

ABSTRACT

Recently extreme weather which is unstable is often the case and interfere with daily activities. Based on the current conditions of geothermal, the weather detection becomes crucial matter in the application of several disciplines and human activity. Nowadays, looking for methods to detect weather at one time with image processing is a new innovation that appears in the weather modeling. This case was driven by high demand from various parties for automation and digitalization in detecting weather conditions carefully and accurately without having to observe it directly.

In this final project conducted the first phase is preprocessing in order to obtain images that match the criteria to be more easily processed to the next stage. The next stage is feature extraction using morphological methods. The next step is the detection/classification of objects/images contained in the cloud by using Hidden Markov Models.

The final project was able to produce the output of a system that can predict or identify and classify the types of clouds that bring rain. Classification methods used in this thesis is a HMM, which is expected to be able to recognize the image of the sky and predict the weather conditions well between sunny, cloudy and rainy with a 91% accuracy rate of 300 data consist of three classes, the average time computing system is 0.042 seconds. Then the expected system performance targets have been achieved can then be used as a database to assist in forecasting weather BMKG hours with range-by-hour.

Keywords: Forecasting, Classification and type of clouds, Hidden Markov Models