

# ***CLASSIFICATION OF DIABETIC RETINOPATHY LEVELS ON RETINA FUNDUS IMAGE USING CONVOLUTIONAL NEURAL NETWORK***

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## ***ABSTRACT***

Diabetic retinopathy is damage to a retina caused by complications of diabetes mellitus. The risk of this disease increases with the length of time a patient suffers from diabetes mellitus. This disease is divided into two, namely Non-Proliferative Diabetic Retinopathy (NPDR) with 4 phases (normal, mild, moderate and severe) and Proliferative Diabetic Retinopathy (PDR). By using the Convolutional Neural Network processing method, retinal fundus images can be identified whether they are experiencing a phase of NPDR or not. Digital image processing prior to classification using CNN such as. resize, CLAHE and gaussian filters can have an increasing impact on the system accuracy of CNN. The results of this study get accuracy of 68%, precision of 69% and recall of 68%, using the confusion matrix method.

**Keywords:** Diabetic Retinopathy, Fundus Retina Image, Digital Image Processing, CNN, Confusion Matrix