

Diagnosis of Diabetic Retinopathy Using Artificial Intelligence Techniques

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The complication of diabetics causes an illness known as Diabetic Retinopathy (DR). It is very widespread among middle-aged and older people. As diabetes progresses, the vision of patients may start to deteriorate and cause DR. People lose their eye visions because of this illness. To cope with DR, an early detection is needed. Patients will have to be checked by doctors regularly which is a waste of time and energy. DR can be divided into two groups; one is non-proliferative (NPDR) while the other is proliferative (PDR). In this study, Artificial Intelligence (AI) techniques are used to diagnose DR at an early stage. These are PNN, SVM, Bayesian Classification and K-Means Clustering. These techniques will be evaluated and compared with each other to choose the best methodology. A total of 300 fundus photographs are processed for training and testing. The features are extracted from these raw images using the image processing techniques. After an experiment, it is concluded that PNN has an accuracy of about 89%, Bayes Classifications 94%, SVM 97% and K-Means Clustering 87%. The preliminary results prove that SVM is the best technique for early detection of DR.

Keywords: *Diabetic Retinopathy, Fundus Images, Retina, Support vector machine, K-Means Clustering.*

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