MONITORING SYSTEM ON IOT BASED SMART HYDROPONIC

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ABSTRACT

The development of Iternet of Thingss (IoT) technology has had a significant impact on various fields, including modern agriculture such as hydroponics. With that, this study aims to design an IoT-based smart hydroponic monitoring system. This tool is designed to monitor the environmental conditions of plant growth in real-time. This system uses pH, TDS, temperature, humidity sensors integrated with a microcontroller and ESP8266 *module to send data to the IoT platform. The data obtained is displayed through an application interface that makes it easy for users to monitor and control the system remotely. The test results show that the IoT-based smart hydroponic monitoring system using the MIT App Inventor application successfully functions well. The system is able to monitor important parameters such as pH and TDS values in real-time, and display them through the application and LCD device. The integration between the ESP32, pH sensor, TDS sensor, and the MIT App Inventor application runs effectively, proven by response time testing. The average time difference from application input to the LCD is 6.75 seconds and from the LCD to the application is 4.75 seconds, indicating that the system has a fairly good level of responsiveness.*

Keywords: *Smart Hydroponics, IoT, Monitoring, sensor,* ESP8266