ABSTRACT

The lithosphere is one of the layers of the Earth are solid. This layer is based on its chemical composition consists of three layers that sequence from the outside in, crust, mantle, and core are in for the two Outer Core and core inside. Of the three types of rocks that is igneous rocks, sedimentary rock, and metamorphic rock, layers of the Earth's crust is largely composed of igneous and metamorphic rocks, whereas sedimentary rocks are generally found on the Earth's surface (crust). Diverse types of rocks only geologists can identify it.

Because the eye also has a level of precision in identifying the object, it is necessary a comparison tool experts to strengthen the classification type of igneous rock witha relatively short time and high accuracy. This thesis discusses the simulation and analysis of igneous rock type classification system. As for the step that is carried out in this study are: image acquisition, preprocessing, classification, characteristics and extraction. Characteristic extraction method used is the Discrete Cosine Transform (DCT) and methods of classification of K-Nearest Neighbor (K-NN).

In this testing is done by the 90 macroscopis rock image and 90 microscopis rock image that is divided in three classes with the composition of 20 test data and 10 training data for each class. So it brings the best accuracy of computational time 98.33% and 0, 4371s to the rocks of a macroscopis by using the parameters: block 512, k = 1, euclidean distance. While the microscopis rock obtained accuracy of 61.67% and computational time 0, 4422s by using the parameters: block 512, k = 1, cityblock distance.

***Keywords** : Type of Rocks, Discrete Cosine Transform* (DCT), *dan K-Nearest Neighbor* (K-NN)