

Fuzzy logic controller for robot navigation in an unknown environment

ABSTRACT

This study aims to allow the robot to move safely without colliding with obstacles to reach a specified position in an unknown environment. To achieve the aim of the study, a fuzzy controller was proposed and employed in intelligent mobile robot navigation strategies within unknown environments. This fuzzy controller has four inputs (one target angle and three obstacle distance), two outputs (left and right speed) and 9 numbers of rules. A virtual mobile robot, E-puck robot in the Webots simulator was used to evaluate the performance of the proposed method. Few features such as time travelling, distance travelling of the output responses were analyzed. Comparisons are made between proposed fuzzy logic and Motlagh fuzzy controller. The simulation results were presented to verify the effectiveness of the proposed architectures in an unknown environment.

Keyword: Fuzzy controller; Unknown environment; Mobile robot navigation