

ABSTRACT

Wall maze is generally known as the labyrinth consists of a trajectory that is formed by halls with uncovered roof. It needed an efficient algorithm which can solve the problem of finding the exit way without having circular hurdles and a compass or other hardware to be able to complete wall maze.

In this final project, pledge algorithm is used in a mobile robot because this algorithm is designed to solve problems that can avoid circular hurdles, by moving forward on the initial condition without using a compass until it find a barrier wall. When certain conditions have been fulfilled, the mobile robot will calculate the number of turning points that will be stored in the memory until the total count turns back to zero. In terms of benefits, this mobile robot can be used in the future such as in unmanned exploration, automation in the transportation and moving platforms for industrial robots.

It needs a control on its speed and direction by using fuzzy logic to make this robot walks in a stable condition. This condition should be fulfilled because there is similar distance which is caught by the ultrasonic sensor and can tolerate the inaccurate datas.

The accuracy of the testing result shows 100% in completing five different wall maze problems until the mobile robot find its way out. The fastest average time of completing five different wall maze problems is 4.704 seconds and longest time reaches 9.726 seconds. The use of fuzzy logic to control the speed and direction of this motor is classified as good based on the experimental results, but it is strongly influenced by the accuracy of the installation of ultrasonic sensors on the mobile robot.

Keywords : Mobile Robot, Wall Maze, Pledge Algorithm, Fuzzy Logic.