FURTHER DEVELOPMENT OF AN AUTONOMOUS MOBILE ROBOT NAVIGATION SYSTEM USING ROBOT OPERATING SYSTEM

By

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in

MECHANICAL ENGINEERING – MECHATRONICS CONCENTRATION
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STATEMENT BY 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 purpose of this thesis is to do further development towards the navigation system of an existing autonomous mobile robot by implementing robotics middleware called Robot Operating System (ROS). Wall follower technique and parking mechanism are the two mandatory navigation systems that will be developed in this thesis. A laser scanner sensor called RPLIDAR will be used as a primary sensor to determine angle and range of detected wall or object, both of the angle and range data obtained will be used as the input data. The input data will be processed in Nvidia Jetson Tegra K1 mini PC to obtain the output data, all of the software and program packages needed will also be stored in mini PC since the mini PC worked as the main processing data hardware. Output data which consist of steering control and drive motor speed will be executed by Arduino Microcontroller.

Keywords: Autonomous, Arduino, Laser Scanner, LIDAR, Microcontroller, Navigation System, Mini PC, Radio Control Car, Robot Operating System, Wall Follower, Parking

DEDICATION

I dedicated this thesis project for the future of engineering and science in all over the world.

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