Name(s)	Project Number
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Project Title

Diabetic Retinopathy Symptoms Recognition Using Image Processing

Abstract

Objectives/Goals
Diabetic Retinopathy (DR) affects 347 million people in the world, of whom 10% will lose their sight. The goal was to develop a tool to be used in diagnosing DR.

Methods/Materials
The research idea was obtained from Kaggle.com. The images were obtained from ADCIS.net. The image#s brightness was curve fitted to a quadratic surface in order to normalize the brightness across the field. Then the color components were used to segment the blood vessels, optic nerve disc and other features that were neither healthy tissue nor blood vessels, i.e., anomalies. Morphological components were used to determine the shape and the size of blood vessels and anomalies. Computing and then measuring the distribution of these morphological measurements, the presence and the severity of the retinopathy was determined.

Results
Hemorrhages and hard exudates were detected successfully on images that were given.

Conclusions/Discussion
The results are very promising because these correct detections of the symptoms will lead directly into correct diagnosis of DR.

Summary Statement

I automated the detection of hard exudates and hemorrhages on fundus images using image processing.

Help Received

Dr. James Choi taught me image processing.