Glaucoma Detection in Retinal Image using Medial Axis Detection and Level Set Method

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Abstract

Glaucoma is an eye disorder that characterized by elevated Intraocular pressure (IOP). The optic nerve head was damaged by the increased intraocular pressure. It will lead to vision loss, if it is unnoticed. By the extraction of optic disc and optic cup and also calculating the cup to disc ratio, the glaucoma will be detected. In our project we automatically extracted the optic disc in retinal image by using LDA and Medial axis detection. The optic cup extracted by using threshold based initialization level set method and ellipse fitting algorithm. These methods have been tested on drive databases. The average value obtained for (optic disc is a precision value and Recall value are 0.9 and 0.966 respectively, the F-score of 0.9323 and for optic cup a precision value and Recall value are 0.9 and 0.946 respectively, the F-score of 0.9218) describes that this method is a robust tool for detection of optic disc and optic cup.

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Glaucoma Detection in Retinal Image using Medial Axis Detection and Level Set Method

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Glaucoma Detection in Retinal Image using Medial Axis Detection and Level Set Method

- Toru Tamaki, Bingzhi Yuan, Kengo Harada, Bisser Raytchev, Kazufumi Kaneda Hiroshima University, Japan Linear Discriminative Image Processing Operator Analysis.

Index Terms

Computer Science

Image Processing

Keywords

Optic disc  LDA  Cup  boundary detection  Vessel bend  Level set method  cup-to-disc ratio