

MOBILE ROBOT USING FUZZY LOGIC

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UTHUMA LEBBE MOHAMED FAYAS

**Science and Technology Degree Program
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Abstract

Fuzzy logic controllers have gained popularity in the past few decades with highly successful implementation in many fields. Fuzzy logic enables designers to control complex systems more effectively than traditional methods. This thesis presents a low-cost educational microcontroller-based tool for fuzzy logic controlled line following mobile robot. Line following robot which can follow black line over white surface. When the curve path comes ahead the speed is reduced using fuzzy logic control and for more curve speed is reduced more. For straight path acceleration is done. The inputs are obtained from infra red sensors mounted. These inputs are sent to a Microchip PIC16F877 microcontroller on the robot, which analyses the data and provides the necessary control signal. A fuzzy logic controller is used to control the robot's motion along the predefined path. The robot algorithm was first done in Matlab and the fuzzy logic rules were optimized for the results possible. Later the microcontroller was programmed in C language using a PIC C-compiler and tested. Experimental results are presented to show the performance of the controller.