Design and Implementation of Embedded System for Automated Obstacle Avoidance Scheme

Hai Mann Hninn Phway
University of Computer Studies, Yangon
haimannhnin90@gmail.com

Abstract

An automated obstacle avoidance system for mobile robots is designed and implemented in embedded system. The purpose of the paper is to find the obstacle by using five Ultrasonic sensors and to avoid this obstacle by controlling the speed and direction of two DC motors using PIC. This work mainly deals with the automated obstacle avoidance (AOA) system of this paper by using Peripheral Interface Controller (PIC) 16F877A microcontroller that is implemented to design for AOA system and it is simply evaluated on PIC. Five Ultrasonic Distance Sensors used in this system, they are located on the car vehicle and PIC is operated according to the received sensor's signal to find the obstacles. The position of the obstacle accepted from the sensor sends to microcontroller as an input and then, this microcontroller controls the speed of DC motor mounted on car vehicle by using pulse-width modulation (PWM). Other DC motor changes the direction of car vehicle when any obstacle is detected by sensors. Proteus software was used for implementing obstacle avoidance system as a simulation. This control system was intended to automatically find and avoid the obstacle by using CCSC compiler software for this model vehicle.