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INTELLIGENT BRAKING SYSTEM FOR AUTOMOBILE FOR VEHICLE

C Rout[1] S. Dash[2] S Mohapatra [3] S Mehebub [4] D Mohapatra[5])
Department of Mechanical Engineering , Raajdhani Engineering College

Abstract

Nowadays accidents become a common happening in roads and also in industry due to carelessness or due to over speeding. If we can avoid this means we can save many lives and values. The main aim of our project is to develop a anti-collision system for vehicle which can be used for real time application. The main features of the project are: IR sensor and power control circuitry .This system monitors the distance between our car and any other vehicle or obstacles in the front. If our car crosses a particular limited distance the power of motor will be cut out. It will resume only when obstacle got cleared on.

Introduction

Obstacle detection and avoidance vehicles are intelligent vehicles which can perform desired tasks in unstructured environments by finding and overcoming obstacles in their way without continuous human guidance. In Vehicles, obstacle avoidance is the task of satisfying some control objective subject to non-intersection or non-collision position constraints. Normally obstacle avoidance is considered to be distinct from path planning in that one is usually implemented as a reactive control law while the other involves the pre-computation of an obstacle-free path which a controller will then guide a Vehicle along. A practical real-time system for passive obstacle detection and avoidance is presented. Vehicle Sensors are essential components in creating autonomous vehicles as they are the only means for a Vehicle to detect information about itself and its environment. As little as one sensor is needed by a Vehicle, though increasing the number and variety of sensors tends to increase the Vehicle's ability to get a more thorough understanding of the world around it. There are a wide variety of sensors available which are capable of measuring almost anything, from environmental conditions (distance, light, sound, temperature) to angular and linear acceleration, forces and distances. The Vehicle Shop offers a wide variety of sensors applicable to almost any Vehicles project. If you are looking for a distance sensor, we offer them in a variety of configurations and optimal distances to suit almost any budget. If you are looking for a more professional solution for measuring distances, take a look at our selection of scanning laser rangefinders, which are able to scan over >180 degrees (and less than 1 degree of accuracy) in well under 1 second.IR Pair is used as sensor to detect the presence of objects. IR LED is used for detecting objects. In this project mainly whenever Vehicle senses any obstacle automatically diverts its position to left or right and follows the path. Vehicle consists of two motors, which control the side pair wheels of each and help in moving forward and backward direction. Vehicle senses the object with help of obstacle sensor. IR pair is used for detecting the obstacle. The two basic parts for working with IR are the emitter and the detector. The emitter is typically an LED that emits near-infrared light.

Review of literatures

This Vehicle has sufficient intelligence to cover the maximum area of provided space. It has an infrared sensor which is used to sense the obstacles coming in between the path of Vehicle. It will move in a particular direction and avoid the obstacle which is coming in its path. It uses IR (Infra Red) sensors and two IR transmitting circuitry. When the obstacle comes in path of Vehicle IR beam is reflected from the obstacle then sensor gives zero voltage to µc. This zero voltage is detected then µc decides to avoid the obstacle by taking left or right turn. If the sensor gives +5v to µc that means there is no obstacle present in its path so it goes straight until any obstacle is detected. left motor are connected to driver IC (L293D). L293D is interface with µc. Micro-controller sends logic 0 & logic 1 as per the programming to driver IC which moves motors forward or reverse direction.

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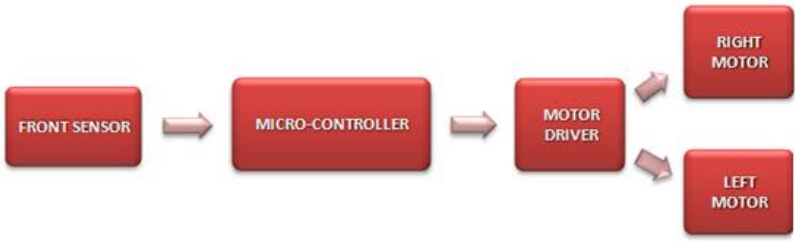

Figure -1: Block Diagram of Project

In Electronics and Communication connection wheel is connected to base very tightly to avoid errors in the system. Connection of blower is made with lower part of base and battery is connected in upper portion of base for power supply to the system which is very important battery used here is of 6v battery, blower of +5V to +9V. And along with wheel electrical motors are connected with base having r.p.m of 100 rpm.

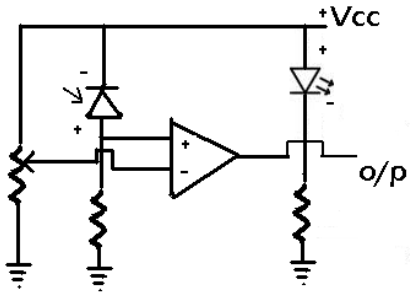

Figure 2.2: IR Sensor circuit

Microcontroller

This is the most important block of the system. Microcontroller is the decision making logical device which has its own memory, I/O ports, CPU and Clock circuit embedded on a single chip. A microcontroller (sometimes abbreviated µC, uC or MCU) is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals. Program memory in the form of NOR flash or OTP ROM is also often included on chip, as well as a typically small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications

L293D contains two inbuilt H-bridge driver circuits. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively. Enable pins 1 and 9 (corresponding to

the two motors) must be high for motors to start operating. When an enable input is high, the associated driver gets enabled.

As a result, the outputs become active and work in phase with their inputs. Similarly, when the enable input is low, that driver is disabled, and their outputs are off and in the high-impedance state. LM324 is a 14pin IC consisting of four independent operational amplifiers (op-amps) compensated in a single package. Op-amps are high gain electronic voltage amplifier with differential input and, usually, a single-ended output. The output voltage is many times higher than the voltage difference between input terminals of an op-amp.

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Fig 2 IC LM324N

These op-amps are operated by a single power supply **LM324** and need for a dual supply is eliminated. They can be used as amplifiers, comparators, oscillators, rectifiers etc. The conventional op-amp applications can be more easily implemented with LM324.

Fixed voltage Positive and Negative regulator ICs are used in circuits to give precise regulated voltage.78 XX series regulator IC can handle maximum 1 ampere current. The Regulator ICs require minimum 1.5 higher input voltage than their voltage rating. For example 7805 IC requires minimum 6.5 volts to give 5 volt output. Here are some circuit designs of IC 7805 to monitor the output voltage.

Conclusion

Thus, we believe that our project will be beneficial for various purposes & hence our efforts will be fruitful. So, we made a successfully obstacle detector Vehicle having application of anti-collision which have ability to move freely anywhere and along with it, have ability to create its own path and it avoid obstacle by artificial intelligence provided by programming in microcontroller to perform action and IR sensor to sense the obstacle.

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