## Team Cheese

Vellore Institute of Technology,
Vellore
Tamil Nadu
632014

# DiaBEAT

**AN EASY WAY TO SAVE VISION FROM DIABETES**

## Overview

Diabetic retinopathy, a common complication threatening all diabetic patients, has no cure and devastating consequences, even blindness. With our application we make detection of this condition efficient and help the patient avoid it altogether. We will integrate opportunities for financially backward patients, and connecting them to specialists easier.

## Goals

- A diabetic person spends $800 every time he visits a doctor. We plan to cut down this cost by 70%.
- We have implemented Artificial Intelligence and Machine Learning in a cross platform application(iOS/Android).
- Generate Metadata and Reports for each individual patient.
- With BlockChain all transactions have been made transparent, so that people know where their money is being invested
- Create opportunities for financially backward patients mainly by raising funds.

## Specifications

We are using  Node.js , Firebase , React Native and Maps API. In this application an angiography image is uploaded. Then the neural networking model detects whether the following angiography image of an eye is a carcinogenic or diabetic. The model has been trained on many previously taken angiography images of a carcinogenic and diabetic retina. The probability for this model to detect the correct result is very high. The app gives an approximate cost of treatment. If you don't have the funds then you can raise funds through the application itself and vice-versa. The application shows nearby doctors and provides an option to call them.

## Milestones

We developed this idea in a hackathon and had problems finding data sets to train the model and had some bugs which we were not able to fix . But now, we  have trained the model with an enormous  amount of data. There are still some small bugs that need to be taken care of.

## Newness of the idea and comparison to existing technology

We have used the latest technology to come up with an accurate solution to solve common problems for diabetic patients. The existing technology consists of hefty and expensive equipment. The treatment in India itself costs around **60,000 - 80,000 INR** (according to : https://www.lybrate.com/topic/diabetic-retinopathy) . On the other hand, this application does not need much investment. It just needs a micro-server and an angiography image of a patient's eye. It may cost around **300 INR** per month for maintenance and updating of the server.
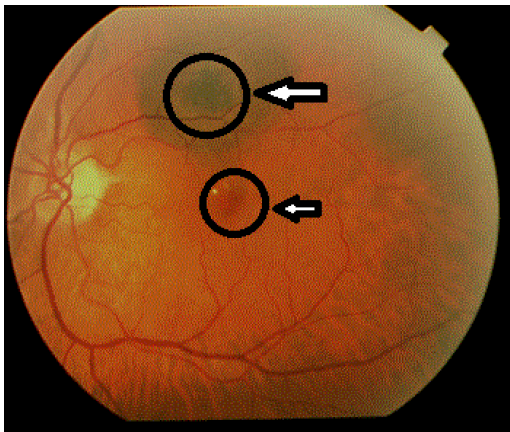
## Feasibility

This application that we are developing is accessible to anyone and everyone who has a smartphone and a good connection to the internet. This idea is **highly feasible** and could be a major game changer in the medical healthcare industry. This technology powered by Artificial Intelligence and neural networking would bring down the overall cost of retinopathy significantly. With more  data values , the model can ultimately give results near to perfect.
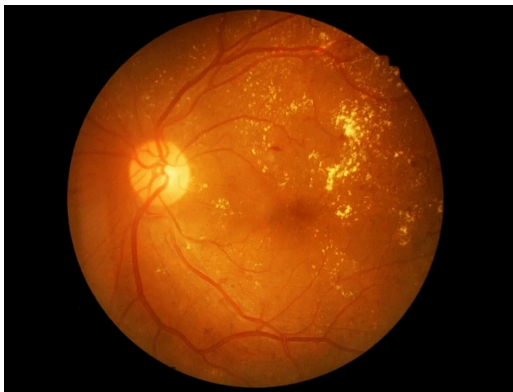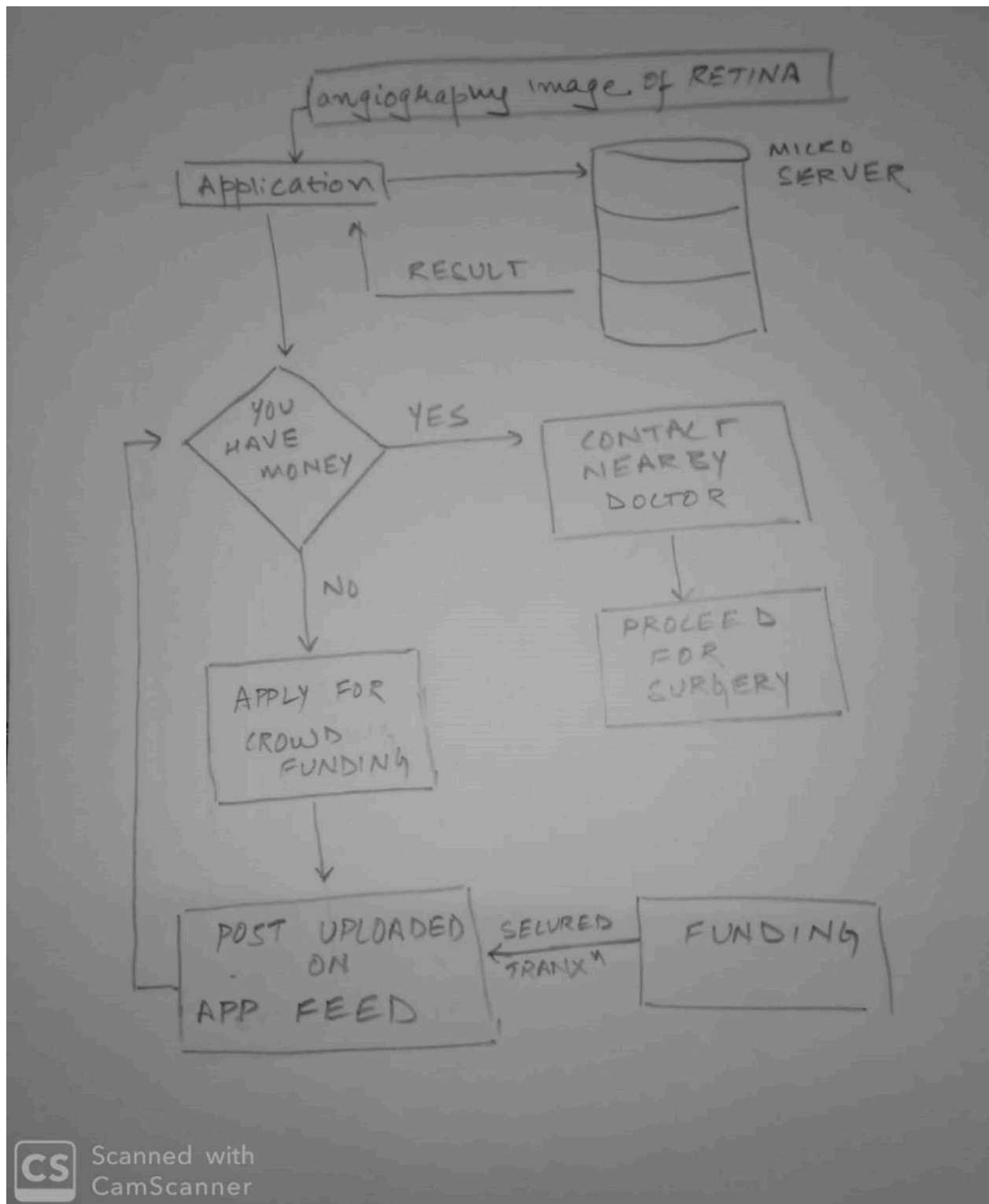
# FlowChart / Schematics
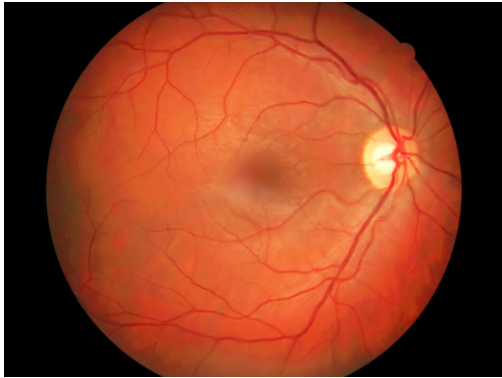

normal angiography image of retina


Cancer affected retina


Diabetes affected retina

angiography image of RETINA

Application → MICRO SERVER

RESULT

YOU HAVE MONEY

YES → CONTACT NEAREY DOCTOR → PROCEED FOR SURGERY

NO → APPLY FOR CROWD FUNDING

POST UPLOADED ON APP FEED ← SECURED TRANX^n ← FUNDING

## Features of the Application

### ML/AI

- The app will check about the daily development diabetic retinopathy in your eye.
- Connects you one to one with doctors on app.

### Open Charity for yourself

-  Need funds? Cancer positive? Worry not, ask for community support within the app.

### MATIC | Blockchain

- Used MATIC network to implement wallet for secure and transparent payments so that each and every person can view their donation channeling!
- Complete display of all the relevant transactions on the channel for transparent usage.

### Maps and NLP

- Chatbot for automatic booking of appointments
- Maps for nearby relevant hospitals/doctors.

## Technical Details

### Tech Stack :
- React Native
- Matic (for BlockChain Wallet)

- Firebase (For Backend Services)
- NodeJS
- Google Map API