Abstract

Diabetic Retinopathy (DR) is globally the primary cause of visual impairment and blindness in diabetic patients. Diabetic retinopathy occurs when the small blood vessels have a high level of glucose in the retina. That causes a change in the retina, which occur over a period of time in diabetics and cause the difficulties with vision. Regular screening is essential in order to detect the early stages of diabetic retinopathy for timely treatment to prevent or delay further deterioration. In this paper, the presences of abnormalities in the retina such as the structure of blood vessels, microaneurysms, and exudates using image processing techniques are detected. These features are processed with the help of Fuzzy C-Means clustering algorithm to detect the different diabetic retinopathy stages. This system intends to help ophthalmologists in DR screening process to detect symptoms faster and more easily. The sensitivity, Precision and accuracy for that Diabetic Retinopathy detection system are 98.01%, 99%, and 97% respectively.

References

Identification of Diabetic Retinopathy Stages using Fuzzy C-means Classifier


- Nathan Silberman, Kristy Ahlrich, Rob Fergus and Lakshminarayanan Subramanian. 2010 Case for Automated Detection of Diabetic Retinopathy. Association for the Advancement of Artificial Intelligence.


- Vijaya Kumari V, SuriyaNarayanan N. 2010 Diabetic Retinopathy-Early Detection Using
Identification of Diabetic Retinopathy Stages using Fuzzy C-means Classifier

- DIARETDB1 Database, http://www2. it. lut. fi/project/imageret/diaretdb1/
- DIARETDB0 Database, http://www2. it. lut. fi/project/imageret/diaretdb0/

Index Terms

Computer Science
Artificial Intelligence
Keywords

Diabetic retinopathy (DR)  microaneurysms  exudates and Fuzzy C-Means (FCM)  Retinal Image (RI).