Healthy Heart?

1. Project Title and Team Members:

Project Title: Healthy Heart?

Team Members:

1. Neha Goud Baddam
2. Reshmi Chowdary Divi
3. Purandhara Maharshi Chidurala

GitHub Link: https://github.com/nehabaddam/SDAI-Project.git

2. Goal and Objectives:

Abstract:

Artificial intelligence (AI) is taking over the world by providing its services in many ways by making the world a better place to live. We have been using artificial intelligence in everyday life for shopping online, streaming videos, smart houses, automation, agricultural fields, health industries, etc. In America, the leading cause of death is due to heart disease, this could be due to many factors like lifestyle, genetics, food habits, etc. It is important to spread awareness about cardiovascular diseases (CVD) and help people lead a better life by predicting their risk of getting CVD. "Healthy Heart?" is a web application that will use AI to predict the risk of a person having a heart disease by taking a few major parameters that cause CVD as an input.

Motivation:

As the cause of death due to heart disease is increasing due to the sedentary lifestyle and unhealthy habits, it's important to curb it by helping people self-access their health using AI, at their homes without having to visit any hospital. After knowing their risk of getting CVD, they can change their habits or visit a medical expert for more advice. This is the main purpose of the "Healthy Heart?".

Significance:

There is much research going on in the field of medicine to identify the risk factors of CVD, but few factors have been identified that contribute to the CVDs like diabetes, High blood pressure, food habits, lifestyle changes, obesity, etc. There are studies showing that reducing these risk factors for heart disease can help in preventing heart disease. By analyzing these factors there is still a scope to calculate the risk factor and warn people about their health, which can help them have a healthy life ahead. "Healthy Heart?" plays a significant role by using previous research data and the latest data about the above-mentioned factors to accurately predict the risk factor using AI algorithms.

Objectives:

The main objective of "Healthy Heart?" would be to take input (basic questions about the factors that cause heart disease) from the user and calculate the risk of having a heart disease based on the inputs given. Even if a person is healthy at the moment they take this assessment, they can find out their risk of having heart disease and improve their lifestyle to make themselves more healthy.

Features:

"Healthy Heart" focuses on predicting the risk factor accurately. Firstly, we train the model with the existing data and use some latest data for validation and testing. Firstly. We shall try to implement it using different models and check the model that produces maximum accuracy. We shall be using the model with the maximum accuracy for predicting the risk factor. Once the model is trained, we can host the website to get the input from the user dynamically and produce the risk factor as output.

We are focusing on using the following classification models:

- SVM
- Naive Bayes
- Logistic Regression
- Decision Tree
- Random Forest

Input: The webpage will be hosted that consists of many input variables like height, weight, age, diabetes(yes/no), hypertension(yes/no), etc. We are hoping to consider below inputs:

1. Age
2. Sex
3. Height
4. Weight
5. Hypertension
6. Diabetes
7. Smoking history
8. Physical Activity
9. Dietary Habits

Output: A calculated risk factor.

3. References:

1. **Heart Disease Prediction using Artificial Intelligence:** Zaibunnisa L. H. Malik, Momin Fatema, Nikam Pooja, Gawandar Ankita, 2021, Heart Disease Prediction using Artificial Intelligence, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) NREST – 2021 (Volume 09 – Issue 04),

2. **Mayo Clinic Health System:** Created by Mayo Foundation for Medical Education and Research using content from Framingham Heart Study Cardiovascular Disease 10-Year BMI-Based Risk Score Calculator, Framingham Heart Study General Cardiovascular Disease 30-Year Lipid-Based and BMI-Based Calculators, and ACC/AHA Pooled Cohort Equations CV Risk Calculator.

4. Team Contribution:

1. Neha Goud Baddam: Will work on developing the model for predicting the risk factor.
2. Reshmi Chowdary Divi: Will work on developing the GUI/Webpage for taking the input from the user
3. Purandhara Maharshi Chidurala: Will work on data collection for the feeding into the model and will work on testing the complete project.