

IOT Enabled Smart Agriculture System

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Abstract: *The increasing demand for sustainable agricultural practices necessitates innovative solutions that optimize resource usage while ensuring crop health. This project presents an IoT-Enabled Smart Agriculture System utilizing a NodeMCU microcontroller to facilitate real-time monitoring and control of essential soil and environmental parameters, including soil moisture, pH level, humidity, and temperature. The proposed system employs a network of sensors connected to the NodeMCU, which continuously collects and processes data to provide actionable insights. Using Wi-Fi connectivity, the NodeMCU communicates with the Blynk app, enabling users to monitor field conditions remotely. The soil moisture sensor detects the water content in the soil, while the pH sensor assesses soil acidity or alkalinity. Additionally, humidity and temperature sensors gather vital environmental data that impact crop health. Based on predefined thresholds, the system intelligently activates a water pump when soil moisture levels drop, ensuring optimal irrigation and conserving water resources. This automated approach enhances the efficiency and sustainability of agricultural practices by providing farmers with real-time data and control over their irrigation systems. The integration of IoT technology not only optimizes water usage but also contributes to improved crop yield and sustainability in agriculture.*

Keywords: Agriculture System

