Research Area: IOT

Title: Smart Irrigation System Using Raspberry Pi.

Number of Members: 03

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Hardware Requirements:

1. Raspberry Pi
2. Rain Sensor
3. Soil Moisture Sensor
4. Temperature Sensor
5. Stepper Motor
6. LCD Display
7. ADC (Analog to Digital Converter)
8. Jumper Wires
9. Power Supply

Software Requirements:

1. Proteus Simulation Software
2. Python (for Raspberry Pi programming)
3. Raspberry Pi OS

Description:

The project aims to develop an automated agriculture system that utilizes IoT technologies for real-time monitoring and control of environmental conditions in agriculture. The system integrates various sensors—rain, soil moisture, and temperature—to collect data about the field's conditions. This data is processed using a Raspberry Pi, which interfaces with an LCD for display purposes and can control a stepper motor for irrigation based on moisture levels.

The project will be designed and tested both physically and virtually using Proteus, allowing for simulation of components and circuit connections. The automation system will enable farmers to monitor their fields remotely, making it easier to manage irrigation and optimize water usage. By leveraging IoT, this project not only enhances agricultural productivity but also promotes sustainable farming practices, aligning with the growing need for efficient resource management in agriculture.

This innovative approach combines modern technology with traditional farming, aiming to reduce labor costs and improve yield while ensuring a more resilient agricultural ecosystem. The research underscores the role of IoT in revolutionizing agriculture, making it smarter, more efficient, and accessible.