

**DEVELOPMENT OF SCALED-DOWN SELF-DRIVING CAR FOR LAST
MILE DELIVERY BASED ON ROS2**

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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 acknowledgment is made in the thesis.

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ABSTRACT

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As most car accident happens because of human errors, companies has been targeting to develop a level 5 SDC which is capable of sensing its environment and move safely without any human intervention. Developing an SDC requires a lot of resources as well as advanced sensors, controller, and actuators which results in a need to scaled-down the SDC concept on an AMR (Autonomous Mobile Robot). AMR has the same work process as SDC which are sensing its environment, planning its route, and moving to reach the goal. This research will focus on development of outdoor AMR based on ROS2 with RTK-GNSS, robot odometry, and Mapviz visualization will be used for localization and 3D camera, LiDAR, and ultrasonic sensor will be used for object detection. RTK-GNSS can capture position with an accuracy of 0.01 – 0.04 meters and LiDAR has an average of 0.1058 difference with the actual value and standard deviation of 0.3208. In conclusion, the AMR can operate safely through keyboard teleoperation while sending accurate location through RTK-GNSS. It is hoped that in the future, this research project can be explored with the improvement of ROS2 as well as other components with better navigation and develop further until applications on real cars.

Keywords: Autonomous Mobile Robot, Scaled-Down Self Driving Car, Last-Mile Delivery, ROS2, Satellite Localization, Object Detection

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DEDICATION

I dedicate this work to the future of the country I love, Indonesia,

God, my families, friends, advisors and lectures as well as

the development of technology in Mechatronics field of study.

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