ARDUINO MINI PROJECT

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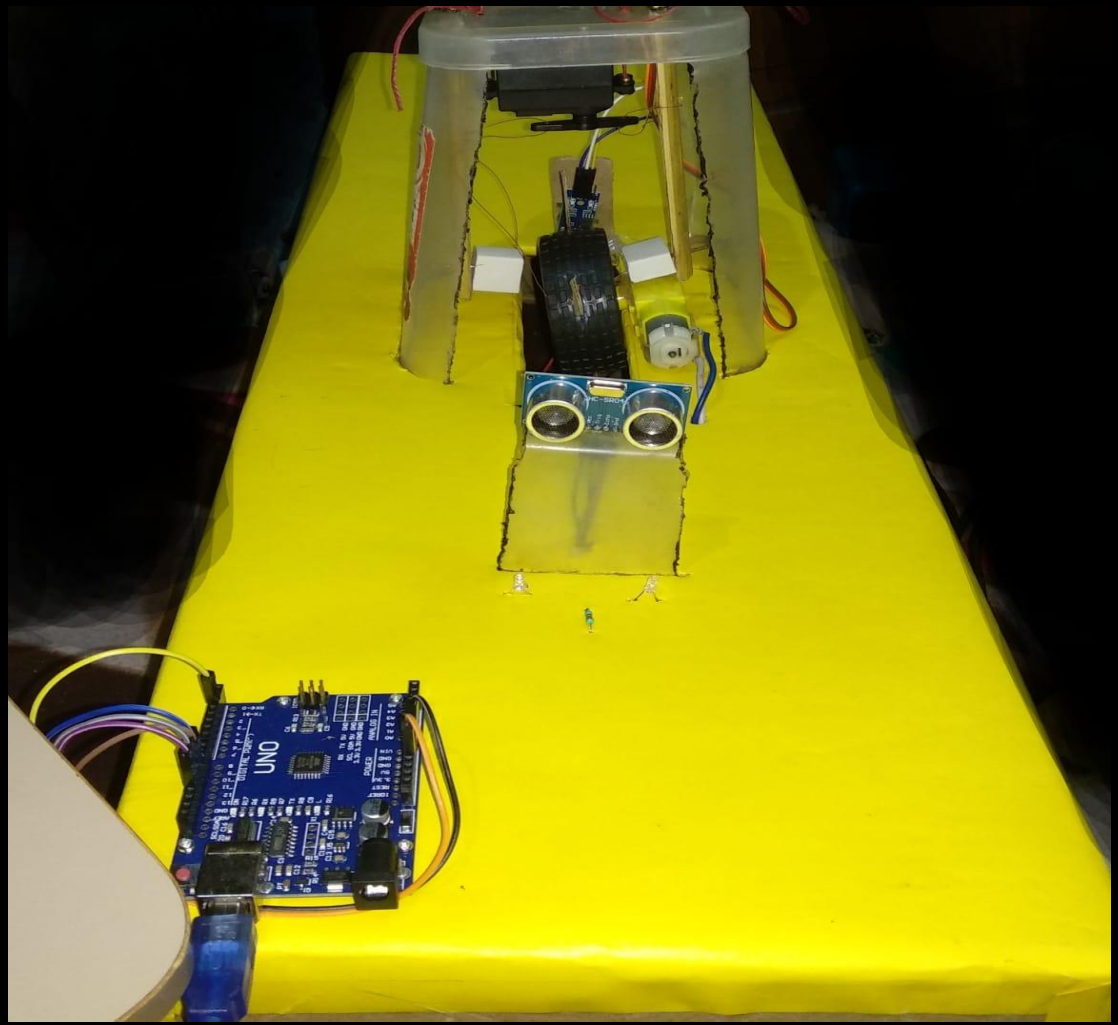
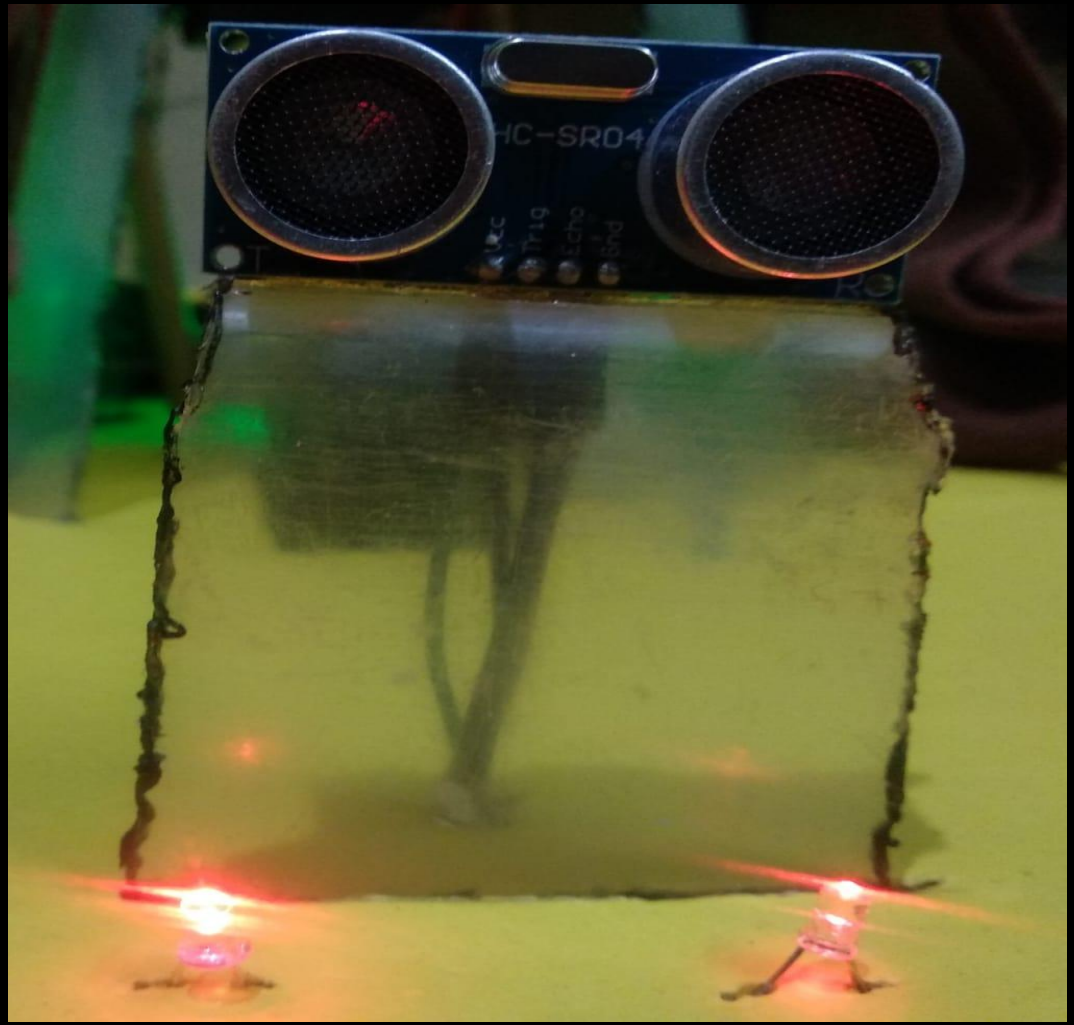
TOPIC:
AUTOMATIC BRAKE SYSTEM

It has been observed many times that people drive carelessly on roads in such a way that even if some object or person comes in front of their vehicle, they don’t bother to apply brakes. So, I have come up with a solution to this problem using ARDUINO UNO.


UNO

Here, in this project, I have used some sensors, servo motor which will make vehicle to apply brakes as soon as it finds that there is some object in front of it and the speed of vehicle is more than that it should be.

The driver will also be alerted when the brakes are applied in this case as LEDs will be turned on as an alarm.
The light intensities of LEDs will depend on the power of brakes applied at that point of situation.


HC-SR04
Vcc
Trig
Echo
Gnd

LET US UNDERSTAND HOW IT IS WORKING:-

Components used:

1. Motor and wheel

2. Distance sensor(HC-SR04):-
   For measuring distance of obstacle from the setup.

3. Servo Motor:-
   To command application of brakes

4. Speed Measuring Sensor:-
   To measure the rotating speed of the wheel

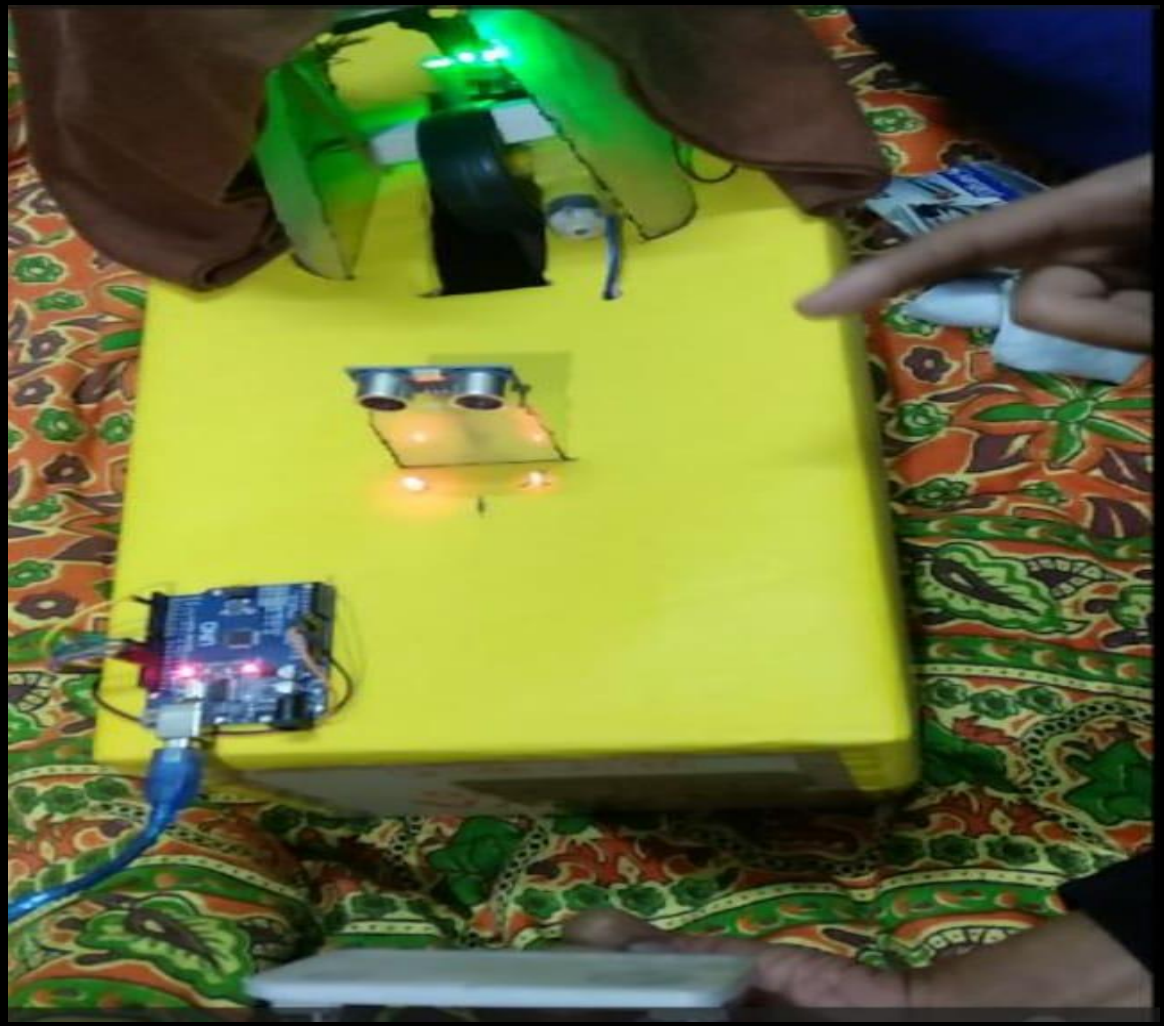
5. LED-2:-
   For alarming the application of brakes by the arduino system

AND A BRAKING MECHANISM

The wheel will move normally when there is no obstacle in front of it and its speed(in RPM), the distance of setup from the object and position of servo motor will be displayed on the Serial Monitor.

As soon as the distance of the obstacle from the object is less than 30 and greater than 20, the servo motor will move to the position of 125 degree resulting in application of brakes. Hence, it will lower the speed of the wheel. LEDs will also now be turned on(with less intensity) indicating that the brakes are applied by the system.

Now, if we come closer to the setup i.e. if the distance of the setup from obstacle is between 20 and 10, the servo will rotate to 130 degree and the LEDs will glow more brighter indicating that the brakes are now applied more powerfully.
(reduction in speed of wheel can be seen both manually and from the serial monitor)



Now, if we come closer to the setup i.e. if the distance of the obstacle from the setup is less than 10, the servo motor will rotate to 135 degree , LEDs will glow with their brightest intensity and the brakes are applied so powerfully that the wheel will stop rotating.

Hence, the brake of this setup will be applied to according to mentioned distance ranges and its power will be indicated by the light intensities of the LEDs.

Therefore, even if the speed of the vehicle is high and distance of object from that vehicle is so close that it should not be, the brakes will be applied automatically reducing the extent of the harm or accident that may happen if it was not there.

THANK YOU