

Optimization of Logic Fuzzy Algorithm with Differential Driving On Mobile Robot Localization System and Navigation

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Abstract

Mobile robots are widely used for several activities such as room cleaning, security activities, independent transportation, etc. In the use of mobile robots for its several activities, there are problem that often arises which are determining the grouping of locations at a certain time which called a mobile robot localization system, and direction system of mobile robot called mobile robot navigation. By studying the development of techniques and algorithms that are implemented in determining the localization system of mobile robot (mobile robot localization) and direction system of mobile robot (mobile robot navigation system) based on radio frequency identification (RFID), researchers intend find techniques and algorithms with a significant contribution for improving the accuracy quality from implementation of the mobile robot localization and direction system itself. This research formulating the fuzzy algorithm logic with differential driving based on radio frequency identification (RFID) approach which has been optimized. The purpose is to find out and improve the accuracy ability of mobile robot location grouping (mobile robot localization system) along with mobile robot direction system (mobile robot navigation system) under certain conditions. Fuzzy logic is an improvement from boolean logic which is replace boolean truths with the levels of the truth. Differential driving in mobile robot is a type of mobile robot whose movement results are obtained from the difference in speed on the left and right wheels. The optimization results of logic fuzzy algorithm and differential driving that implemented on mobile robot localization and navigation system are getting better precision accuracy in reaching the target movement, increasing directional accuracy and localization, as well as reducing error estimation between robots involved in moving from one point to other, on the selected environment track under certain conditions.

Keywords: fuzzy, algorithm, differential, driving, robot

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