

ABSTRACT

Localization is one of the research that is important in the world of robotics. Multi Robot Localization problem arises when a robot change positions and determine the direction of next movement of the robot. With the information obtained from the sensor, so the robot can determine next movement. Monte Carlo Localization (MCL) is a special algorithm to solve the problems that occur in Robot Localization. MCL algorithm can address problems that occurred in Robot Localization, relying on sample-based representation. After the robot can determine the direction of next movement, another issues that arise in the Multi-Robot is the absence of communication between the robot and therefore caused the collision between the robot.

In this research have been designed and implemented using the simulator robot Robot Localization is Robot Operating System (ROS), as well as communication Multi Robot on a case study Soccer Robot with kind of robot used is the Wheeled Robot. By using MCL algorithm, the robot can do Localization and can determine its own position. Communication on Soccer Robot needed so that the robot can exchange information with each other position to minimize the occurrence of collisions between robots.

Output result in studies with the approach of using MCL algorithm on a real robot is a robot can determine the position of the robot and communicate with other robots. With this level of accuracy MCL algorithm approach is 100% and the level of accuracy of communication soccer robot is 90%.

Keywords: Multi Robot Localization, Monte Carlo Localization, Multi Robot Information Sharing