THESIS OUTLINE

School of: Information System

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Type of thesis ***(please tick one)*** ☐ Survey ☑ Case Study

Topic

Implementing an Arduino-based IOT monitoring system for a hydroponic farm.

Title

IOT Enabled Hydroponic Farm Monitoring Using Arduino and Cloud

Reference(s)

Title
https://arduinogetstarted.com/tutorials/arduino-mysql. “Arduino - MySQL”
https://forum.arduino.cc/t/how-to-connect-pc-to-arduino-through-wireless-communication-new-to-arduino/321401. “How to Connect PC to Arduino Through Wireless Communication”
https://circuitdigest.com/microcontroller-projects/arduino-mq137-ammonia-sensor - “Measuring PPM From MQ Gas Sensors Using Arduino”

Abstract/ Summary of what you are going to do

Please elaborate your research background / what you are going to do (max. 100 words)

The hydroponic farm in question is currently doing all of their farm monitoring and status tracking manually. They’re measuring the chemical levels in the hydroponic water by hand (using single-use measuring kits) and keeping track of the data using a whiteboard.

I will be developing an IOT solution using Arduino and Cloud to help the hydroponic farm’s operators by enabling them to remotely track and view changes in the hydroponic water’s chemical composition.

The application from where staff members will be viewing the compiled sensor output will be hosted on the web. For the purposes of this thesis’ demonstration and proof of concept, it will be deployed on the cloud.

Research/ Case Questions

Please state your research/case questions

1. Is it possible to devise an Arduino and cloud powered solution to track changes in a hydroponic plantation’s chemical composition?
2. Is it possible for the Arduino devices to communicate directly with the database without need for direct interaction with the staff in day-to-day operations?
3. Can the information collected by the Arduino devices be compiled and presented in an understandable manner by the hydroponics staff?

Thesis Design/ Methodologies/ Approach

Elaborate your proposed/ planned research methodologies

1. The first phase of the case study would be to do research and compile the necessary information to be able to make the Arduino prototype.
2. The second phase would be to create the Arduino prototype itself.
3. The third phase is to make the database server and make the Arduino able to communicate with the database on its own.
4. The fourth and final phase of the project would be to the creation of a web application to compile and present the information to the users (hydroponic farm’s staff members).

Approval

Date of approval

☐ Accepted

☐ Declined

Remarks

Head of Program