

Abstract

Grow lights are LED lights specifically for agriculture that can be used for aeroponics because aeroponics is often cultivated in low light conditions, for example in an indoor environment. Prediction systems that use machine learning can be applied to improve grow lights control performance, however predictions with limited data can cause the prediction model's performance to be suboptimal. This study aims to optimize the growth light control function in an IoT-based aeroponic system using the sensor fusion concept and random forest classification. To test the effect of the sensor fusion concept in the aeroponic system, a performance comparison of several different random forest models was carried out using different combinations of light intensity, water temperature, and humidity sensor. The test results show that sensor fusion has a positive effect on the performance of random forest classification in aeroponic systems and with a combination of humidity, light intensity, and water temperature sensors all together, the accuracy obtained by random forest classification is 90.62%.

Keyword: *Aeroponics, Internet of Things, Grow Lights, Light Intensity, Sensor Fusion, Random Forest*
