

ABSTRACT

Rock is one part of natural wealth in Indonesia. Rocks form naturally from minerals or mineraloids. According to the process of rock formation is divided into 3 namely, igneous rocks, sedimentary rocks, and metamorphic rocks. Obtained from experts to find out the types of stones that will be found anywhere, either through the visible or through a microscope. However, the easiest geology is invisible to get these types of rocks, therefore a system is needed to collect and classify special types of rocks containing carbon, carbonate sediments, based on texture, optimally, and good delivery time.

In this Final Project a digital image-based software has been designed using Matlab. This software will identify and classify carbonate sedimentary rocks based on the texture by the Gabor Wavelet method with the advantages of minimizing nonessential features in the spatial and frequency domains, while the K-Nearest Neighbor (K-NN) classification with excellence in looking for similarity or similarity of characteristic values from the feature extraction method. The system process will go through several stages, namely, image acquisition, pre-processing, feature extraction, and classification of the results of the feature extraction.

In the study of classification of carbonate sedimentary rocks based on texture produced an accuracy of 90% and a computation time of 56.3848 seconds with frequency scale 6 parameters, orientation 9, downsampling 16, k=1 with Euclidean distance types.

Keywords: *Rock type, carbonate sedimentary rock, Digital image, Gabor Wavelet, K-Nearest Neighbor (K-NN).*