Abstract

Glaucoma detection system analyses the retinal images. This system gives vital information about presence of Glaucoma, the second largest cause of blindness. Usually the Glaucoma patients have large Cup-to-Disc ratio (CDR), inspection of CDR of Optic Disc is crucial of any Glaucoma detection system. Therefore accurate segmentation Optic Disc (OD) and Cup are critical in the formulation of CDR. Current work focuses on OD segmentation to develop an efficient Glaucoma detection system. A serious difficulty arises in OD segmentation in retinal images having inhomogenities due to Peripapillary Atrophy (PPA) and fuzzy boundaries. So this paper proposes a OD Segmentation method that takes care of fuzzy boundaries and inhomogenity presenting in the retinal images. At First, The matched filter with Cauchy kernel is applied to extract blood vessels. Then Vessel Directional Matched filter (VDM) is used to locate the centre of the optic disc approximately followed by Vessel Inpainting to erase the vasculature in the OD region. Finally a LBF energy based active contour model is formulated that embeds edge and region based information in the newly formulated locally computed signed pressure force (SPF) function, to segment OD. The obtained results indicate that the proposed OD
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segmentation outperforms many existing methods.

References

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Index Terms

Computer Science Image Processing

Keywords

Retinal Image, Glaucoma, Level Sets, Optic Disc Segmentation