**DIABETIC RETINOPATHY DETECTION**

Diabetic Retinopathy is the leading cause of blindness in the working age population of the developed world, estimated to affect over 93 million people. Diabetic Retinopathy (DR) is an eye disease caused by long-standing diabetes. Loss of vision can be stopped if DR is detected in time, however this is difficult as the disease shows little symptoms until it is too late. Diabetic retinopathy occurs when these tiny blood vessels leak blood and other fluids. This causes the retinal tissue to swell, resulting in cloudy or blurred vision. The condition usually affects both eyes. The longer a person has diabetes, the more likely they will develop diabetic retinopathy. If left untreated, diabetic retinopathy can cause blindness. Early detection and treatment can limit the potential for significant vision loss from diabetic retinopathy. Often the early stages of diabetic retinopathy have no visual symptoms.

Currently, detecting DR is a time-consuming and manual process that requires a trained clinician to examine and evaluate digital color fundus photographs of the retina. By the time human readers submit their reviews, often a day or two later, the delayed results lead to lost follow up, miscommunication, and delayed treatment.

The need for a comprehensive and automated method of DR screening has long been recognized, and we’ll be creating a system which takes a “color fundus” photograph as input and producing a numerical output on a scale of 0-4 where 0 represents No DR and 4 is Proliferative DR. Our aim is to improve upon the previous efforts which applied image classification, machine learning and pattern recognition.

**References:**

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