

## ABSTRACT

Seeing the many types of rocks that exist in nature, there are several ways to study the types of rocks. One of them is by studying geology. However, the process needed to understand the classification or many types of rocks, especially in the field of sedimentary rocks, takes quite a long time, this is due to the classification of sedimentary rocks is still done conventionally (general nature). Related to these problems the authors conducted research to find out and classify types of sedimentary rocks, more precisely the sedimentary sandstones.

The initial stage is that the system is given input in the form of a digital image of the rock microscopically taken from a petrographic microscope in the form of an incision and in a microscope a camera is attached and connected to a computer. The purpose of this study is to make it easier for geologists to find out the types of sedimentary sandstones.

In 2018 a study by Abu Amar Tantowi was titled "Identification of Mineral Textures and Colors for Frozen Rock Classification with Discrete Wavelet Transform (DWT) method and Support Vector Machine (SVM)". The difference in previous studies is from the aspect of rock types namely igneous rocks, the amount of data that is cross nikol 246 training images and 155 test images, nikol parallel images 250 training images and 162 test images, the method used is Discrete Wavelet Transform (DWT) and Support Vector Machine (SVM). The study was obtained accuracy of 83.95% for nikol parallels and 78.06% for nikol cross. In this Final Project the author has designed a software based on MATLAB version R2018a. The results obtained in the form of a matrix operation simulation software that can be used to determine and classify the types of sediment sandstones. Obtained the best accuracy when testing the parallel image of Nikol that is 87.69% with a computational time of 0.0218 seconds. Using nikol cross and nikol parallel images, each totaling 255 training data and 65 test data, comparison of the amount of data 80% training 20% test, Subband LL parameters, Decomposition Level 2, Hidden Layer 10, Learning Rate 0.01, Epoch 100 In this study Wavelet was used as a feature extraction method and Learning Vector Quantization (LVQ) as a classification.

Keywords: Petrography, Discrete Wavelet Transform (DWT), Support Vector Machine (SVM), Learning Vector Quantization (LVQ), Wavelet.