Abstract

In this paper, a fully automated method for feature extraction and classification of retina diseases is implemented. The main idea is to find a method that can extract the important features from the Optical Coherence Tomography (OCT) image, and acquire a higher classification accuracy. The using of genetic programming (GP) can achieve that aim. Genetic programming is a good way to choose the best combination of feature extraction methods from a set of feature extraction methods and determine the proper parameters for each one of the selected extraction methods. 800 OCT images are used in the proposed method, of the most three popular retinal diseases: Choroidal neovascularization (CNV), Diabetic Macular Edema (DME) and Drusen, beside the normal OCT images. While the set of the feature extraction methods that is used in this paper contains: Gabor filter, Local Binary Pattern (LBP), Gray Level Co-occurrence Matrix (GLCM), histogram of the image, and Speed Up Robust Filter (SURF). These methods are used for the both of global and local feature extraction. After that the classification process is achieved by the Support Vector Machine (SVM). The proposed method performed high accuracy as compared with the traditional methods.
References


Index Terms

Computer Science

Artificial Intelligence

Keywords
Genetic programming, feature extraction, Optical Coherence Tomography, OCT image classification, OCT feature extraction.