ABSTRACT

The rapid technological development makes the segmentation process so necessary, the process of segmentation of the retinal blood vessels in the retinal fundus is important in the biomedical field to facilitate health experts in identifying eye-related diseases.

Therefore, this final project designed a software system using MATLAB, in which the system is able to segment the retinal blood vessels in the retinal fundus image. As for the main steps in segmentation, the first step is to do image preprocessing which aims to improve image quality so that it can be segmented optimally, then do image segmentation which aims to extract the process so that the retinal blood vessels from the fundus image of the eye are using edge detection and morphological operations and combining edge detection and morphology operations methods.

Based on the results of research that uses DRIVE (Digital Retinal Images for Vessel Extraction) data as many as 40 retinal images are performed system performance analysis using confusion matrix which produces an average value of accuracy of edge detection of 80.19% and morphological operation of 88.40% and combined method of edge detection and morphological operation is 85.21% with accuracy, TPR, FPR and precision parameters.

***Keywords**: Eye, Image Detection, Segmentation, Edge Detection, Morphology Operation*