

Auto Braking System using Bluetooth Control

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Abstract

IC Motor has been propelled a great deal with the end goal that its speed is turning into a significant calamity. A propelled programmed stopping mechanism improves slowing down methods in vehicles with a Bluetooth controller. It changes the total slowing mechanism in a car and manages the ideas of the Automatic Braking System giving the arrangement of Path finding and Decision making with Bluetooth Control. This task is structured with an Infrared transmitter, Infrared beneficiary, Arduino UNO R3 board with PIC microcontroller, DC gear engine, Servomotor, and Automatic Braking course of action. Infrared Sensor generates (430THZ-300GHZ) recurrence signal. The Infrared Receiver is utilized to get the reflected waves present in a front of the vehicle, at that point the reflected wave is given to the Infrared wave generator unit in which the approaching wave is intensified and contrasted with reference signals with keeping up a predictable degree and this banner is given to microcontroller and through which the working of DC gear engine and Servomotor may occur, which brings about the use of the brake. The model has been readied relying upon the traveller control with a LED design signal framework.

Keywords: Microcontroller, Infrared Sensor, DC Motor, Bluetooth Controller, Peripheral Interface Controller (PIC).

I. INTRODUCTION

Driving is a run of the mill activity for a huge segment of the people. The measure of vehicles is developing a little bit at a time. Presently a day, the innovation has huge changes which lead to speed up. The speed accepts a principal occupation to keep up a perfect open door for more. In any case, this speed additionally getting a significant issue for street mishaps. The normal slowing down isn't adequate for the shirking of mishaps when driver isn't dynamic. Future improvement needs to done in the slowing mechanisms so as to slow down a vehicle when driver can't slow down i.e., it might need a programmed stopping mechanism. This programmed slowing mechanism permits the vehicle to slow down without the help of the driver. The main target of the IR Sensor Braking System is that, vehicles should automatically brakes and produce buzzer sound when the sensor sense the obstacle. This framework incorporates two IR Sensors, which is set before the vehicle for detection.

II. MOTIVATION/OBJECTIVE

The Objective of the undertaking is to structure the programmed stopping mechanism to stay away from the mishaps. To build up a security vehicle stopping mechanism utilizing IR Sensor and to structure a vehicle with less human regard for the driving.

III. NEED OF BRAKING SYSTEM

At the point when a wellbeing variable of a vehicle is viewed as an essential consider that glimmers mind is its brakes and slowing mechanism. So a stopping mechanism is such an essential segment that is fundamentally required when a vehicle is thought of. It decreases the motor vitality of the vehicle in conditions when a vehicle needs to back off and furthermore it must be halted. Subsequently ensuring the vehicle and the travellers inside it are sheltered. In this approach, each slowing mechanism is steadily demanded to ensure the security of the drivers and traveller's uncountable esteemed lives.

IV. HARDWARE COMPONENTS

A. IR SENSOR

Infrared (IR) light leaving a LED reflects off a thing. The reflected light goes back to an IR recipient. The IR beneficiary distinguishes the nearness of the item. The sensors give the framework capacity to distinguish the nearness of the item position. The hypothesis is the IR producer transmits infrared light. In the event that an item nearness the sign will be reflected back to the beneficiary. At that point, the IR indicator actualized will identify the reflected light. At that point, the correspondence signal sends to the Micro-Controller for dissecting.

IR Receiver

IR receives the modulated Infrared waves and charges its output. It has to interface a LED to the yield of TSOP1738, to test the receiver. The use of BC557 PNP transistor is to reverse the effect of TSOP, which means at whatever point the yield is HIGH LED will be OFF, and at whatever point it identifies IR and yield is low, LED will be ON.

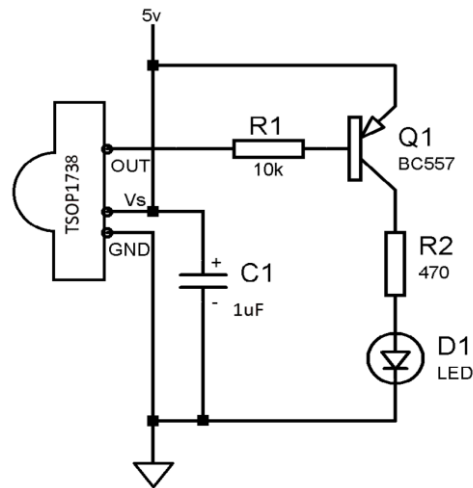


Figure: IR receiver

IR TRANSMITTER

IR using TSOP 1738 for receiver, so it need to generate the modulated IR of 38 kHz. It have to create IR of separate recurrence as TSOP .So it utilizing 555 clock in stable mode to oscillate the IR at 38kHz frequency .The frequency of the ocillator 555 timer is decided by resistor R1, R2 and capacitor C1. It can be determined using the formula,

$$1.44/((R1+2*R2)*C1)$$

Output Pin 3 of the 555 Timer IC has been connected to IR LED using 470 resistor and a push button switch.

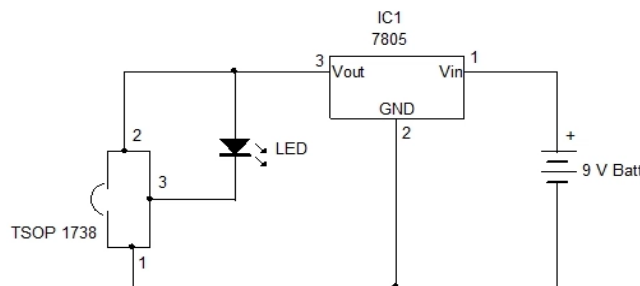


Figure: IR transmitter

IR LED

It comprises of infrared Sensor in left and right for detecting with every one of two LED lights for noticing. When the Sensor sense the object then the LED gives RED color alert with buzzer sound.

B. ARDUINO UNO

The microcontroller based on the ATmega 328 is the Arduino board of type Uno R3 .It has 20 advanced digital input/output pins, a 16 MHz resonator, a USB association, a power jack, a USB connection, a power jack, an in-circuit system programming header, and reset button. It contains everything expected to support the micro controller; essentially interface it to a PC with USB link and force it with USB cable and power it with a AC-to-DC adapter.

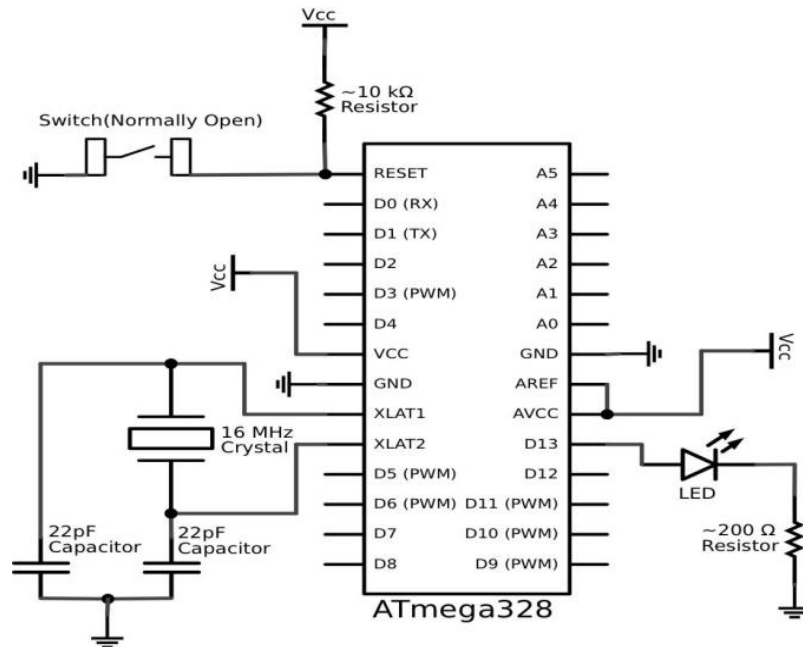


Figure: Arduino UNO R3

C. BLUETOOTH CONTROLLER

The vehicle is constrained by utilizing Android cell phone rather than some other strategy like buttons, gesture etc. Here mobile phone screen with touch sensors are used to control the vehicle in forward, backward, left and right directions. So here android mobile phone is used as transmitting device and module of Bluetooth is placed in car is used as receiver. Android phone will transmit command using its in-built Bluetooth to vehicle so that it can move in the different direction like moving forward, reverse, turning left, turning right and stop.

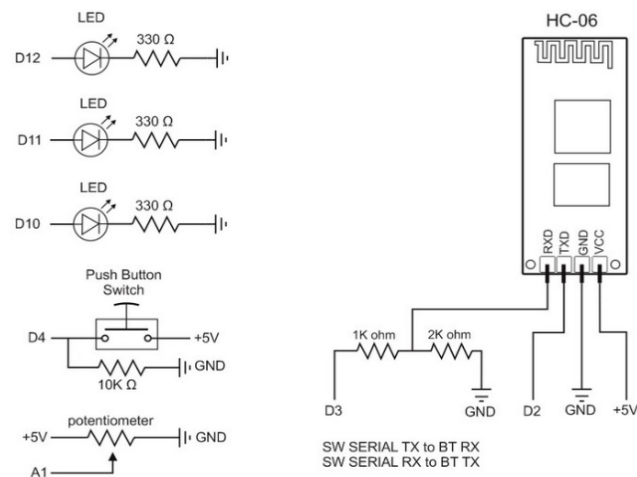


Figure: Bluetooth

configuration

V. PROPOSED SYSTEM

This proposed framework can be effectively actualized to nearby various populated regions. The power of the proposed system lies in its flexibility and capability of development with little hardware changes such as changing the speed limits and speed control methods using the software of the base station in negligible amount of time.

The proposed system is based on micro controller technology for collecting data related to speed and transmitting it with a transceiver through a base station that authorize the transmitted data and takes appropriate decision related to speed limit and control requirements.

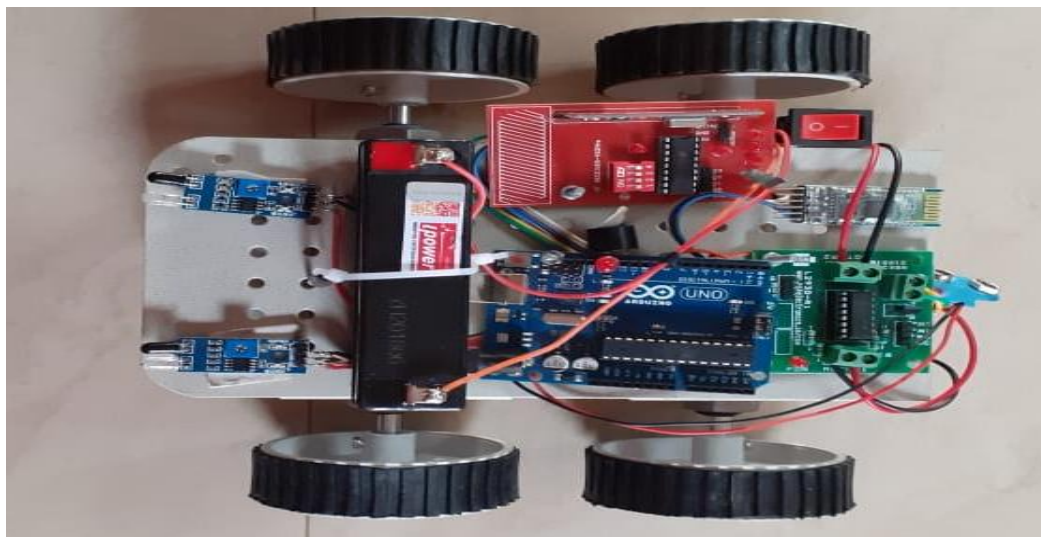


Figure: Auto braking system with a Bluetooth control

VI. CONCLUSION

We have successfully completed the fabrication of automatic braking system model prototype and this project presents the implementation of an Automatic braking system for Forward Collision Avoidance, when the vehicle is in use, where the drivers may not intend the brake manually, but the speed of the vehicle can be reduced automatically due to the sensing of the obstacles. It avoids the several accident levels and try to save the lives of many people.

VII. FUTURE WORK

In future, the Bluetooth device can gets enabled and if the car gets closer than 10 m the automatic braking system takes control. After the hydraulic braking valves decreases the pressure on the braking circuit, when the car brake is applied thus effectively decreases the braking force on the wheels. If the vehicle wants to limit the speed of the engine to overtake then the other auto mobile then the car gives a overtake signal to the car ahead. Hence the vehicle stops with the brake with gradual decrease in speed with a tracking and messaging system.

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