

Universiti Teknologi MARA

**Wearable Obstacle Sensor for Blind
People with Mobile Application**

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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 knowledge in accordance with the standard referring practices of the discipline.

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ABSTRACT

Currently blind people use traditional method to navigate indoor and outdoor environment by using cane and finding lost cane with the help of other people. However, a cane is not very friendly as it is heavy and blind people does not feel comfortable when asking other people help, blind people also have trouble when finding lost cane as they cannot determine the location of the lost cane. Therefore, the first objective was to develop Wearable Obstacle Sensor (WOS) to replace cane and My Sensor Detector (MSD) mobile application to replace the traditional method of finding things. Second objective is to test the effectiveness of environment on accuracy of WOS operate in certain range. In order to develop WOS, there were two process involved which were Development 1 and Development 2. Development 1 consists of two NodeMCU, one was for obstacle sensor that attached with Ultrasonic Sensor HC-SR04 to detect obstacle and buzzer to give alert. Another NodeMCU was for MSD that attached with buzzer to give alert of WOS whereabouts. Development 2 was designed and coded using MIT AI2. WOS and MSD were tested on three experiment which were functionality, usability and network. Functionality test was tested on different environment by placing the WOS on ankle and wrist. Usability test involved 32 respondents to test WOS and MSD. Network test was analyzed by ping, traceroute and port scan of IP address of NodeMCU. For results, WOS can detect obstacles and give alert to users in different environment and MSD was success to detect the whereabouts of WOS as it will satisfy the requirement for one of the 11th Malaysia Plan to make Smart Cities happen.

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