

UNIVERSITI TEKNOLOGI MARA

**A REAL-TIME TRAFFIC SIGN
RECOGNITION SYSTEM FOR
AUTONOMOUS VEHICLE USING
YOLO**

NURUL PAUDZIAH AIDA BINTI MOHD PAUDZI

BACHELOR OF COMPUTER SCIENCE (Hons.)

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**A Real-Time Traffic Sign Recognition
System for Autonomous Vehicle using
YOLO**

Nurul Paudziah Aida Binti Mohd Paudzi

**Thesis submitted in fulfilment of the requirements for
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SUPERVISOR APPROVAL

A REAL-TIME TRAFFIC SIGN RECOGNITION SYSTEM FOR AUTONOMOUS VEHICLE USING YOLO

By

**NURUL PAUDZIAH AIDA BINTI MOHD PAUDZI
2017412206**

This thesis was prepared under the supervision of the project supervisor, Nur Nabilah binti Abu Mangshor. 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.

Approved by



NUR NABILAH BINTI ABU MANGSHOR
Pensyarah
Fakulti Sains Komputer dan Matematik
Universiti Teknologi MARA (Melaka) Kampus Jasin
77300 Merlimau, Melaka

.....
Nur Nabilah Binti Abu Mangshor
Project Supervisor

JULY 11, 2020

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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NURUL PAUDZIAH AIDA BINTI MOHD PAUDZI
2017412206

JULY 11, 2020

ABSTRACT

In recent years, research towards Autonomous Vehicle (AV) has grown up tremendously. The introduction of Advanced Driving Assistance System (ADAS) in AV has led researchers to explore on the key functionalities that an AV should have, proposes to create a convenience and safe environment where there is no input acquire from a human throughout the journey. The key functionalities are including traffic sign recognition, parking space detection, pedestrian crash avoidance and blind spot detection. As the rises of road accident due to drivers' carelessness and the distracted drivers that has been neglected the traffic signs on the road, this project aims to develop a traffic sign recognition system that can recognize in real-time for integrated on autonomous vehicles and to test the accuracy of the system. The image processing technique has been chosen to be applied on developing this system where the project is the implementation of the deep learning technology using You Only Look Once (YOLO) algorithm to train the model for detection. Five types of warning sign including crossroad, crossroad right, crossroad left, school children crossing and hump from Malaysian Traffic Sign is used. System testing was also conducted to study the accuracy of the detection and recognition towards traffic signs on the road. Test results reached real-time object detection with 96% accuracy on both traffic sign detection and recognition. The finding from this study is believed to be helpful as it may contribute to the automotive industry. In future, this system can be improved by integrating with the navigation system such as Global Positioning System (GPS) to make the system more functional and achieve more advance monitoring.