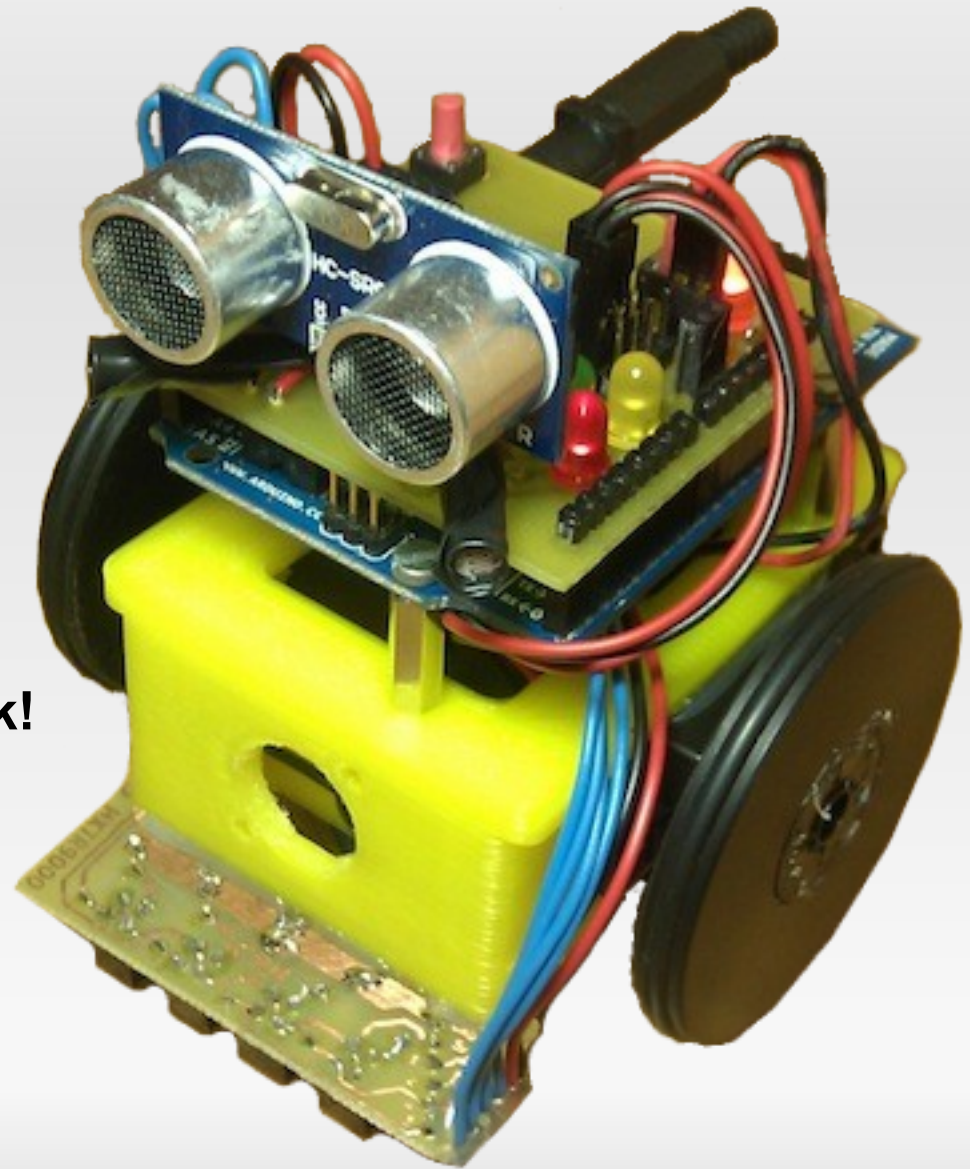


# Lesson 1 - Introduction

## ArduSkyBot 2012 Summer Workshop

Today you will learn:

- Basic **components** of a robot.
- What is **Arduino** and how to program it.
- Meet the **ArduSkyBot**!
- You will **play music** and make **LED's blink**!



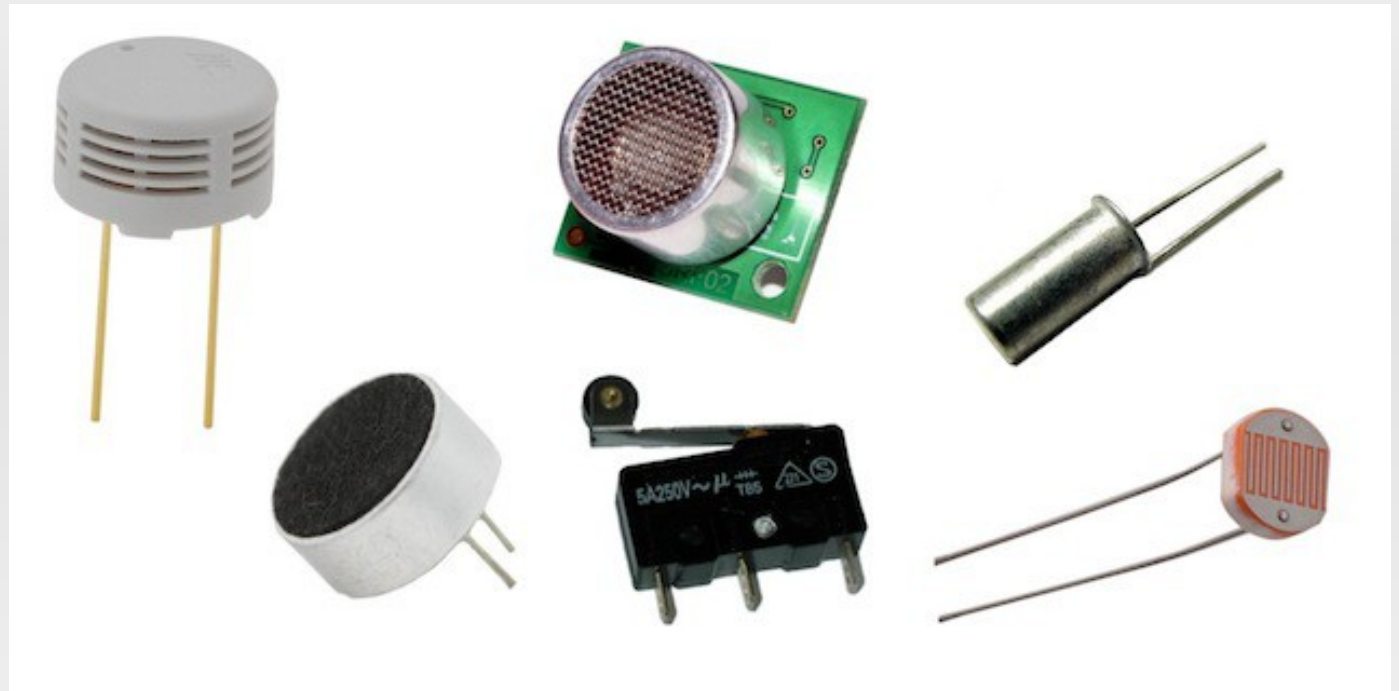
# What is a robot?

Autonomous device  
that is able to make  
pre-programmed tasks

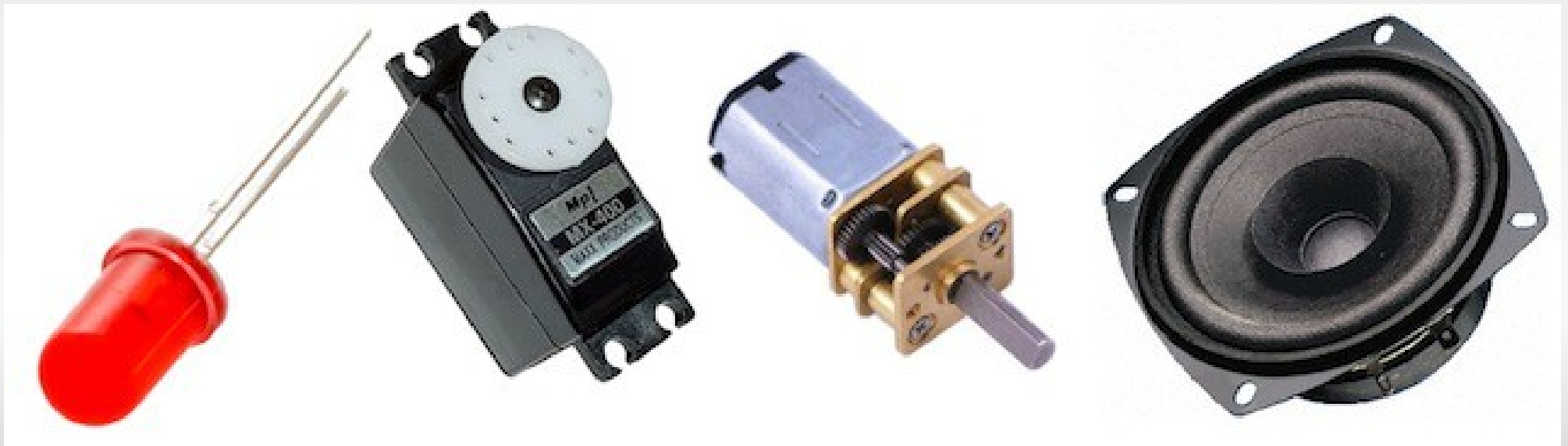


# Components of a robot

## Sensors



## Actuators



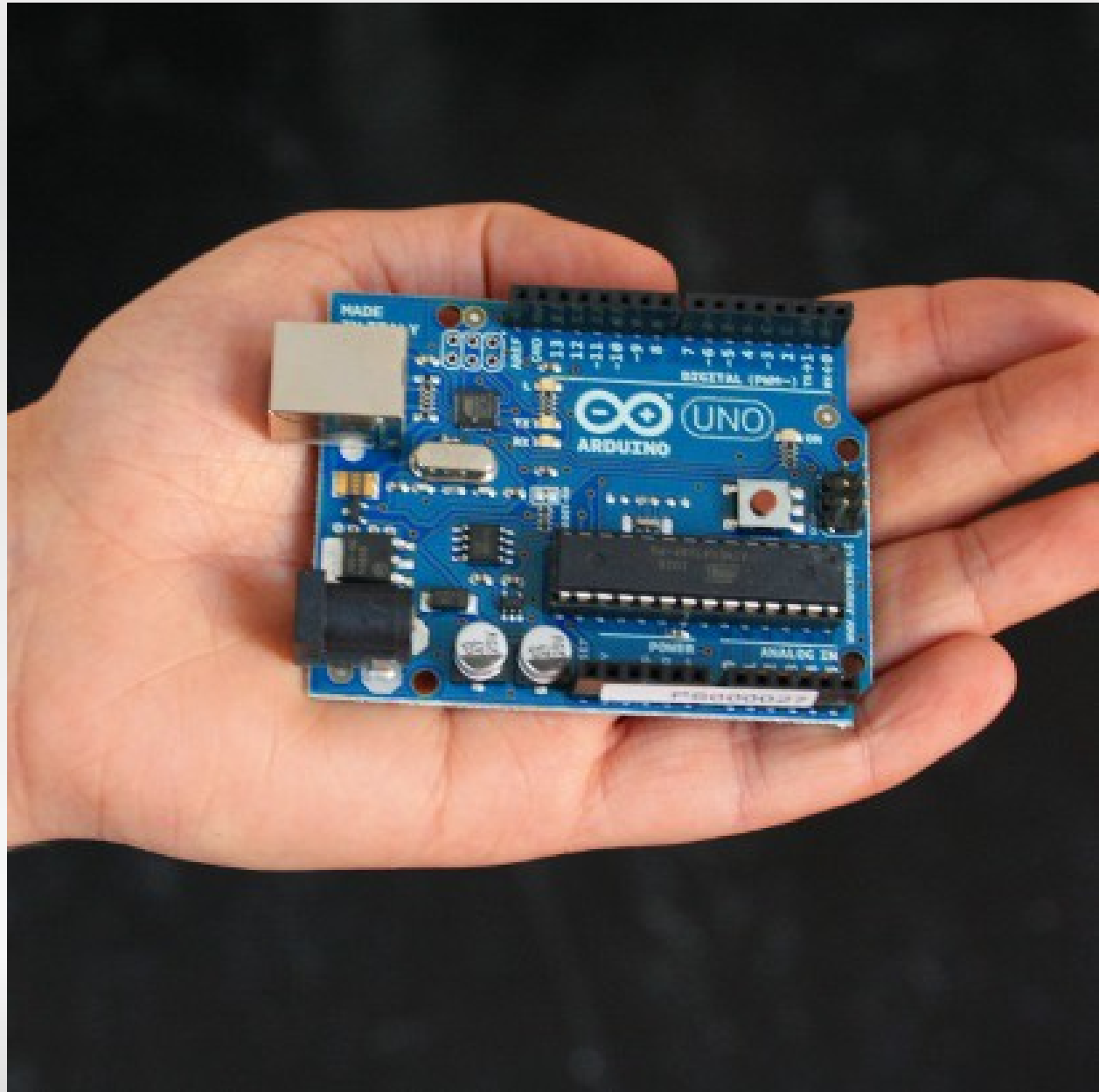


# Arduino

Open source  
electronics platform

**It is the “brain”  
of our robot!**

**You can program  
it with a computer**



# Arduino (2)

**People make  
crazy projects**



Automatic feeder



RC lawnmower!

Automatic toilet flush:

<http://www.youtube.com/watch?v=4k899QWsJwI>

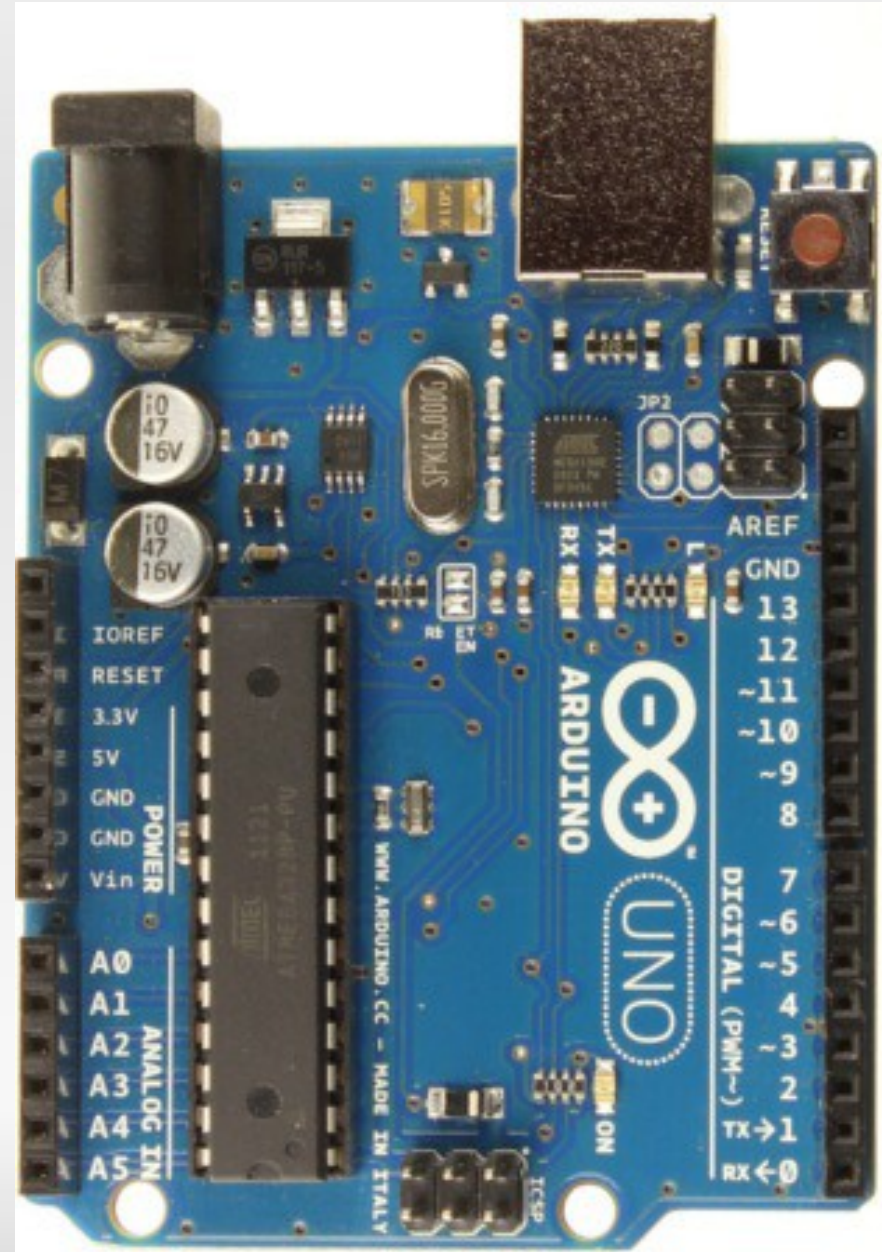
Arduino paper cat:

[http://www.youtube.com/watch?v=ZzZ4\\_g4YzxY](http://www.youtube.com/watch?v=ZzZ4_g4YzxY)

# Arduino (3)

**We are using Arduino UNO**  
It has lots of input/output pins

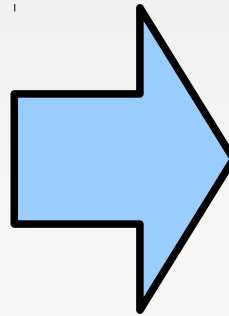
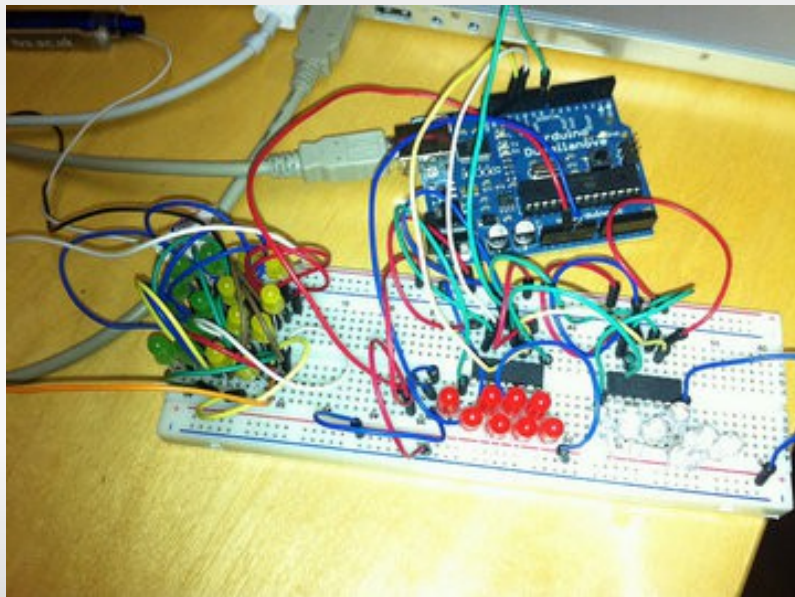
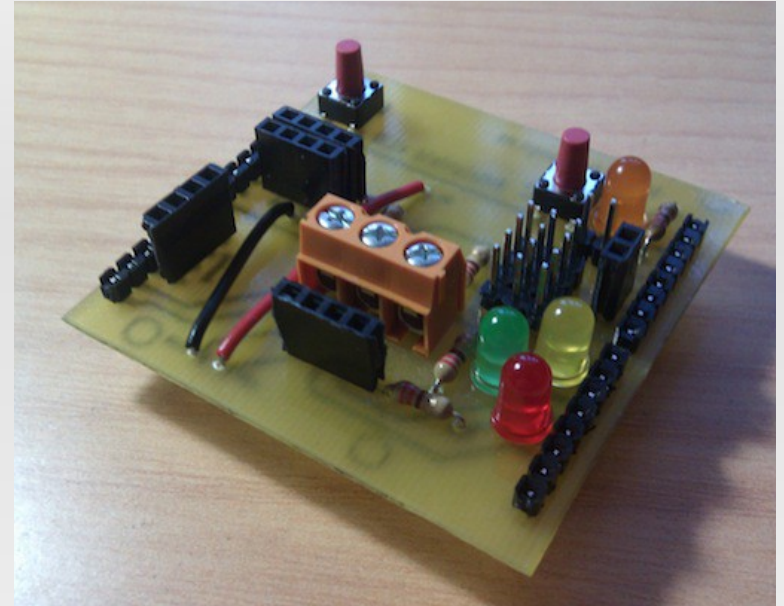
You can connect any kind of  
sensors and actuators





# Arduino & Printshield

**Compact electronics using  
an Arduino UNO with a  
Printshield**



# Printshield

Connector  
for light sensors

LED lights

Connectors  
for servo-motors

Another  
LED light

Push button

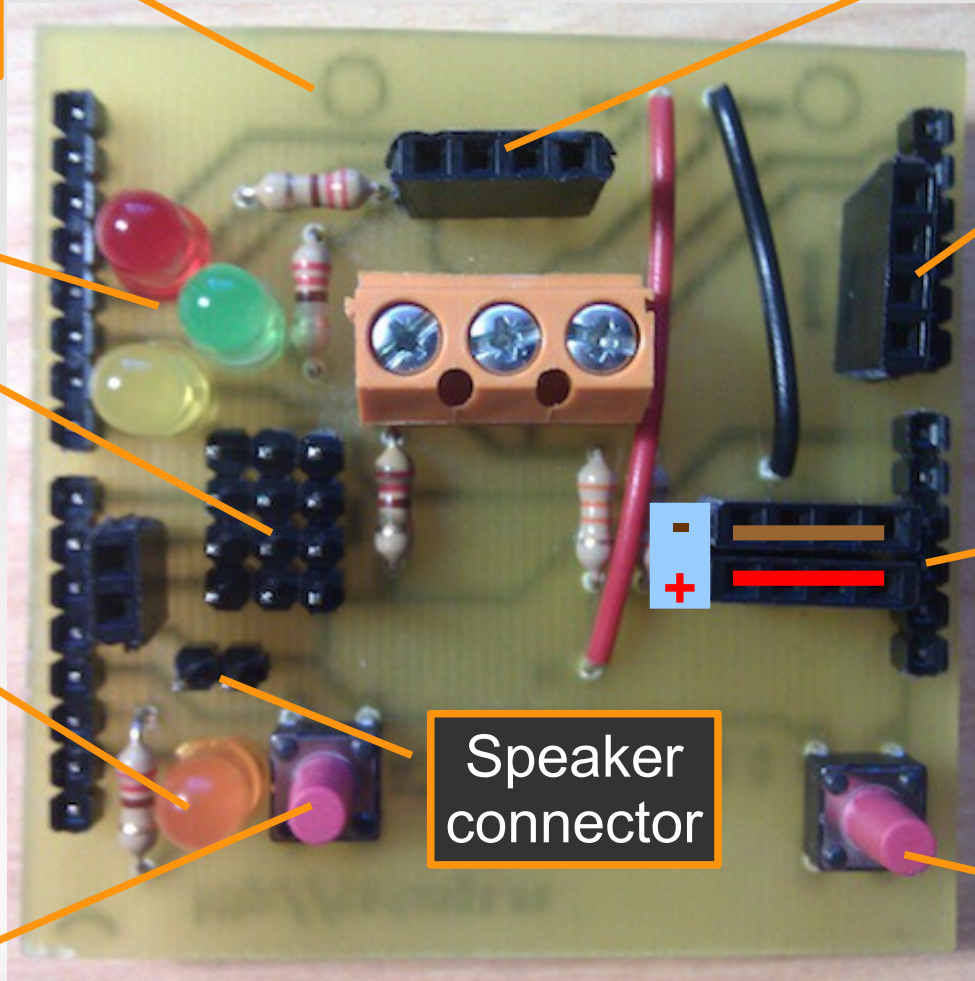
Connector for  
distance sensor

Connector for  
line sensor

5V Power line

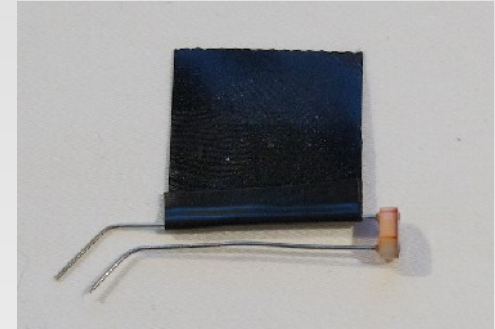
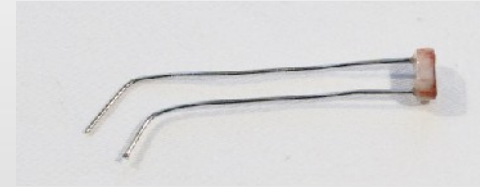
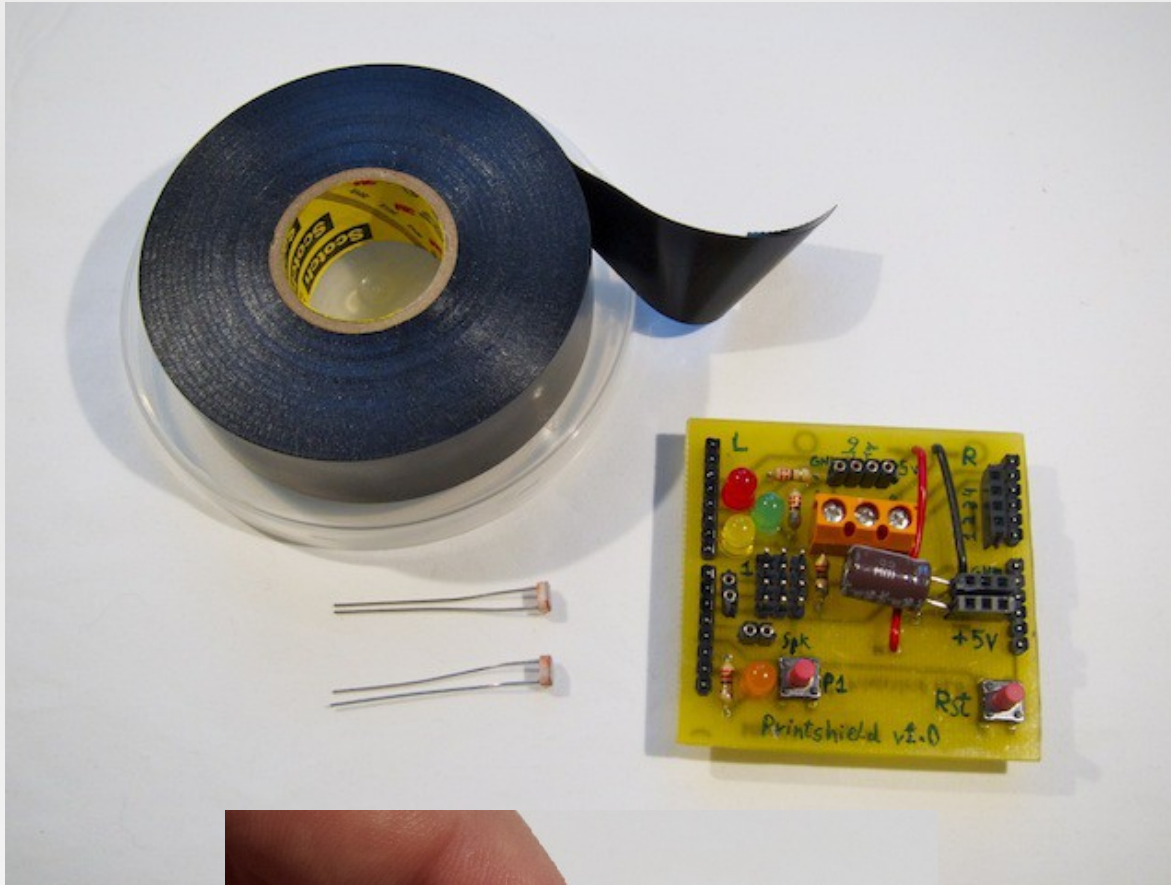
Speaker  
connector

Restart/reset  
button



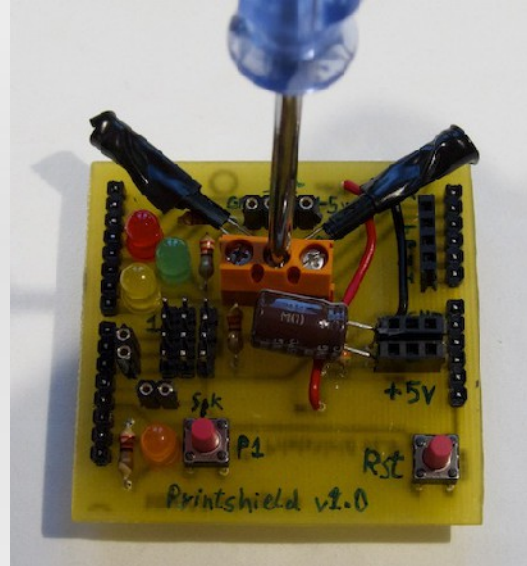
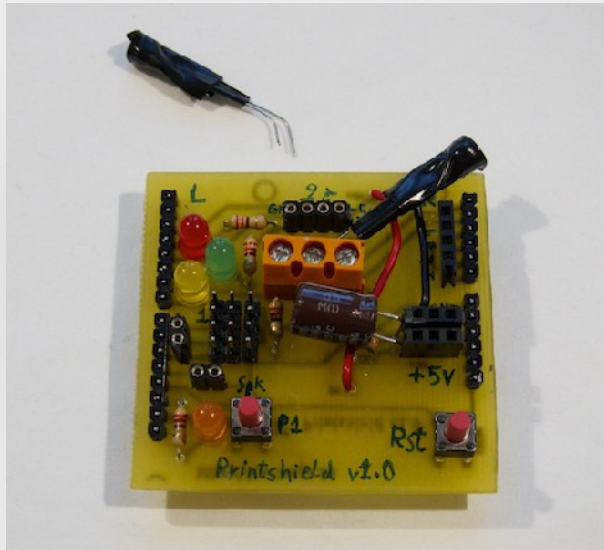


# Assembling the Printshield (1)



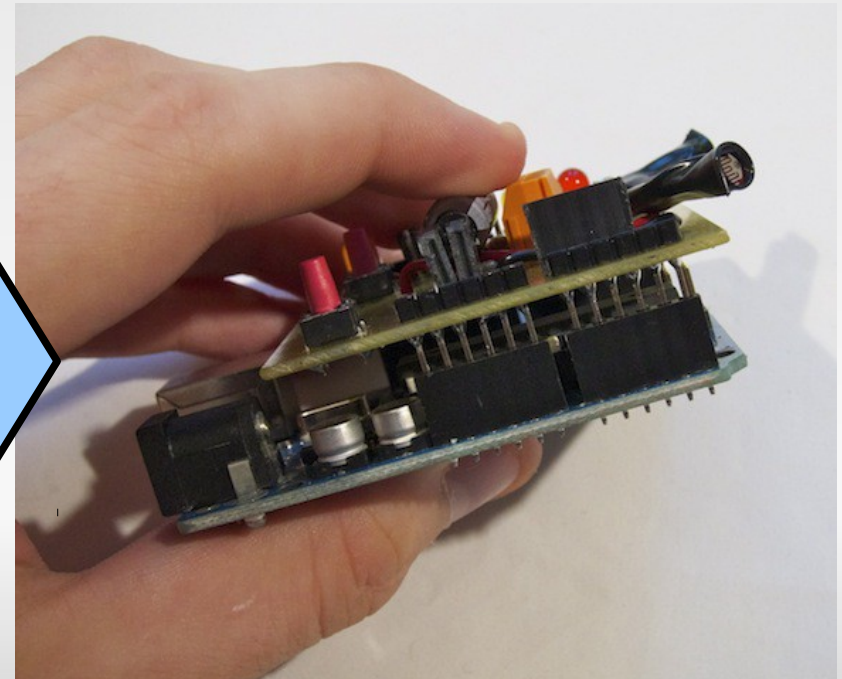
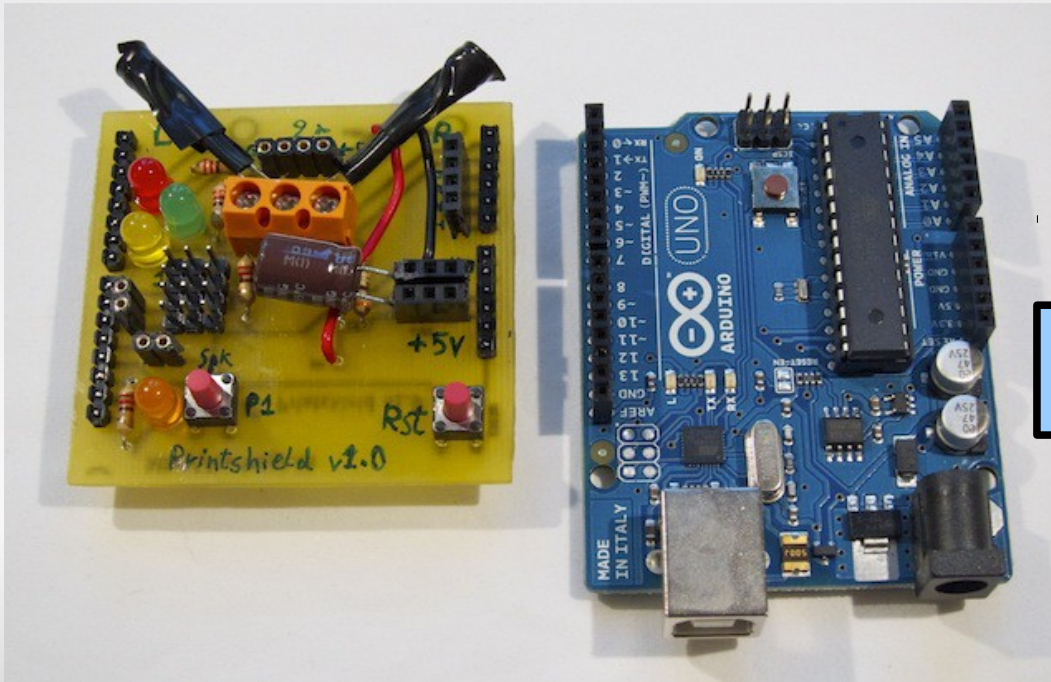
First we need to insulate the light sensors with black tape

# Assembling the Printshield (2)



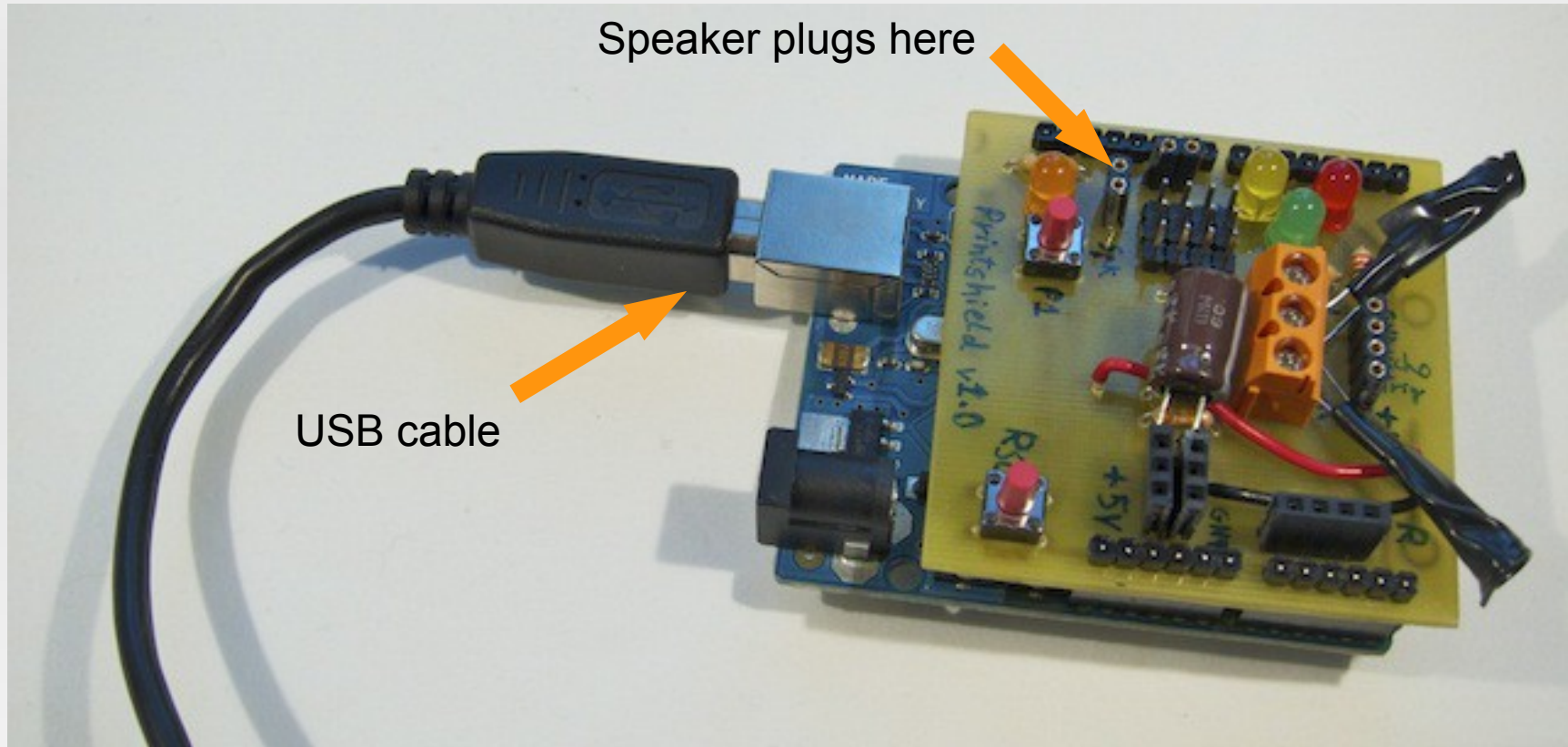
Light sensors need to be screwed into the orange connector

Then we must plug the Printshield on the Arduino UNO board





# Plug it into the computer!

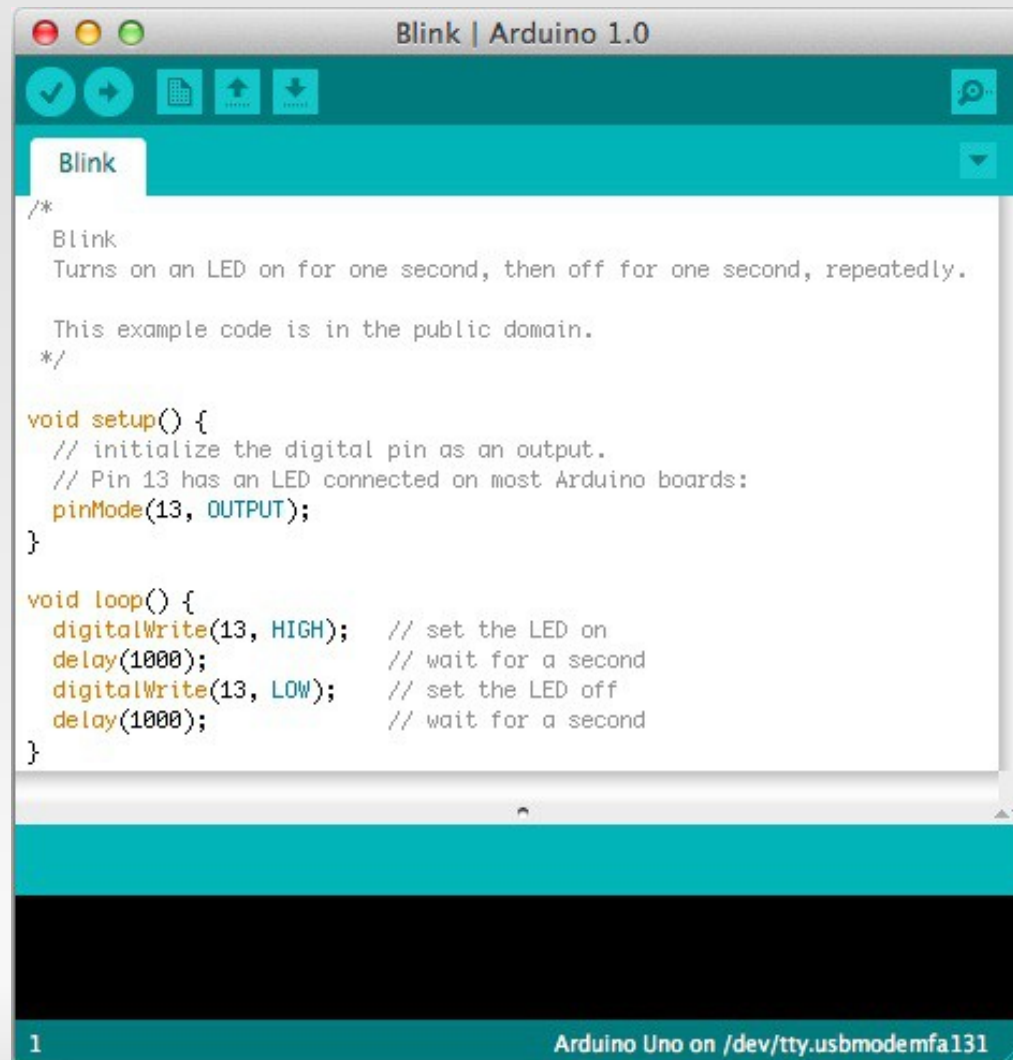


Now we just need to load our programs into the board.



# Load the “Blink” example

Download more example code from  
<http://www.carlossgs.es/2012-summer-workshop>

A screenshot of the Arduino IDE interface. The title bar reads "Blink | Arduino 1.0". The menu bar includes icons for a checkmark, a right arrow, a document, an upload arrow, a download arrow, and a gear. Below the menu bar, a tab labeled "Blink" is selected. The main text area contains the following code:

```
/*  
  Blink  
  Turns on an LED on for one second, then off for one second, repeatedly.  
  
  This example code is in the public domain.  
  */  
  
void setup() {  
  // initialize the digital pin as an output.  
  // Pin 13 has an LED connected on most Arduino boards:  
  pinMode(13, OUTPUT);  
}  
  
void loop() {  
  digitalWrite(13, HIGH);  // set the LED on  
  delay(1000);             // wait for a second  
  digitalWrite(13, LOW);   // set the LED off  
  delay(1000);             // wait for a second  
}
```

The bottom status bar shows "1" on the left and "Arduino Uno on /dev/tty.usbmodemfa131" on the right.

# Say hello to the ArduSkyBot!

It features:

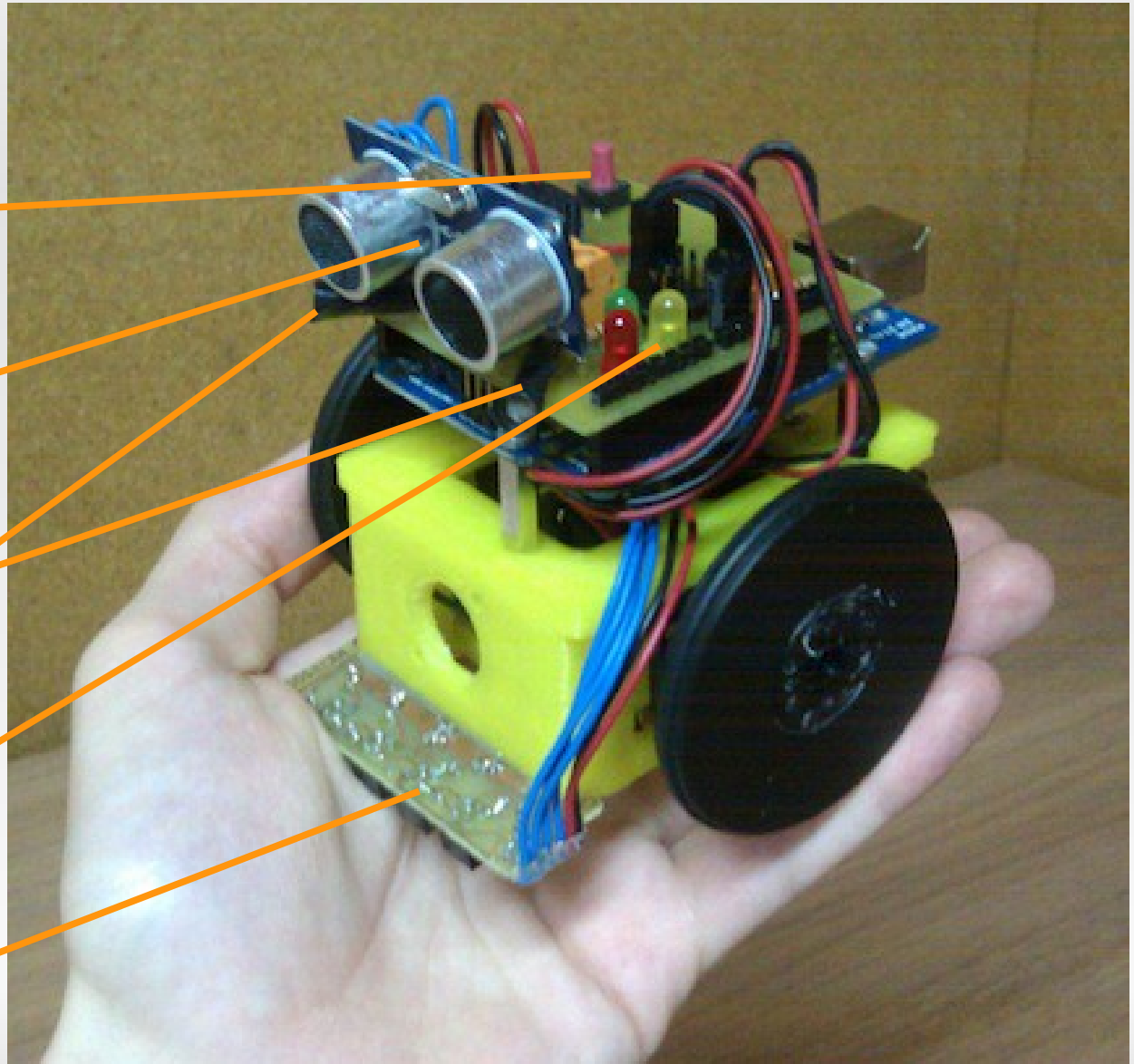
**Push buttons**

**Frontal distance sensor**

**Two light sensors**

**Lots of LED lights**

**Line sensor**

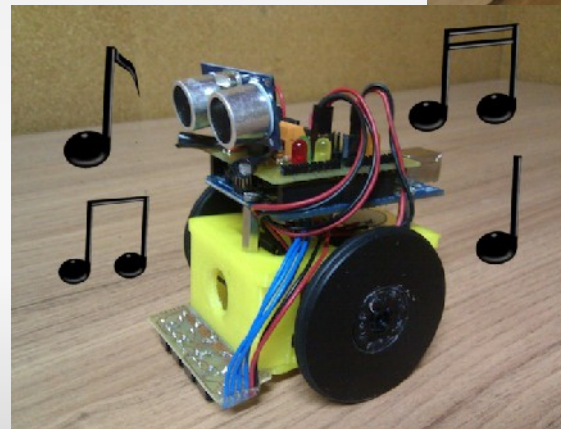
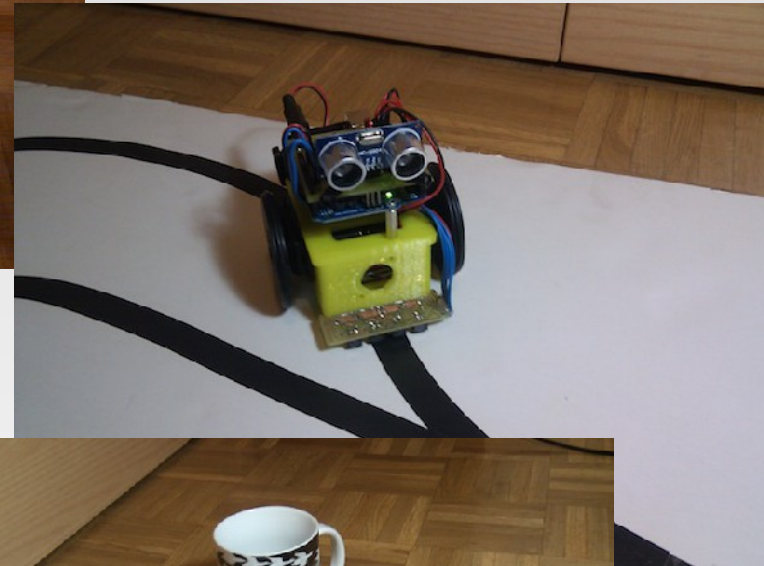


# What can the ArduSkyBot do?



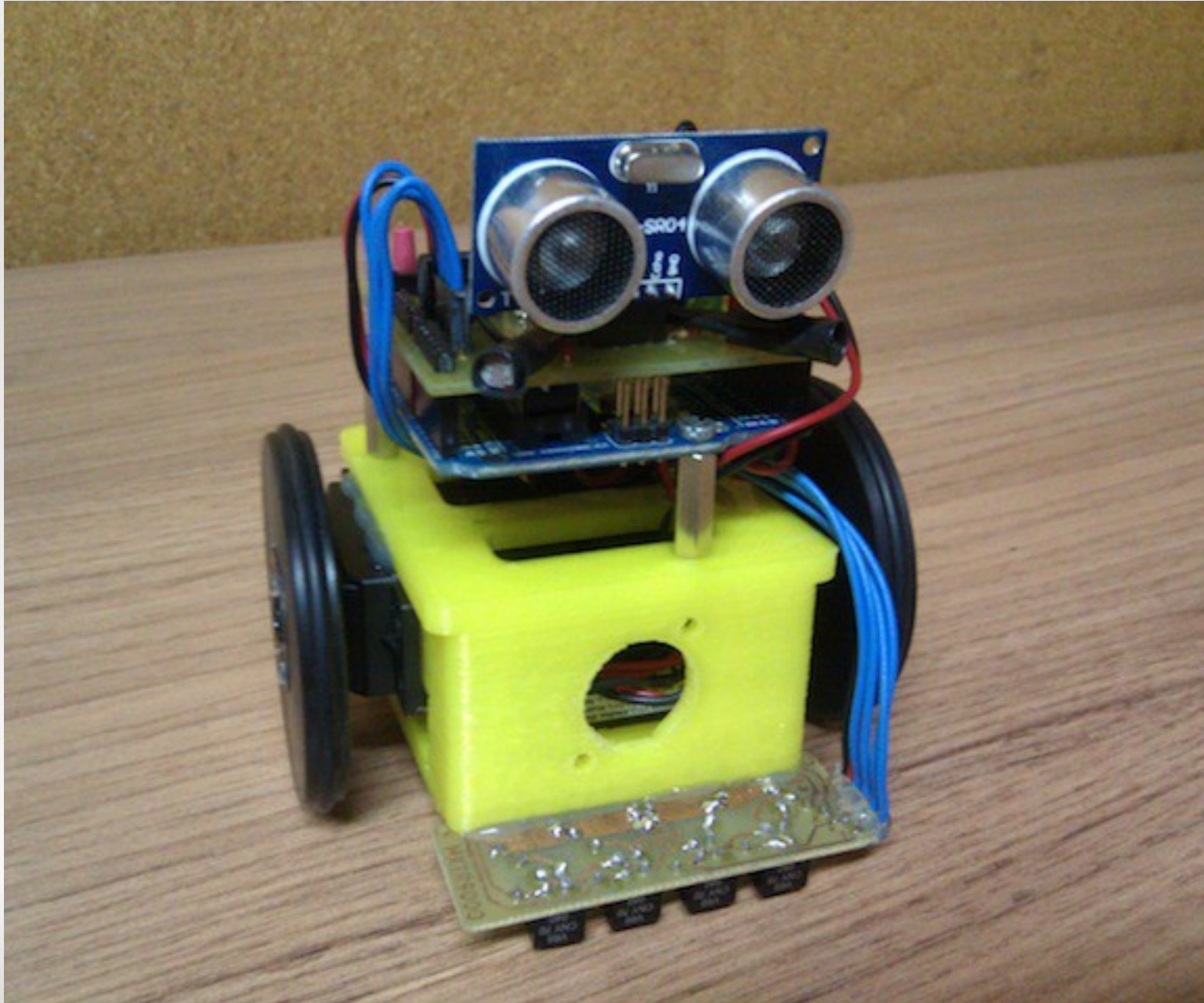
Some examples:

- Follow light
- Line follower
- Avoid obstacles
- Play music tones





# Tomorrow more!

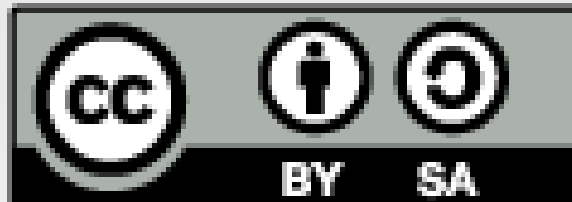


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Author:  
Carlos García Saura