ABSTRACT

Rocks is one part of the natural wealth in Indonesia. With so many different types of rocks scattered throughout Indonesia, it takes a lot of experts to know the type of rocks in Indonesia. There are many ways to identify a stone, can be seen directly by naked eye and can also through microscopes. From that way probably the easiest is seen directly by naked eye to immediately recognize the type of rock, therefore required a tool as a comparison of experts to ensure the classification of igneous rock types with high accuracy and a short time.

In this final project implemented science of Digital Signal Processing (DSP) which creates a Matlab based system by detecting the rock image which input into the system. Then, in this final project is also realized an application to identify the type of igneous rock using extraction feature Curvelet Transform method which is its optimal superiority in representing the edged object especially curved lines and also each rock image sought similarity with K-Nearest Neighbor (K-NN).

From the results of system performance testing, it was found that the results of the system performance reached the highest accuracy when the feature extraction process using Curvelet scale 5 *orietation* 16. *From the test results, obtained the best accuracy is about* 88,89% f*or megaskopic image,* 80% *for the image of a microscope parallel nicol, and* 73.33% *for microscopic images cross nicol.*

Key Words: *Igneous Rock, Curvelet Transform, k-Nearest Neighbor*