

Abstract

The usual navigation system is associated with the process of mapping or making maps as a reference point. Nowadays the navigation system is conceptually known as SLAM (Simultaneous Localization and Mapping), which is the process of mapping simultaneously localizing. Furthermore, SLAM developed again and had an exploration path search system to support the process of making maps (mapping) as well as localization. Exploration path search systems are created using certain algorithms and there are many exploration path search algorithms successfully developed.

*The process of searching for paths owned by the algorithm is specifically for searching for exploration pathways based on information already obtained such as rough sketches of an area or using LiDAR on Mobile Robot. One of the path search algorithms is D * algorithm. The path search process in the D * algorithm is still very diverse in results and additional aspects are needed to improve its accuracy in many studies.*

*The result of this research is to prove that the D * algorithm is able to support the path creation process in the Mobile Robot system. This is also supported by multi-robot exploration, each robot is able to support each other by continuing exploration activities if one of the robots stops working, this is supported by the results of several tests on multi-robot simulations capable of visiting at least one destination point. Multi robot simulation can also visit more points of destination with twice as much presentation than single robot simulation. From all the tests carried out, 87% of them proved that the area of exploration that was successfully reached in the multi robot simulation proved to be wider. Unfortunately, the multi-robot simulation is burdened by the longer simulation time duration than the single robot simulation, which is around 69.3%. This algorithm is able to support the process of finding a path to the destination point in exploration activities.*

Keywords: *D* Algorithm, SLAM, Mobile Robot, Navigation, information. search.*