

UNIVERSITI TEKNOLOGI MARA

**SMART AGRICULTURE
MONITORING SYSTEM WEB-
BASED USING NODEMCU AND
TELEGRAM NOTIFICATION
FOR CHILI PLANT**

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**BACHELOR OF INFORMATION
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WEB-BASED USING NODEMCU AND TELEGRAM
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**Thesis submitted in fulfilment of the requirements for Bachelor of
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SUPERVISOR'S APPROVAL

SMART AGRICULTURE MONITORING SYSTEM WEB-BASED USING NODEMCU AND TELEGRAM NOTIFICATION FOR CHILI PLANT

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This thesis was prepared under the supervision of the project supervisor, Sir Nurzaid Muhd Zain. It was submitted to the Faculty of Computer and Mathematical Sciences and was accepted in partial fulfilment of the requirements for the degree of Bachelor of Computer Science (Hons.) Netcentric Computing.

Approved by

Sir Nurzaid Muhd Zain
Project Supervisor

JULY 15, 2022

STUDENT DECLARATION

I certify that this thesis and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

The majority of gardeners nowadays use traditional ways to water the chili plant at home. The traditional technique of moving water to the garden plant uses a hose or a bucket which will consume time and physical activities for the gardener. The chili plants also need extra care by being given the right amount of water daily to support the growth of the chili plants. If the gardener has other commitments to make, the gardener sometimes forgets to regularly check the chili plants. This will make the chili plants wither or die if the chili plants do not get water daily. One solution to this problem is to build an automatic irrigation system. In this project, the Arduino IDE was used to program the NodeMCU as a microcontroller. The sensor that was used is the soil moisture sensor and the DHT11 sensor. The web application was used as a platform to monitor the daily data from sensors and a telegram bot was used for reading the current data from sensors because it was more convenient and mobility for the user. The prototype was tested in two experiments that use wet soil and dry soil to verify functionality. From the experiment, if the soil moisture sensor detects a water value of less than 30%, it will be automatic on the water pump. However, if the sensor detects a water value of more than 30%, it will get automatically off the water pump. The average response time for NodeMCU to send data from sensors to the database is 4.87 seconds. The average response time for Telegram Bot receives notification is 7.13 seconds. For future works, the researcher can add more sensors so that more plants can be monitored by the user, enhance the interface of the web application to be more user-friendly, and add control features for the water pump.