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AUTOMATED FEATURE EXTRACTION OF DIABETIC RETINOPATHY RETINAL IMAGES IN EARLY STAGES USING MORPHOLOGICAL METHODS AND FUZZY-C- MEANS CLUSTERING

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Abstract

Automated detection of lesions in retinal images can assist in early diagnosis and screening of a common disease: Diabetic Retinopathy. A robust and computationally efficient approach for the localization of the different features and lesions in a fundus retinal image is presented in this paper. Since many features have common intensity properties, geometric features and correlations are used to distinguish between them. We propose a new constraint to detect the major blood vessels and Exudates quite accurately using different morphological operations and Fuzzy – C- Means algorithm applied appropriately. Extensive evaluation of the algorithm on a database of images with varied contrast, illumination and disease stages yields 86.4% and 91.6% for exudates. These compare very favourably with existing systems and promise real deployment of these systems.

Keywords: Diabetic Retinopathy, Segmentation, Morphology, Fuzzy – C- means clustering