Full Paper

BOUNDARY SEGMENTATION AND DETECTION OF DIABETIC RETINOPATHY (DR) IN FUNDUS IMAGE

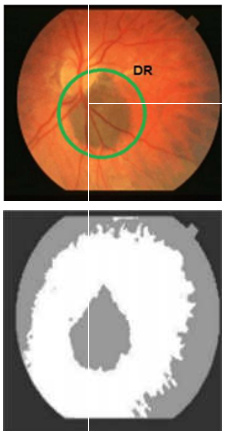
R. Samad*, M. S. F. Nasarudin, M. Mustafa, D. Pebrianti, N. R. H. Abdullah

Faculty of Electrical & Electronics Engineering,
Universiti Malaysia Pahang,
26600 Pekan, Pahang, Malaysia

*Corresponding author
rosdiyana@ump.edu.my

Article history
Received
19 June 2015
Received in revised form
26 June 2015
Accepted
10 July 2015

Graphical abstract



Abstract

Recently, the automatic detection system or Computer-Aided Detection (CAD) is widely developed in the medical field to screen or diagnose the medical image. This paper presents the boundary segmentation and detection of Diabetic Retinopathy (DR) in fundus image. The proposed method uses Fuzzy C-Means for clustering and detect the boundary of the DR object. The number of cluster used in this work is 3 and the average number of iterations is 28.The DR region is successfully detected by FCM and the average processing time is 1.235s.

Keywords: segmentation, diabetic retinopathy, fundus image, Fuzzy C-Means

Abstrak

Pada masa ini, sistem pengesanan automatik atau bantuan pengesanan berkomputer dibangunkan secara meluas dalam bidang perubatan untuk menyaring atau mengdiagnosis imej perubatan. Kertas keria ini membentangkan segmentasi sempadan dan mengesan diabetic retinopathy (DR) dalam imej fundus. Kaedah yang dicadangkan menggunakan Fuzzy C-Means untuk kluster dan mengesan sempadan objek DR. Bilangan kluster yang digunakan dalam kajian ini adalah 3 dan purata bilangan ulangan adalah 28. Sempadan DR telah berjaya diksan oleh FCM dan purata masa pemprosesan adalah 1.235s.

Kata kunci: segmentasi, diabetic retinopathy, imej fundus, Fuzzy C-Means