

ABSTRACT

Glaucoma is one of the biggest causes of blindness that damages the optic nerves because of an increase in pressure in the eye. Late detection may inflict permanent blindness.

This final project involves a simulation and analysis of a system that could classify glaucoma eyes and normal eyes using Vertical Cup to Disc Ratio (VCDR), Horizontal Cup to Disc Ratio (HCDR), Horizontal to Vertical Cup to Disc Ratio (HVCDR), Cup to Disc Ratio (CDR), and Rim to Disc Ratio (RDR) Values that could be attained via fundus image. In the initial stage, the Pre-Processing process is carried out by changing the fundus image into a grayscale image. Segmentation method includes Otsu Thresholding, and morphological operations. Another classification method used is Support Vector Machine (SVM) One-Against-One.

The result of this final project includes the classification of normal eyes and a glaucoma eyes using features VCDR, HCDR, HVCDR, CDR, and RDR with Pre-Processing on Optic Disc (OD) with red channel and Optic Cup (OC) with green channel and Support Vector Machine (SVM) One-Against-One classification. The system input is in the form of 50 test images including 25 glaucoma eyes and 25 normal eyes, and also 50 practice images including 22 Glaucoma eyes and 28 normal eyes. Result of simulation of the system is the best accuracy at 100% from the practice data and 94% from the testing data.

Keywords: *Glaucoma, Optic Disc, Optic Cup, Rim Disc, Otsu Threshold, SVM*