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CLASSIFICATION OF DIABETIC DETECTION USING RETINA IMAGE

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ABSTRACT

Diabetic retinopathy (DR) is a disease resulting from diabetes complication, causing non-reversible damage to retina blood vessels. DR is the leading cause of blindness if not detected early. This are currently available DR treatment limited to the stopping DR or delaying deterioration of the sight, highlighting the importance the regular scanning using high-efficiency computer -based system to the diagnose cases early. Diabetes happens once the exocrine gland fails to the secrete enough hypoglycaemic agent, slowly poignant the tissue layer of the human eye. because it progresses, the vision of the patient starts deteriorating, resulting in the diabetic retinopathy. during the regard, retinal pictures non inheritable through fundal camera aid analysing the results, nature, and standing of the impact of polygenic disease attention. different stages the diabetic retinopathy into traditional, mild, moderate severe and the proliferative diabetic retinopathy (PDR).

1. INTRODUCTION

Diabetic retinopathy (DR) is the common diabetes complication that occurs when the retina's blood vessels are damaged due the high blood sugar levels, resulting in swelling and leaking of the vessels. In advanced DR stage, the vision may be lost completely. The percentage of the blindness worldwide resulting from DR is 2.6%. therefore, diabetes patients need regular screening retina to the deep DR early, manage progression and avoid the risk of the blindness.

The leaking blood and fluids appear the spots, called lesions, in the fundus retina image. Lesion can be the recognised either red lesions or bright lesions. Red lesions involve microaneurysms and haemorrhage , while bright lesions involve soft and hard exudates. The small dark red dots are called MA and the larger spots called HM. Hard EX appears as bright yellow spots, while soft EX, also called cotton wool, appear as the yellowish white and fluffy spots caused by the nerve fiber damage.

2. Literature Survey

The authors given a way of localizing totally different options and lesions during a body structure image. A constraint of detection optic disk was planned wherever, the blood vessels were detected initial and used the intersection ofthose to seek out the approximate location of the optic disk.

they need additionally declared by victimisation totally different morphological operations, totally different options like blood vessels, Exudates, small aneurysms and haemorrhages may be detected in, the authors N.B Prakash, G.R Hema lakshmi and M. Stella used SVM classifier for the classification of the sickness. The authors planned a technique for detection optic disk, blood vessels and exudates.

3. OBJECTIVE

Our thesis objective is to detect diabetic retinopathy and classify whether it is a PDR or NPDR. Specific objectives of the thesis are: Process colour fundus retinal images for Diabetic Retinopathy detection.Extract key features from the pre-processed images.Detect the presence of Diabetic Retinopathy. Classify whether Diabetic Retinopathy is the Proliferative or Non proliferative.

4. EXISTING SYSTEM

Method proposed in this project can be listed in two steps : Image Preprocessing, and Supervised learning and Feature Extraction First, the images are preprocessed. They are converted from RGB to gray scale. Proper resizing of image is also done. As the images are heterogeneous they compressed into a suitable size and format. Layer separation will also performed. For making intensity variations uniform histogram equalization to the image can be applied.

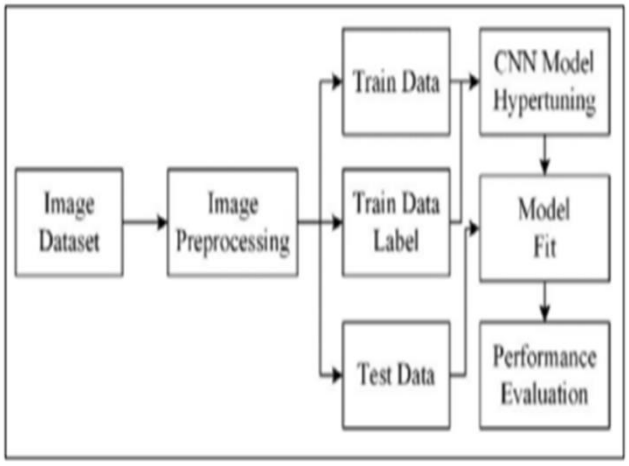
7.PROPOSED DESIGN

A CNN is able to capture the temporal and spatial dependencies in images and fits better due to the decrease in parameters used and weight reusability. It has the ability to train to understand the complexity of the image more efficiently.

8. METHODOLOGY

Colour fundus image of eye is provided as an input and by processing this, we get the result whether the eye is affected with Diabetic Retinopathy and stages of DR. To detectDiabetic Retinopathy, we preprocess the image and apply classification techniques. We divide the total process into 3 steps- preprocessing, feature extraction and Diabetic Retinopathy classification. Preprocessing includes green channel extraction, Contrast Limited Adaptive Histogram Equalization, dilation, morphological process, median filtering, three holding etc. In the feature extraction phase, we extract several features like area of exudates, area of blood vessels, area of microaneurysm etc. Finally, in the classification phase, we will detect whether Diabetic Retinopathy is present or not. Moreover, if present, whether it is Mild, Moderate, Severe and PDR.

9. BLOCK DIAGRAM



10. CONCLUSIONS

A number of the studies use neural networks and image processing for the detection using different architectures. It is certain that using machine learning techniques will give us good results along with good accuracy for prediction. In the report, we explored potential usage the CNN in retinal image classification. Due to this tedious manual methods medical personnel, automated system reduce labor involved the diagnosing large quantities retinal images significantly.

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