Pemanfaatan LiDAR Untuk Navigasi Pada *Mobile Robot* Menggunakan Algoritma A* dan Dijkstra

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Abstract

In this journal will discuss the use of LiDAR to navigate on mobile robots using A * algorithm and dijkstra. The LiDAR data will be used to determine the environment from the results of mapping and localization that have been obtained from the results of LiDAR scanning on mobile robots for obstacle avoidance purposes. This test uses an U-shaped environment. The navigation system used in this final project uses path planning. The Path Planning here uses 2 methods, namely Global Planner and Local Planner. Where the method implements the dijkstra algorithm and A * algorithm. The test results show that the navigation system that has been designed using the A * algorithm that is carried out on the U-shaped walls environment results in a shorter time than testing using the Dijkstra algorithm when the mobile robot avoid ance from the starting point to the destination. By obtaining the lowest average time results when using A * algorithm with the particles used 15, in determining the initial position of the mobile robot at position 3 with an average time of $\mu = 45.68$ seconds. Because A * algorithm is more effective to find the minimum costplan from the starting point to the end point, but in Dijkstra's algorithm, the heuristic function value is always 0 (zero) or so there is no easier function search for the solution.

Keywords: LiDAR, Local Planner, Global Planner, Dijkstra Algorithm, A* Algorithm