ABSTRACT

Rock is a major part of our earth. Rocks are composed of a collection of minerals that have frozen. Generally, rocks are formed from two or more minerals. Based on the type of rock grouped into three major types, namely igneous rocks, sedimentary rocks, and metamorphic rocks.

In this final project, a system that can classify sandstone sedimentary rocks has been designed. The purpose of the system is to help geologists to classify the types of microscopic images of sandstone sedimentary rocks efficiently. Rock sampling is carried out in the Petrology Laboratory of Padjajaran University. Samples that have been taken are then performed feature extraction using the Local Binary Pattern (LBP) method to obtain training features. The next stage is conducting training features that have been obtained. Furthermore, the database obtained from the training results will be used to classify test data for the image of sandstone sedimentary rocks using the Support Vector Machine (SVM) method.

There are five class for sandstone classification, feldspatic graywacke, lithic arenite, lithic graywacke, quartz arenite and quartz graywacke. Testing by using the same of two parameters, the ratio amount of data using 80% training data and 20% testing data. The radius parameter using 1, the polynomial kernel type is 1 orde with a kernel scale is 8 and the target of multiclass SVM is One Against One (OAO). The cross nicol image, obtained an accuracy of 93.40% by taking a computing time of 0.98 seconds. In the parallel nicol image, obtained an accuracy of 98.90% with a computing time of 0.94 seconds.

Keywords **:** *Rocks, Local Binary Pattern, Support Vektor Machine.*