# Project Name: Heart Attack Risk Prediction using Retinal Eye Images

***ABSTRACT:*** Heart disease has increased the mortality rate in recent years across the world. So, it is necessary to develop a model to predict heart disease occurrence as early as possible with a higher rate of accuracy. Till now the detections are gone through blood tests, ECGs, and invasive stress tests. In this project, heart disease is predicted by a non-invasive method with retinal image data. A Chase image dataset is considered, as the health of our eyes is connected to the health of our heart. Here, Heart problems can be detected from the changes in the microvasculature, which is imaged from the retina. The prediction of disease is by considering features like the size of blood vessels, non-uniform background illumination, etc. We use Image processing for identifying patterns in images and the Support Vector Machine (SVM) and Random Forest Classifier (RFC) algorithm for classification. The main objective of the proposed system is to predict the occurrence of heart disease from retinal fundus images with a higher rate of accuracy.

***INTRODUCTION:*** Heart disease is one in each of the key causes of two increase in the fatality rate at intervals in the developed world. Therefore, the prediction of heart conditions is unbelievably necessary and up to decrease the fatality rate. There are many techniques on the market to see the prevalence of heart conditions. Yet, they are expensive to sight the unwellness and to boot take longer. The relation between heart and eye is high. The membrane is one in each of the required choices that facilitate direct microcirculation. The membrane provides a window for the detection of changes in the microvasculature in the event of a heart condition. Throughout this project machine learning, classification algorithms unit of measurement was involved in a method of structure photos. As the health of our eyes is connected to the health of our heart. The upset area unit is usually detected from the changes in blood vessels, that are imaged from the membrane. The prediction of unwellness is completed by extracting choices like the size of blood vessels, non-uniform background illumination, etc. from the retinal image.

**RELATED WORK & EXISTING PROBLEM:**

A study undertaken and enhanced by Melillo et al. [1]; have used a machine learning algorithm named CART which stands for Classification and Regression in which sensitivity and specificity are achieved at 93.3 percent and 63.5 percent respectively. Then to improve performance, an electrocardiogram (ECG) approach which was suggested by Rahhal et al. [2] in which deep neural networks are used for choosing the best features and then using them. Then, to detect heart failure, a clinical decision support system by Guidi et al. [3] for preventing it at an early stage. They tried to compare different machine learning models and deep learning models, especially neural networks such as Support Vector Machine, Random Forest, and CART algorithms. An accuracy of 87.6 percent was achieved by Random Forest and CART, which outperformed all used in the classification. SVM techniques are used for binary classification i.e., to detect the patients who already have diabetes and then predict heart disease by Parthiban and Srivatsa [4] achieved an accuracy rate of 94.60 and the characteristics collected were common such as blood glucose level, the patient's age, and their blood pressure.

***TECHNOLOGY WE COVER:***

1. Python Programming
2. Machine Learning/Deep Learning/Segmentations
3. Django – Front End
4. PostgreSQL – Database
5. MLOps using MLFLow – Model Orchestration
6. Github Action - CI/CD Pipeline
7. DVC for Data Tracking
8. DagsHub
9. Docker and Kubernetes

***OUR OFFERING:***

1. Complete Implementation of Project
2. Training and Project Deployment on local system
3. Project Completion Certificate
4. Paper Publication in IJera International
5. Project Report
6. Xerxez T-Shirts

DISCLOSURE:

1. Students must prepare the PPT for demonstration.

2. 50% Advance and 50% during project submission.
3. Once Payment is done, cannot be refundable.

***CONTACT US***

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