

Team ID	PNT2022TMID14141
Project Name	Project – Visualizing and Predicting Heart Diseases with an Interactive Dash Board

## SPRINT DELIVERY 2

### STEPS:

1. Load heart disease Data Set
2. Preprocessing the Data set
3. Feature Extraction
4. Splitting Data Set into training and testing Data set.
5. Ensemble Machine learning approaches
6. Comparison graph

## FRAME

The image displays a machine learning software interface with four overlapping windows. The 'Main Frame' window has a green header and contains a 'Load Heart Disease Dataset' button and a list of numerical data points. The 'Preprocessing' window has a maroon header and a 'Preprocessing' button, showing a list of features and their corresponding values. The 'Feature Extraction' window has a brown header and a 'Feature Extraction' button, displaying a list of 'Selected Qualified Features' and 'Remaining Dataset after Feature Selection'. The 'Split Dataset' window has a purple header and a 'Split Dataset into Training (80 %) and Testing (20 %) Datasets' button, showing two columns of data representing the split datasets.

### MAIN FRAME

Load Heart Disease Dataset

```
64.0,1.0,1.0,110.0,211.0,0.0,2.0,144.0,1.0,1.8,2.0,0.0,3.0,0
58.0,0.0,1.0,150.0,283.0,1.0,2.0,162.0,0.0,1.0,1.0,0.0,3.0,0
58.0,1.0,2.0,120.0,284.0,0.0,2.0,160.0,0.0,1.8,2.0,0.0,3.0,1
58.0,1.0,3.0,132.0,224.0,0.0,2.0,173.0,0.0,3.2,1.0,2.0,7.0,1
60.0,1.0,4.0,130.0,206.0,0.0,2.0,132.0,1.0,2.4,2.0,2.0,7.0,1
50.0,0.0,3.0,120.0,219.0,0.0,0.0,158.0,0.0,1.6,2.0,0.0,3.0,0
58.0,0.0,3.0,120.0,340.0,0.0,0.0,172.0,0.0,0.0,1.0,0.0,3.0,0
66.0,0.0,1.0,150.0,226.0,0.0,0.0,114.0,0.0,2.6,3.0,0.0,3.0,0
43.0,1.0,4.0,150.0,247.0,0.0,0.0,171.0,0.0,1.5,1.0,0.0,3.0,0
40.0,1.0,4.0,110.0,167.0,0.0,2.0,114.0,1.0,2.0,2.0,0.0,7.0,1
69.0,0.0,1.0,140.0,239.0,0.0,0.0,151.0,0.0,1.8,1.0,2.0,3.0,0
60.0,1.0,4.0,117.0,230.0,1.0,0.0,160.0,1.0,1.4,1.0,2.0,7.0,1
64.0,1.0,3.0,140.0,335.0,0.0,0.0,158.0,0.0,0.0,1.0,0.0,3.0,1
59.0,1.0,4.0,135.0,234.0,0.0,0.0,161.0,0.0,0.5,2.0,0.0,7.0,0
44.0,1.0,3.0,130.0,233.0,0.0,0.0,179.0,1.0,0.4,1.0,0.0,3.0,0
42.0,1.0,4.0,140.0,226.0,0.0,0.0,178.0,0.0,0.0,1.0,0.0,3.0,0
```

Preprocessing

```
age,sex,cp,trestps,chol,tbs,restecg,thalach,exang,oldpeak,slope,ca,thal,Class
0.7,1.0,0.5,0.2,1.0,6.0,0.4,1.0,0.8,0
0.8,1.0,6.0,4.0,1.0,3.1,0.2,0.5,1.0,1
0.8,1.0,2.0,2.0,1.0,4.1,0.4,0.5,0.7,1,1
0.2,1.0,7.0,3.0,3.0,0.0,9.0,0.6,1.0,0.0
0.2,0.0,3.0,3.0,2.0,1.0,8.0,0.2,0.0,0.0
0.6,1.0,3.0,2.0,3.0,0.0,8.0,0.1,0.0,0.0
0.7,0.1,0.4,0.3,0.1,0.7,0.0,6.1,0.7,0,1
0.6,0.1,0.2,0.5,0.0,0.7,1.0,1.0,0.0,0
0.7,1.0,3.0,3.0,1.0,6.0,0.2,0.5,0.3,1,1
0.5,1.0,4.0,2.1,1.0,6.1,0.5,1.0,1,1
0.6,1.0,4.0,2.0,0.0,6.0,0.1,0.5,0.8,0
0.6,0.0,3.0,4.0,4.0,1.0,6.0,0.2,0.5,0.0,0
0.6,1.0,7.0,3.0,3.1,1.0,5.1,0.1,0.5,0.3,0.8,1
0.3,1.0,3.0,2.0,3.0,0.0,8.0,0.0,0.0,1.0
0.5,1.0,7.0,7.0,2.1,0.0,7.0,0.1,0.0,1.0
0.6,1.0,7.0,5.0,1.0,0.0,8.0,0.3,0.0,0.0,0
```

### FEATURE EXTRACTION

Feature Extraction

Selected Qualified Features

```
age
sex
cp
trestps
chol
tbs
restecg
thalach
exang
Class
```

Remaining Dataset after Feature Selection

```
age,sex,cp,trestps,chol,tbs,restecg,thalach,exang,Class
```

Split Dataset into Training (80 %) and Testing (20 %) Datasets

### SPLIT DATASET

Split Dataset into Training (80 %) and Testing (20 %) Datasets

```
0.5,1.0,3.0,3.0,0.0,0.2,1.1
0.7,0.1,0.1,0.3,0.0,0.7,1.1
0.1,0.0,3.0,2.0,2.0,0.0,9.0,0
0.4,1.0,2.0,2.0,0.0,0.5,0.0
0.8,0.0,7.0,5.0,3.0,0.0,8.0,0
0.5,1.0,2.0,2.0,1.0,3.1,1
0.8,1.0,2.0,2.0,1.0,5.1,1
0.5,0.0,7.0,4.0,2.0,1.0,7.0,0
0.5,0.1,0.8,0.5,0.5,0.4,1.1
0.4,1.0,7.0,2.0,1.0,1.0,4.0,1
0.9,0.0,3.0,2.0,3.0,1.0,4.1,0
0.5,0.0,7.0,6.0,2.0,0.0,7.0,0
0.5,1.0,3.0,4.0,1.0,3.1,1
0.6,1.0,3.0,4.1,1.0,2.1,1
0.4,1.0,2.0,3.0,1.0,6.0,1
0.4,0.0,3.0,4.0,3.0,0.0,7.0,0
0.3,1.0,3.0,2.0,4.0,0.0,7.0,0
0.2,1.0,3.0,2.0,2.0,0.0,6.0,0
```

```
0.6,1.0,2.0,2.0,0.0,0.5,0.7,1
0.6,0.1,0.7,0.2,1.0,6.1,1
0.6,1.0,3.0,3.0,2.0,0.0,6.0,1
0.6,1.0,3.0,3.0,2.0,1.0,7.0,1
0.6,1.0,3.0,2.0,3.0,0.0,7.0,1
0.6,1.0,7.0,5.0,2.0,1.0,6.0,1
0.5,0.0,3.0,4.0,5.0,0.0,7.0,1
0.3,1.0,2.0,1.0,0.0,6.1,1
0.7,1.0,4.0,1.0,1.0,6.1,1
0.7,0.1,0.3,0.2,0.0,0.5,1,1
0.2,1.0,3.0,2.0,1.0,0.0,8.0,1
0.6,1.0,7.0,1.1,1.0,1.0,1
0.6,0.1,0.4,0.3,0.0,0.4,1,1
0.3,1.0,2.0,3.0,0.0,0.5,0,1
0.8,1.0,5.0,2.1,0.0,5.0,1
0.6,1.0,3.0,0.0,0.3,1,1
0.6,0.0,3.0,3.0,3.0,1.0,8.0,1
0.2,1.0,7.0,4.0,1.0,0.0,8.0,1
```

Ensemble ML approaches

## ENSEMBLE ML APPROACHES

Ensemble ML approaches using Tuned Hyperparameter

ENSEMBLE ML APPROACHES

Ensemble ML approaches

\*\*\*\*\*  
Ensemble ML Classification and Prediction Results  
\*\*\*\*\*

@relation HeartDiseaseDatasetTesting  
  
@attribute age numeric  
@attribute sex numeric  
@attribute cp numeric  
@attribute trestbps numeric  
@attribute chol numeric  
@attribute fbs numeric  
@attribute restecg numeric  
@attribute thalach numeric  
@attribute exang numeric  
@attribute Class {0,1}

View Comparison Graph

COMPARSION

