INTELLIGENT CATARACT DETECTION SYSTEM

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Abstract - *Cataract is one of potentially dangerous diseases that will be causing the blindness as an impact of the belated in handling cataract. It is a natural clouding of the eye's lens that causes loss of vision. If cataract is not treated in proper time, then it will lead to blindness. The symptoms of cataract are cloudy or blurred vision,glare,poor night vision . In remote areas people could not afford high cost of cataract detection machines.Also time taken by the machine to detect cataract is more , doctor could not attend more number of patience. This paper presents an Intelligent Cataract Detection System using smartphone that allows patients for regular eye examinations and disease diagnosis.*

Key Words-Cataract detection, Smartphone,Blurred vision, Lens,Glare

1.INTRODUCTION

The lens is a transparent part of our eye that helps us to focus light, or an image, on the retina.In case of normal eyes, light passes through the lens which is transparent to the retina.Inorder to get a sharp image the lens must be transparent . When the lens is cloudy the cataract is formed.

Our eye lens is made up of mostly proteins and water. The protein keeps the lens clear as it is arranged in an accurate way and allows the light to pass through it. The protein may clump together as age increases, and a small area of the lens is clouded. This clouding of the eye's lens is cataract.

2 LITERATURE SURVEY

2.1 Retinal Image Classification for Cataract Detection

Based on the classification of retinal images this paper proposes a neural network classifier for cataract detection. This paper for the first time proposes a BP neutral network classifier for the cataract detection .In this paper, cataract is classified into four different grades: normal, mild, medium and severe.A neural network classifier is proposed to automatically classify the severity of cataract. It is based on the clearness degree of the retinal image. It improves the efficiency of the ophthalmologist and help to reduce the physical and economic burden of the patients and society as well.

2.2 Features of Gray Distribution for Localization of Iris

This paper proposes a localization method for iris with elimination of noise.For locating the inner edge of the iris, morphological open is used to eliminate noise based on separating pupil region by binaryzation.In order to locate the iris area, centers and radius of the boundaries have to be calculated to acquire the ring like iris region from the original eye image and the noise should be eliminated.Then the pupil's center and radius are located accurately by gray projection. .For locating the outer edge morphological close is proposed to eliminate the texture within the iris area.

2.3 Computer-aided Grading System for Cataract

To filter out the pterygium the proposed method can be used .It improves the accuracy of the grading system.The proposed method can improve the existing automatic cortical cataract grading system.Computer-aided grading systems facilitate clinical research and practice. In this paper,a pterygium detection method was proposed. This system excludes pterygium in the cortical cataract detection which improve the accuracy of the cortical cataracts grading system.

3 PROPOSED SYSTEM

The proposed system allows smartphone users to access low-cost regular eye examination and diagnosis of disease, there are no experts needed, at any time.

3.1 IMPLEMENTATION

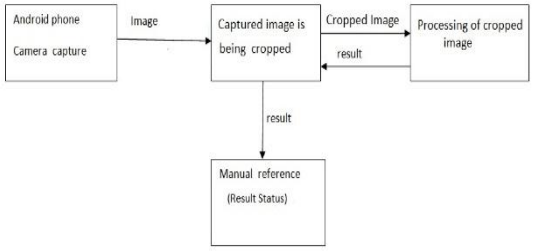

Fig – 1: Block Diagram of the proposed system

To find the position of pupil , first, face region must be separated from the rest of the image using boundaries function,which is a process of segmentation .This will cause the images background to be non-effective.Region prop technique is used to separate a region from total face and the region containing eyes and eyebrow.This results in decreasing the computational complexity.Finally in proposed method points with the highest values are selected as the eye candidate's using centroid function.The eye region is well detected among these points .

4 CONCLUSION

The present cataract detection using fundus camera is very expensive .The time taken by the machine to detect cataract is more doctor could not attend more number of patience. Current test cataract detection is not portable and needs an expert to perform the operation. Poor people could not afford very costly machines. As a result of these drawbacks, a smartphone based cataract detection system is necessary for the current scenario. Smart phone based cataract detection system is an intelligent mobile-based retinal disease detection method. The proposed system was developed for the Android operating platform. The system consists of following modules: Register , Login , Capture , Processing , Result. The proposed system make use of Mysql community server and Android Studio. The proposed system allows smartphone users to access low-cost regular eye examination and diagnosis of disease, there are no experts needed, at any time and any place.

As a future work, we are planning to extend the current system for skin cancer detection and to further distinguish various causes of retinal abnormalities.

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