Autonomous navigation is an important feature that allows a mobile robot to independently move from a point to another without an intervention from a human operator. Autonomous navigation within an unknown area requires the robot to explore, localize and map its surrounding. By solving a maze, the pertaining algorithms and behavior of the robot can be studied and improved upon. This paper describes an implementation of a maze-solving robot designed to solve a maze based on the flood-fill algorithm. Detection of walls and opening in the maze were done using ultrasonic range-finders. Algorithm for straight-line correction was based on PI(D) controller. The robot was able to learn the maze, find all possible routes and solve it using the shortest one.

Index Terms

Computer Science
Automation

Keywords
Mobile robot obstacle avoidance microcontroller