

TEAM ID: PNT2022TMID19611

# **Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy**

## **Ideation 1**

### **Abstract**

This Project, primarily aims on the techniques used to identify the initial diabetic occurrence in human being using the digital image processing, which analyze the captured input image of an eye and obtain an understanding or make a decision to produce a balanced reliable bioinformatics details about the retina of an eye of human begin, whether he/she reflecting any symptoms of diabetes which helps early detection of disease, these process include the processing of image through various phases like eye image capturing, image enhancement, image restoration, morphological processing, segmentation , representation with description and finally object reorganization to find any changes in blood vessel patters in the retina to produce the high accuracy reliable results in the classification of images of diabetic retinopathy which occurs in patient of diabetic, helping in early detection of the diabetes and makes the best use of technology to take preventive measures towards healthy life.

### **Advantages**

- The digital image processing technology can be used in detection of

diabetic retinopathy and the classification such as exudates, micro aneurysms and hemorrhages using fundus images helps in detecting the initial stage of diabetes.

- The diagnostic methods, evaluation and comparison methods, fact, and the procedure are proposed for automatic detection of diabetic retinopathy.
- The results of automatic diabetic retinopathy methods helps in finding the disease in its initial stage further can take preventive measure to minimize the loss to diabetic patient.

## **Disadvantages**

This field needs more research on detecting the initial stages of diabetic symptoms accurately in human beings, the continuous research will definitely gives us more reliable methods of finding initial stage of diabetic, which will be helpful in life saving for human being.

## **Ideation 2**

## **Abstract**

The study is based on the rising situation in the developing world, suggests diabetic retinopathy may soon be a major problem in the clinical world as it is a major cause of blindness. Hence, detection of diabetic retinopathy is important. This paper focuses on to analyse the retinal images normal or abnormal and find the metrics of DR by using Raspberry Pi kit. To detect the diabetic retinopathy from retinal images using python through Threshold, Colour-k means clustering algorithm, water algorithm, mean shift algorithm, distance algorithm.

## **Advantages**

- For the past several decades, tremendous efforts have been made to decrease the complications of diabetes, including diabetic retinopathy.
- New diagnostic modalities like ultrawide field fundus fluorescein angiography and spectral domain has allowed more accurate diagnosis of early diabetic retinopathy and diabetic macular edema.

## **Disadvantages**

- According to survey Antivascular endothelial growth factors are now extensively used to treat diabetic retinopathy and macular edema with promising results.
- There remains uncertainty over the long term effects and the socio-economic costs of these agents.

## **Ideation 3**

### **Abstract**

Diabetic retinopathy is caused by the retinal micro vasculature which may be formed as a result of diabetes mellitus. Blindness may appear as a result of unchecked and severe cases of diabetic retinopathy. Manual inspection of fundus images to check morphological changes in microaneurysms, exudates, blood vessels, hemorrhages, and macula is a very timeconsuming and tedious work. It can be made easily with the help of computer-aided system and intervariability for the observer. In this paper, several techniques for detecting

microaneurysms, hemorrhages, and exudates are discussed for ultimate detection of nonproliferative diabetic retinopathy. Blood vessels detection techniques are also discussed for the diagnosis of proliferative diabetic retinopathy.

## **Advantages**

- This helps in the detection of retinopathy at an early stage; timely treatment of this disease will prevent permanent vision loss.
- In proliferative diabetic retinopathy, at times, an antiinflammatory medicine or antivascular endothelial growth factor medication injection can help in the new blood vessels contraction process.

## **Disadvantages**

- If a person with diabetes gets legitimate eye mind consistently and treatment when fundamental, DR will once in a while cause all out blindness.
- Nonproliferative diabetic retinopathy contains early indications of DR and it is extremely critical to recognize and analyze DR at its initial stages.