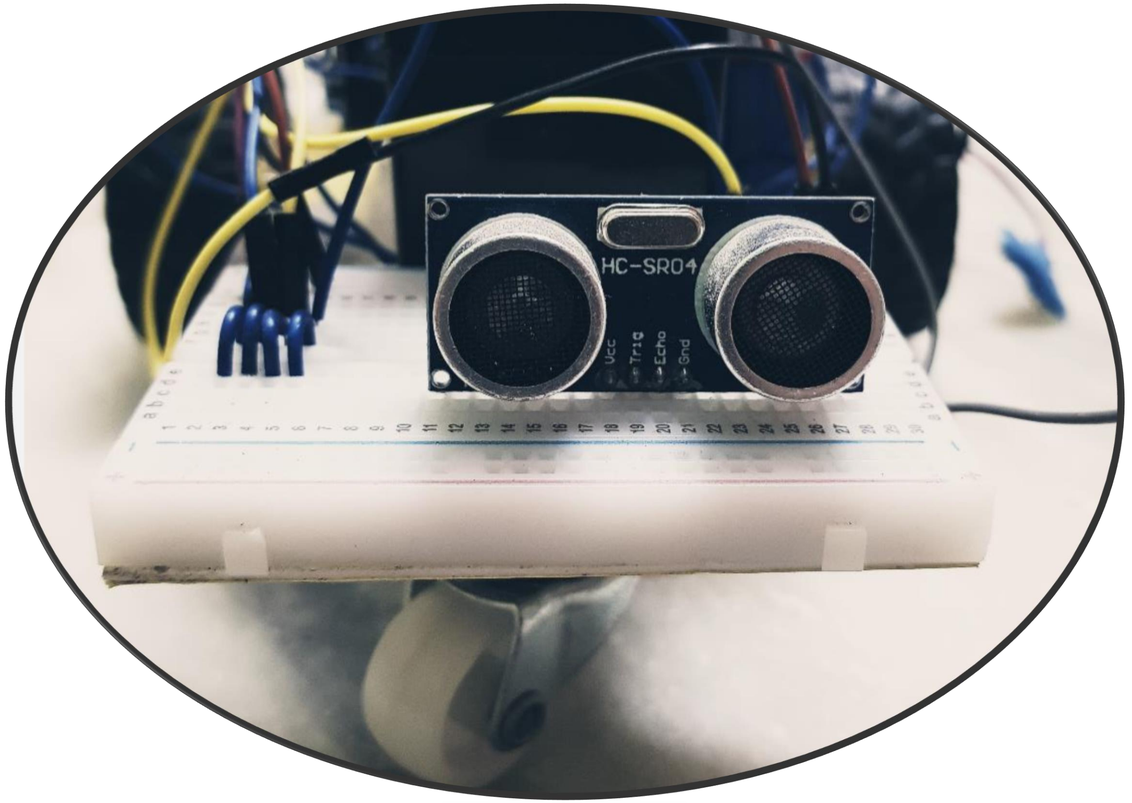
MINI-PROJECT



PROJECT GUIDE

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BY

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WIRELESS CAR WITH OBSTACLE DETECTION

Using Arduino, HC-05 & SR-04

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PURPOSE

1. The **Purpose** of our project is to provide simpler robot's hardware architecture.

2. Students can build their own robots with low cost and use them as platform for experiments in several courses.

3. The main purpose this project is to develop a remote user to control a robot via wireless technology.

ARDUINO UNO

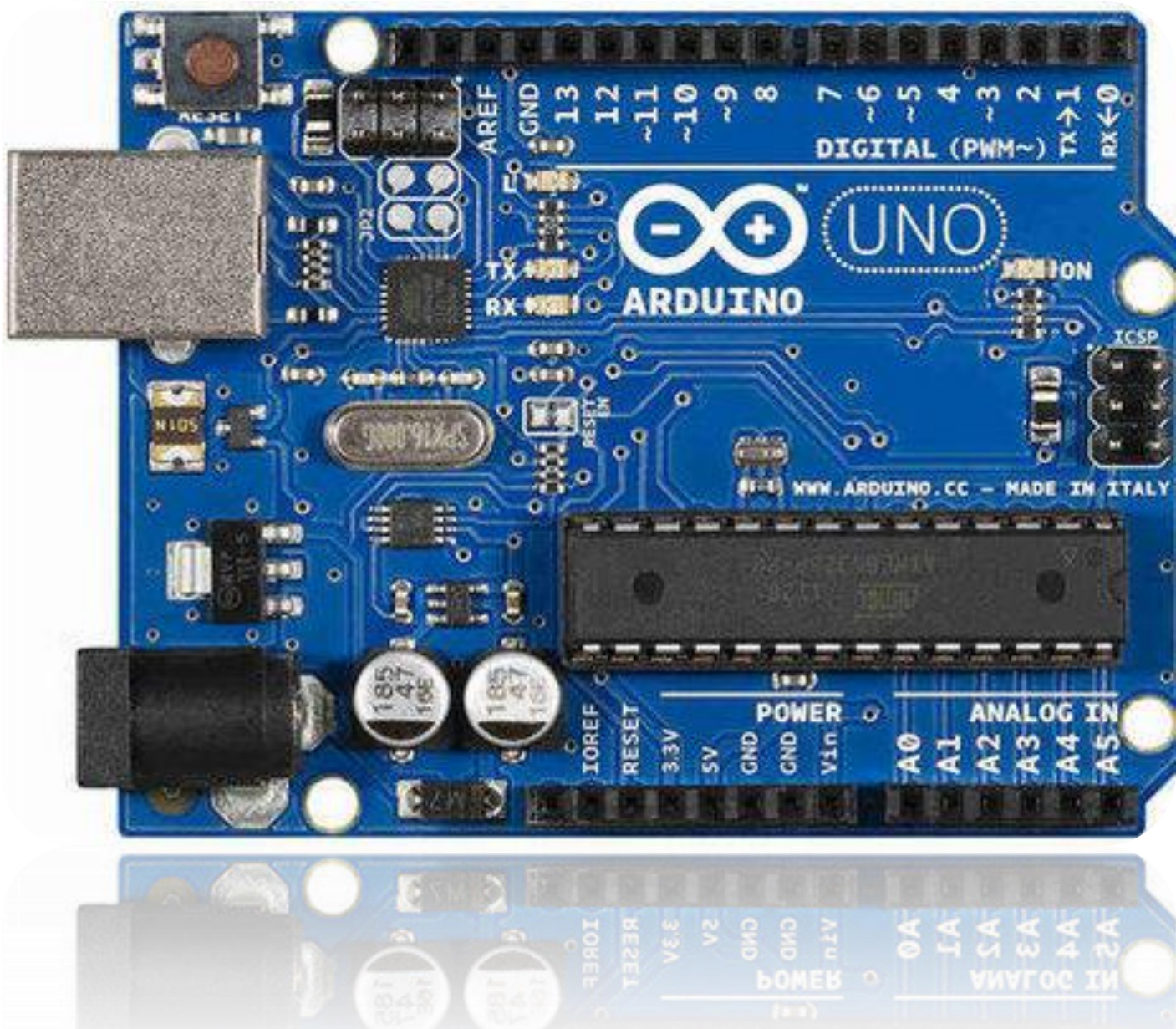
The MICROCONTROLLER

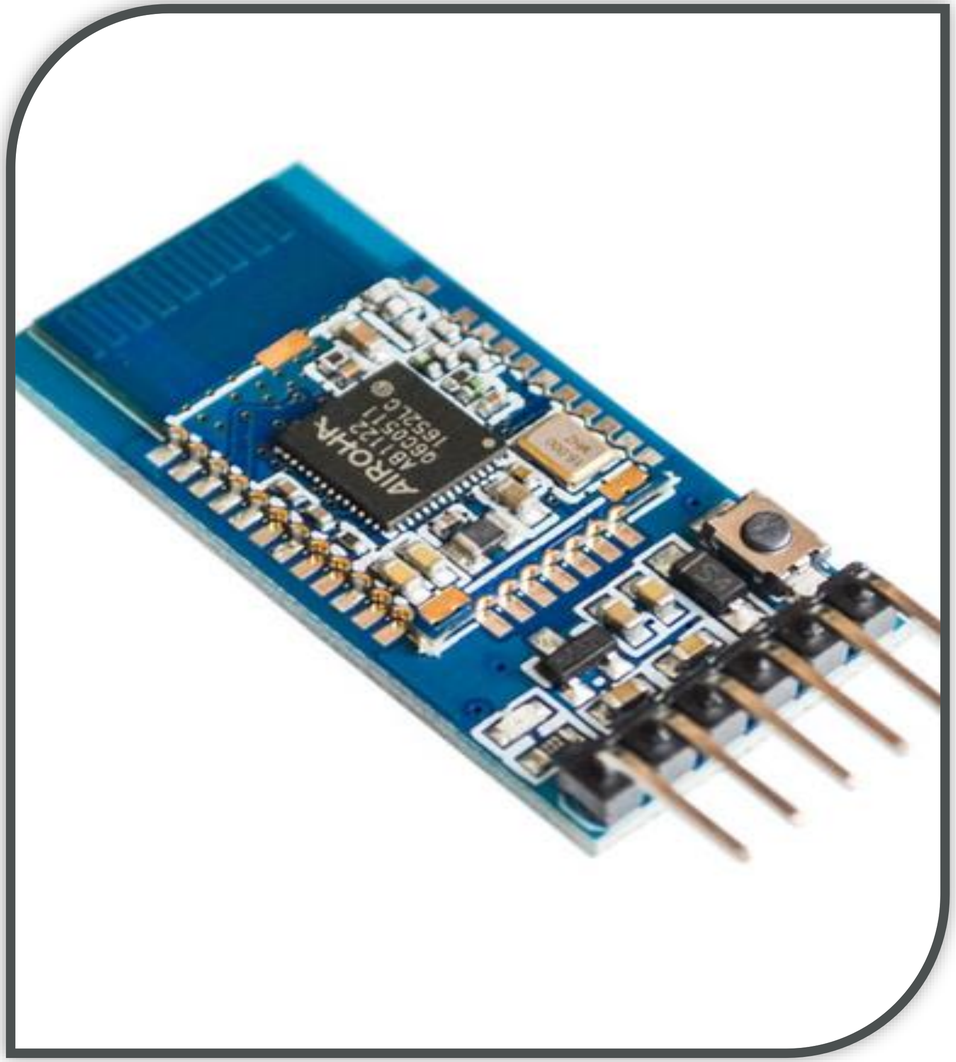
1. The Arduino UNO is widely used opensource microcontroller.

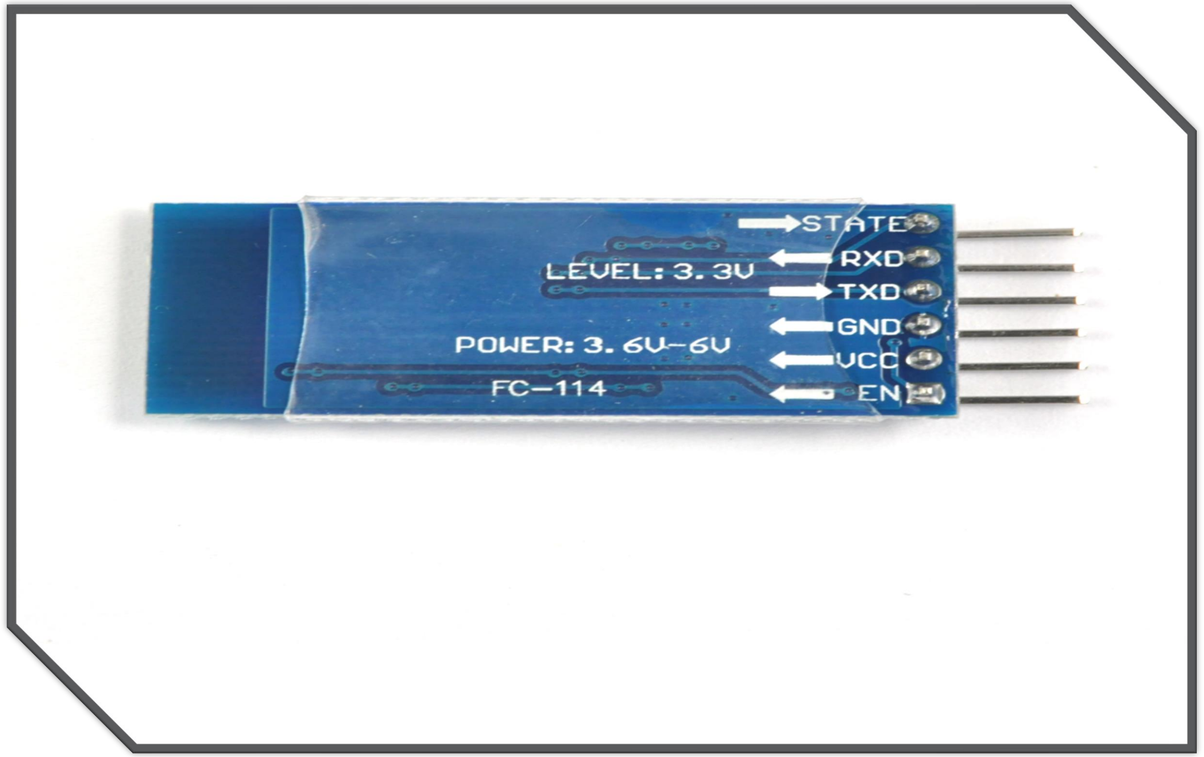
2. The board is equipped with set of digital and analog input /output pins that may be interfaced to various expansions boards.

3. The board features 14 digital pins and 6 analog pins.

4. It can be powered by a USB cable or by an external 9volt battery through it accepts voltages between 7 and 20 volts.







HC-05 BLUETOOTH MODULE

CONNECTIVITY

1. This is used for establishing Bluetooth connectivity, it is easy to use Bluetooth SPP (special pot protocol) module.

2. It setup a transparent wireless serial connection

3. HC-05 is a fully qualified Bluetooth supporting 3Mbps modulation

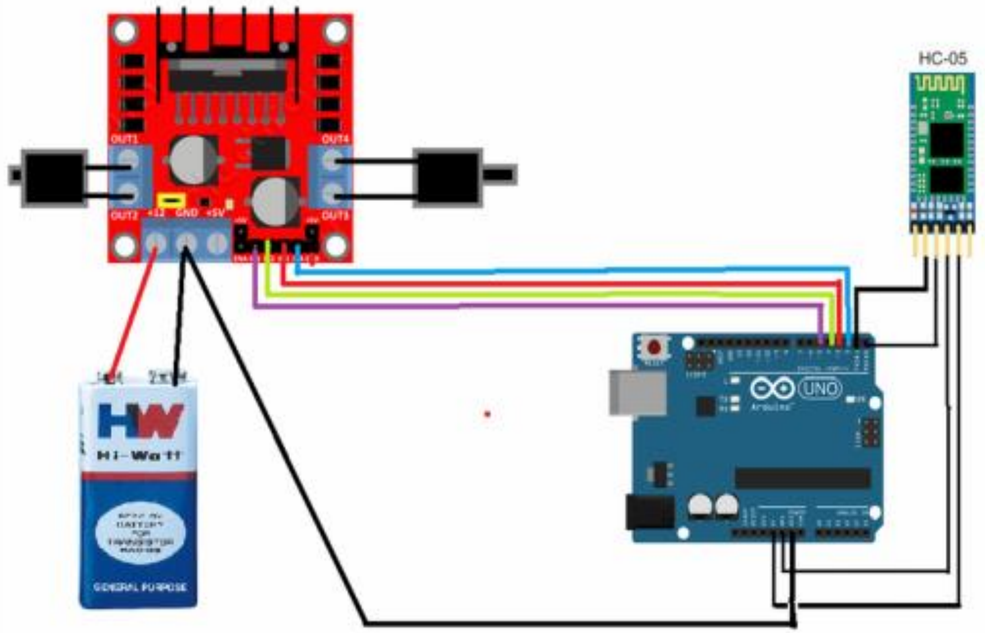
ULTRA SONIC SR-04

The TRIGGER

The ECHO

1. SR-04 distance sensor is commonly used with both microcontroller and microprocessor platforms like Arduino, Raspberry pie etc.

2. It is basically used to detect and avoid obstacles



Circuit Schematics

The Jumper wire Connections

CONNECTION OF HC-05 TO ARDUINO

1. CONNECT RX PIN OF HC-05 TO TX PIN OF ARDUINO

2.CONNECT TX PIN OF HC-05 TO RX PIN OF ARDUINO

3.CONNECT GND PIN OF HC-05 TO GND PIN OF ARDUINO

4.CONNECT VCC PIN OF HC-05 TO 5V PIN OF ARDUINO

Connection of l298N to Arduino

1. Connect n1 pin of l298n to Arduino 2 pin

2. Connect n2 pin of l298n to Arduino 3 pin

3. Connect n3 pin of l298n to Arduino 4 pin

4. Connect n4 pin of l298n to Arduino 5 pin

5. Connect Gnd pin of l298n to Arduino Gnd pin

WORKING

Working Principle of Project

BLUETOOTH CONTROL

- Mobile applications send the RUN commands to the HC-05 Module
- The module decodes the commands and transmits it to the Arduino Uno
- Further, the instructions are sent to L298N(Motor Driver Module) which in turn moves the wheels in required direction

ULTRA SONIC CONTROL

- It is a combination of both ultrasonic transmitter and receiver module.
- This sensor is attached to detect the distance of the obstacle from the robot.
- If the obstacle is near by the robot, it sends a instruction to the Arduino Uno which triggers the Buzzer.

Applications

WHEEL CHAIR

✓ Cost efficient- wireless wheel chair control is possible with this project.
✓ Even obstacle avoidance can also be added.

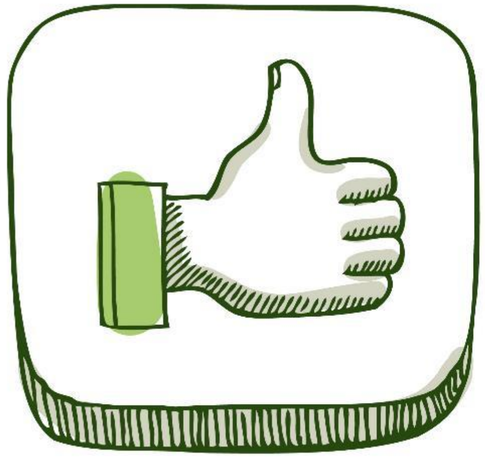
SURVEILLANCE

✓ As it has long range connectivity, the Bluetooth module can also be used in camera surveillance.

HOSTAGE RESCUE

✓ If a camera module is added, it can detect hostages as it can sneak through places where a human can’t fit.

ADVANTAGES AND DIS-ADVANTAGES



ADVANTAGES:

1.Easy to control using mobile.

2.Easy to maintain and repair.

3.efficient and low cost design.

4.low power consumption.

5.The programming of microcontroller is easy.

DISADVANTAGES:

1. It is used for short distance only.

2. Bluetooth has low bandwidth

CONCLUSION

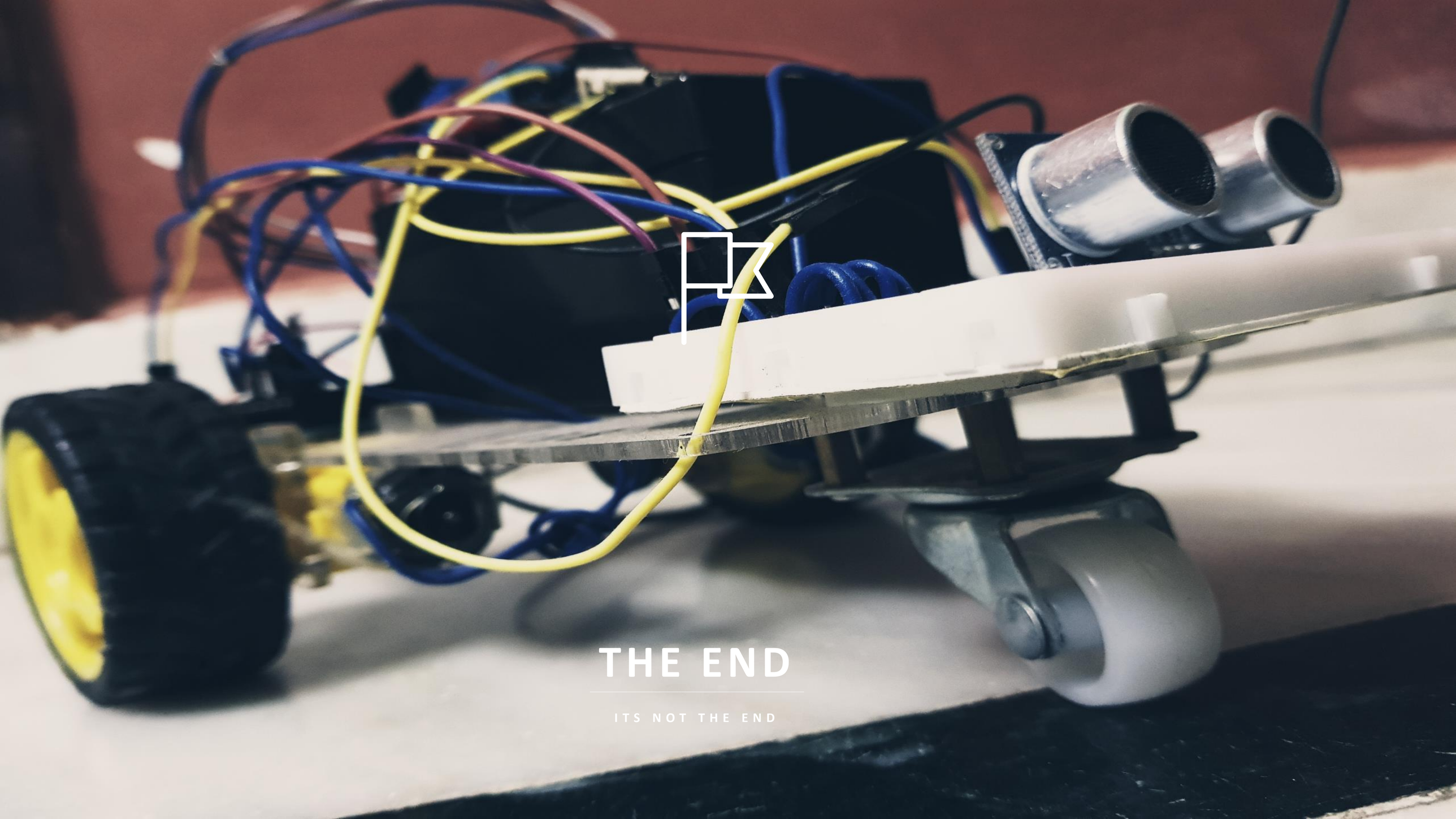
THE KEY POINTS

1. Almost all navigation robot demands the some sort of obstacle detection, hence obstacle avoidance strategy is of utter importance.

2. The robots need to gather information about their surroundings to avoid obstacles.

3. Since we have wireless control in robot form the past.

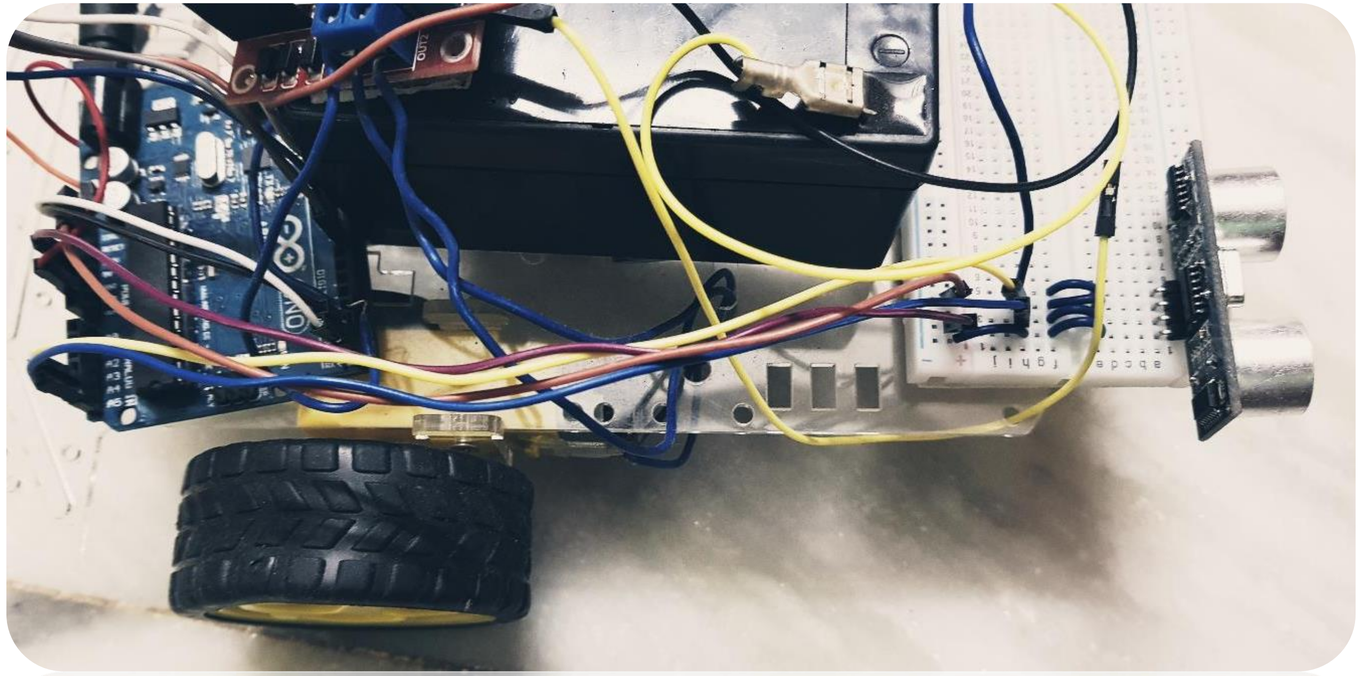
4. When wireless control is linked with obstacle avoidance, it gives rise to wide range of applications



THE END

ITS NOT THE END

WIRELESS CONTROL WITH OBSTACLE AVOIDENCE



WIRELESS CONTROL WITH OBSTACLE AVOIDENCE