Project Title Smart Mushroom Farm using Long Range Wireless

Communication Technology

Proposed by Narinthon Sonchaiyaphum and Wannarong Satitwittayakul

Year 2021

Department Computer Engineering

Project Advisor Dr. Saweth Hongprasit

**Abstract**

This thesis aims to design and construct a mushroom farm. That can control the environment in the farm to optimize the flowering of mushrooms through a web application and a window application to monitor and control the system. LoRa has been applied to serve as a communication medium between the mushroom house and the Internet-facing area to solve the problem of the location of the houses far from the Internet coverage area.

The farm environment control system consists of a microcontroller (ESP32LoRa) which controls the entire system. Using a sensor AM2315 to measure temperature and humidity, BH1750FVI measure the brightness. It has environment control devices such as fans, pumps, light bulbs, and has applied Current Sense Resistors to monitor the operating status of the device. The web application part uses a microcontroller (ESP32LoRa) as a web server and uses ngrok application installed on the Raspberry Pi to do port forwarding to be able to use the web application from anywhere that has access to the Internet. The window application can monitor and control the mushroom farm through the Serial Port between the microcontroller and the computer.

Conclusion of the experimental results the working of the system can work well. The mushroom cultivation experiments used grey oyster mushrooms for a total of 14 days the results of the experiment can be summarized as follows environment control farm has average flower width was 7.66 cm and the total weight was 1.06 kg. The farm without environment control has average flower width of 6.45 cm with a total weight of 0.6 kg.