



Predictive Modeling for Disease Diagnosis



INTRODUCTION

Overview of Predictive Modeling in Healthcare

- **Definition:** Predictive modeling is a statistical technique using machine learning and data mining to predict future outcomes based on historical data.
- **Objective:** To leverage historical and real-time data to make informed predictions about future events, behaviors, or conditions.



Importance in Healthcare

01.

Early Detection and Diagnosis:

Helps in identifying diseases at an early stage, improving treatment outcomes.

02.

Personalized Medicine:

Enables tailored treatment plans based on individual patient data.

03.

Preventive Care: Identifies risk factors and predicts potential health issues, enabling preventive measures.

PROJECT OBJECTIVE

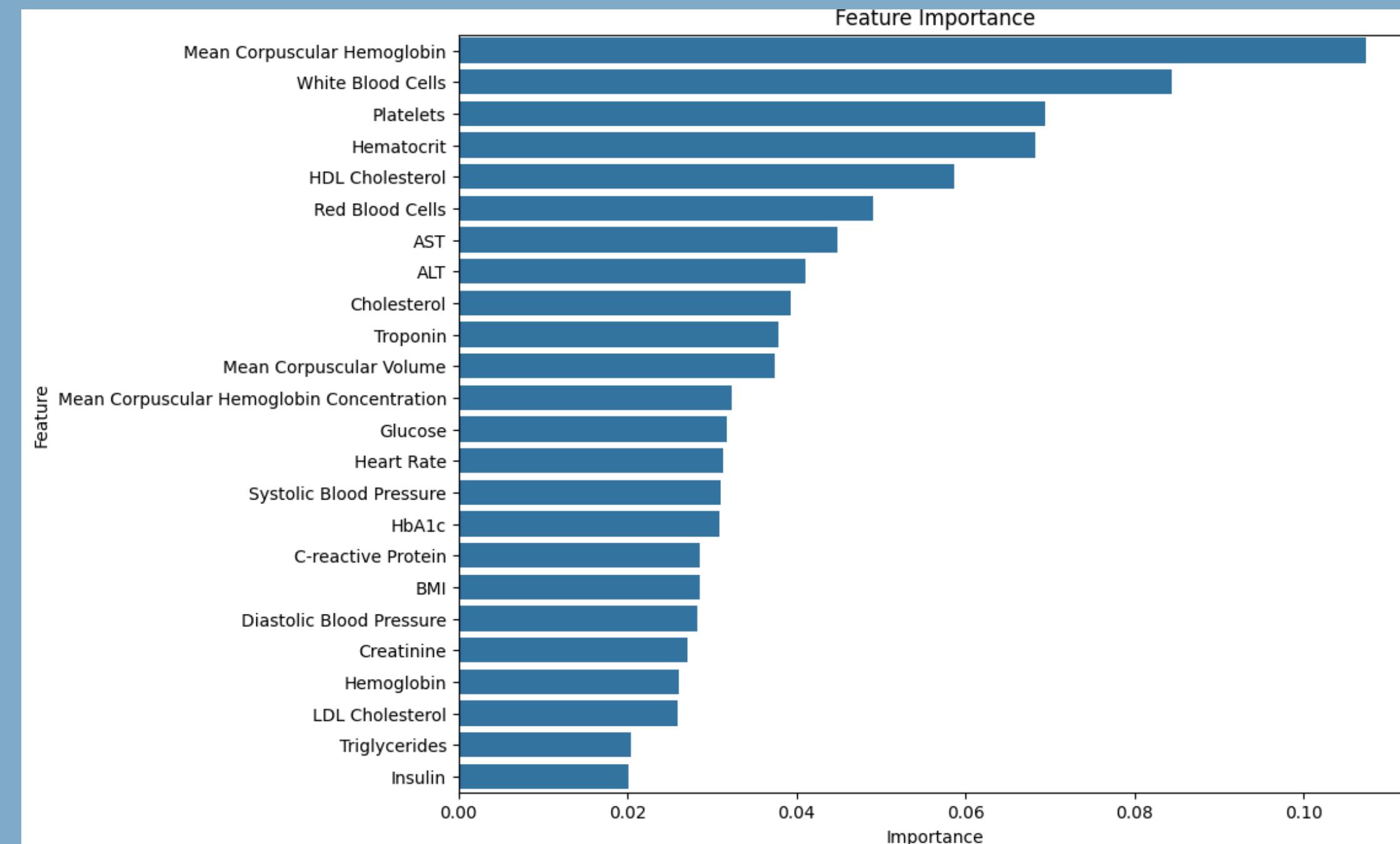
- The objective of this project is to develop a predictive model that can accurately classify individuals into diseased or non-diseased categories based on their health attributes.
- By leveraging machine learning algorithms, we aim to create a reliable tool that healthcare providers can use to assist in disease diagnosis and prognosis.



EXPLORATORY DATA ANALYSIS

Data Visualization

- Data visualization is the graphical representation of information and data.
- By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.



MODEL SELECTION

RANDOM FOREST

- Random Forest is an ensemble learning method used for classification and regression tasks.
- It builds multiple decision trees during training and outputs the mode of the classes for classification or the mean prediction for regression.

MODEL EVALUATION

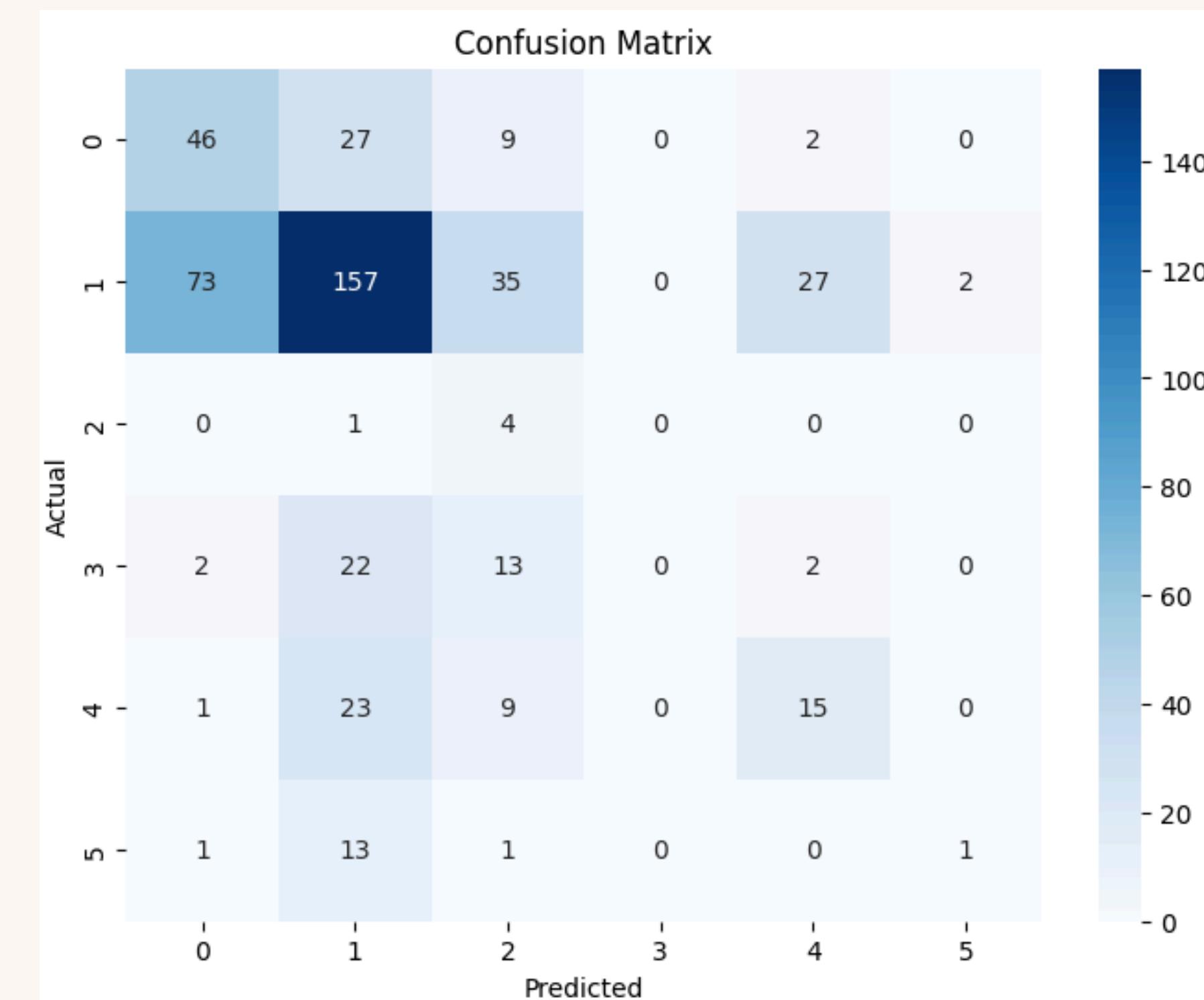
CONFUSION MATRIX

01.

A confusion matrix is a performance measurement tool for classification models.

02.

It provides a detailed breakdown of the predictions made by the model and how these predictions compare to the actual outcomes.



RESULT

- **Accuracy:** Measures the proportion of true results (both true positives and true negatives) among the total number of cases examined.
- **Precision:** Indicates the proportion of true positive predictions out of all positive predictions made.
- **Recall:** Measures the proportion of true positive predictions out of all actual positive cases.
- **F1-Score:** Harmonic mean of precision and recall, providing a balance between the two metrics.





Thank You

