Abstract

This paper describes a prototype mobile robot which will harvest energy when its own power reserve is diminishing while working. The need of power restoration of the mobile robot drives it automatically by auto plugging-in with the help of a microcontroller interfaced with a motor control circuit. For the development of the system a prototype mobile robot is made by designing of its various parts. The mobile robot firstly follows a line like a line following robot. With the movement of the robot, the battery charge will be decreased. When the charge decreases to less than 50%, the mobile robot then follow the second line to recharge itself by auto plugging into the charging station. After getting fully recharged, the mobile robot again switched to follow the first line. A control circuit is designed to control the line following movement of the mobile robot. An algorithm is also developed circuit consists of infrared sensor, motor driver circuit with power supply, transmitter circuit, receiver circuit and infrared LED (IR-LED). DC motor is used as an actuator to control the wheel of the mobile robot. An infrared sensor is used to generate high and low frequency in the transmission circuit. High frequency is generated when capacitor’s capacity is low and low frequency is generated when
capacitor’s capacity is high. The receiver circuit receives the high and low frequency and sends signal to the program that controls the DC motor according to the analysis result. Thus the DC motor drives the wheel to control the movement of the mobile robot. The overall success rate of the prototype mobile robot is 83.33% including line following and recharging.

References

9. Heil, Oskar, "Improvements in or relating to electrical amplifiers and other control arrangement and devices", Patent No. GB439457, European Patent Office, filed in Great Britain 1934-03-02, published 1935-12-06 (originally filed in Germany 1934-03-02).

Index Terms

Computer Science      Artificial Intelligence

Keywords

Intelligent Energy Harvesting, Auto-recharging, Emergent Situation