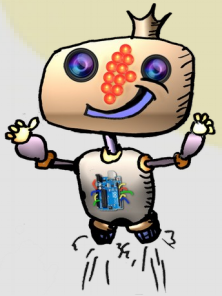
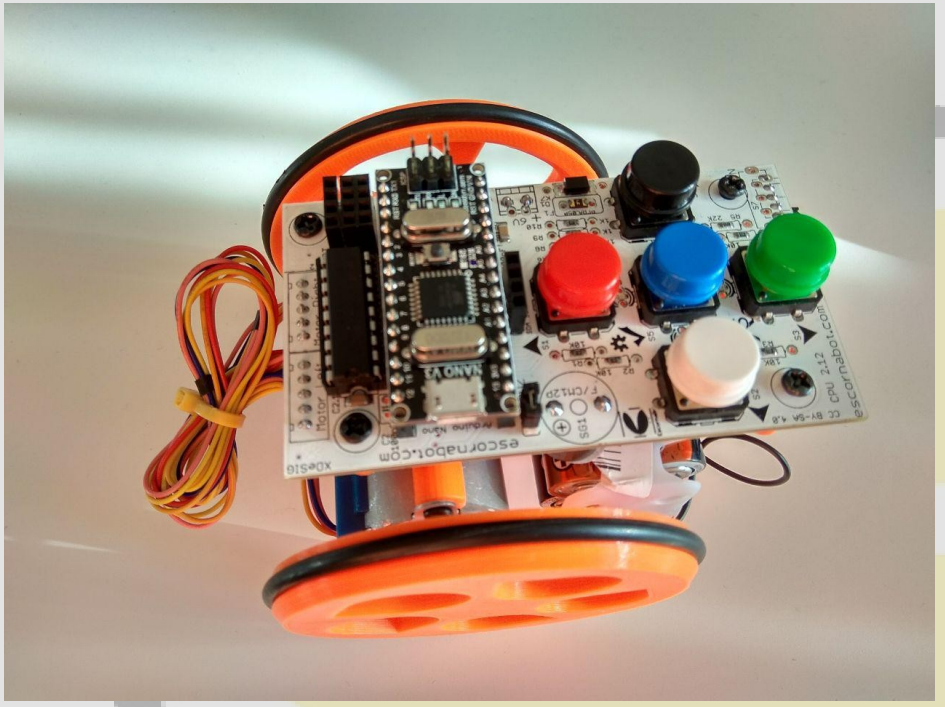
Taller Escornabot DIY

Club Robótica Granada



¿Escorna que ...?



ESCORNABOI (escarabajo lucanus cervus en galego) + BOT (robot)

Objetivo

ROBÓTICA Y PROGRAMACIÓN

Sustituye a Robots privativos

Características

- Lo haces tú
- Hardware abierto y Software libre
- Asequible
- Bien documentado

¿Quién?

Equipo de desarrollo (Github https://github.com/orgs/escornabot/people/ / Grupo de google)

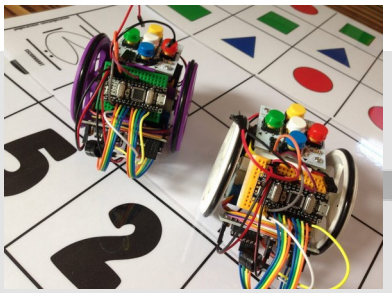
Comunidad (Grupo de google / Telegram)

¡¡¡ Escornafan !!!

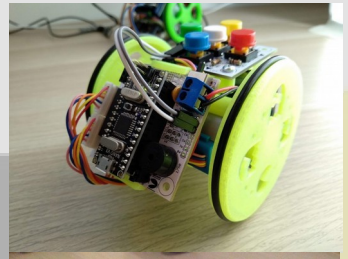
Pablo Rubio

(https://pablorubma.cc/)

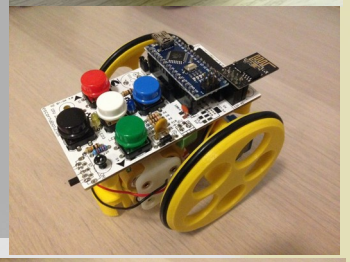
Versiones



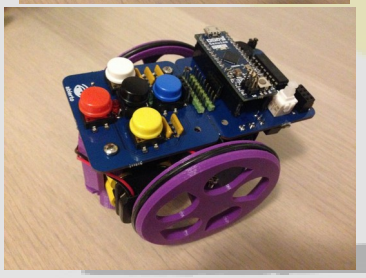
Do It Yourself (DIY)



Compactus



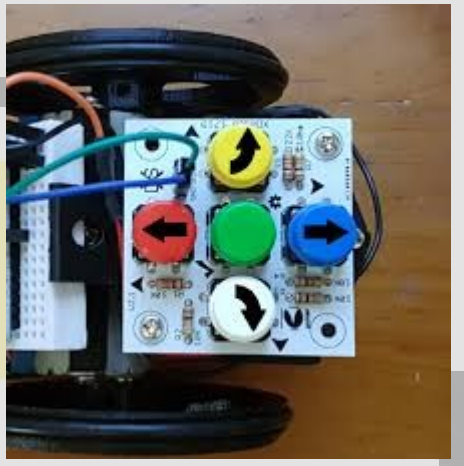
Placa 2.12

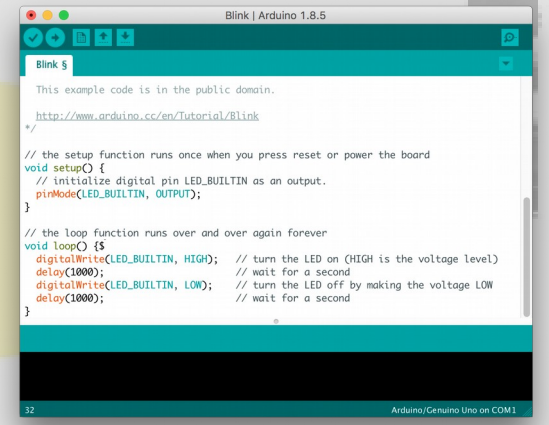


Okagi

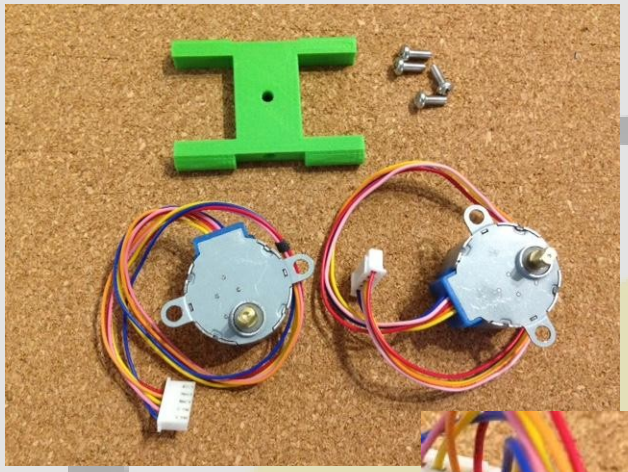
Funcionamiento y programación

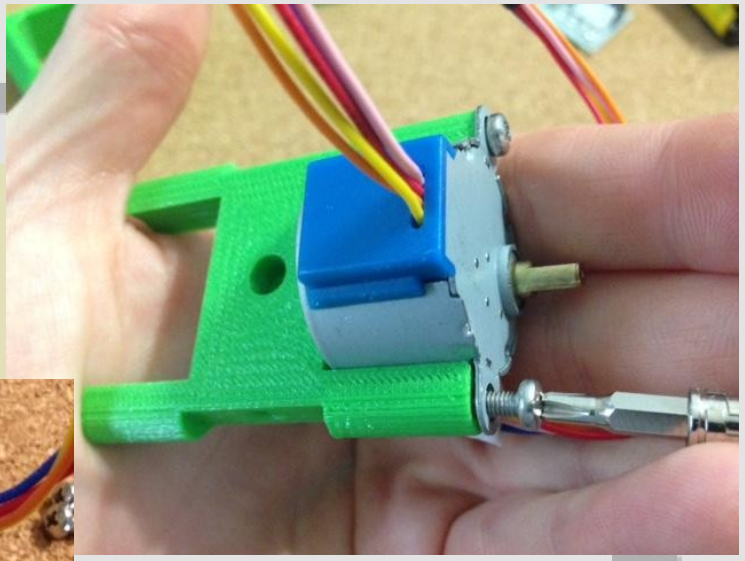
- Introduce Firmware y se maneja con botonera (modo clásico)
- Se puede programar con librería para arduino e incluso poner sensores extras

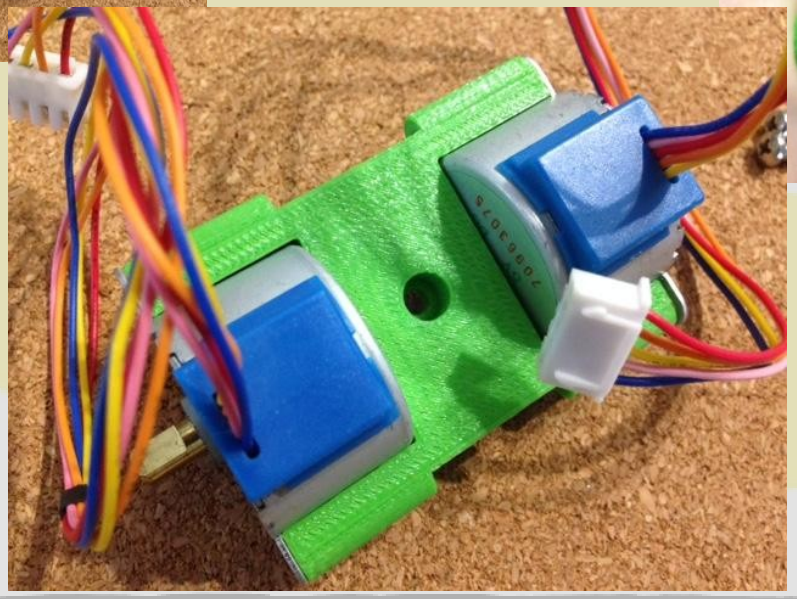




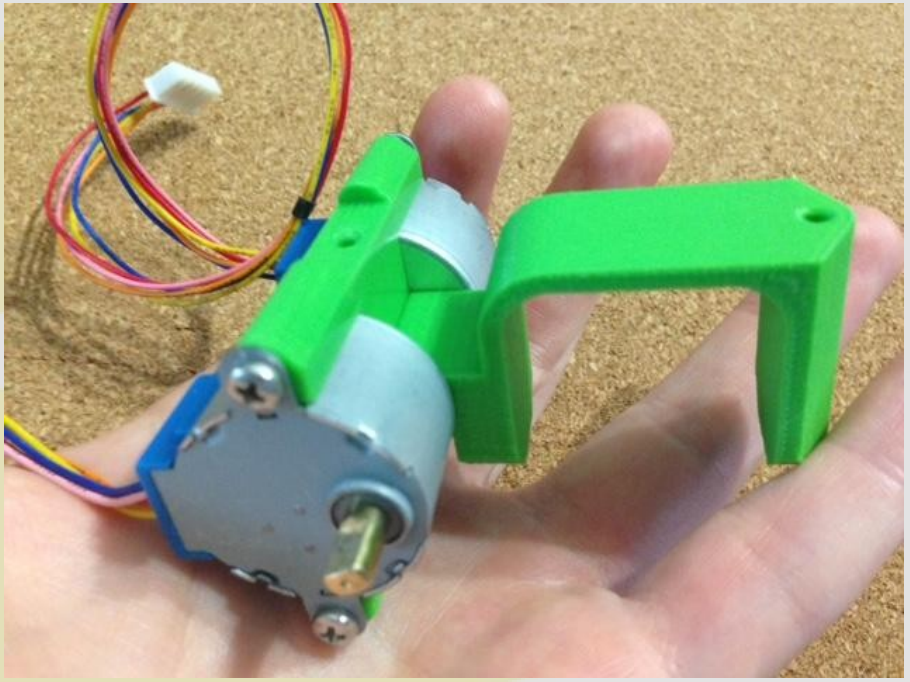
Motores



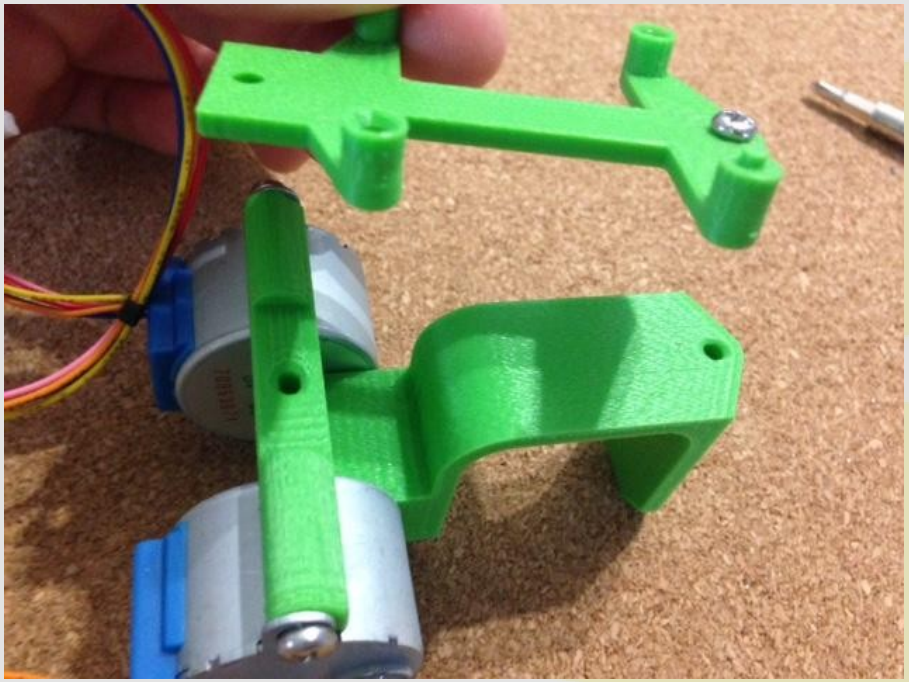


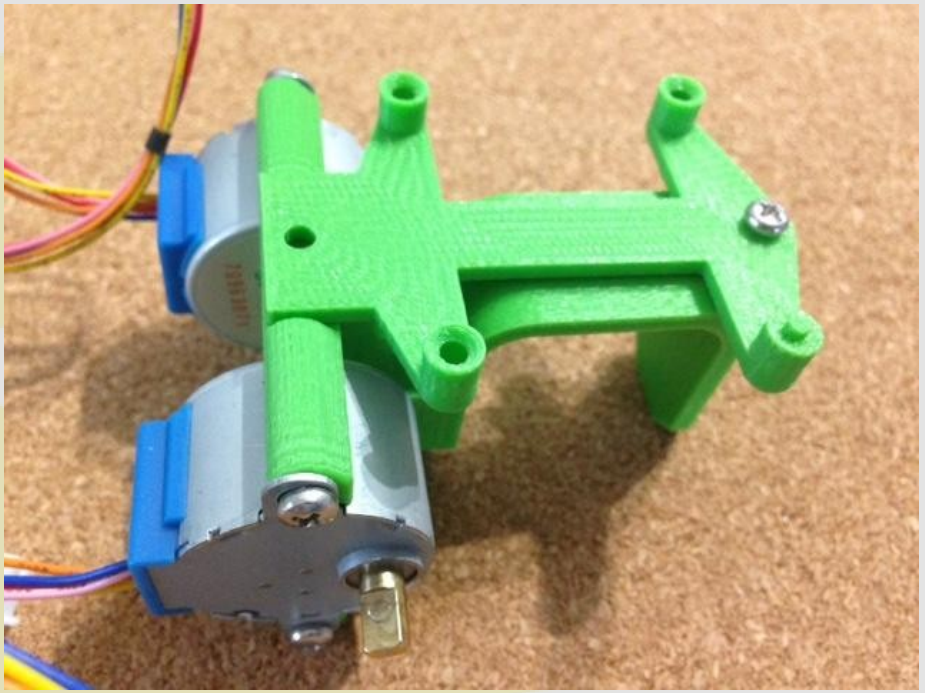


Soporte portapilas

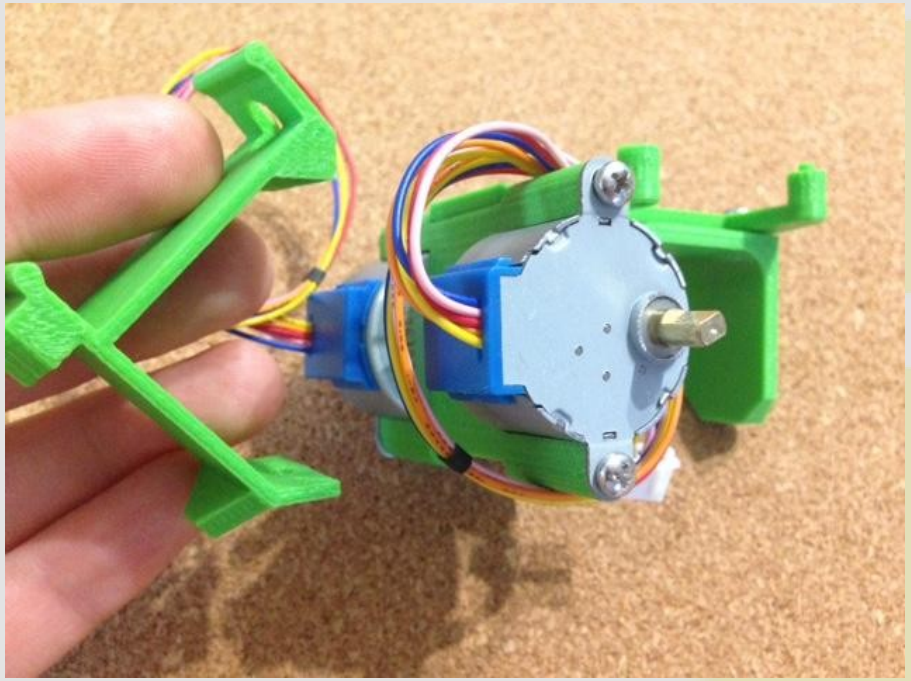


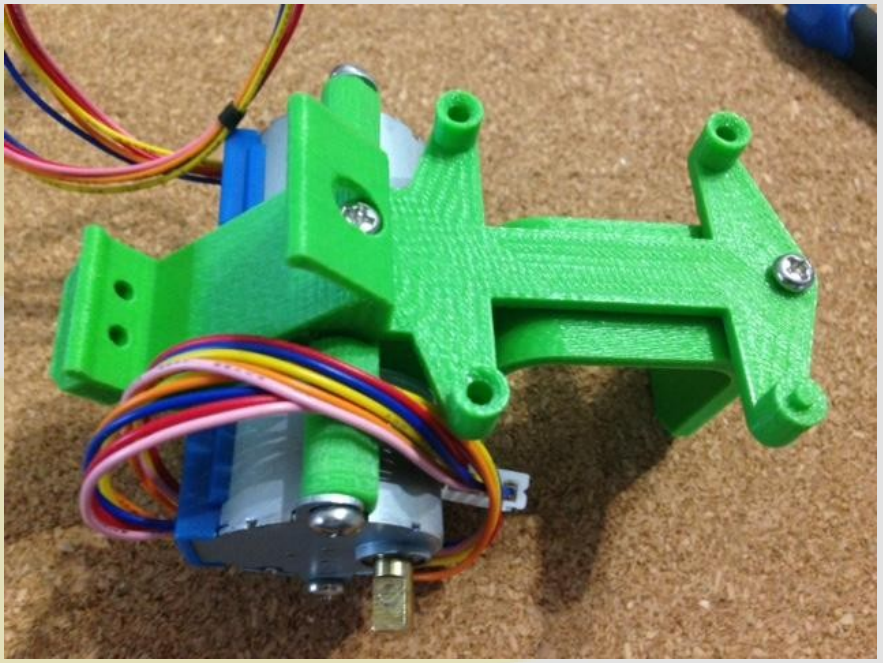
Soporte botonera



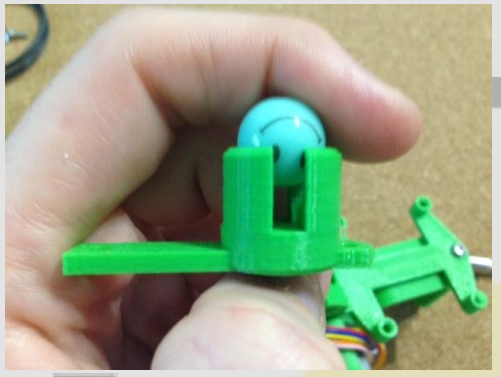


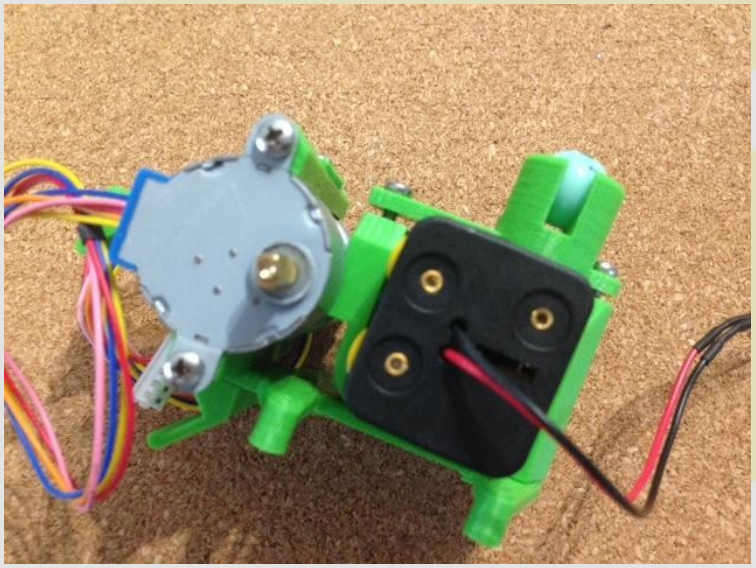
Soporte board

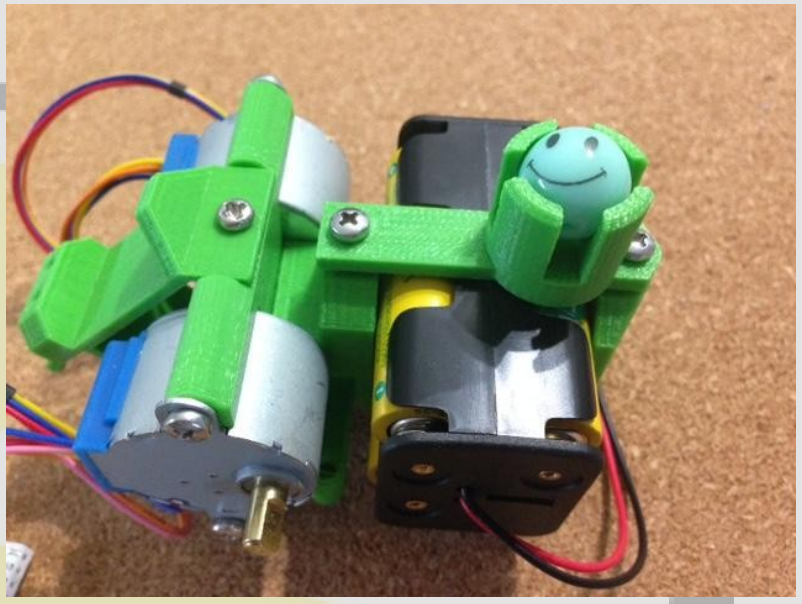




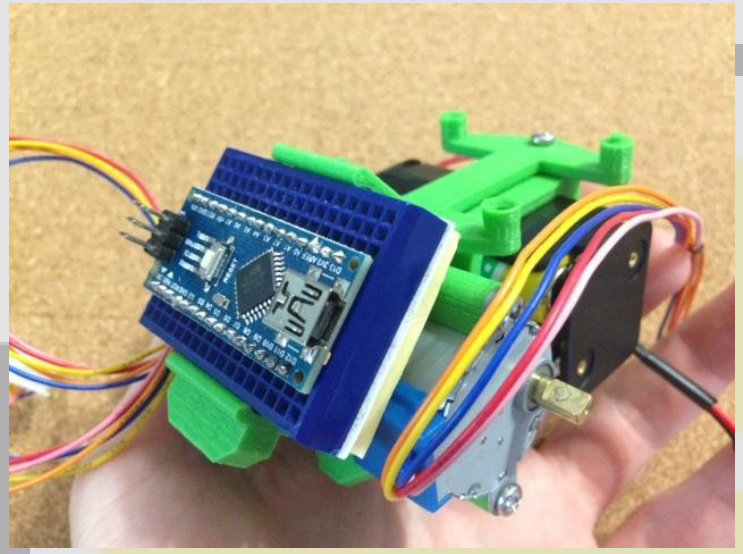
Portapilas y bola

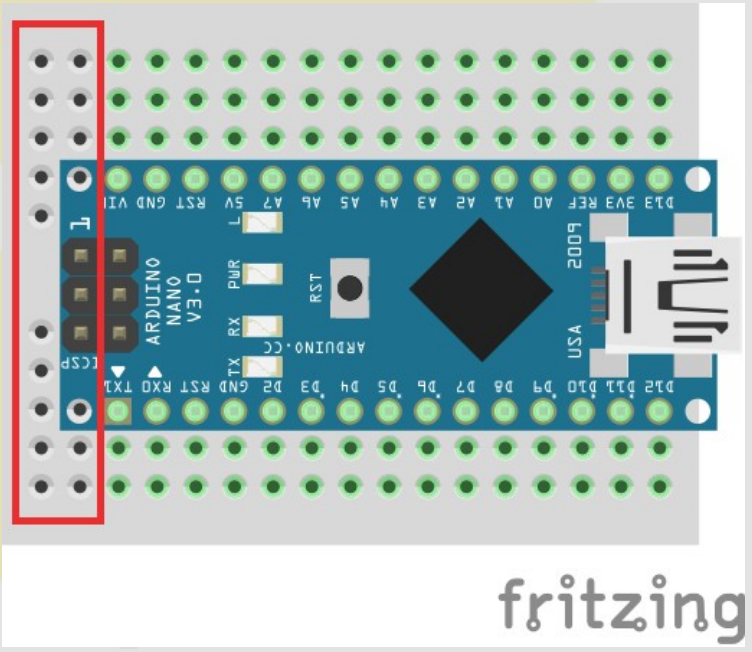




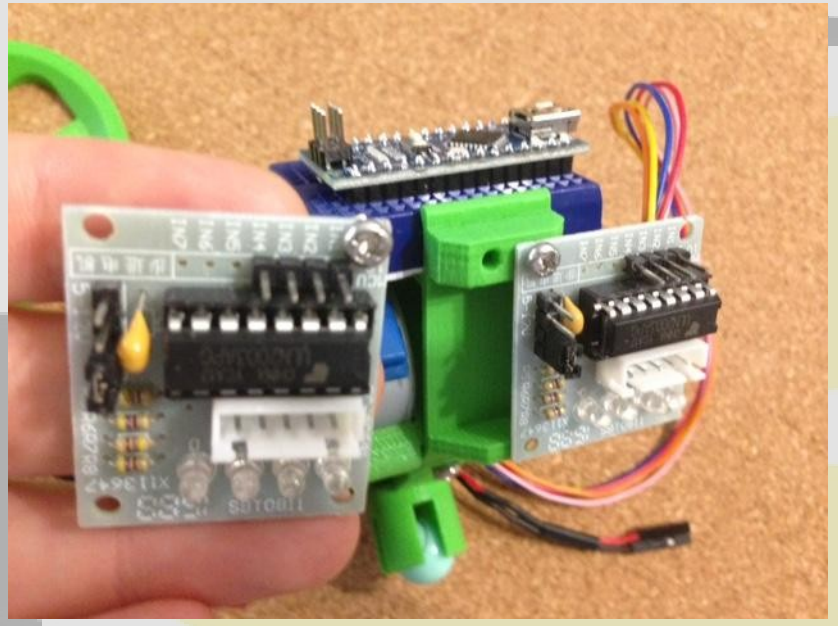


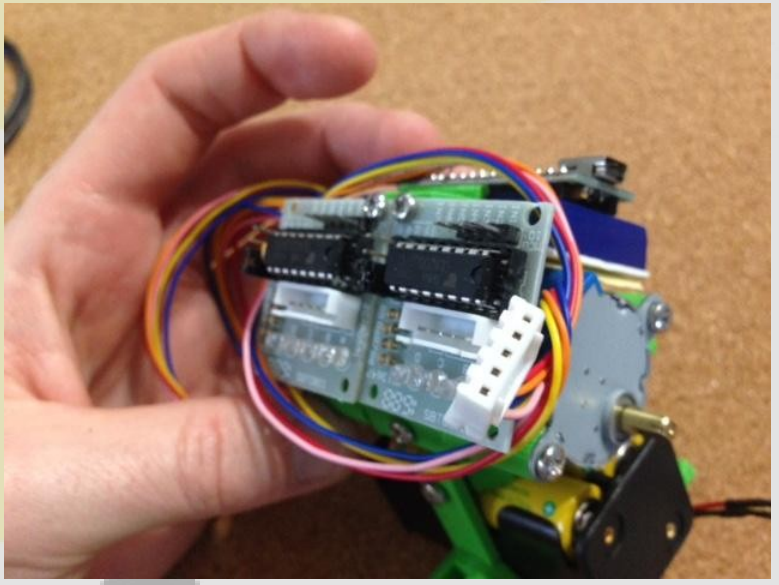
Board



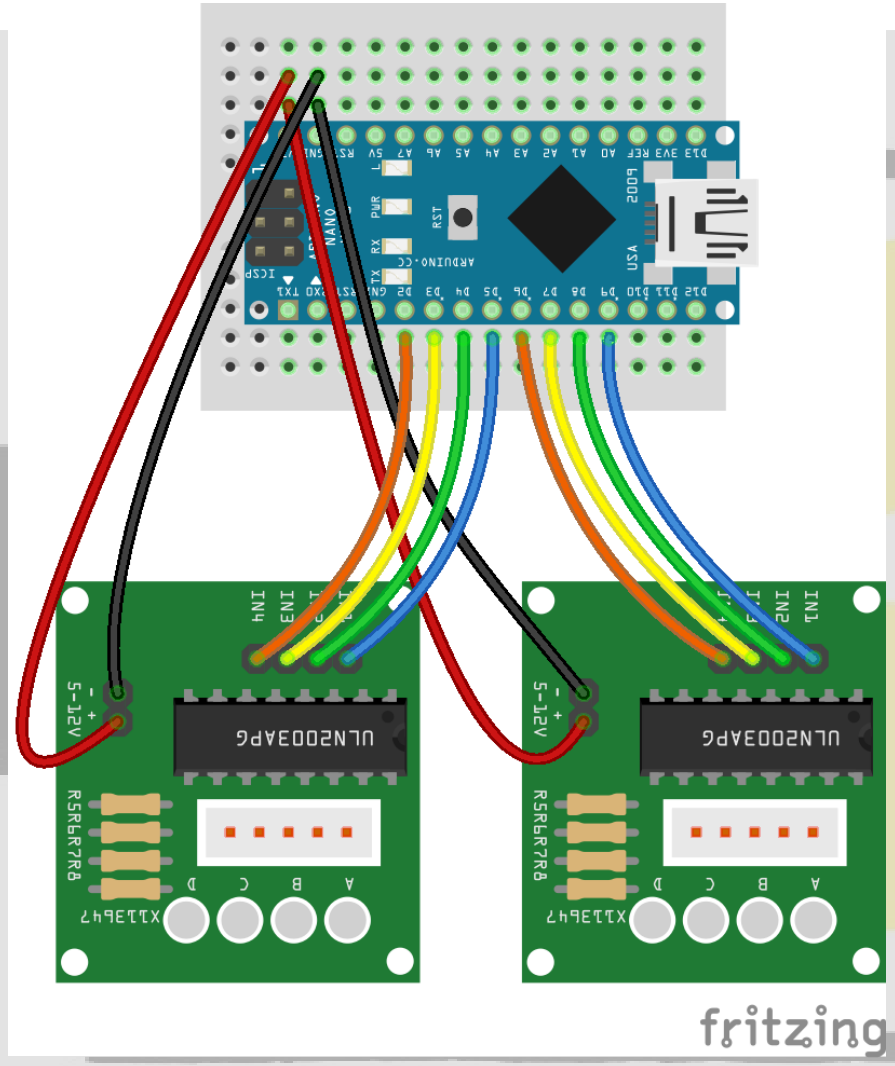


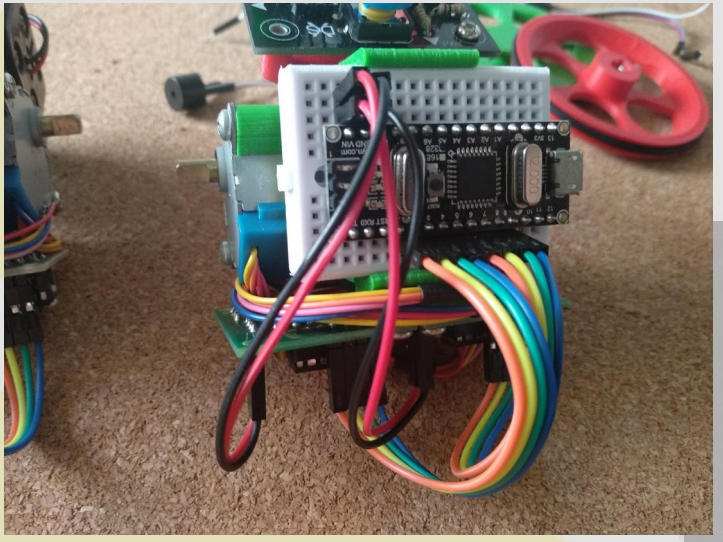
Drivers de motores



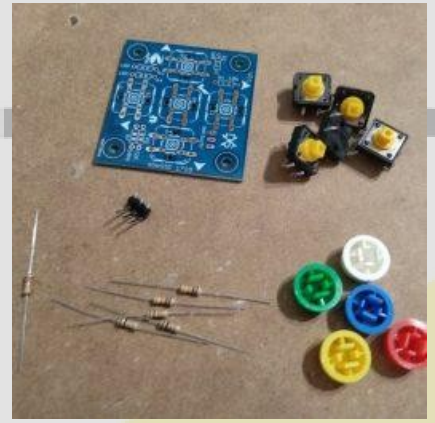


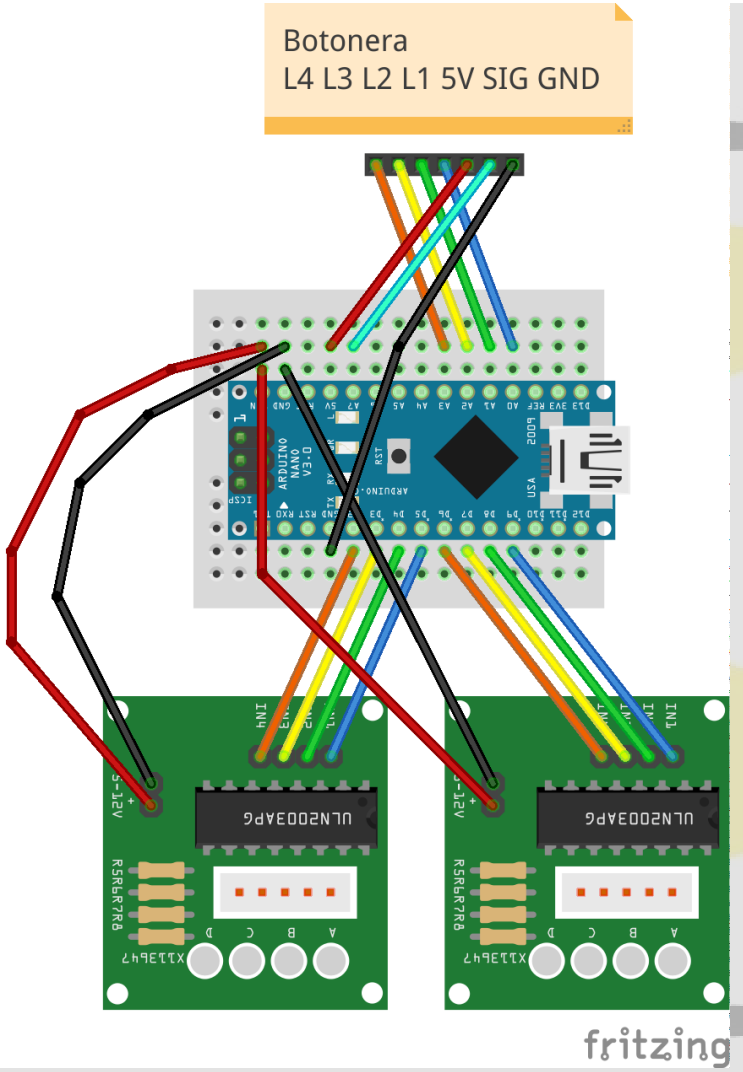
Conexionado drivers





Conexionado Botonera

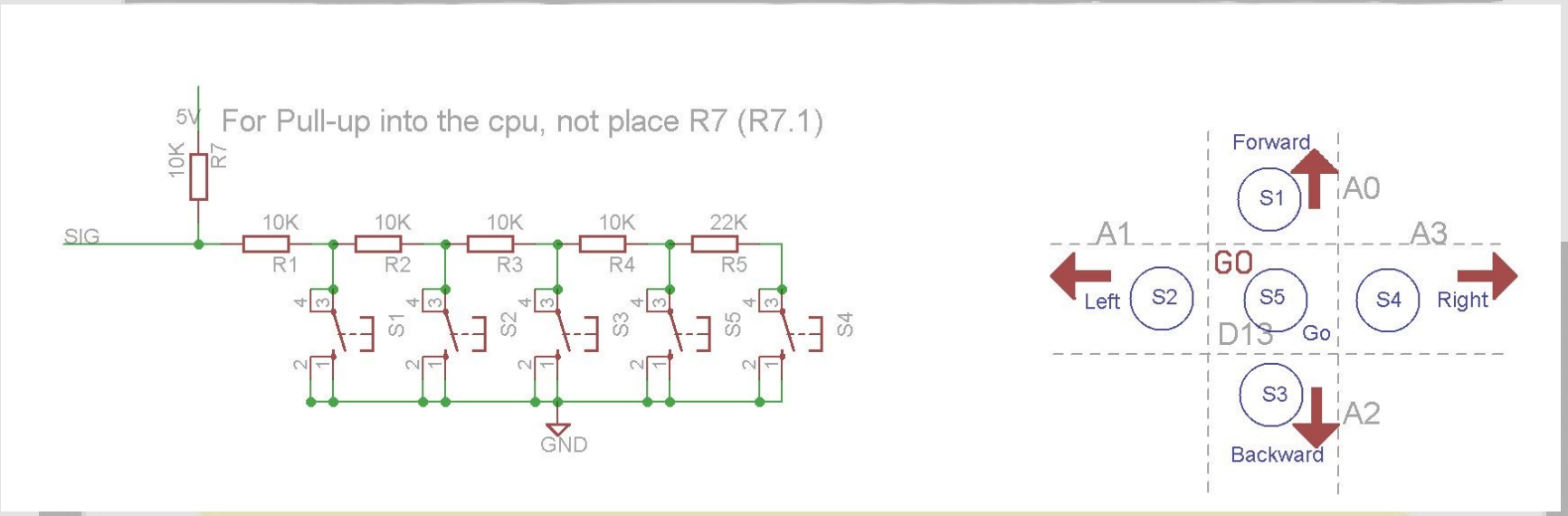




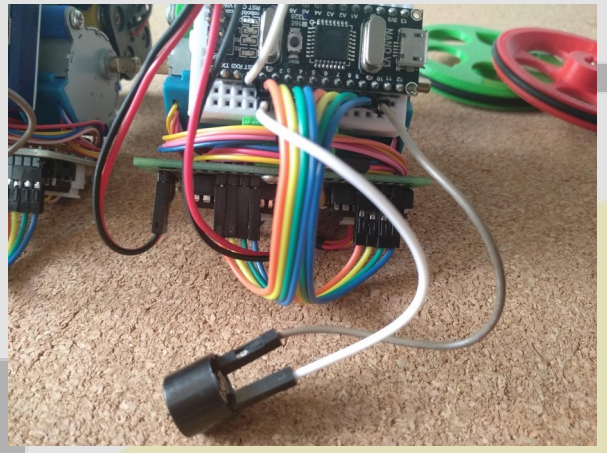
Conexionado botonera

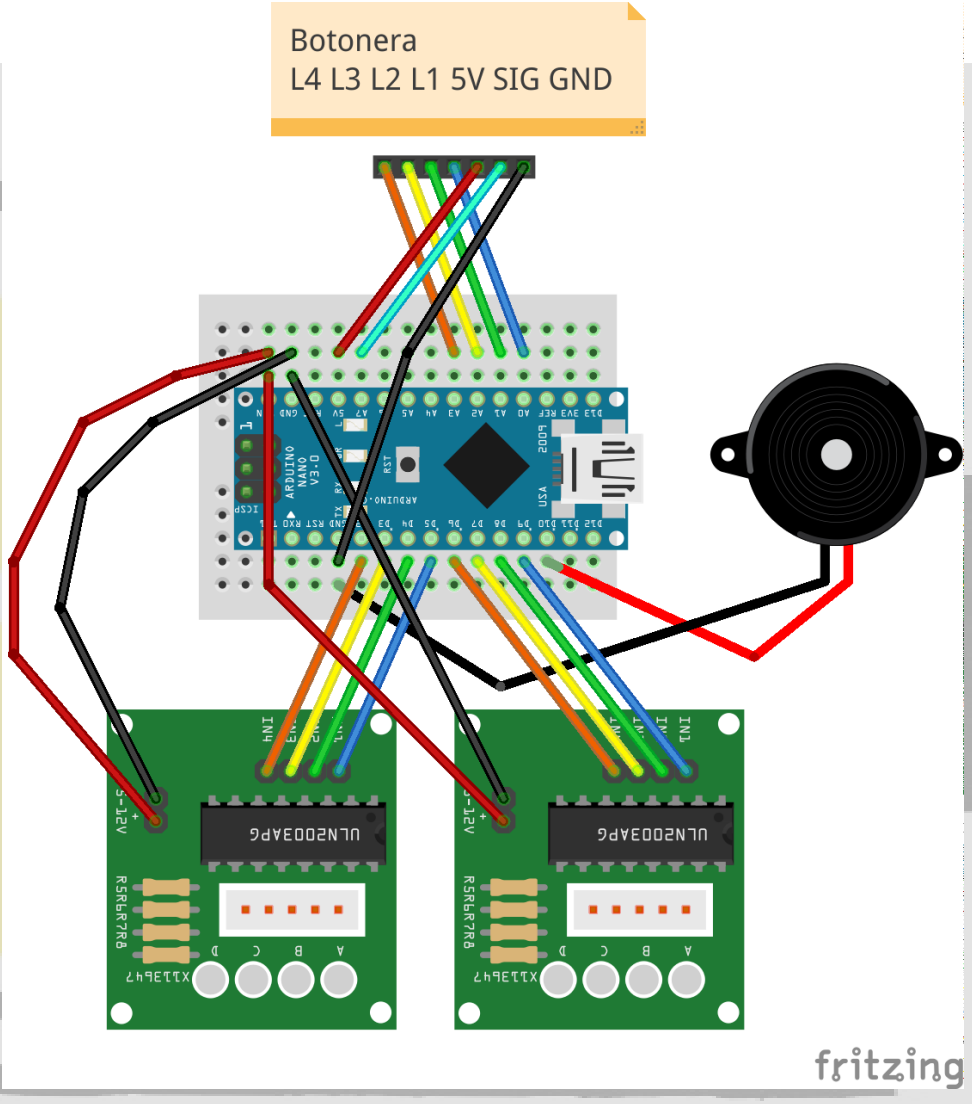
- Pin gnd: gnd de abajo (al lado D2)
- Pin 5V: 5V de arriba
- Pin Signal: A7 (arriba)
- Pin L1: A0
- Pin L2: A1
- Pin L3: A2
- Pin L4: A3

Botonera

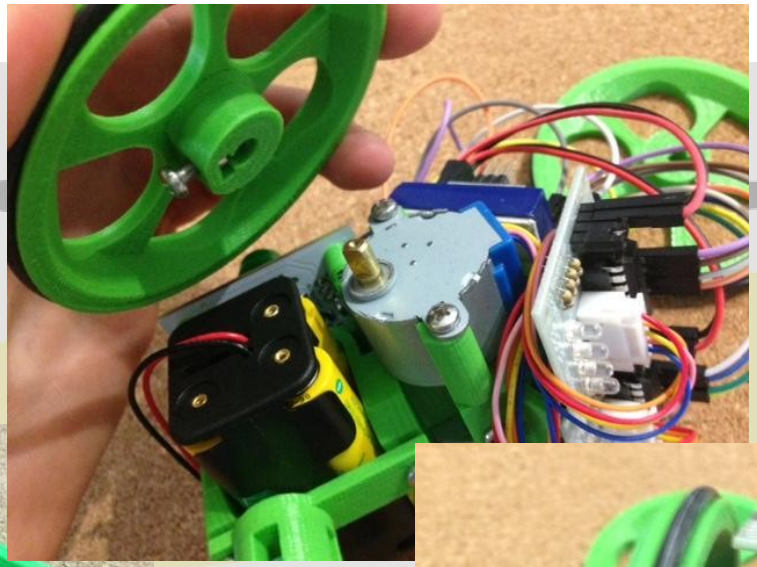

5V
For Pull-up into the cpu, not place R7 (R7.1)
10K
R7
SIG
10K
R1
10K
R2
10K
R3
10K
R4
22K
R5
S1
S2
S3
S5
S4
GND
Forward
S1
A0
A1
A3
GO
Left
S2
S5
S4
Right
D13
Go
S3
A2
Backward

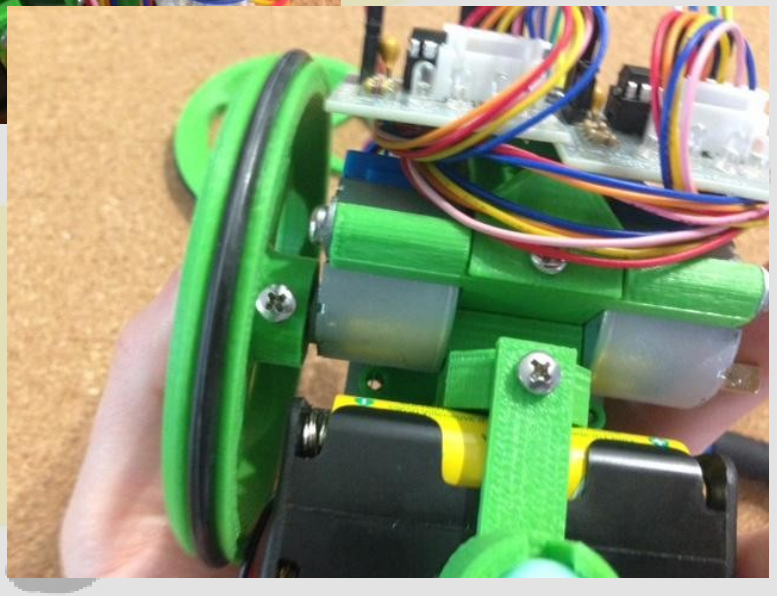
Zumbador y conjunto



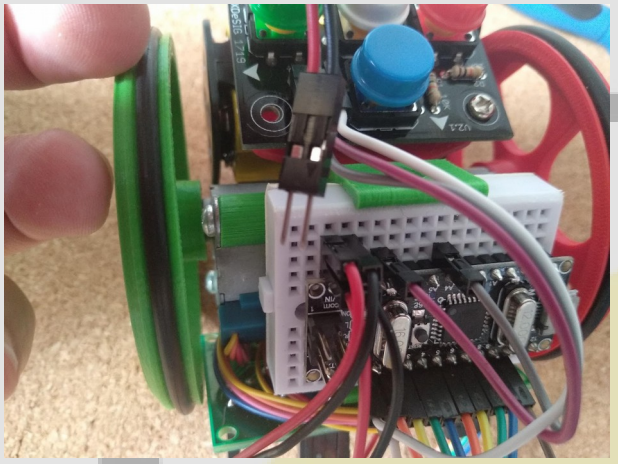


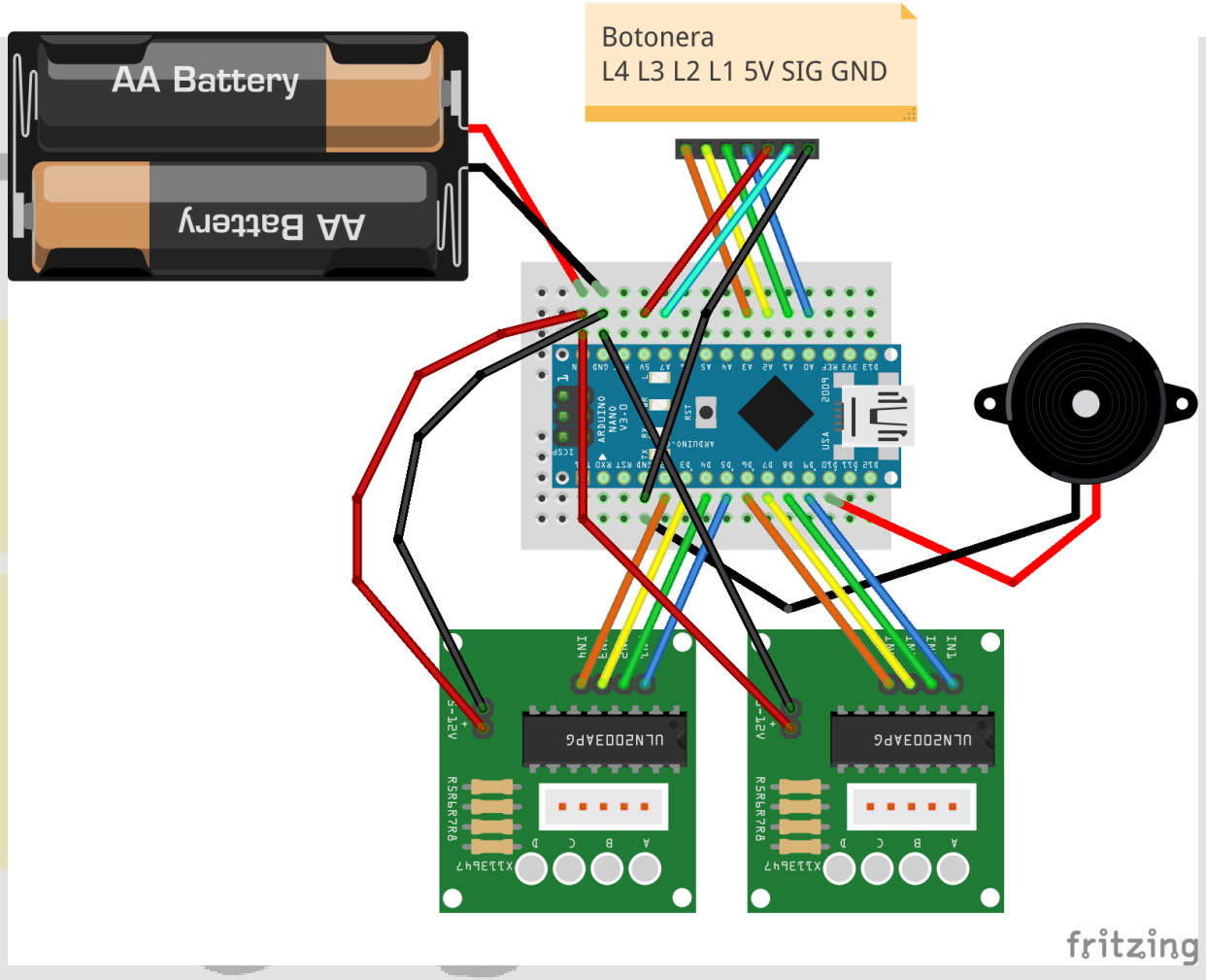
Ruedas





Conexionado Portapilas





Modos firmware 1.6.2

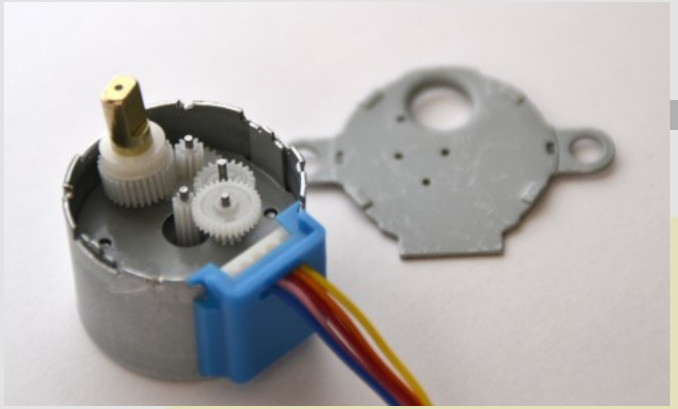
- Modo normal
  - Pulsación corta: giros 90º
  - Pulsación larga: giros 45º
- Modo 60º (tecla GO pulsación larga)
  - Pulsación corta: giros 60º
  - Pulsación larga: giros 120º
- Pausa: pulsación larga tecla atrás.

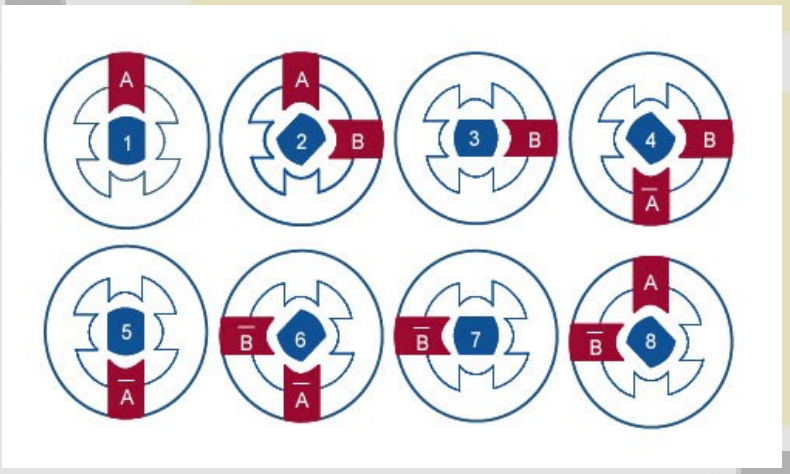
Cambios en firmware

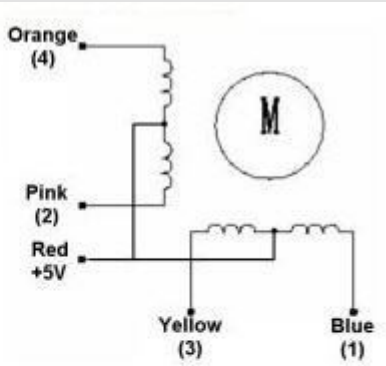
- Abrimos Escornabot.ino, pestaña Configuration.h
  - #define STEPPERS_STEPS_PER_SECOND 1000: numero de pasos por segundo, el tope anda sobre 2300
  - #define STEPPERS_LINE_STEPS 1738: da un avance de 10cm
  - #define STEPPERS_TURN_STEPS 1024: establece un giro de 90º, una vuelta completa 4096 pasos

```
#ifdef ENGINE_TYPE_STEPPERS
// stepper pin setup (digital outputs)
#define STEPPERS_MOTOR_RIGHT_IN1 5
#define STEPPERS_MOTOR_RIGHT_IN2 4
#define STEPPERS_MOTOR_RIGHT_IN3 3
#define STEPPERS_MOTOR_RIGHT_IN4 2
#define STEPPERS_MOTOR_LEFT_IN1 9
#define STEPPERS_MOTOR_LEFT_IN2 8
#define STEPPERS_MOTOR_LEFT_IN3 7
#define STEPPERS_MOTOR_LEFT_IN4 6

// step calibration
#define STEPPERS_STEPS_PER_SECOND 1000
#define STEPPERS_LINE_STEPS 1738
#define STEPPERS_TURN_STEPS 1024

#endif
```

Motor paso a paso







Half-Step Switching Sequence

Lead Wire Color	---> CW Direction (1-2 Phase)							
	1	2	3	4	5	6	7	8
4 Orange	-	-						-
3 Yellow		-	-	-				
2 Pink				-	-	-		
1 Blue						-	-	-

64 pasos/vuelta x 64 reductora =
4096 pasos para una vuelta