
MBLOCK ROBOTICS

Written by Lucy Ikpesu

CLASS DESCRIPTION

In this class, students will start exploring STEM using mBlock Robotics.

TOTAL CLASS TIME: 120 minutes

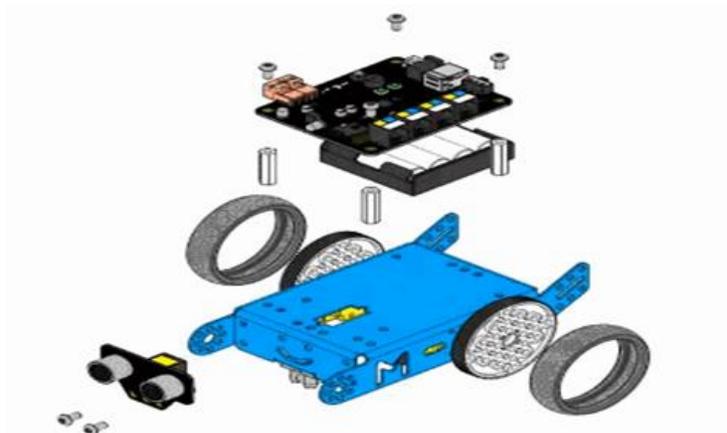
CLASS OUTCOME

By the end of this class, Students will understand the basics of programming Robotics. They will be able to identify the Infra-Red Sensor and how to program the Robot to follow the line. They will be able to create their own codes that would help to solve problems.

INTRODUCTION

mBot is an all-in-one solution to enjoy the hands-on experience of programming, electronics, and robotics. Working with mBlock inspired by Scratch 2.0, connecting with computers or smart devices via Bluetooth or 2.4G (by different versions), this easy-to-assemble mBot provides infinite possibilities for you to learn STEM (Science, Technology, Engineering, and Mathematics).

It contains **38** assembly parts that can be assembled in 10 minutes and color-labeled RJ25 ports for convenient wiring, making sure more time can be spent on programming and creativity.



mBot assembly part

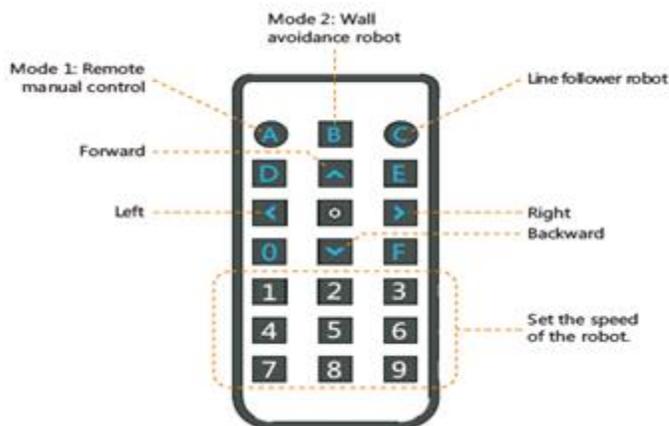


Get started with playing mBot Robot.

After assembly, the parts of mBot, Get ready to play.

mBot has 3 pre-set modes: **IR control mode**, **obstacle avoidance mode** and **line-following mode**.

- When you turn on your mBot for the first time, it will be in **IR control mode** by default and the onboard Red Green Blue (RGB) LED is white. Now you can use the IR remote control to start controlling mBot. In addition, you can also download APP to control the Bluetooth version mBot.



IR Remote Controller

Tips: If the speed you set is too low, mBot may not move. In this case, just set a higher speed.

Without an IR remote controller or an app, you can still test your mBot by pressing the on-board push button to change modes:

- When the RGB LED is green, mBot is in the **obstacle avoidance mode**. Place your mBot on the floor, and watch it avoid the obstacles.
- When the RGB LED is blue, mBot is in the **line-following mode**. Place your mBot on the line-follower map and watch it track the line.

Graphical Programming with mBot

Introduction to mBlock

mBlock is a drag-and-drop graphical programming tool developed based on scratch2.0. It allows users to quick way to learn programming, read sensor values, control the output of hardware modules and realize multiple functions from the robot.

Features of mBlock are;



WIRELESS CONNECTION

1. Introduction to Bluetooth Module

The Bluetooth is designed especially for mcore with the support of Bluetooth 2.0 and 4.0. It is suitable for both individual users and family. It can be matched with android or iOS smartphone to control mBbot, and also can be matched with a computer (that support Bluetooth communications) to do wireless programming.

2. Introduction to 2.4G Module

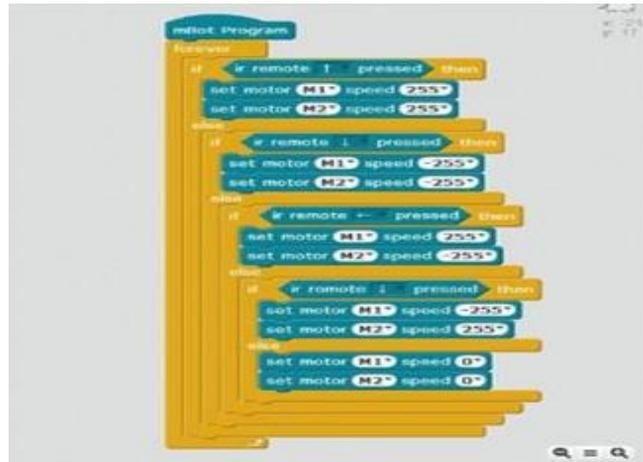
The 2.4G module includes two parts: the 2.4G wireless serial-USB for computers, and the 2.4G wireless serial-module for mCore. It uses the same technology as the wireless mouse and is very suitable for the classroom. No driver or pairing is needed.

Guide for mBlock:

<https://learn.makeblock.com/get-started/>

Use the Scratch (mBlock) to Programming

The mBot is an all-in-one solution to enjoy the hands-on experience of programming, electronics, and robotics. Working with mBlock inspired by Scratch 2.0, you can use Bluetooth or 2.4GHz wireless module to connect with mBot (By different version), this easy-to-assemble mBot provides infinite possibilities to learn STEM (Science, Technology, Engineering, and Mathematics).



Step 1: Prepare and install

Open your browser (chrome), and install the web app "Makeblock mBot for Scratch X" in the Chrome Webstore.

Use link to download: <http://www.mblock.cc/download/>



Step 2: connect

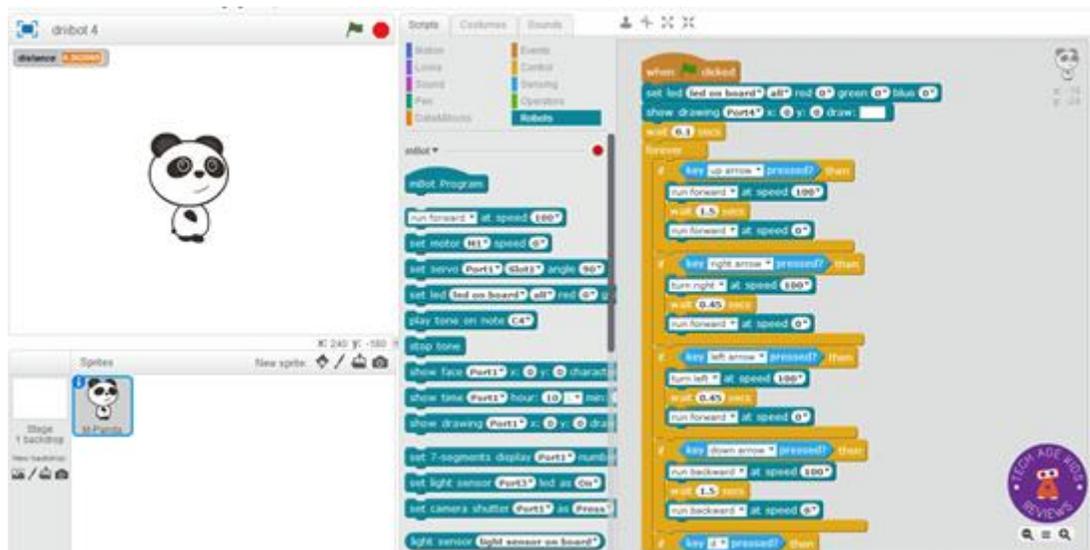
Choose your mbot's connection method, such as USB serial, Bluetooth, 2.4G wireless. And click to connect.



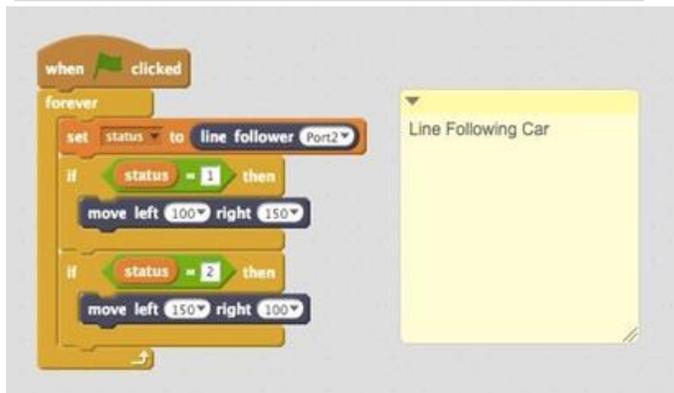
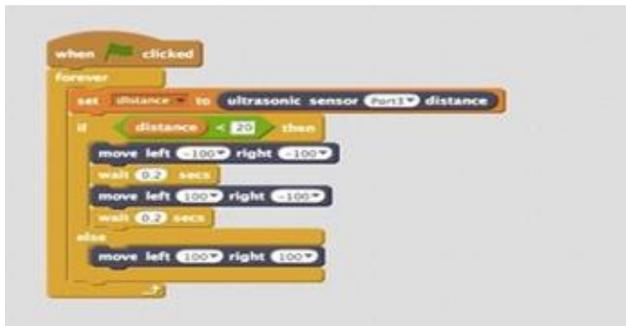
Step 3: Programming

Click the button "Open Scratch X" to enter scratchx website. It will show the default project that it can control the mBot to moving.

We can use the mBot built by ourselves to play some games or make them complete some functions autonomously, such as playing football, ultrasonic obstacle-avoiding and following line etc.



Step 4: Examples



Learn more about mBot: <http://learn.makeblock.com/en/mbot/>