Automatic Identification of Hard Exudates in Retinal Fundus Images using Techniques of Information Retrieval

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Authors:
Kemal Akyol
Baha Sen
Safak Bayir

Abstract

Diabetic retinopathy, a subject of many studies in the medical image processing field since long time, is one of the major complications of diabetes mellitus and it cause blindness. In this study, we proposed a method that consist of keypoint detector-feature extraction-reduction process and classifier stages within the framework of hybrid approach for the detection of hard exudates. This method is divided into two parts: learning and querying. In the learning phase, initially we created visual dictionaries for the representation of pathological or non-pathological regions on retinal images. After, we completed modeling process with the training and testing processes. In the querying phase, keypoints and patch images are obtained with keypoint detector algorithm from new retinal images. Thus, knowledge is obtained by these patch images are classified in the final part of this phase. Experimental validation was performed on DIARETDB1 public database. The obtained results are showed us that positive effects of machine learning technique suggested by us for diagnosis of exudate.
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Keywords
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Visual Dictionary
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