

UNIVERSITI TEKNOLOGI MARA

**SMART AGRICULTURE
MONITORING SYSTEM FOR
HARUMANIS USING LORA
TECHNOLOGY IN UITM PERLIS**

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**BACHELOR OF COMPUTER SCIENCE (HONS.)
DATA COMMUNICATION AND NETWORKING**

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**Smart Agriculture Monitoring System
for Harumanis using LoRa Technology
in UiTM Perlis**

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**Thesis submitted in fulfilment of the requirements
for Bachelor of Computer Science (Hons.) Data
Communication and Networking
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SUPERVISOR APPROVAL

SMART AGRICULTURE MONITORING SYSTEM FOR HARUMANIS USING LORA TECHNOLOGY IN UITM PERLIS

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This thesis is prepared under the direction of the thesis supervisor, Puan Rafiza Binti Ruslan and co-supervisor, Puan Nor Azira Binti Mohd Radzi. It was submitted to the Faculty of Computer and Mathematical Sciences. It was accepted in partial fulfilment of the degree of Bachelor of Computer Science (Hons.) Data Communication and Networking requirements.

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STUDENT DECLARATION

I guarantee that this report and the research cited in it are the product of my work. Any ideas or citations of other people's work that have been published or cited in other ways are fully recognized by the standard citation practice of the discipline.

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ABSTRACT

Smart Agriculture based on IoT technology assists plantation workers in reducing waste such as pesticides and improving the quality of fruit produced. Plantation workers at UiTM Perlis need to walk to the plantation area every day to monitor the soil condition. This process must be done every day to measure the soil moisture. The previous researcher created and examined a soil moisture monitoring system that used the Zigbee network to monitor the soil moisture, however, Zigbee only covers a small area. Furthermore, Zigbee also has a low data speed, and low data transmission due to the unstable network, and Zigbee is highly sensitive to rain. This research was implemented to build a prototype to capture soil moisture value needed by Harumanis mango using LoRa technology and to execute functionality, usability, and network test. This project used two LoRa shields that act as client and server and the data will store locally in Microsoft Excel via Data Streamer. The results obtained from this project are soil moisture values ranging from 300 to 600, maximum coverage at 300 meters, and -RSSI value of -110 dBm. UiTM Arau can consider providing a gateway for use of future researchers without having to depend on a public gateway as there are few concerns while performing this project.