

INTISARI

Pendeteksian Glaukoma Berbasis Ciri Disc Ratio Dan Neuroretinal Rim Menggunakan Multilayer Perceptron

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Glaukoma merupakan salah satu penyebab kebutaan permanen pada mata. Penyakit mata ini dapat dideteksi lebih dini dengan menggunakan teknik pengolahan citra digital. Telah terdapat banyak penelitian terdahulu mengenai penyakit glaukoma namun banyak dari penelitian tersebut belum memiliki hasil yang maksimal serta fitur-fitur yang digunakan pada tiap-tiap penelitian umumnya berbeda-beda. Pada penelitian ini, pendeteksian glaukoma dilakukan dengan menggabungkan seluruh fitur klinis yang umumnya digunakan pada penelitian-penelitian sebelumnya, yakni CDR, VCDR, RDR dan neuroretinal rim.

Data yang digunakan dalam penelitian ini merupakan gabungan dari dataset Dhristi-GS, RIM-ONE serta *Glaucoma Detection* dengan jumlah 168 data. Data terlebih dahulu akan di-*crop* secara manual pada bagian optic nerve head. Citra kemudian melalui tahapan pra-pemrosesan, segmentasi serta ekstraksi fitur. Fitur-fitur klinis yang didapat kemudian akan dilatih dan diuji menggunakan multilayer perceptron (MLP). Berdasarkan proses pelatihan dan pengujian diperoleh skor akurasi, presisi, recall dan F1 sebesar 91%, 92%, 82% dan 89%.

Kata Kunci: Pendeteksian glaukoma, Pengolahan citra digital, *Cup-to-Disc Ratio*, *ISNT*, *Rim-to-Disc Ratio*, *Multilayer Perceptron*

ABSTRACT

Glaucoma Detection in Retina Fundus Based On Disc Ratio Features and Neuroretinal Rim Using Multilayer Perceptron

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Glaucoma is one of the causes of permanent blindness in the eye. Early stages of glaucoma can be detected using digital image processing techniques. There have been many previous studies regarding glaucoma, but many of these studies have not had optimal results and the features used in each study are generally different. In this study, glaucoma detection was carried out by combining all the clinical features commonly used in previous studies, namely CDR, VCDR, RDR and neuroretinal rim.

The data used in this study is a combination of the Dhristi GS, RIM-ONE and Glaucoma Detection datasets with a total of 168 data. The data will first be cropped manually on the optic nerve head. The image then goes through pre-processing, segmentation and feature extraction stages. The clinical features obtained will then be measured and tested using a multilayer perceptron (MLP). Based on the training and testing process, the accuracy, precision, recall and F1 scores were obtained by 91%, 92%, 82% and 89%.

Keywords: Glaucoma detection, Digital Image Processing, Cup-to-Disc Ratio, ISNT, Rim-to-Disc Ratio, Multilayer Perceptron