

Abstract

Weather is an indication that can bring weather conditions such as rain and strong winds that can result in gains or losses for various groups. Air humidity is an important indicator in predicting weather conditions, because air humidity has a close relationship with the arrival of rain. In planning to take advantage of the weather conditions, the use of this data is very important and is expected to be a solution so that it can be prepared when rains come and other natural disaster that can be caused by rain. So from this research, we do Modelling Air Humidity distribution using Gaussian Mixture involving *Expectation-Maximization* Method and the measurement of the result of this research is Akaike Information Criteria (AIC), where the smaller of the value obtained the better of the modeling. *Expectation-Maximization* algorithm is unsupervised algorithm that can obtain knowledge from data sets that do not have a specific label or target class. The *Expectation-Maximization* algorithm is also known as an iterative optimization method for maximum likelihood estimation and this algorithm has 2 stages, the first one is the expectation step and the second one is maximization step. The test result in this study were obtained by doing iteration modeling from one component to fifteen component, from the modeling result the Gaussian with 3 component was chosen as the best *Gaussian Mixture* Model obtained from the smallest AIC score which is 11989.70.

Keywords: air humidity, AIC, expectation-maximization, gaussian mixture, weather