Cognitive Approach for Heart Disease Prediction using Machine Learning

Artificial Intelligence Project

Nazmus Sadat
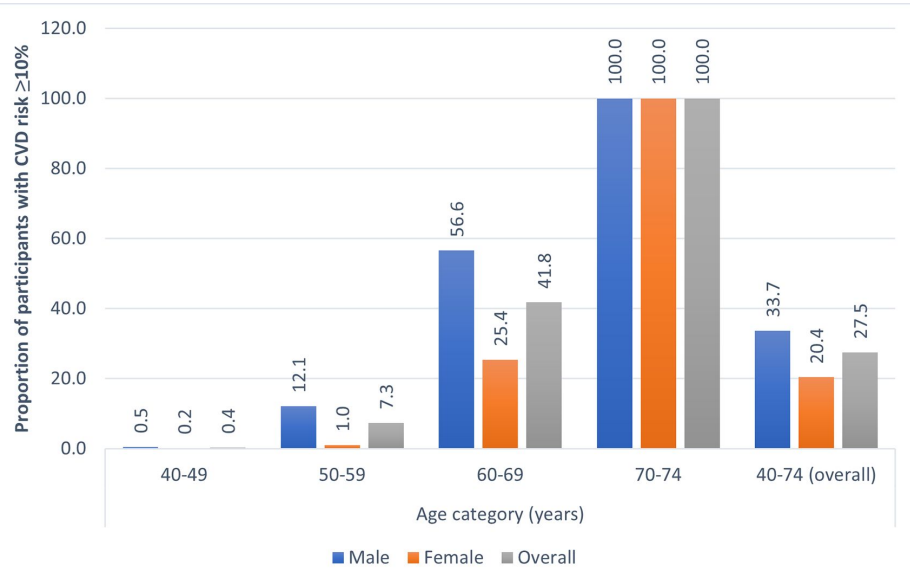Aisha Hayder Chowdhury

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Introduction

A context-aware heart disease prediction system which guides you to live a better life.

Motivation

Source : National Institute of Cardiovascular Disease

- An estimate by WHO, over 17.9 deaths occur worldwide every year because of cardiovascular disease

- Various risk factors like smoking, overuse of alcohol, hypertension, high blood cholesterol, high blood glucose, obesity, inactivity affect heart harshly

- Hospitals' huge amounts of data which have hidden relationships are untapped

Our Approach to Prediction System

- Collect and store patient's data about medical conditions

- Analyze the dataset and discover hidden patterns and relationships among attributes

- A prediction system where whether a person has cardiovascular disease or not will be predicted.

Our Approach to Prediction System

- By this prediction system to reduce medical errors, decrease unnecessary tests and reduce patient's cost

- Assist healthcare practitioners to make intelligent decisions

Dataset Preparation

Dataset Source:

- The data has been extracted from kaggle.

Dataset Attributes:

- Age
- Height
- Weight
- Gender
- Blood pressure

- Glucose
- Smoking
- Alcohol
- Physical activity
- Presence of cardiovascular disease
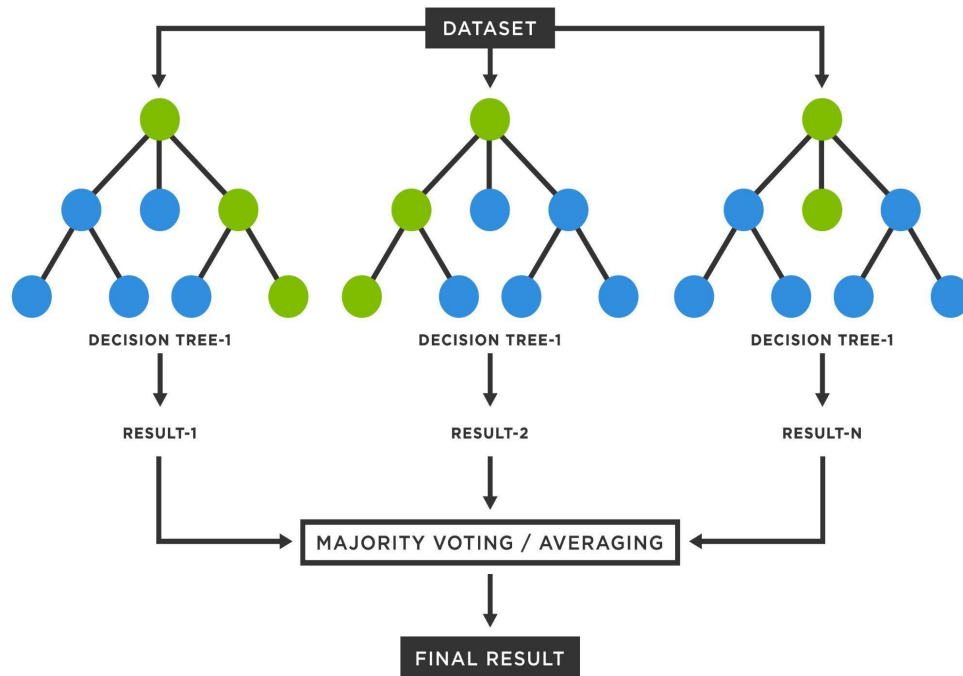
Dataset Preparation

Dataset cleaning:

- The dataset was clean

- Missing values and outliers were handled

Dataset Normalization:

- Age attribute was normalized

- Height attribute was normalized

Methodology

- Create bootstrap dataset

- Generate multiple decision trees picking a random subset of attributes

- Predict the target variable from all trees and pick the result based on majority votes.

Web application using Streamlit

Heart Disease Prediction

This is AI based heart disease prediction website

To know more about heart disease, click in this link https://en.wikipedia.org/wiki/Cardiovascular_disease

Predict now

Name

Sadia

Age in year

34

Gender

Female

Height in cm

166

Weight in Kg

80.00

Systolic blood pressure

Predict Now 👈

Prediction Result:

WARNING!

Joy , you are in risk of heart disease !!!

Seek emergency medical care if you have these heart disease symptoms:

1.Chest pain

2.Shortness of breath

3.Fainting

Always call 911 or emergency medical help if you think you might be having a heart attack.

For more inforamtion, please visit this site https://www.heart.org/en/health-topics/consumer-healthcare/what-is-cardiovascular-disease

Smoke ?

○ Yes
● No

Alcohol ?

○ Yes
● No

Active ?

○ Yes
● No

Predict Now 👈

Prediction Result:

Sadat , you are not in the risk of heart disease !!!
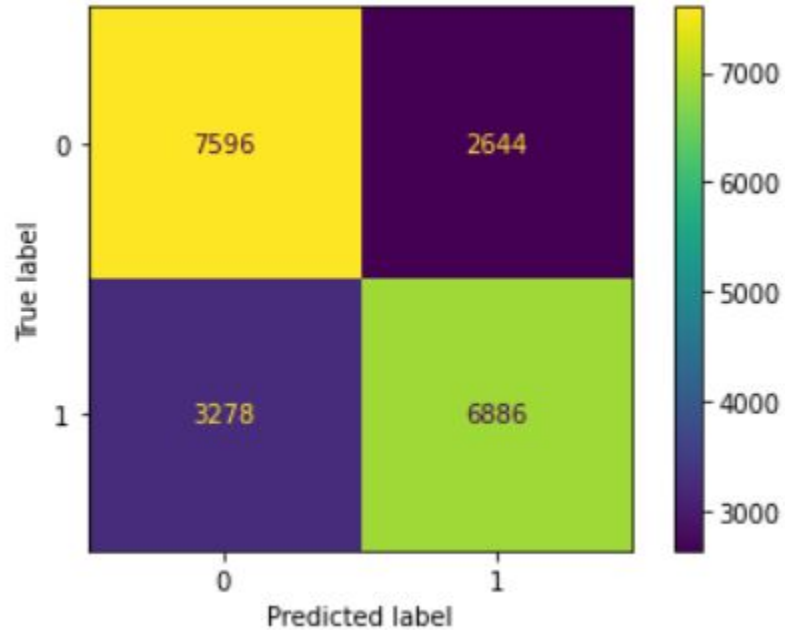
Performance evaluation

Figure: Confusion matrix

Conclusion

- Our model predicts with an accuracy 72.10%

- We plan on making our system more efficient

- Make accurate prediction with lesser number of attributes or variables

THANK YOU