



Abstract

Diabetic Retinopathy is considered as one of the significant reasons for vision impairment. Its identification involves detecting the presence of some features in retinal fundus images by clinicians which is a time and resource consuming procedure and a difficult manual diagnosis. In this article, a deep learning-based approach using Deep Convolutional Neural Network is developed for the diagnosis of Diabetic Retinopathy. By classifying from retinal fundus images with its severity level, it is possible to detect Diabetic Retinopathy. A Diabetic Retinopathy classifier is constructed followed by a transfer learning technique, DenseNet architecture based pre-trained model. Identification of Diabetic Retinopathy is done by detecting the presence of features like micro-aneurysms, exudates, hemorrhages in retinal images. We have also shown the preprocessing and augmentation of image data that benefits the model to detect retinopathy. After the training and validating procedure, the developed classifier achieves significant training accuracy of 96.3% and validation accuracy of 94.9% along with 0.88 quadratic weighted kappa.

