**ABSTRACT** 

Diabetic Retinopathy is a disorder of the blood vessels in the retina in patients with

diabetes mellitus. It is the leading cause of blindness in adults on developing countries,

including Indonesia.

A medical examination of patients with diabetic retinopathy disease carried by direct

observation by doctors in patient retinal images taken using a fundus camera. Results of

retinal imaging of fundus cameras usually can not provide a clear picture of the blood

vessels of the retina, so it will be difficult for doctors to analyze the retinal image. The

weakness of this method also it takes a relatively long time to know the results.

To overcome these weaknesses, a system built using computational models needed to

change the image pixel retinal to a feature of the retina that can assist doctors in

determining the medical act quickly and appropriately.

In this study, we make a system that can detect and classify diabetic retinopathy to 4

class based on its severity, that is normal, mild, moderate, and severe. This study use

Discrete Wavelet Transform as feature extraction with 9 level of decomposition and the

classification using artificial neural network. From 37 images tested, which 4 normal retina,

16 mild retinopati, 8 moderate retinopati and 9 severe retinopati, with one hiddenlayer and

10 neurons inside, the best accuracy obtained in this study was 78.37 %

**Keyword:** Retinopathy; Fundus image; Feature extraction.