IMPROVING SERVICE ROBOT USING ROS2 HUMBLE AND MICRO-ROS

By

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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

IMPROVING SERVICE ROBOT USING
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AMRs, also known as autonomous mobile robots, represent some of the most cutting-edge advancements in modern technology. They are increasingly being adopted across various industries due to their growing reliability, user-friendliness, and cost-effectiveness. Autonomous mobile robots are robotic vehicles that possess the ability to navigate and maneuver through their environment without the need for tapes or reflectors. They are equipped with advanced sensors that enable them to comprehend and adapt to their surroundings. AMRs excel in applications that involve multiple and dynamic destinations, as they offer independent navigation capabilities, granting them the freedom to operate autonomously. Among the essential sensor or navigational components, the Inertial Measurement Unit (IMU), the Camera Real Sense D, and the encoder for odometry are particularly crucial. These components allow the robot to perceive its environment by determining its changing location and orientation over time. In this project, a 3D camera and LiDAR sensors are employed to enable the robot to avoid obstacles in its path. LiDAR, which stands for light detection and ranging, utilizes a laser beam emitted from an aerial vehicle to measure distances to objects and detect potential obstacles, with the assistance of an active sensor remote.

Keywords: AMR, LiDAR, Teensy, IMU

DEDICATION

To my loving family, supportive friends, and dedicated advisor, Dr. Rusman Rusyadi.

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