PATH PLANNING SIMULATION FOR QUADCOPTER USING GAZEBO SIMULATOR

By

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11501038

BACHELOR'S DEGREE
in

MECHANICAL ENGINEERING - MECHATRONICS CONCENTRATION
FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

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August 2017

Revision after the Thesis Defense on 2 August 2017

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 acknowledgment is made in the thesis.

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ABSTRACT

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The purpose of this thesis is to create a quadcopter simulation that able to do path planning operation. Robot Operating System (ROS) and Gazebo software are used to design and simulate the behavior of quadcopter. Standard ROS packages such as hector quadrotor package, joystick package, mapping package, and navigation package are modified and applied to the system as the foundation of this thesis work program. Odometry sensor for localization purposes use 3D Position Interface for Ground Truth (P3D) plugin inside Gazebo and laser scan sensor. Experiments to test the movement behavior, mapping quality, and path planning performance are conducted and reported in this thesis. The result shows that the simulation is able to simulate quadcopter flight behavior and path planning algorithm accordingly. This free simulator is fit for educational purposes because it is free and has vast programming library.

Keywords: simulation, Robot Operating System, quadcopter, Gazebo, flight behavior

DEDICATION

I dedicate this thesis work for my family

ACKNOWLEDGEMENTS

Greatest gratitude is given to my family for their prays and supports.

Enormous thanks to my advisor Rusman Rusyadi and co-advisor Eka Budiarto who have given guidance during my thesis work.

Huge recognition to ROS teams: William Gunawan, Matthew Judijanto, Daniel Setiono, Kevin Ariesta, Aulia Syamil, Victor Nugraha, and Gio. Thank you all for your time and aids during our struggle finishing our thesis.

Great appreciation for my friends in Mechatronics batch 2013. Those who welcome and accompany me in SGU.

And for others that directly or indirectly contribute in this thesis.

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