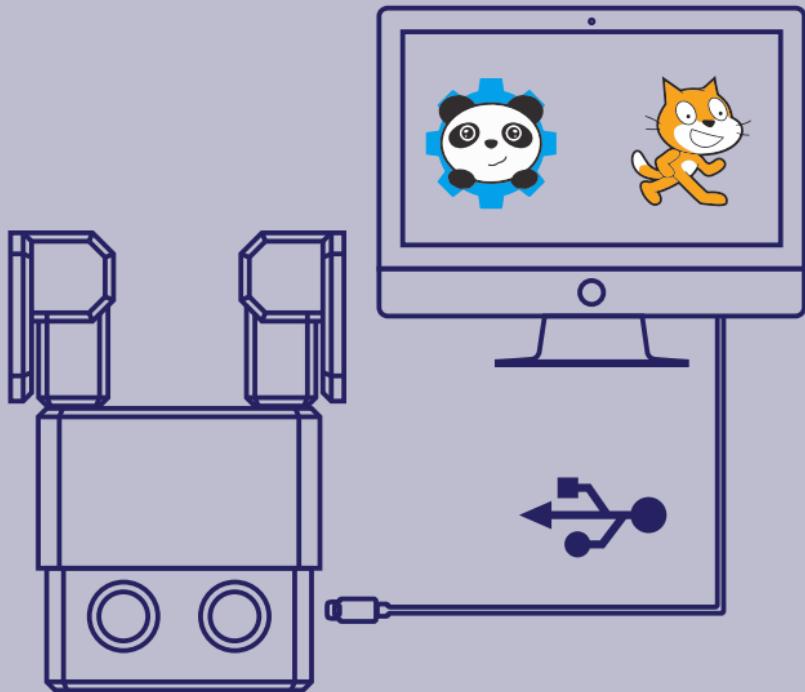


# CODING GUIDE

mblock

O++O

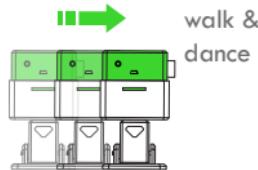


# build your own robot

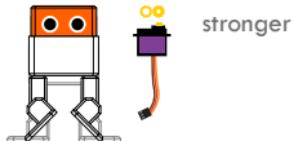


**Otto is an interactive robot that anyone can make!**

you will be able to build your own Otto in as little as one hour!  
easy to build and disassemble with a simple screwdriver.



## DIY

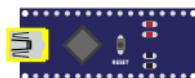


## DIY+





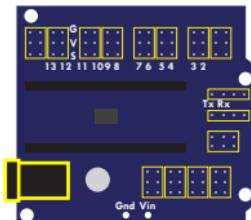
**USB for programming-coding and POWER  
NOT FOR BATTERY RE-CHARGE**



connect and power with USB and test your code  
before using new AA 1.5V batteries  
or any other energy source



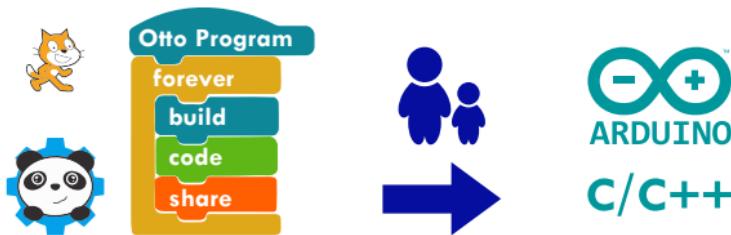
external auxiliary POWER port 6-12V



# 1



**mblock** is a graphical programming environment based on **Scratch 2.0 Open Source Code** that makes it easy to program electronics projects and create interactive robots like Otto; with the **Arduino mode** you can view both the Arduino source changes in real-time and the graphical blocks corresponding to the **C language** code, so that you can process a smooth transition to advanced programming.



download Arduino for FREE to your computer  
from <http://www.mblock.cc/software/mblock/mblock3/>

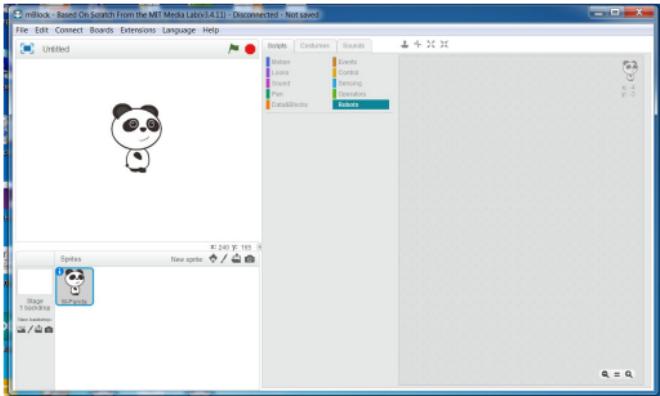


choose the appropriate Operating System installation package for your computer.

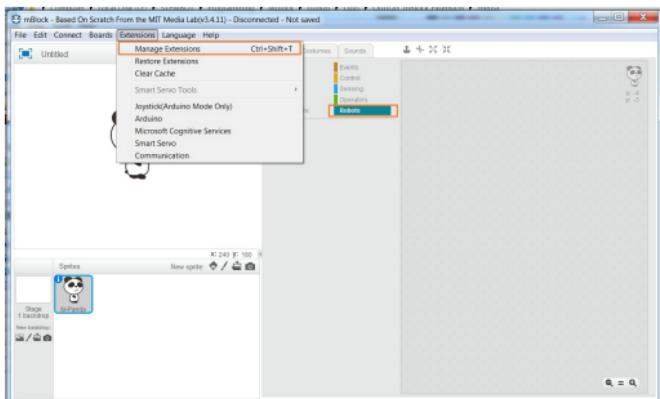
# 2



## a open the software



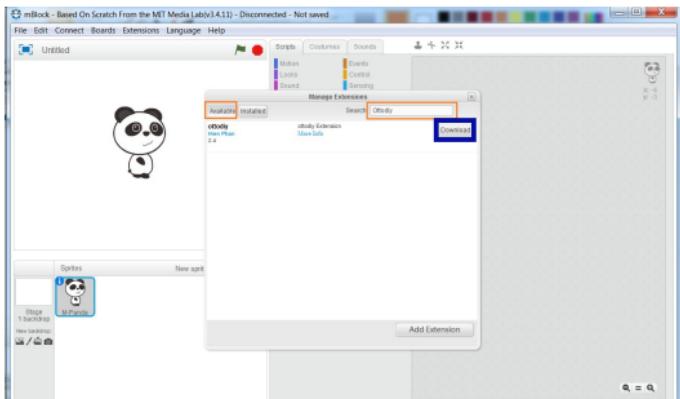
## b go to Manage Extensions



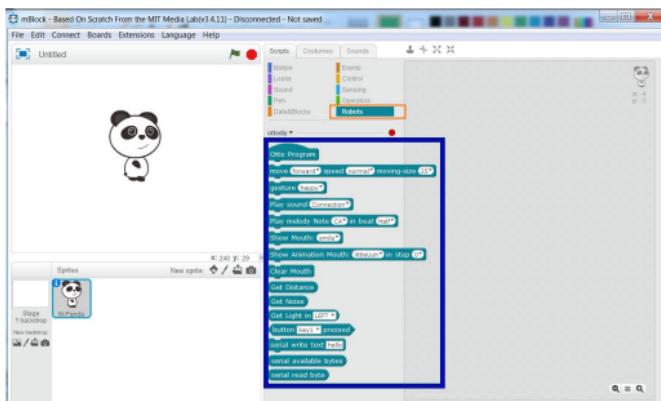
# 3



## a search OttoDIY and Download



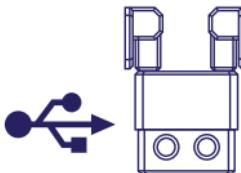
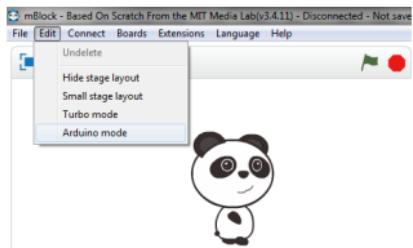
## b OttoDIY blocks appear in Robots scripts area



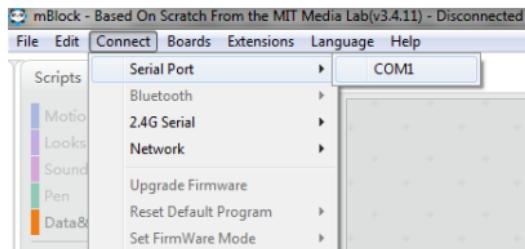
# 4



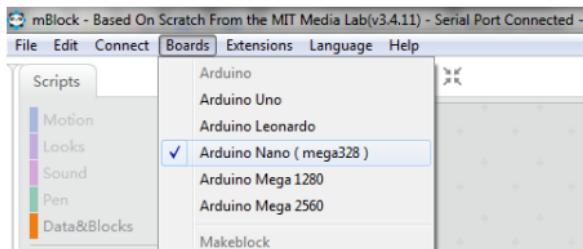
**a** enter Arduino mode; go to Edit/Arduinno mode



**b** go to Connect/Serial Port (select Otto USB port)



**c** go to Boards/Arduino Nano (mega328)

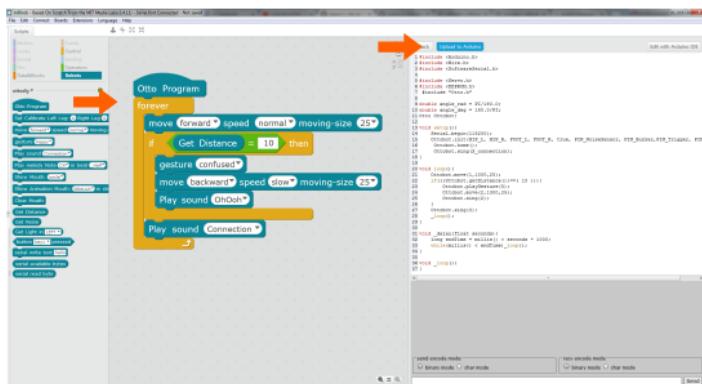


# 5



**you are all setup and ready to code your own Otto!**

**Programming is easy to master as building blocks.  
drag & drop the blocks from script area to the center,  
you can create dances, stories and interactions easily.**



**Upload to Arduino**



**“the Arduino code will be automatically encoded  
by mblock and directly upload to your Otto”**

# 6



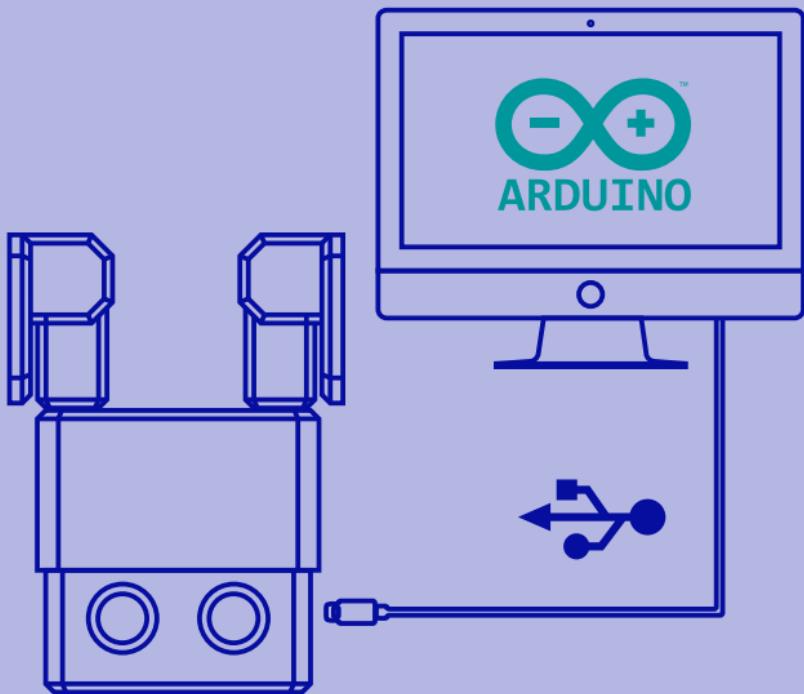
- a** **SIGN UP** in [ottodiy.com](http://ottodiy.com)  
download and unzip [OttoDIY\\_PLUS\\_all.zip](#)
- b** try the examples demos for Otto DIY
- c**  find more in  
[facebook.com/groups/ottodiy/](https://facebook.com/groups/ottodiy/)
- d** post your creations #OttoDIY  
become an #Ottobuilder



# CODING GUIDE

arduino

O++O

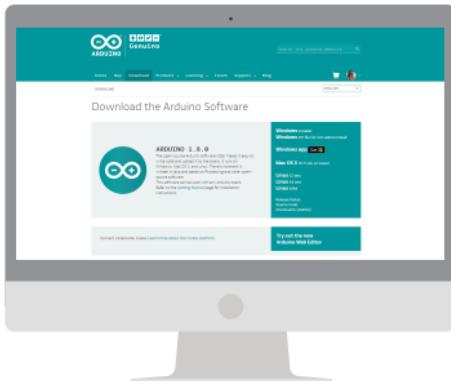


# 1



a

download Arduino for FREE to your computer  
from [www.arduino.cc](http://www.arduino.cc)



⚠

choose the appropriate Operating System  
installation package for your computer.



b

install Arduino in your computer...

# 2



- a** **SIGN UP** in [ottodiy.com](http://ottodiy.com)  
download and unzip [OttoDIY\\_PLUS\\_all.zip](#)

- b** from the “driver” folder install **CH341SER**
- !** choose the appropriate Operating System installation package for your computer.

- c** copy or move all “**libraries**” folders to:

C:\Documents\Arduino\libraries\  
(your Arduino library folder location)

- d** copy or move all “**Otto\_**” folders to:

C:\Documents\Arduino\  
(your Arduino library folder location)

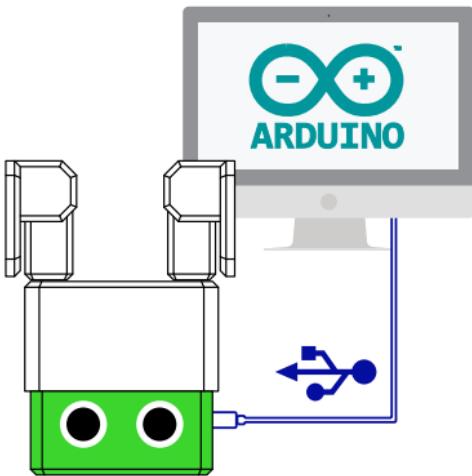
# 3



- a** open Arduino and  
[open Otto\\_avoid.ino](#)



- b** Connect Otto to your computer USB

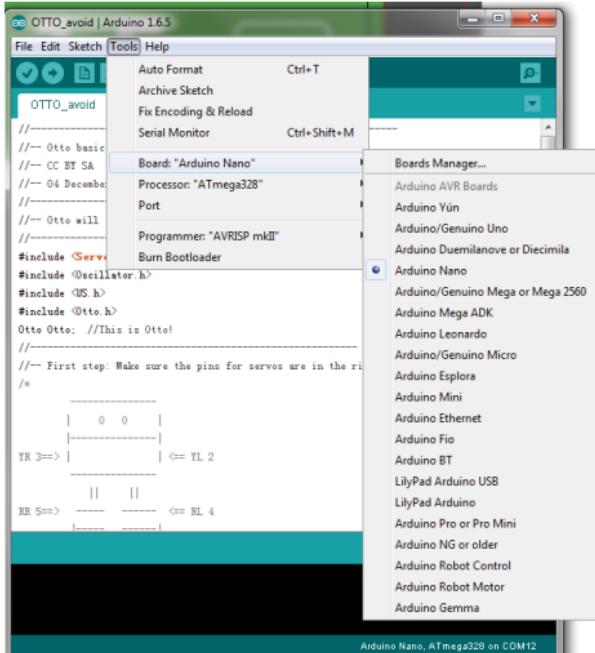


# 4



select in Arduino Tools /

- Board: “Arduino Nano”
- Processor: “ATmega328”
- Port COM# (where your Otto is connected)



# 5



**a**

verify the code



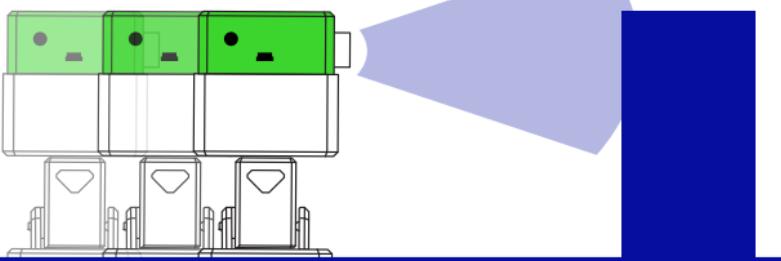
**b**

upload the code



**c**

Otto will walk endless until detect  
obstacles to avoid



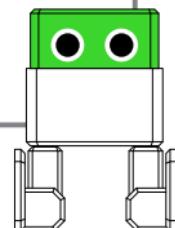
# 6



*in Arduino the principal loop code looks like this:*

Otto\_avoid.ino

```
52|void loop() {  
    if(obstacleDetected){  
        Otto.sing(S_surprise);  
        Otto.playGesture(OttoFretful);  
        Otto.sing(S_fart3);  
        Otto.walk(2,1300,-1);  
        Otto.turn(2,1000,-1);  
        delay(50);  
        obstacleDetector();  
    }  
    else{  
        Otto.walk(1,1000,1);  
        obstacleDetector();  
    }  
}
```



# 7



**sing function:**

Otto.sing(S\_surprise);

\_\_\_\_\_

sing function

("sound to make")



**try change sound:**

(S\_surprise);

(S\_OhOoh);

(S\_OhOoh2);

(S\_cuddly);

(S\_sleeping);

(S\_happy);

(S\_superHappy);

(S\_happy\_short);

(S\_sad);

(S\_confused);

(S\_fart1);

(S\_fart2);

(S\_fart3);

(S\_mode1);

(S\_mode2);

(S\_mode3);

(S\_connection);

(S\_disconnection);

(S\_buttonPushed);

# 8



***play Gesture function:***

Otto.playGesture(OttoFretful);

play Gesture function

("emotion to express")

***try change emotion:***

(OttoSuperHappy);



(OttoSad);



(OttoSleeping);



(OttoFart);



(OttoConfused);



(OttoFretful);



(OttoLove);



(OttoAngry);



(OttoMagic);



(OttoWave);



(OttoVictory);



(OttoFail);



# 9



## move functions:

```
Otto.walk(2,1300,-1);
```

  
move function ("#steps, Time[ms], direction")

## try change move function to:

```
Otto.walk(1,1000,1);
```

```
Otto.walk(1,1000,-1);
```

```
Otto.turn(3,1000,1);
```

```
Otto.turn(3,1000,-1);
```

```
Otto.bend(2,1000,1);
```

```
Otto.bend(2,500,-1);
```

```
Otto.shakeLeg(1,1000,1);
```

```
Otto.shakeLeg(1,500,-1);
```

```
Otto.moonwalker(1,1000,moveSize,1); moveSize: "height of the move"
```

```
Otto.moonwalker(1,1000,30,1);
```

```
Otto.crusaito(1,1000,moveSize,1);
```

```
Otto.flapping(1,1000,moveSize,1);
```

```
Otto.swing(1,1000,moveSize);
```

```
Otto.updown(1,1000,moveSize);
```

```
Otto.tiptoeSwing(1,1000,moveSize);
```

```
Otto.jitter(1,1000,moveSize);
```

```
OttoAscendingTurn(1,1000,moveSize);
```

```
Otto.jump(1,1000);
```

# 10

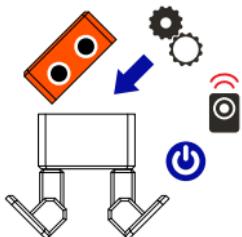


post your creations online



#OttoDIY share!

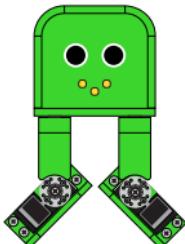
expand...



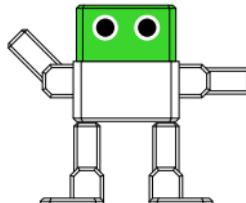
customize



remix



modify





# wanted Otto builders

do you have what it takes?

[ottodiy.com](http://ottodiy.com)

