

Abstract

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Optic Disc Segmentation by Weighting the Vessels Density within the Strongest Candidates

Optic disc segmentation is a key element in automatic screening systems, which facilitates the detection of lesions that affect the interior surface of the eye (i.e. fundus). Therefore, this paper aims to provide a fully automated technique for detecting and segmenting the optic disc. First, the fundus image is preprocessed in order to estimate the approximate location of the optic disc, excluding the positions that doubtfully contain the optic disc. Consequently, the top candidates for the optic disc are detected and then ranked based on their strengths. Afterwards, the vessels density within each candidate is calculated and then weighted according to the candidate's strength, in which the one having the highest score is chosen to be the segmented optic disc. The performance of the proposed segmentation algorithm is evaluated over nine heterogeneous datasets of fundus images, achieving a sensitivity of 94.72%.