Universiti Teknologi MARA

Intruder Detection System at Home using LoRa Technology

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SUPERVISOR APPROVAL

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Approved by

Ros Syamsul bin Hamid

Project Supervisor

JULY 14, 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

As a result of its ease and effectiveness, Internet of Things (IoT) technology is one of the primary requirements for the development of a smart house. This is because IoT technology makes inhabitants feel better. LoRa is a 1GHz ISM band modulation from Semtech. LoRaWAN is one of the finest Low-Power WAN (LPWAN) technologies. Sigfox and Zigbee have implemented home security solution, which includes home intrusion that have problems, such as low data rate for Sigfox and shorter range for Zigbee. By implementing LoRa Technology proposed project, Intruder Detection System at Home using LoRa Technology, the prototype can detect intruder at long range and LoRa have higher data rate. This project consists of three different developments, which is LoRa peer-to-peer communication, addition of ESP-01s WiFi Transceiver and connect LoRa Shield to LoRa gateway. As a result, only one method that succeed the network testing and the testing has been conducted by measuring packet loss and RSSI at two different places, which is residential area and open space area. To avoid limitations for future researchers and developers that wanted to do project about LoRa, it is suggestable to add more LoRa gateway at public places, or places that many people can do research with LoRa, for example, at university. It is hoped that this project can add more safety and security at home.

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