DESIGN AND CONSTRUCTION OF AUTOMATIC GUIDED VEHICLE BASED ON COMPUTER VISION FOR NAVIGATION SYSTEM

By

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BACHELOR'S DEGREE
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Revision after the Thesis Defense on 3rd August 2015

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 main purpose of this thesis project is to design and construct a three wheeled AGV based on computer vision for navigation system, which will enable the robot to detect signs and follow the sign according to the sign direction. The navigation system is designed to be implemented for indoor use. Using camera as the main sensor with perspective transformation to transform the perspective view of the robot into Bird's Eye View perspective. The communication system of the robot is established by the connection between the host computer and the microcontroller through serial communication using Firmata protocol. The system has been tested to follow the sign direction and the AGV robot is able to move forward and follow the direction of the sign.

Keywords: Automated Guided Vehicle, Three wheeled AGV, Bird's Eye View, Signs Detection, Computer Vision, Navigation System, Distance Estimation, Firmata.

DEDICATION

I dedicate this work to my God, Jesus Christ,

My parents and my family, who always supports me all the time,

And all of my friends and lecturers who helps me to finish this research.

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