Obstacle Avoiding Multi-purpose
# Arduino Robot Car

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Introduction

We present an obstacle avoiding Arduino RC, made with Arduino and Ultrasonic Sensors. Its main features include avoiding obstacles up to 15 Centimeter, which can be swapped for being a remote-controlled car controllable by a phone remote. Nearby object detecting is done by using an ultrasonic sensor, which uses ultrasonic sound waves to measure the distance to an object by measuring how long would it take the sound/pulse to bounce off of a nearby object and return to the sensor.

Normal distance would be, Distance = Speed of Sound * Time taken, but as the sound is travelling twice (going and bouncing back), we divide the formula by 2. So, the formula stands as -

Distance = (Speed of Sound *x* Total **Time taken) /2

It's the same formula Bats use to find nearby insects.
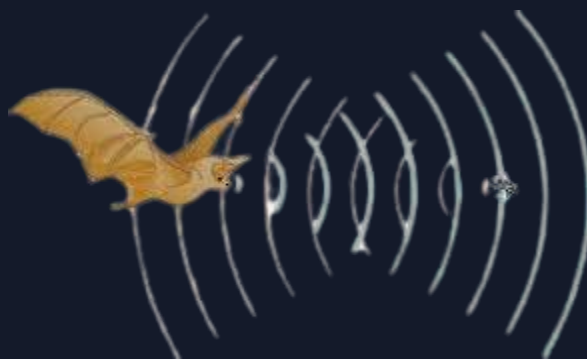
Objective

1. To learn more about Arduino,

2. To create a feasible project - which prevents car accidents,

3. Have fun with what we create.

Equipment details

1. Arduino Uno x 1

2. Gear motor x 4

3. Motor Driver(L293D) x1

4. Robot wheel x 4

5. Ultrasonic sensor x 1

6. Bluetooth module x 1

7. Li-ion battery x 2

8. Li-ion battery holder

9. Base to build x 2

10. Switch

11. Soldering Iron

12. Jumper Wires (Multiple)

Total budget: 3500 TK

Working Process

1. First we check all the equipment's using a battery and a LED. We change the parts if we see any leakage or disturbance in them.

2. Then we start connecting the pieces. Starting with the base board and motors. First, we connect the motors to two wires. Then we put 4 motors on the base board.

3. We than put a second baseboard over that. We take our motor driver and connect the Arduino to it. We place it in our base board.

4. We take the wires via a hole in the base hole and connect the wire to the Arduino + Motor driver. We screw the wires in.

5. We take the servo motor, connect it to the Arduino and place it on the base board.

6. We take the ultrasonic sensor, and the Bluetooth sensor, attach them to the servo motor properly.

7. We then connect a batter holder and a switch to the Arduino board.

8. We connect all the wires using a soldering iron.

9. We connect the Arduino to a computer & input the code needed to run it.

10. Finally we connect all four RC tires and 2 batteries.

11. The car is done, just needs to turn on the switch.

Working group/Credits

1. **Code & tech:**

 Code & wire assembly done by Biplob Sutradhar (203-15-3923)

2. **Art Committee**:

All figure, recording and shopping done by Mahian Islam Sadim (203-15-3898)

3**. Labor & Digitalization:**

All shopping and soldering handled by Md. Zonaid (203-15-3927)

4. **Project & People**:
Budget planning, money collection & partial shopping done by Md Mehedi Hasan (203-15-3911)

5**. Innovation & Documentation:**
The innovation and this awesome report is written & designed by Arnob Dey (203-15-3906)
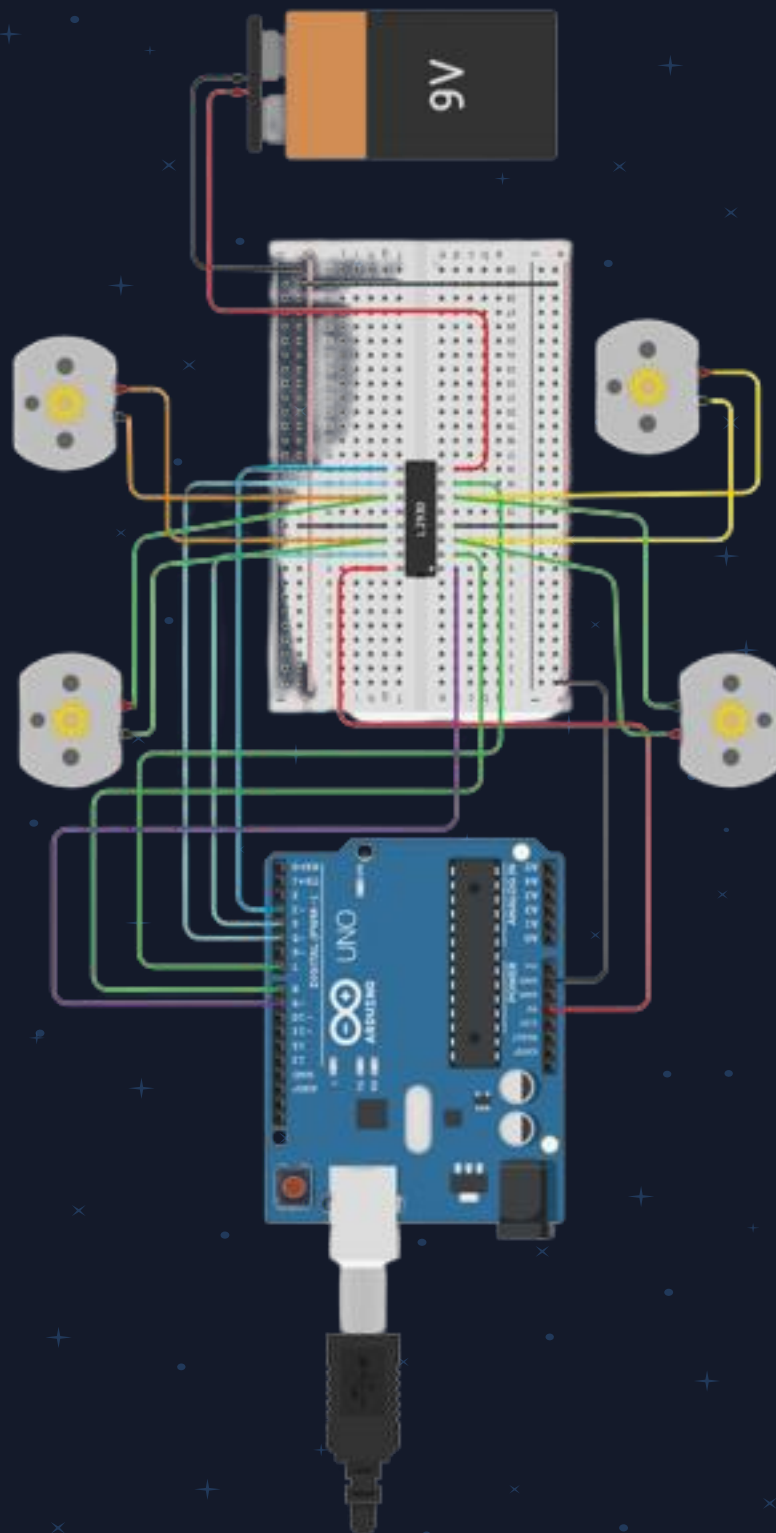
Motivation

The motivation is the recent increase of car accidents happening on our country. Since fixing the roads is a big hurdle for a small group like us (not feasible), we're thinking of if the cars can be modified, we can probably save so many lives that shouldn't have been lost in the first place. So, we sat down with an Arduino project in mind, and wrote down what we can by tingling with various sensors. We added the ultrasonic sensor for the project, and used Bluetooth module to connect a controller.... just for fun

Outcome

We made a working Arduino Project Car, by DIY methods. We have found some interesting ways to tinker with other sensors and make a car more protective. For now, our car can be controlled by a remote or it can be used as an obstacle avoiding car. Our Arduino RC runs well on both carpeted and tiled surfaces as all four wheels are used and driven.

Circuit Diagram

Showcase