

Exudates segmentation using inverse surface adaptive thresholding

Abstract

This paper presents a new approach to detect exudates and optic disc from color fundus images based on inverse surface thresholding. The strategy involves the applications of fuzzy c-means clustering, edge detection, otsu thresholding and inverse surface thresholding. The main advantage of the proposed approach is that it does not depend on manually selected parameters that are normally chosen to suit the tested databases. When applied to two sets of databases the proposed method outperforms methods based on watershed segmentation and morphological reconstruction. The proposed method obtained 98.2 and 90.4 in terms of sensitivity for Standard Diabetic Retinopathy Database – Calibration Level 1 (DIARETDB1) and a local dataset provided by National University Hospital of Malaysia (NUHM), respectively.