Abstract

The explosion of microcontrollers and microprocessor applications has led to a rapid growth in the area of robotics especially line follower robots. Controlling line follower robots to travel over a complex race course pose some instability and speed problems. This article mainly deals with the design of an electronic three wheeled-robot capable of tracking a black line by means of infrared sensors and also capable of moving through a given trajectory by control of limit switches at a relatively high speed. The method consists first in developing a program written in Basic language under Microcode plus environment and loading it into the microcontroller to control the robot. Various PWM techniques were adopted in the programming to handle the turning left, right, the moving forward and backward. In addition, necessary hardware involving 6V DC motor, limit switches, infrared sensors, 6V battery and others have been assembled on a PIC16F877 microprocessor board and put in a case, shaped as a vehicle. H bridge motor control and PWM were used to control the DC motors. The implementation is finally successful. The robot can move autonomously across a black line and also pass through a complex race in absence of black line by means of limit switches. The motor can complete a race of 2m in 10s and turn at angles less than 30 degree while remaining stable.
Design of a Fast and Autonomous Complex Line Tracker and Fully Controlled Robot by Limit Switches

References

- Sonal K., Dipesh P. and Karl S. 2007. Design and Hybrid Control of a Two Wheeled Robotic Platform. Dept. of Mechanical Engineering, University of Auckland, New Zealand

Index Terms

Computer Science     Automation

Keywords

Basic language Programming     Microprocessor     DC motor control     infrared sensors     PWM

H-bridge