

Abstract

Ali M. Nabil Allam

Automatic Segmentation of Optic Disc in Eye Fundus Images: A Survey

Optic disc detection and segmentation is one of the key elements for automatic retinal disease screening systems. The aim of this survey paper is to review, categorize and compare the optic disc detection algorithms and methodologies, giving a description of each of them, highlighting their key points and performance measures. Accordingly, this survey firstly overviews the anatomy of the eye fundus showing its main structural components along with their properties and functions. Consequently, the survey reviews the image enhancement techniques and also categorizes the image segmentation methodologies for the optic disc which include property-based methods, methods based on convergence of blood vessels, and model-based methods. The performance of segmentation algorithms is evaluated using a number of publicly available databases of retinal images via evaluation metrics which include accuracy and true positive rate (i.e. sensitivity). The survey, at the end, describes the different abnormalities occurring within the optic disc region.