

194. SEGMENTATION OF BLOOD VESSELS AND OPTIC DISC IN RETINAL IMAGES

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Retinal image analysis is more prominent as a non-intrusive method in modern ophthalmology. This method is used to segment the blood vessels and cup disc in the fundus retinal images. Since the morphology of the blood vessels and cup disc is an important indicator for diseases like diabetic retinopathy, hypertension, glaucoma, etc. The blood vessel information is then used to estimate the location of the optic disc. By segmenting the blood vessels and cup disc, they can easily detect the diseases contained in the fundus retina of eye using principle component analysis (PCA) and Morphological Top Operation. Here fundus retinal image is to obtain a grey image in which the different structures of the retina such as blood vessels and cup disc. The method proposed in this paper is mainly based on mathematical morphology although includes a principal component analysis in the preprocessing stage. The main steps of the method are the following: First, the PCA is applied on the RGB fundus image in order to obtain a grey image in which the different structures of the retina, such as vessels and OD, are differentiated more clearly to get a more accurate detection of the OD. This stage is very important since it largely determines the final result. Our method takes as first step the extraction of the retina vascular tree using Morphology Top Operation. Image complement, Top hat and binarization is used for blood vessel extraction. This new technique is attempted to reduce the time for detecting the diseases caused in retina, improves the robustness and the accuracy of the graph cut algorithm.

Keywords— Principle Component Analysis (PCA), Hypertension (HTN), Field of View (FOV), Adaptive histogram equalization (AHE).

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