**IDIVIDUAL ASSIGNMENT (PRACTICAL)**

How IOT contribute to agriculture development

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**COS30011 – IoT Programming**

**Fall 2023**

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**Abstract**

# Summary

* 1. **Topic background**

The emergence of the Internet of Things (IoT) has ushered in a transformative era, reshaping industries across the globe. One sector profoundly impacted is agriculture, where the interconnectivity of devices and data-driven practices are revolutionizing traditional farming methods. In this context, my survey paper delves into the multifaceted influence of IoT innovation on agriculture, exploring its implications from precision farming to sustainable practices.

Traditionally, agriculture has been characterized by tradition and manual labor. However, with the surge in global population and escalating environmental concerns, the necessity for more efficient, sustainable, and data-driven approaches to farming has become increasingly apparent. The integration of IoT into agriculture provides a technological frontier that addresses age-old challenges. This paper investigates how IoT enables farmers to remotely oversee their land and crops, receiving critical updates and insights on their smartphones or personal devices. This level of connectivity affords an unprecedented level of control and responsiveness, empowering farmers and citizens alike to take timely actions to mitigate potential risks and losses.

In the realm of farming practices, the integration of IoT technologies has ushered in a new era of agricultural management and efficiency. Sustainable farming practices have been significantly bolstered by IoT. The continuous monitoring of environmental conditions facilitated by IoT assists in pest management and disease prevention.

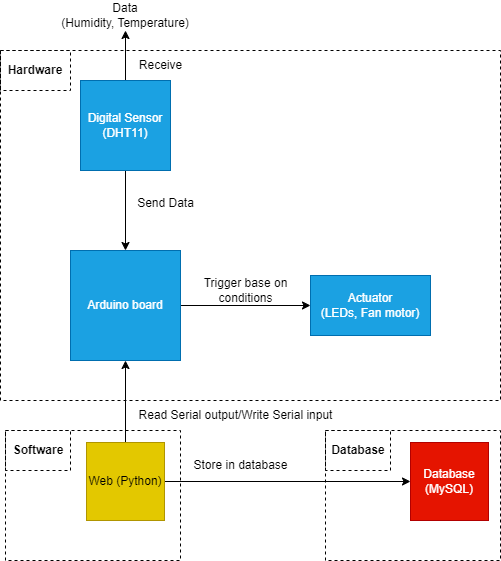
A proposed smart agriculture system for cornfields, utilizing wireless sensor networks and drones, is scrutinized for its benefits and limitations. The need for many sensors and the cost of drones are identified as challenges, despite the potential to improve crop yields.

Lastly, the survey explores a smart farming system based on IoT sensors for data collection and cloud computing for analysis. Machine learning is employed to provide farmers with recommendations on enhancing crop yields and reducing environmental impact. Emphasizing the real-time data collection capabilities of IoT sensors, enabling farmers to make informed decisions for improved crop yields, reduced costs, and environmental sustainability. While acknowledging the transformative power of IoT, the survey paper also highlights existing challenges such as high costs and complexity that need addressing for widespread adoption in agriculture. As IoT continues to evolve, its role in agriculture is poised to grow, contributing to a more efficient, profitable, and sustainable future for farmers and industry.

* 1. **Proposed system**

# Conceptual Design

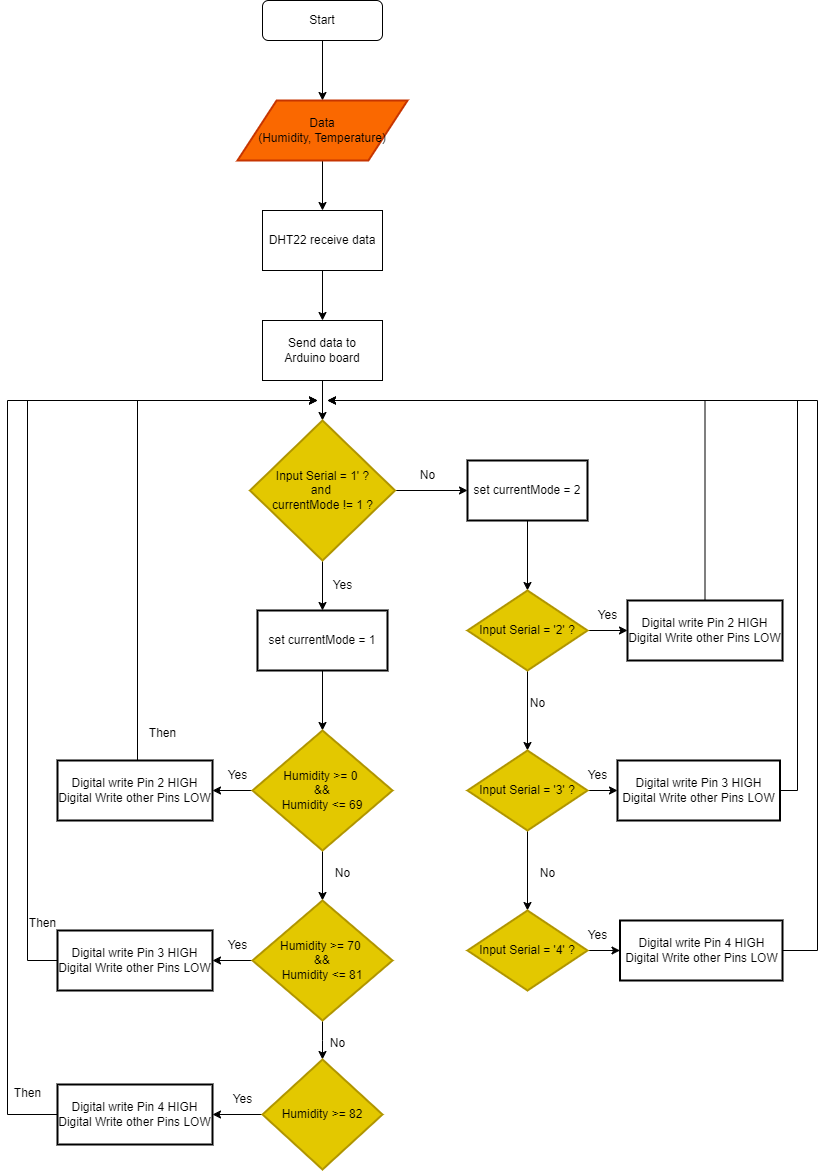
## Block diagrams



*Figure 1: Block diagram for proposed system*

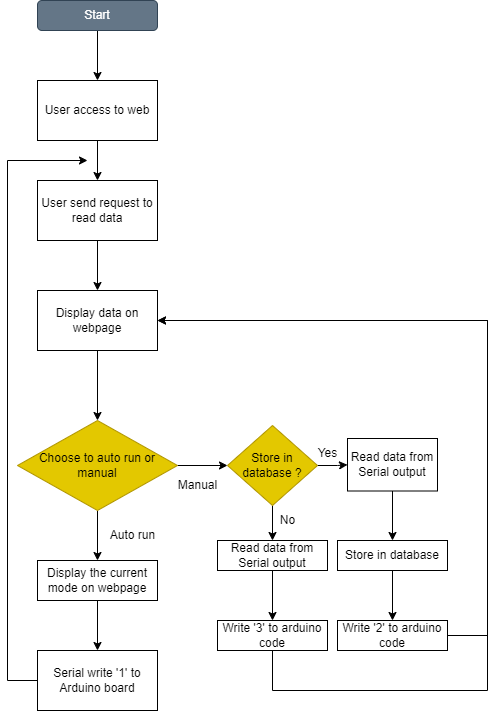
First, the digital sensor (DHT11) will receive the data (Humidity and Temperature) from the environment then it will send the data to the Arduino board. Based on the data and conditions, the Arduino board will trigger the actuator (LEDs) for notifying. The web application can show the front end and read the serial output from the Arduino board and display the data. Depending on the user, the web application can perform the action to store the data to the database (MySQL).

## UML diagram



*Figure 2: Flow chart for how the Arduino work*

For the above chart, the Arduino code runs in the order and keeps looping. The data are humidity and temperature will be received from the DHT22. It can be divided into 2 modes: for the first mode when the user input ‘1’ to the Arduino, the code will automatically run and detect the humidity it receives from the DHT22 sensor. If the user enters ‘2’ or ‘3’ or ‘4’ to the Arduino, the current mode will switch to 2 and perform the action of setting the corresponding pin to HIGH and other pins to LOW state.



*Figure 3: Flow chart for how the python program work and send request.*

# Implementation

## Sensors

## Actuators

## Software/Libraries:

# Resources

Circuit Basics (2023). *How to Use a DHT11 Humidity Sensor on the Arduino - Ultimate Guide to the Arduino #38*. *YouTube*. Available at: https://www.youtube.com/watch?v=dJJAQxyryoQ [Accessed 25 Oct. 2023].

# Appendix