## PENGEMBANGAN SISTEM PENYIRAMAN TANAMAN OTOMATIS BERBASIS IOT DAN NOTIFIKASI TELEGRAM BOT

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## ABSTRACT

The unscheduled and inefficient watering of plants frequently leads to water wastage and suboptimal plant growth. This research aims to develop an automatic plant watering system based on a microcontroller with integration. The proposed system utilizes Internet of Things (IoT) technology and Telegram bot notifications to ensure the efficient and timely watering of plants. The system uses the NodeMCU ESP8266 microcontroller as the central controller, a soil humidity sensor to monitor soil conditions, a Telegram for system control, and a relay to operate the water pump. The research methods include hardware and software design, sensor testing, and system performance evaluation in various environmental conditions. Test results demonstrate the capacity of systems to function automatically with a high degree of accuracy in detecting soil moisture and executing flushing operations when necessary. The employment of soil humidity sensors has been demonstrated to enhance water utilization by up to 30% compared to manual sprinkler systems. Consequently, the irrigation process has become more efficient, easily supervised, and remotely controlled via Telegram. The implementation of this system can be applied to various levels, ranging from residential properties to plantations and technology-based modern agriculture, thereby supporting more efficient and sustainable smart agriculture.

Keywords: Automation, IoT, Plant, Telegram, Watering.