ABSTRACT

Weather conditions greatly affect human daily activities. Weather is a natural phenomenon that always changes from time to time. Weather forecasting or prediction needs to be done to minimize the impact that occurs due to erratic weather conditions. Many factors must be considered in weather forecasting. Changes in weather parameters such as air temperature, air humidity, and wind speed are also considered because they can affect the weather changes that will occur. The development of predictive methods is needed to get accurate and fast prediction methods to avoid information omissions.

In this research a weather monitoring system will be designed based on wind speed, temperature, and humidity. The system will measure the magnitude of these parameters so that it can predict weather conditions such as rainy, cloudy, sunny, cloudy and sunny. Weather prediction uses 2 methods, Fuzzy Logic and Simple Moving Average. The weather prediction results from these two methods will then be compared using the Confusion Matrix analysis to determine which method is better in predicting the weather.

The test results of the weather monitoring system show that the accuracy of the system in measuring parameters is 90.79% for wind speed, 92% for humidity, and 98.61% for temperature. The weather prediction results using the Fuzzy Logic method show an accuracy value of 66.67%, while the prediction results using the Simple Moving Average method show an accuracy value of 62.22%. All measurement results and prediction results are then stored and displayed on the Arduino IoT Cloud.

Keywords: Simple Moving Average, Fuzzy Logic, weather forecasting, Internet of Things.