ABSTRACT

Mapping and navigation on robots has been widely used in various types of robots, such as mobile robots. Mapping and robot navigation are also very important for use in various fields because it makes it very easy for robots to move from one place to another and get to know their environment.

By processing LIDAR sensor data, the robot position is obtained which will later be processed into a local map. Localization using the LIDAR sensor is used as a reference for updating the global map. Then the path planning is obtained which can later be passed by the robot using trajectory tracking.

The result of this final project is a tool that has been able to map the environment, find out the presence of robots in real time, make efficient path planning and be able to navigate to the destination point with 100% accuracy in 10 trials with an average travel time of 60.5 seconds using the Rviz application on the Robot Operating System (ROS).

***Keyword**: mapping and navigation. LIDAR, localization, trajectory tracking, ROS.*