

ABSTRACT

There are many factors influence plant growth such as nutrient solution, temperature, soil moisture, light intensity, PH level contained, electrical conductivity which affects the growth and development of hydroponic plants so that an integrated control system is needed. There are so many error factors if it is not carried out in an integrated control system such as human error which will have an impact on the quality of the growth and development of hydroponic plants and will make humans work more to check the situation manually which will take more time.

A data input system is created in the form of temperature, humidity, and light intensity sensors by sending data to a microcontroller which then sends the data using LoRa communication and connected to the IoT Antares platform. In this final project using a context-aware method that works based on the habits of the daily environment in hydroponic plants, by using a sensor of temperature, humidity, and light intensity, the system will automatically adjust the optimal condition of the planted plants if they experience different parameters.

The results of this study that the system can maintain the value in the setpoint range of light intensity, temperature, and humidity, LoRa can be sent as far as 180 meters vertically and 6 floors horizontally. The growth of indoor plants with systems is better than non-indoor systems and non-outdoor systems with a sig (2-tailed) value of $0.00 > 0.05$ and data can be displayed on the Antares website.

Keywords: Hydroponics, Context-aware, LoRa, IoT