

Design and Development of an IoT-Based Prediction System for Chili Plant

Watering Time Using the Moving Average Method

Zilvanhisna Emka Fitri, S.T., M.T. *as a supervisor*

Fillah Septian

Study Program of Informatics Engineering

Majoring in Information Technology

ABSTRACT

This study develops a predictive system for chili plant watering time based on the Internet of Things (IoT) using the Moving Average method. The primary issue in chili cultivation is suboptimal irrigation, either due to water deficiency or excess, which can affect plant growth and productivity. The developed system utilizes a soil moisture sensor connected to an ESP32 microcontroller to collect real-time moisture data. This data is then processed using the Moving Average method to predict the optimal watering time. The system is also equipped with monitoring and watering control features via a web-based interface, allowing users to set soil moisture thresholds and choose between automatic or manual watering modes. The test results indicate that this prediction system provides highly accurate watering recommendations. Additionally, the Moving Average method has proven effective in identifying soil moisture patterns and improving water use efficiency in chili cultivation.

Keywords: *Internet of Things, Moving Average, Automatic Watering, Soil Moisture Prediction*