Web System to Diagnose Diabetic Retinopathy Using a Convolutional Neural Networks

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Abstract: Diabetic retinopathy is the most significant complication of diabetes mellitus that involves the eyes. The early stages of this disease usually have no symptoms, however it is progressive and it is the leading cause of blindness and visual disability. The diabetic retinopathy is the third cause of irreversible blindness worldwide, this can be preventable as long as it is detected in a timely manner or in early stages. In many countries the diagnosis is performed manually by specialists, but this process is both expensive and time consuming, moreover, the number of trained personnel is still small.

We proposed an automatic web system to diagnose diabetic retinopathy using a convolutional neural networks which is trained using 527 fundus images and it is capable of diagnosis the disease with an accuracy of 96%.

Keywords: Convolutional Neural Networks, Deep Learning, Diabetic Retinopathy, Image Classification.