

Pemetaan Lingkungan dan Lokalisasi Mobile Robot Berdasarkan Particle Filter

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Abstract

This journal discusses mobile robot using LiDAR for mapping environment and mobile robot localization. LiDAR is required to scan the environment around the mobile robot. Data obtained by LiDAR will be used for environmental mapping and displayed in 2D form and used for mobile robot localization required for mobile robot purposes. For mobile localization robot information Monte Carlo Localization (MCL) algorithm is used. This algorithm is specific to solve the problem on robot localization. This algorithm relies on sample-based representation. In ROS is used AMCL in which the process of localization is done adaptively. There are different tests for mobile robot mapping and localization. The mapping test is done by changing the particle used in the mapping process which affects the accuracy of the mapping with the SLAM_Gmapping package. Localization testing is done by changing the particle value and the actual distance measured by mobile robot. So that the optimal number of particles obtained for mapping the environment and mobile robot localization is 500 particles because the maps produced are compatible with the space used and have the smallest error distance compared to the use of 15 and 120 particles.

Keywords: LiDAR, mapping, localization, Monte Carlo Localization, particle
