A Threshold based Algorithm to Detect Peripapillary Atrophy for Glaucoma Diagnosis

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Abstract

The presence of a Peripapillary Atrophy (PPA) is one of the conditions for Glaucoma to develop. This paper is divided into three parts. The first part of this paper describes the terminology related to the diagnosis of glaucoma. The second part of this paper describes various existing algorithms to detect and segment human PPA from a digital fundus retinal image. The paper compares the performances and contrasts the various shortcomings of these described algorithms. The third part of this paper proposes a threshold-based algorithm to detect the PPA of a human eye to aid the diagnosis of Glaucoma. The proposed algorithm calculates the Red by Green ratio for each pixel in the Region of Interest (ROI) and segments the Optic Disc (OD) from the PPA, having different pixel ratios. The algorithm can be further improved by applying sub-algorithms of false region elimination. The proposed algorithm should, theoretically, overcome most of the problems faced by the described algorithms.

References
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Glaucoma diagnosis, Peripapillary Atrophy, Optic Disc, Optic Cup.