



Cutebot and Micro:bit



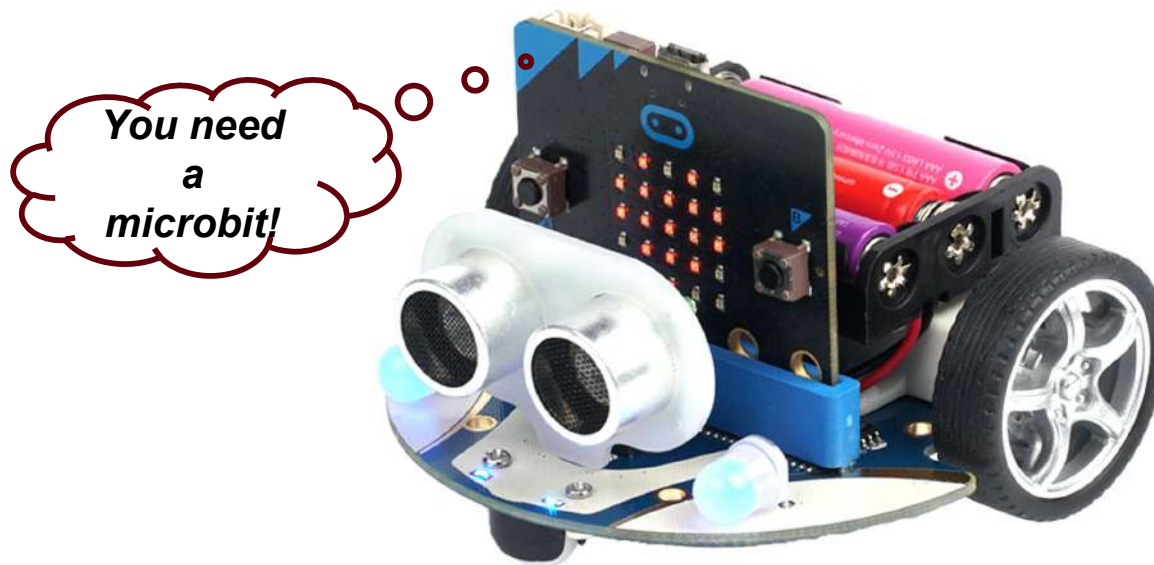
CODERS CS Team

Summer 2023



Introduction to Cutebot

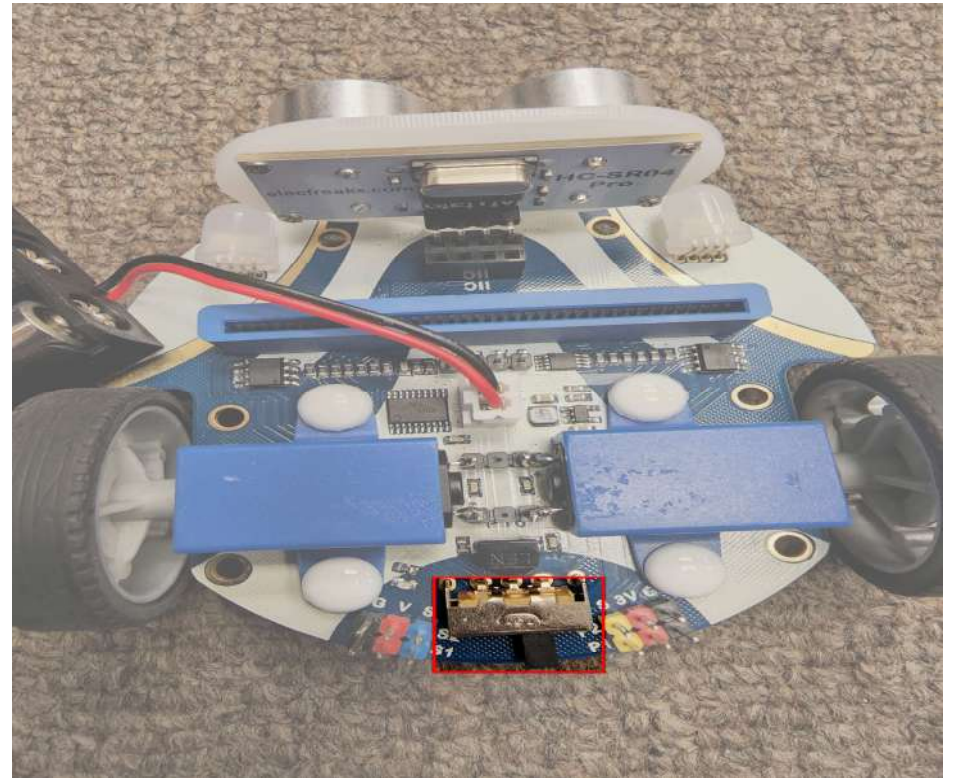
https://www.electronicsforu.com/learn-en/microbitKit/smart_cutebot/cutebot_car.html





ON/OFF Switch

- There is a **black** ON/OFF switch and a status LED.





Battery Placement

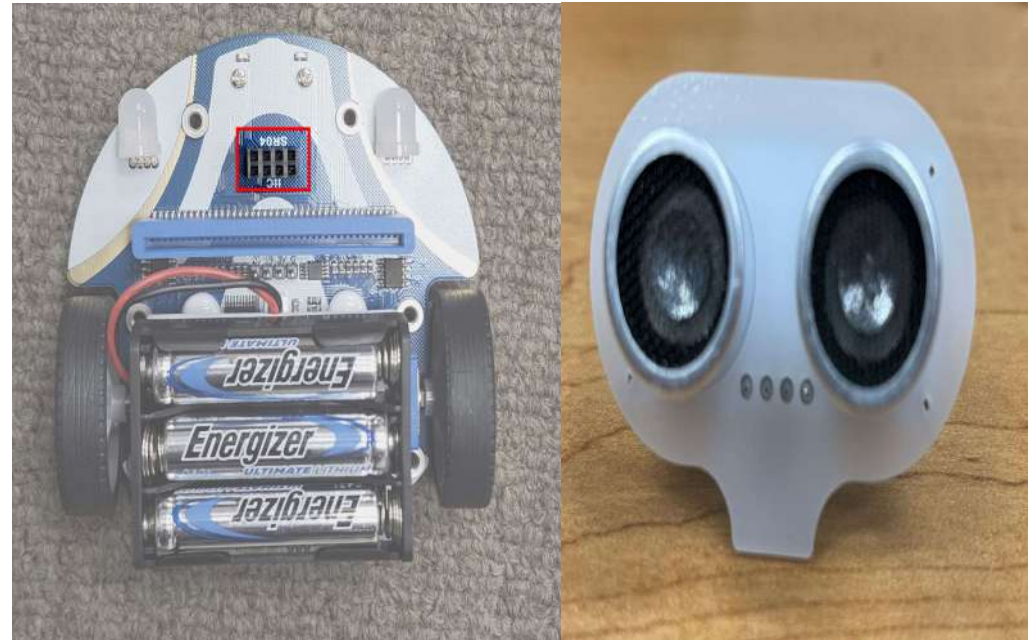
An expansion board for **3xAAA** batteries is placed on the top of the Cutebot (and behind the micro:bit slot).





Ultrasonic Sensor

- The red highlighted part of the Cutebot has an **ultrasonic sensor** connection **SR04** in the front top part of the Cutebot to connect ultrasonic sensor.
- The ultrasonic sensor helps the Cutebot to sense object in-front of it and measure the distance of the Cutebot from the object.





Wheels

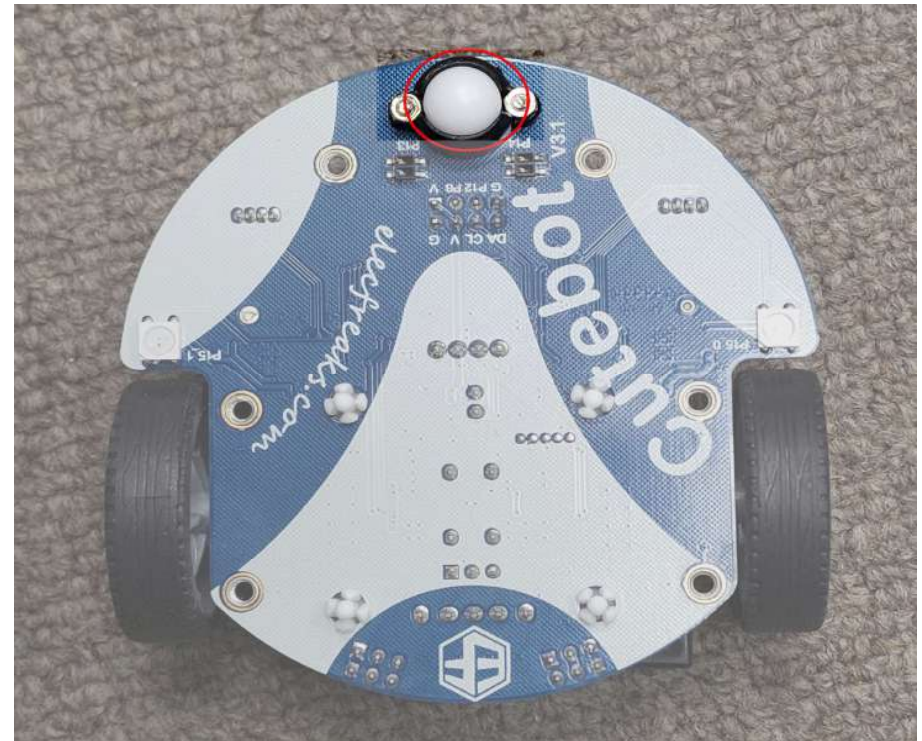
- Two wheels on the sides are driven by DC motors (maximum 300 RPM).
- The wheels are responsible for moving the Cutebot forward or backward.





Universal Wheel

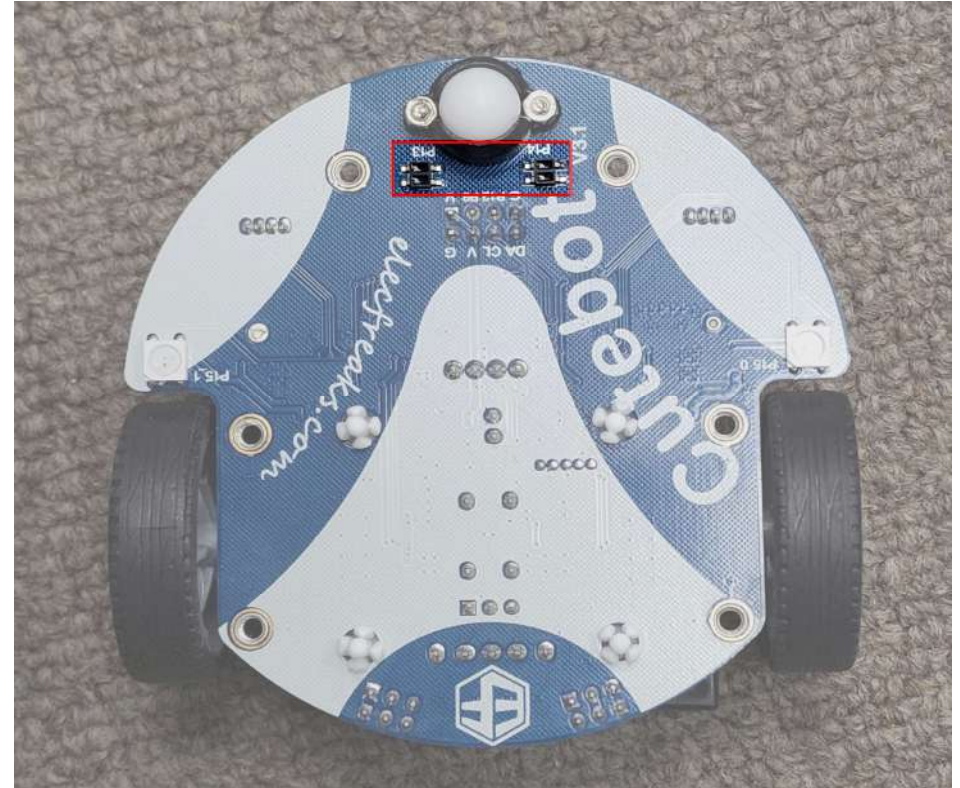
- A white universal wheel is placed in the front bottom of the Cutebot.
- The purpose of this feature is to steer the Cutebot in all directions.





Line Tracking Sensors

- The highlighted part shows 2-line tracking sensors.
- The purpose of line tracking sensors is to detect broad lines and their edges.



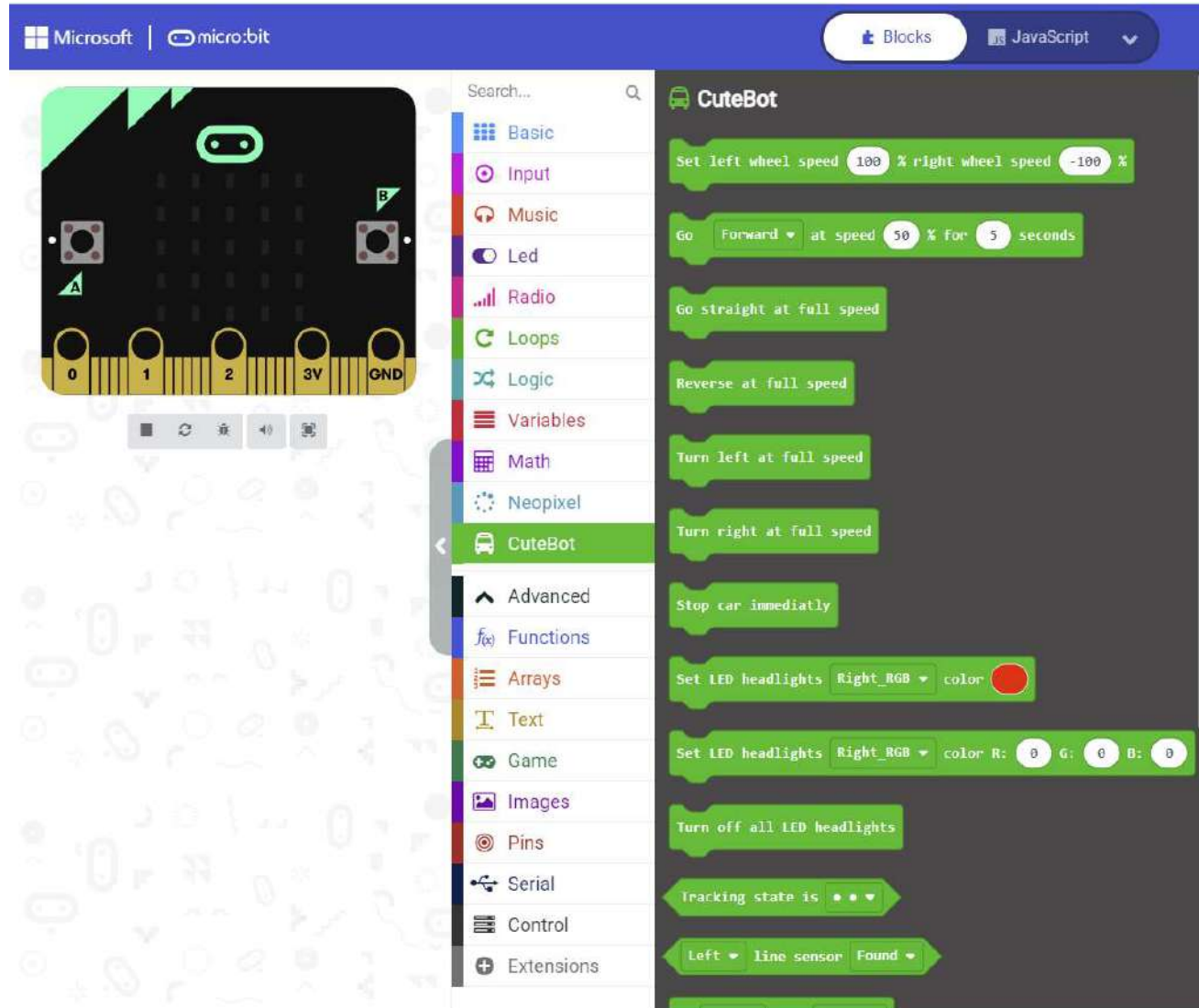
Coding the Cutebot

In a Chrome browser, go to: <https://makecode.microbit.org>

1. Create a **new** project and give it a unique name
2. Click "**Extensions**" from the side drawer.
3. Search for "**cutebot**".
4. Select Cutebot to add it to your project.



Coding the Cutebot





Activity-1: Go! Cutebot Go!

Goal: Move the cutebot forward with headlights on.





Activity-1: Code

Input:

Obstacle sensed by the sonar sensor

Logic:

1. Cutebot will move forward with its headlights turned green.
2. It will stop immediately if an obstacle is detected, and its headlights will turn red. It will also play a sound.

Output:

Cutebot moves forward with green lights but stops moving if an obstacle is detected, changes its headlights to red and makes a sound.

```
on start
  show icon [sonar icon]

forever
  if [HC-SR04 Sonar unit inches > 5] then
    Set LED headlights ALL color [green]
    Go Forward at speed 30 % for 1 seconds
  else
    Stop car immediatly
    Set LED headlights ALL color [red]
    play tone Middle C for 1 beat
```



Activity-2: Control Cutebot Remotely

Goal: Move a cutebot around using another microbit as a remote.





Activity-2: Code

Input:

Specific signals from a remote micro:bit.

Logic:

1. If remote micro:bit logo is pressed, the Cutebot will move forward.
2. If remote micro:bit A is pressed, the Cutebot will turn left.
3. If remote micro:bit B is pressed, the Cutebot will turn right.
4. If remote micro:bit A and B buttons are pressed together, the Cutebot will move backward.

Output:

The cutebot moves as per the instruction sent from the remote micro:bit.

```
on start
  show icon
  radio set group 1

on logo touched
  radio send number 0

on button A pressed
  radio send number 1

on button B pressed
  radio send number 2

on button A+B pressed
  radio send number 3
```

Remote

```
on start
  show icon
  radio set group 1

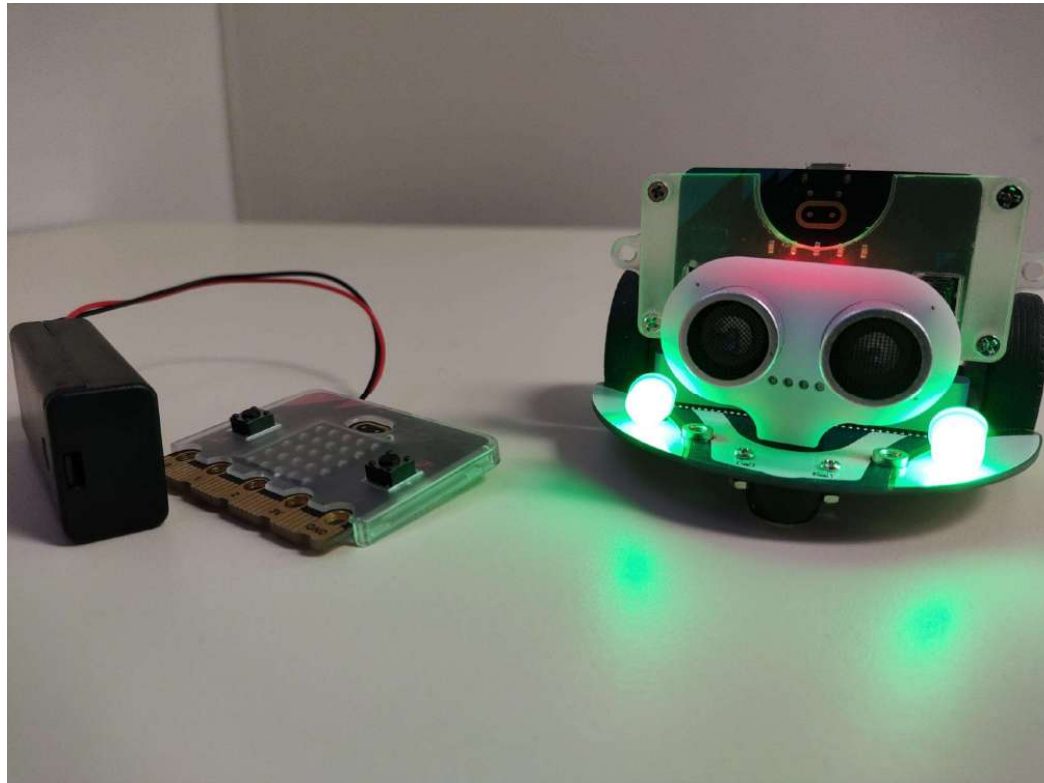
on radio received receivedNumber
  if receivedNumber = 0 then
    Go Forward at speed 50 % for 1 seconds
  if receivedNumber = 1 then
    Go Left at speed 25 % for 0.5 seconds
  if receivedNumber = 2 then
    Go Right at speed 25 % for 0.5 seconds
  if receivedNumber = 3 then
    Go Backward at speed 50 % for 1 seconds
```

Controlled



Practice Activity: Add LED to Activity-2

Goal: Move a cutebot around using another microbit as a remote, and enable turn signals, headlights, and reverse lights.





Thank You

Any Questions?