Computerised Retinal Image Analysis to Detect and Quantify Exudates Associated with Diabetic Retinopathy

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Abstract

One of the greatest concern and immediate challenges to the current health care is the severe progression of diabetes. Diabetic retinopathy is an eye disease that associated with long-standing diabetes. The conventional method followed by ophthalmologists is the regular supervision of the retina. As this method takes time and energy of the ophthalmologists, a new feature based automated technique for classification and detection of exudates in color fundus image is proposed in this paper. This method reduces the professionals work to examine on every fundus image rather than only on abnormal image. The exudates are separated from the fundus image by thresholding and removal of optic disk using morphological operation and connected component analysis. Finally, an automated Fuzzy Inference System (FIS) is used for classifying the retinal images as exudates and its severity and non-exudates. The sensitivity, specificity and accuracy are reported as 91.11%, 100 % and 93.84% for Fuzzy Inference System Classification.

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**Index Terms**

Computer Science | Image Processing

**Keywords**

Exudates | Fundus image | connected component | Morphological operation | Fuzzy Inference System