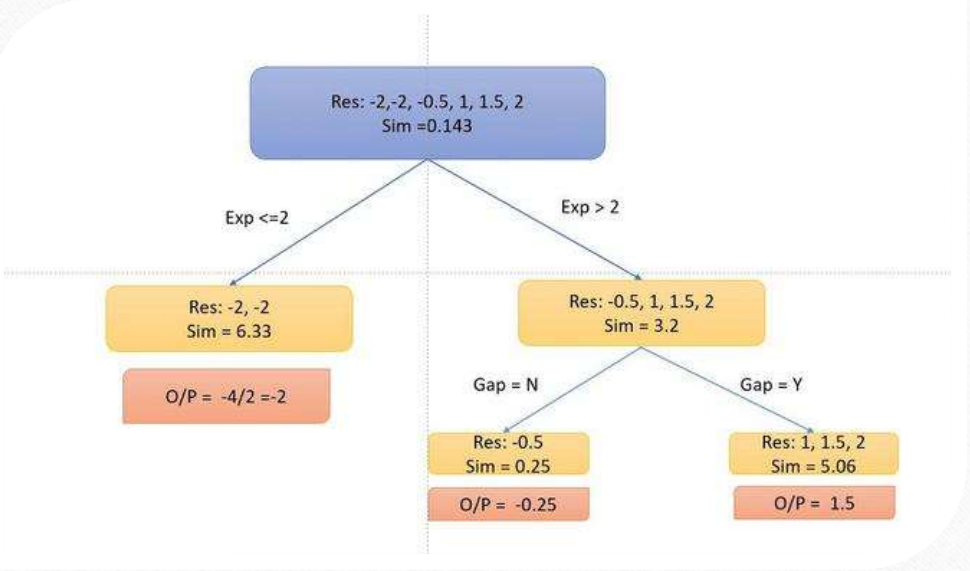
ACCURACY=86.88

AUCM = 0.87

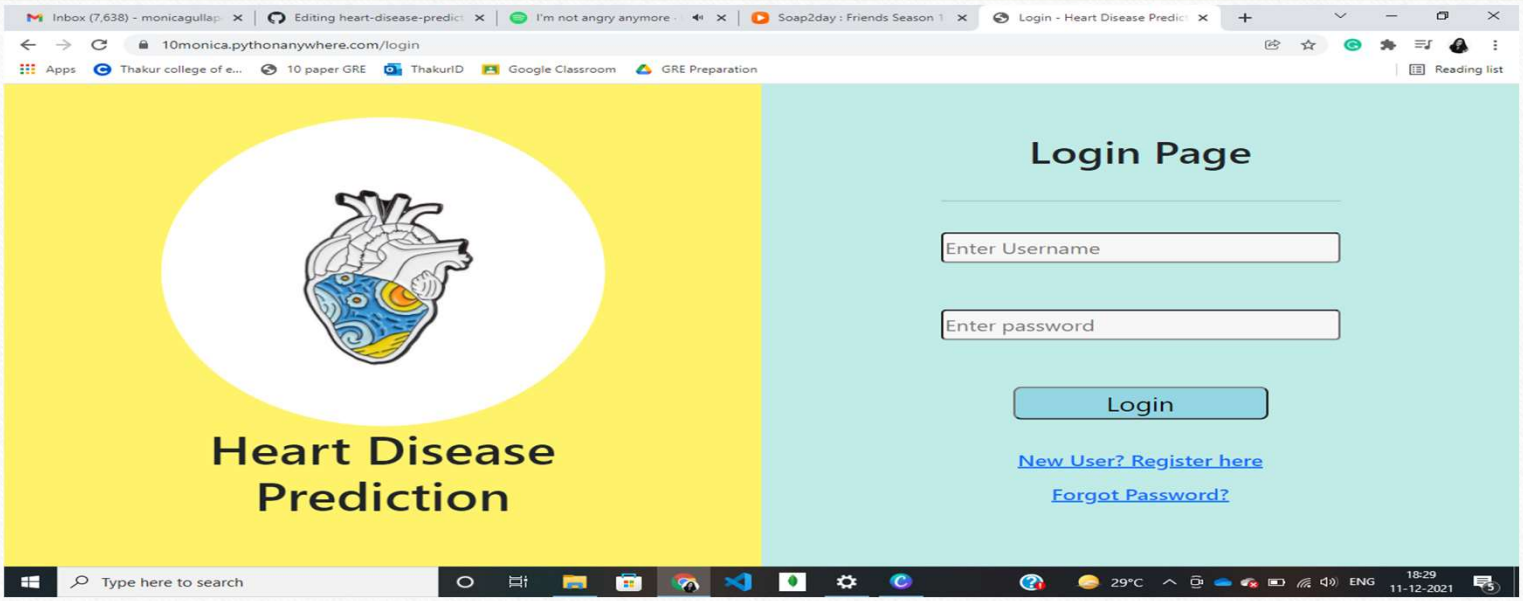
2.WITH ALL FEATURES:

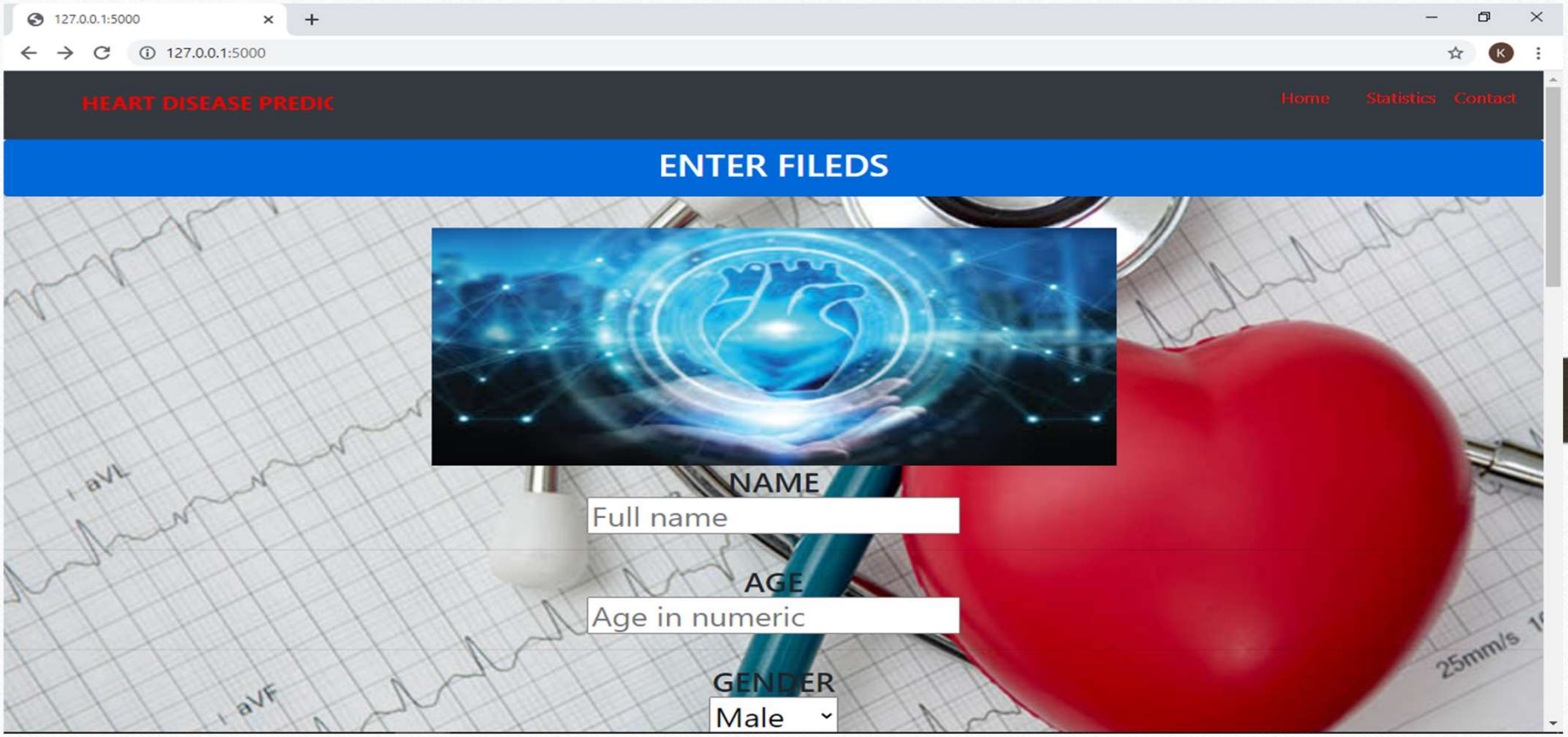
ACCURACY = 86.88

AUC = 0.87



WEBSITE OVERVIEW:




127.0.0.1:5000
127.0.0.1:5000
HEART DISEASE PREDIC
Home
Statistics
Contact
ENTER FILEDS
NAME
Full name
AGE
Age in numeric
GENDER
Male
aVL
aVF
25mm/s


HEART DISEASE PREDICTION
It's a clean, easy to understand set of data. However, the meaning of some of the column headers are not obvious. Here's what they mean,
Age: displays the age of the individual.
Sex: displays the gender of the individual using the following format :
1 = male
0 = female
Chest-pain type: displays the type of chest-pain experienced by the individual using the following format :
0 = typical angina
1 = atypical angina
AGE
(Age: 1 - 150)
SEX
(Male: 1 & Female: 0)
CP
(Enter Single Value From Range 0-3)
TRESTBPS
(Enter Non-Decimal Value)
CHOL
(Enter Non-Decimal Value)
FBS
(1 = True; 0 = False)
RESTECG
(Enter Single Value From Range 0-2)
THALACH
(Enter Non-Decimal Value)
EXANG
(Exercise: 1 = YES; 0 = NO)
OLDPEAK
(Enter Decimal Value)
SLOPE
(Enter Single Value From Range 0-2)
CA
(Enter Single Value From Range 0-4)
THAL
(Enter Single Value From Range 0-3)
SUBMIT
PATIENT HAS NO HEART PROBLEM

"Our heart attack prediction model has the potential to save lives and improve healthcare outcomes . We invite you to try it out and experience the power of machine learning.

Link of the model:
https://colab.research.google.com/drive/1cOQaXWkTIL0Vr7X8x_vYhT8Bhc47UbrH?usp=sharing