

**DESIGNING AND CONSTRUCTING AGV ROBOT
CASE: OBSTACLE AVOIDANCE INDOOR ENVIRONMENT**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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The objective of this thesis is to build a computer vision system that capable to avoid obstacle for Home Robot. The obstacle avoidance is designed to be implemented for indoor usage. In this thesis an AGV is used to test the computer vision system. Stereo camera is used to detect an object in front of the AGV. After an object is detected, the average pixel intensity is calculated for the obstacle avoidance algorithm. The AGV pivots until there is no object in front of the AGV. The communication system of the AGV is established by the connection between the host computer and the microcontroller through serial communication using firmata protocol. The design and construction of the AGV hardware is done together as a group project with Rheza Andika Prasetya, who is working for the navigation system, and Meiviana Charisa, who is working for the path planning. The group only shares the hardware. The software that is implemented is different and operates independently. This system is developed by using Mini PC, Qt Creator, and Arduino.

Keywords: Stereo vision, disparity map, OpenCV, Obstacle avoidance



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DEDICATION

I dedicate this thesis to God, my beloved family, and all of my friends.



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