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Corneal arcus classification for hyperlipidemia detection using gray level co-occurrence matrix features

Abstract

The arcus cornea is an eye problem that is often encountered among older people, but the situation is risky to teenagers and young people, in which it gave a sign the presence of lipid abnormalities in their blood and the risk of disease problems such as diabetes and heart disease. This paper presents the classification of the arcus cornea, using the extraction of texture features of the gray level co-occurrence matrix, along with several models of the classifiers, namely as scale conjugate gradient, Bayesian regulation, and Levenberg-Marquardt. Percentage fractions for training, testing and validation for classifier are 70%, 15%, and 15% respectively. The comparison of the classifiers used by the past researchers for classification the eye abnormalities, also were analyzed and studied in this work. In this experiment, a total of 125 image eyes were used, consisting of two classes of the eye image, which is normal and abnormal. The best result demonstrated in this proposed framework using Bayesian regulation classifier is, a sensitivity of 96%, and a specificity of 100%. However, this classifier did not achieve perfectly classification or an accuracy of 100%. Nevertheless, it is able and evident that the system is effective by the output of 98.4% accuracy.