ABSTRACT

As the development of technology in applications that process digital images, the segmentation process is becoming increasingly necessary. The retinal blood vesels segmentation process in the retinal fundus provide useful information for health professionals to identify abnormalities in the blood vessels of the retinal. The example of the abnormalities are narrowed blood vessels, abnormal branching, and many more.

Therefore, in this final project, the writer design a software using MATLAB where the system is able to segment the retinal blood vessels in the retina fundus image using Matched Filter and Morphology Operation and also combining Matched Filter and Morphology Operation method. There are two main steps in the process of segmentation. The first step is to do the image preprocessing which aims to improve the quality of the image to be segmented optimally. The second step is the image segmentation which aims to make the extraction process in order to obtain the retinal blood vessels of the eye fundus image.

The amount of data that used is 40 images of the retina that is accompanied by 40 manual segmentation images that performed and validated by an expert observer. In this study, it is conducted analysis of system performance based on the accuracy of the system. The average result of accuracy using Matched Filter method is 88,62%. While for the Morphology Operation method is 88,34% and for the combined method of Matched Filter and Morphology Operation is 88,26% of accuracy.

Keywords: Eye, image detection, segmentation, Matched Filter, Morphology Operation