

ABSTRACT

Glaucoma is an eye disease caused by increased eyeball pressure resulting in damage to the optic nerve and the second leading cause of blindness after cataracts. Nerve damage often occurs without warning, so an early check-up is needed. However in glaucoma trials, manual CDR calculations must be carried out by doctors who approve and use expensive devices such as Heidelberg. Therefore, the author approves a system to help ophthalmologists to detect glaucoma.

Glaucoma classification is done by extracting various features like Horizontal Cup to Disc Ratio (HCDR), Vertical Cup to Disc Ratio (VCDR), Horizontal to Vertical CDR (H-V CDR), Cup to Disc Area Ratio (CDAR), and Rim to Disc Area Ratio (RDAR) with Morphological Operations and Thresholding for segmentation of Optic Disc (OD) and Optic Cup (OC). Artificial Neural Network (ANN) is used as a classifier of glaucoma.

Through this method, the test data can be divided into two classifications namely normal eyes and glaucoma eyes. 62 pieces of data will be trained and 62 pieces of data will be tested. The results obtained aim to facilitate early detection of glaucoma eyes. Accuracy on training data reaches 100% and accuracy in this study is reached 93.5484% the ANN parameter specifications used are 250 epoch, 3 hidden layers, 10 neurons on each hidden layer, thresholding used 168 on the red OD channel and 110 on the green channel OC.

Keywords: Glaucoma, Morphological Operation, Thresholding, Artificial Neural Network