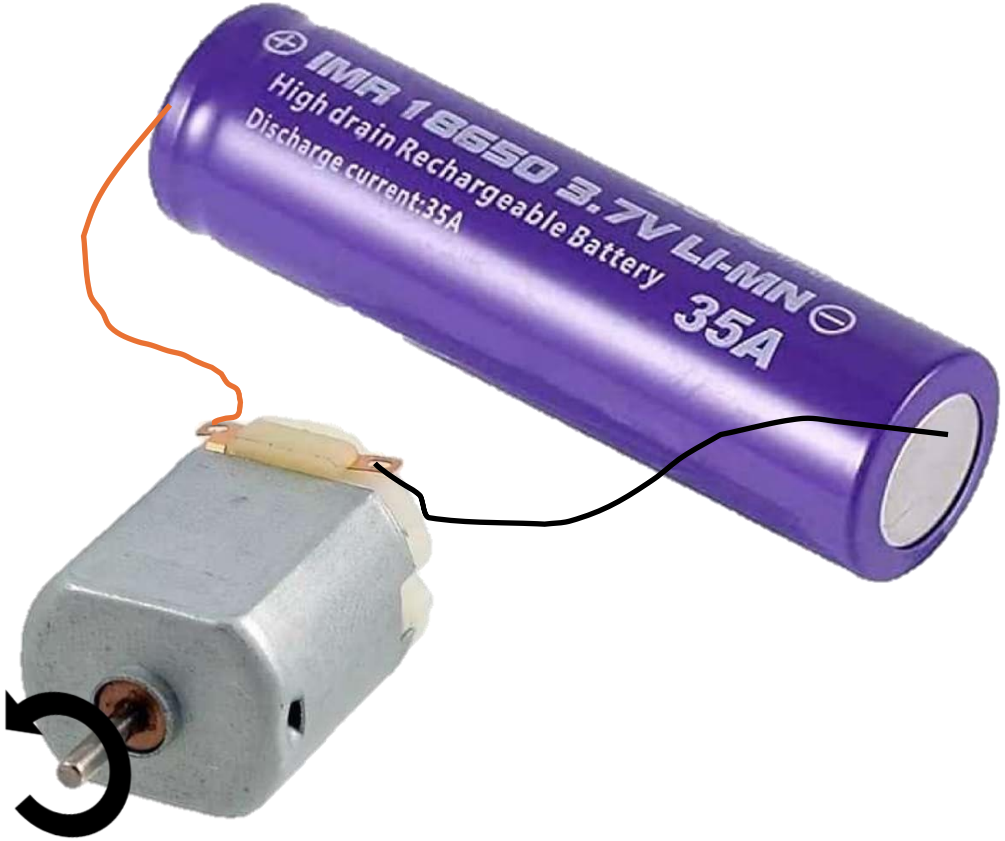
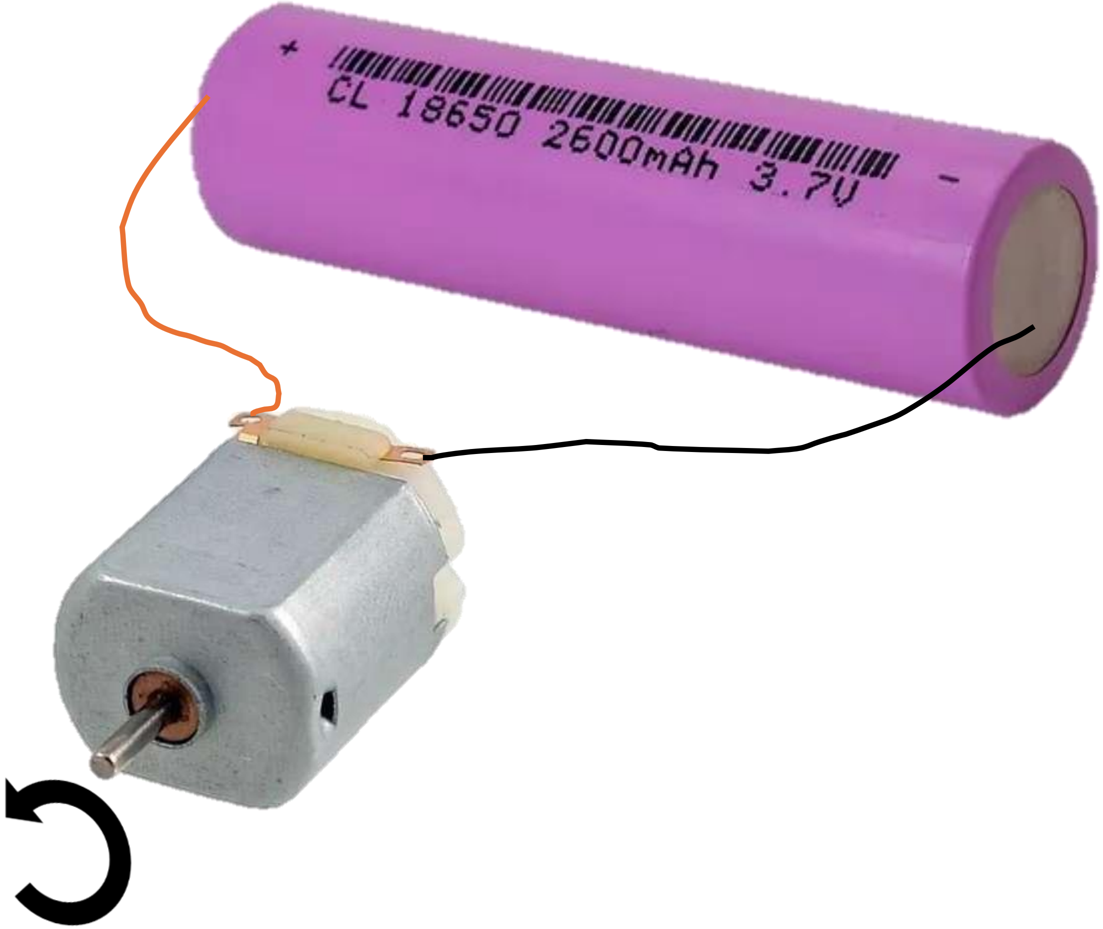
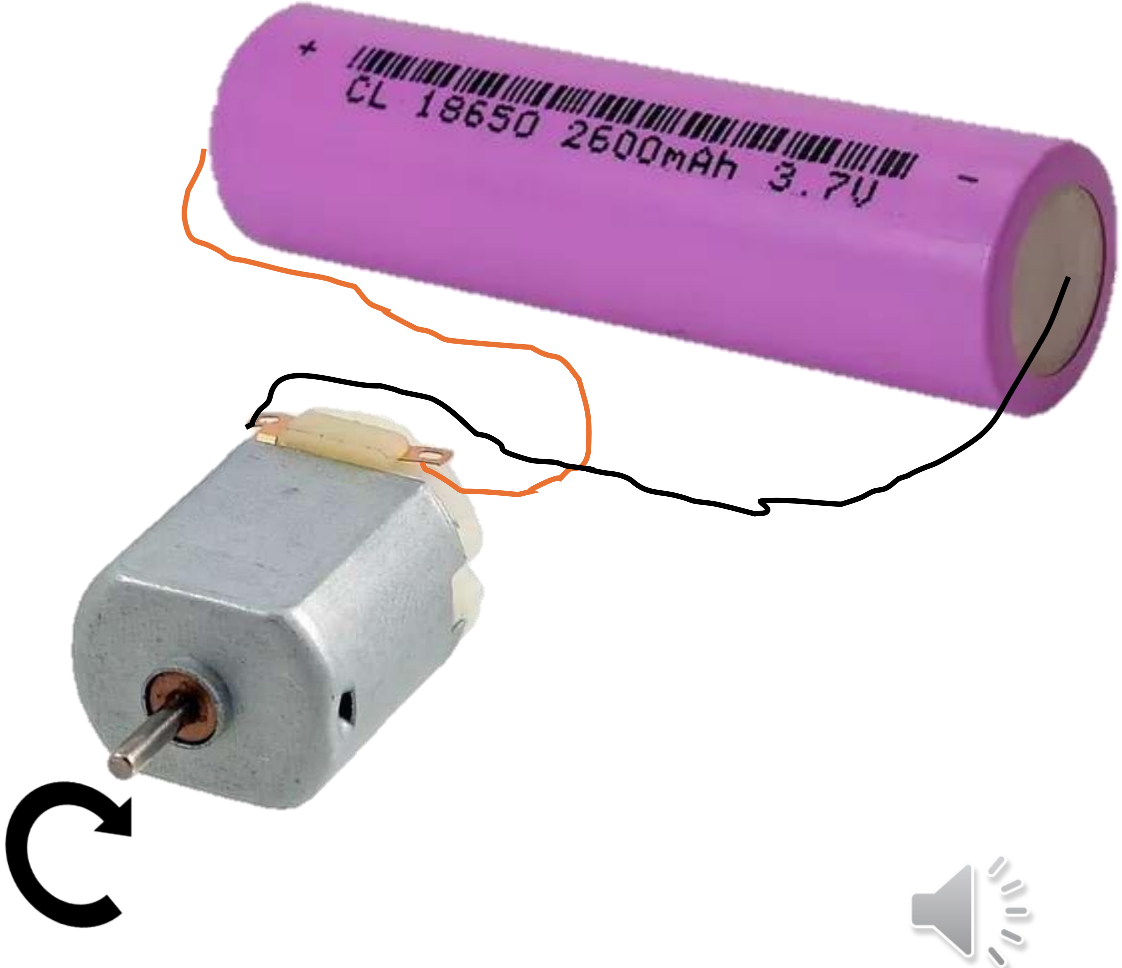
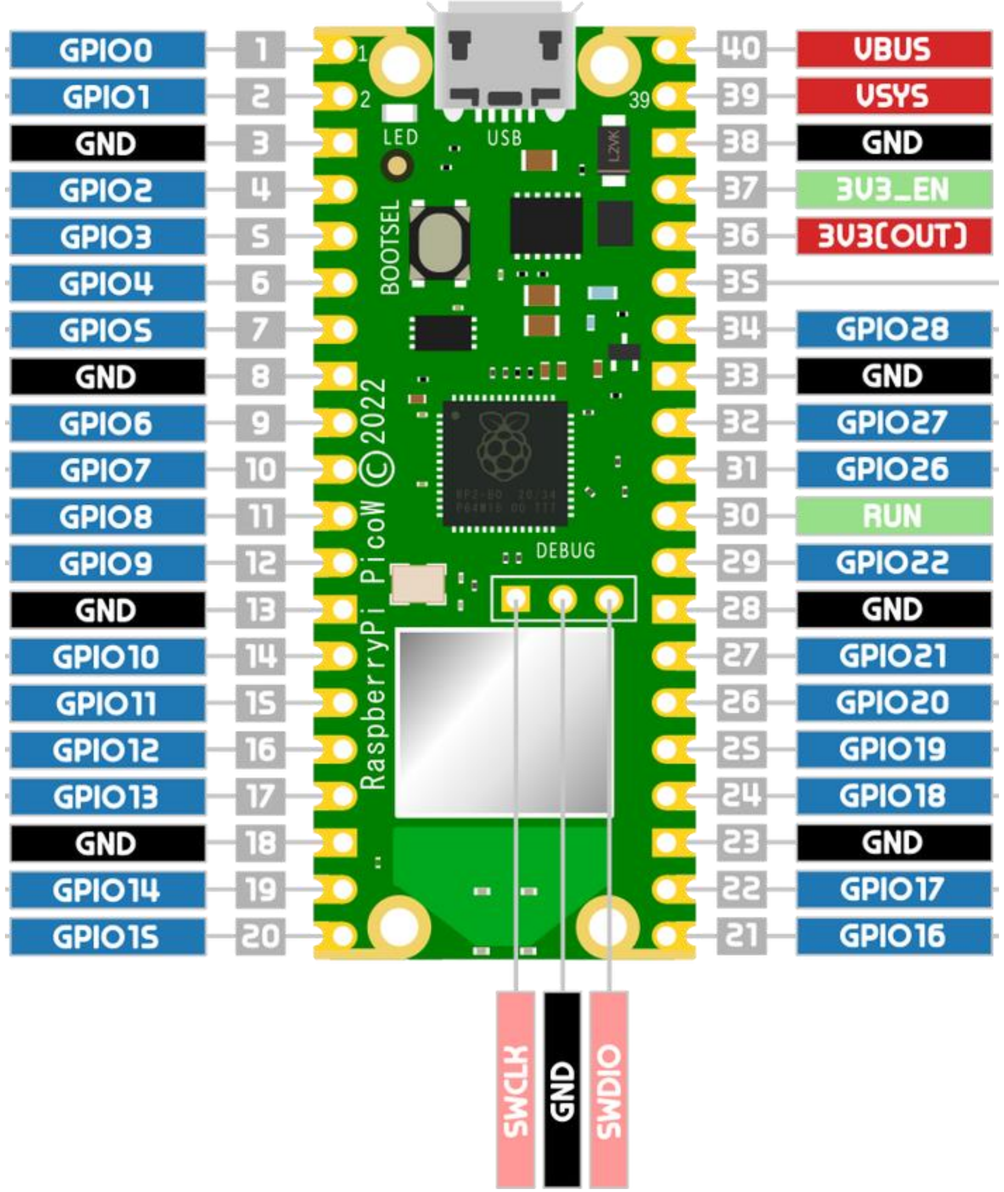
gmunoz@udistrital.edu.co


⊕ IMR 18650 3.7V LI-MN ⊖
High drain Rechargeable Battery
Discharge current:35A
35A

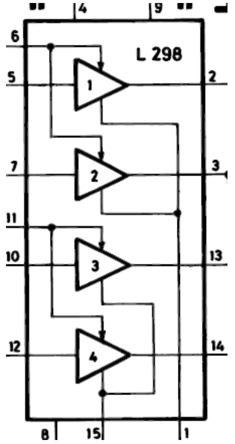

+
CL 18650 2600mAh 3.7V
-


+
CL 18650 2600mAh 3.7V
-

Raspberry Pi Pico W

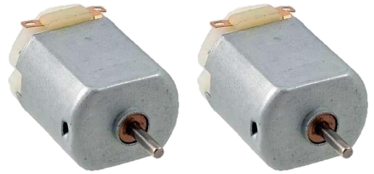


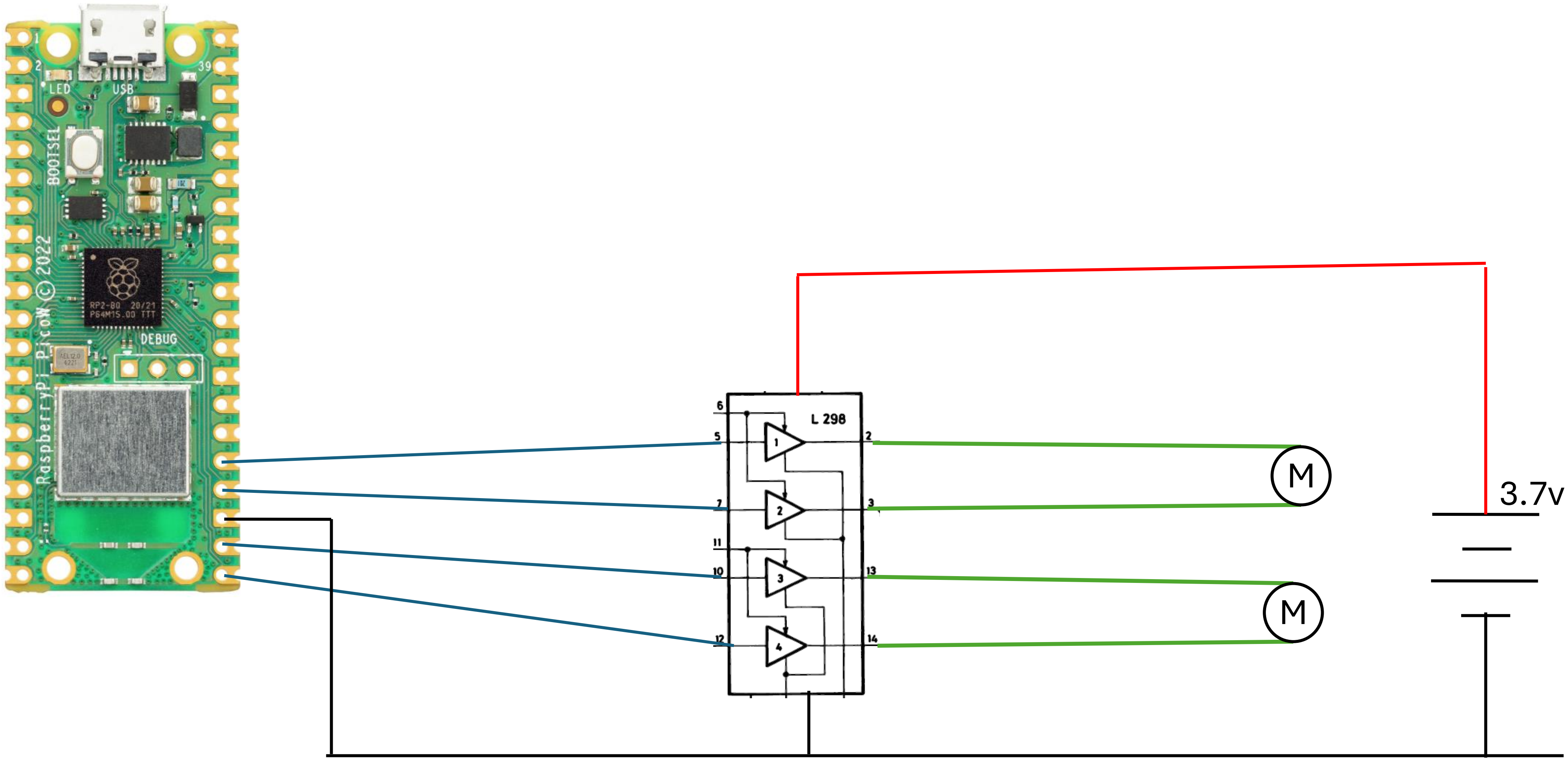
Puente H



Batería de 3.7v

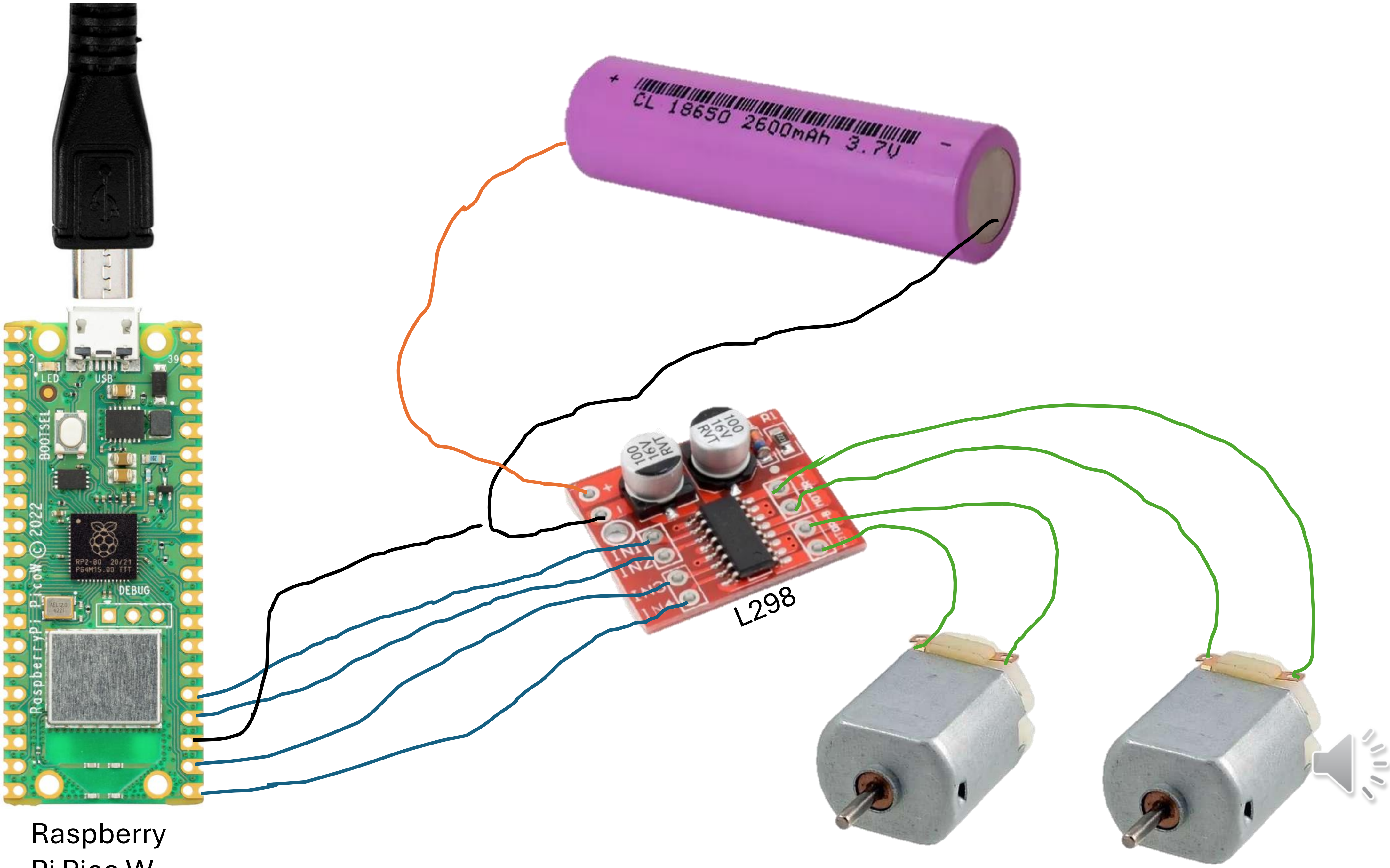
Motores DC





Raspberry
Pi Pico W

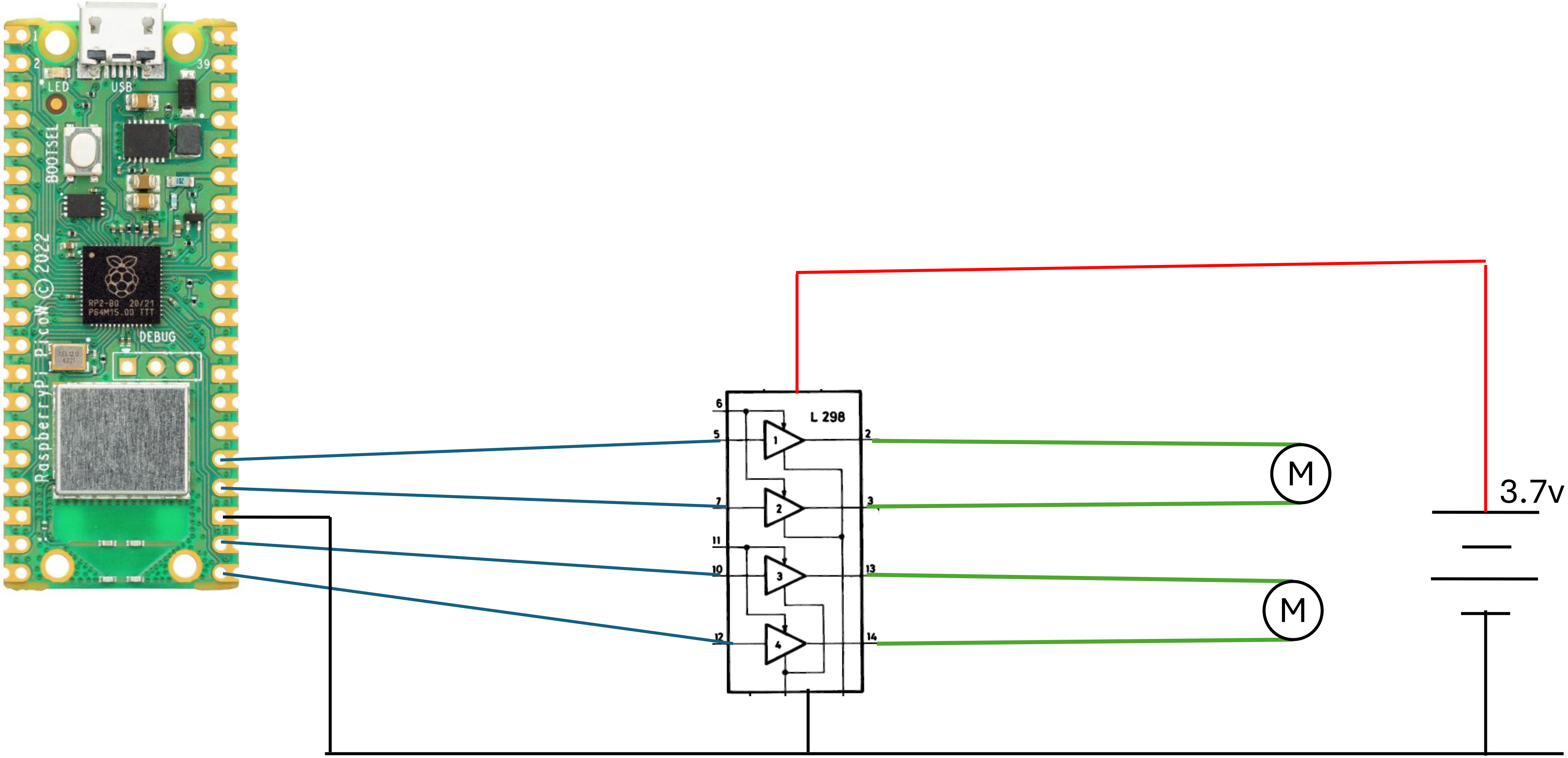
gmunoz@udistrital.edu.co



L298

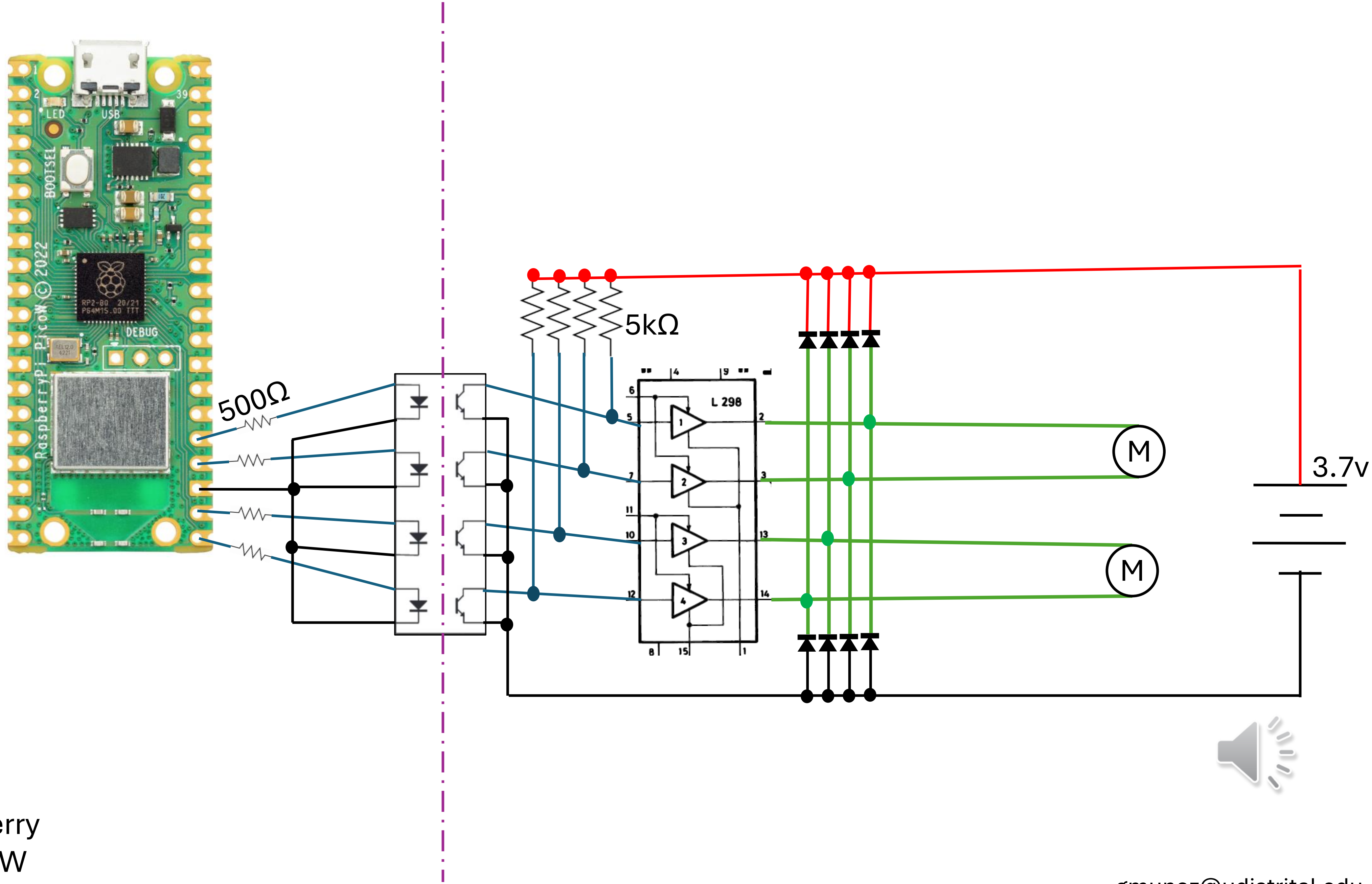
Raspberry
Pi Pico W

gmunoz@udistrital.edu.co



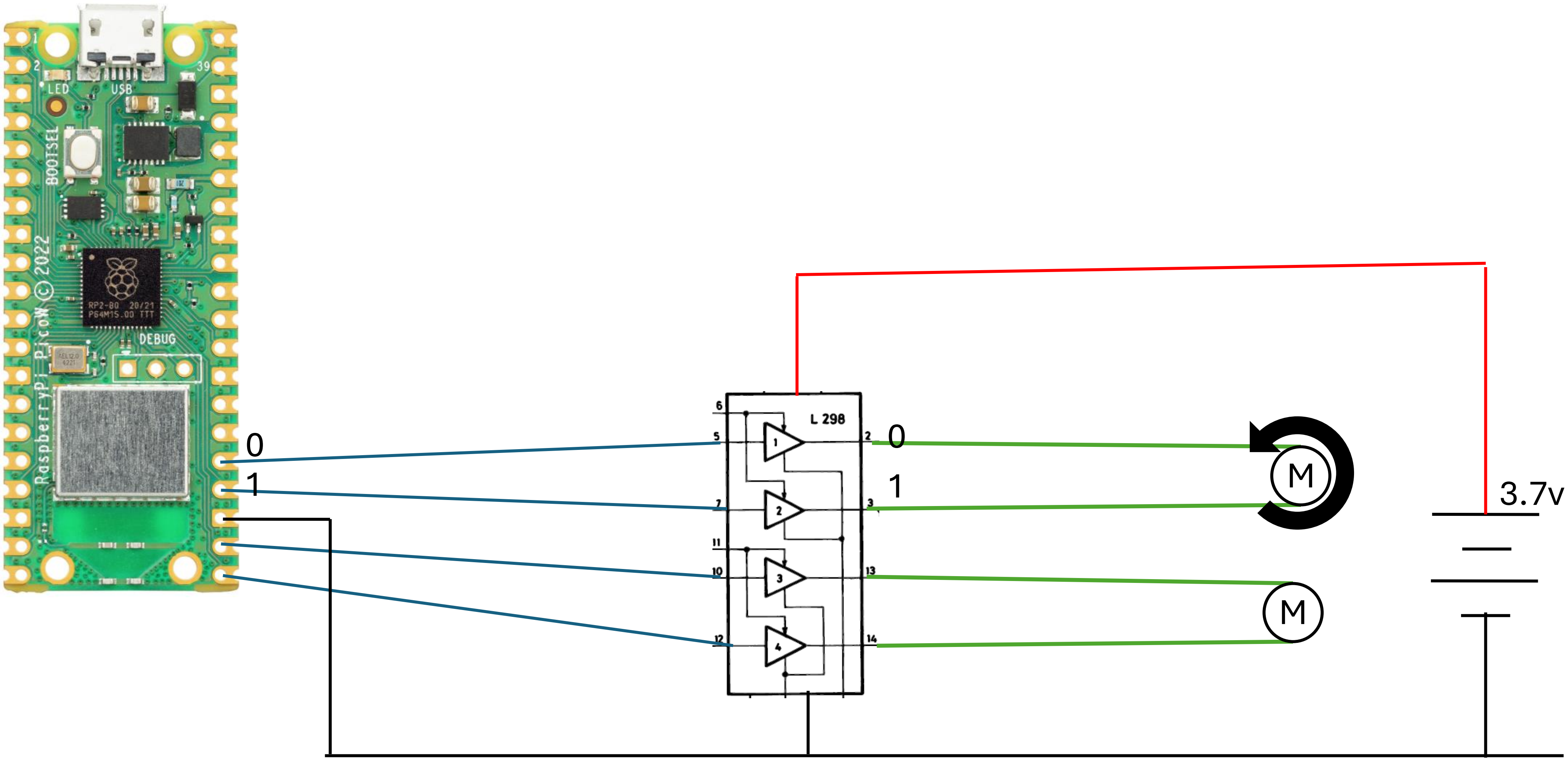
Raspberry
Pi Pico W

gmunoz@udistrital.edu.co



Raspberry
Pi Pico W

gmunoz@udistrital.edu.co



Raspberry
Pi Pico W

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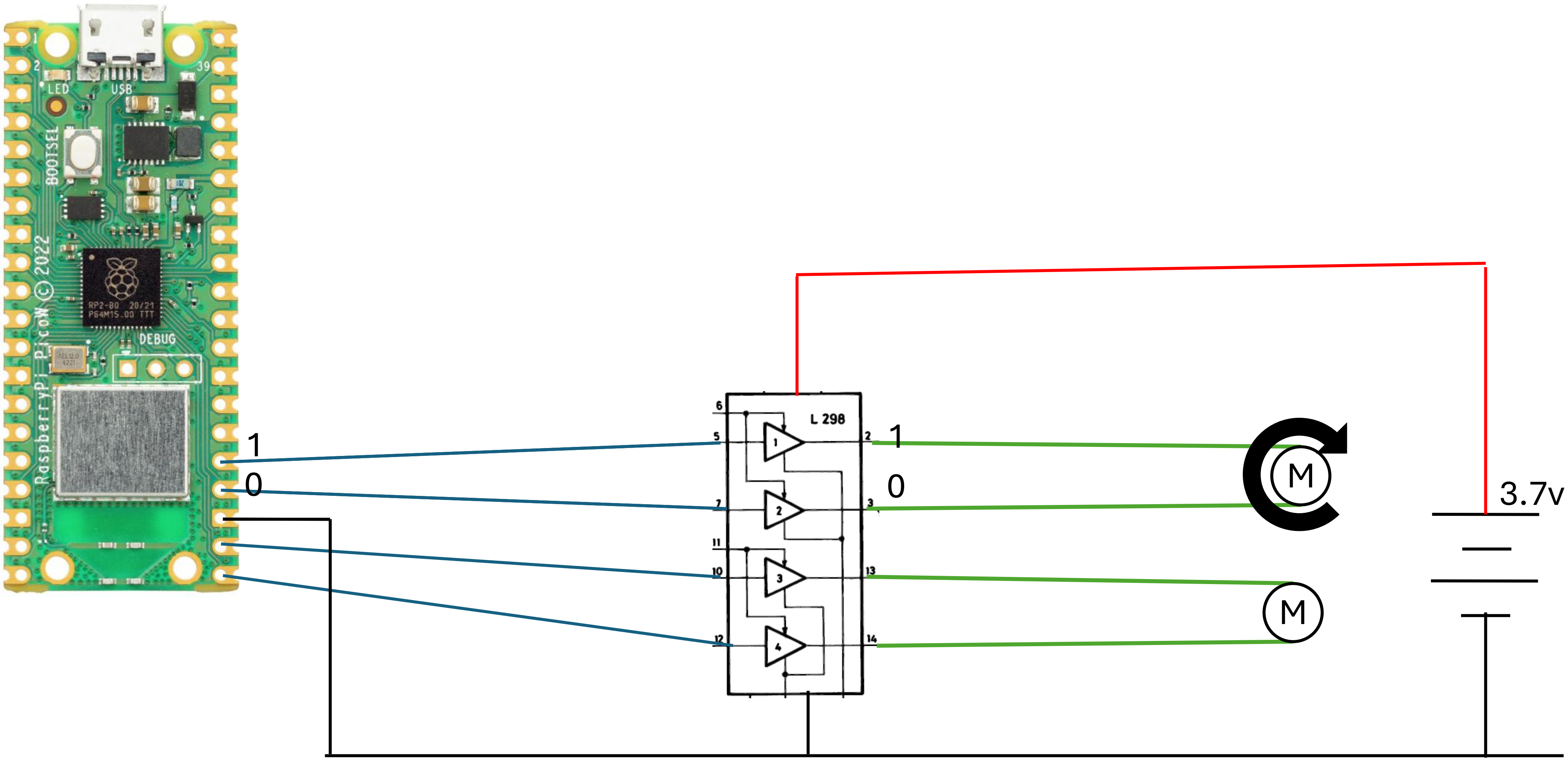
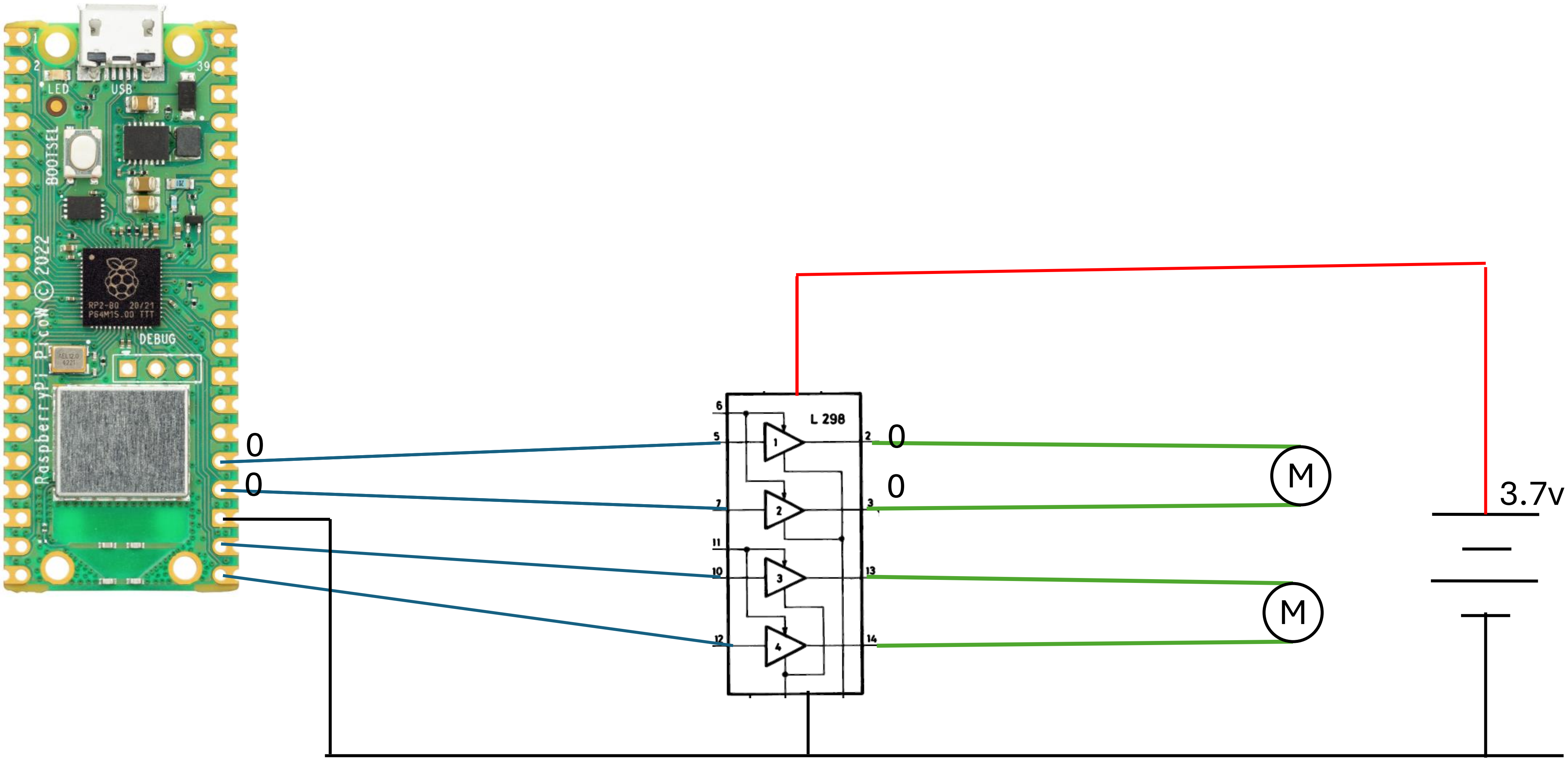
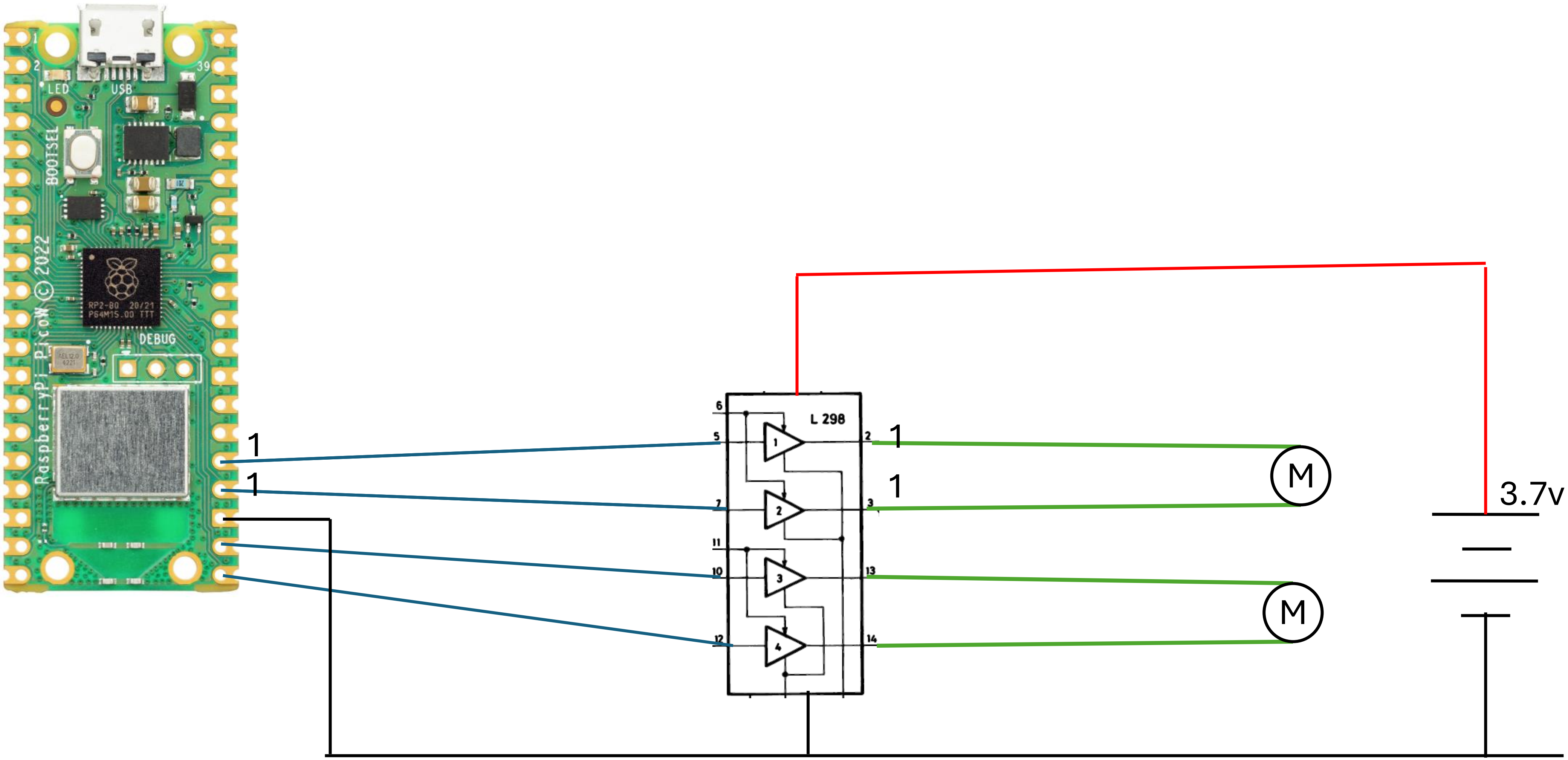


Raspberry
Pi Pico W



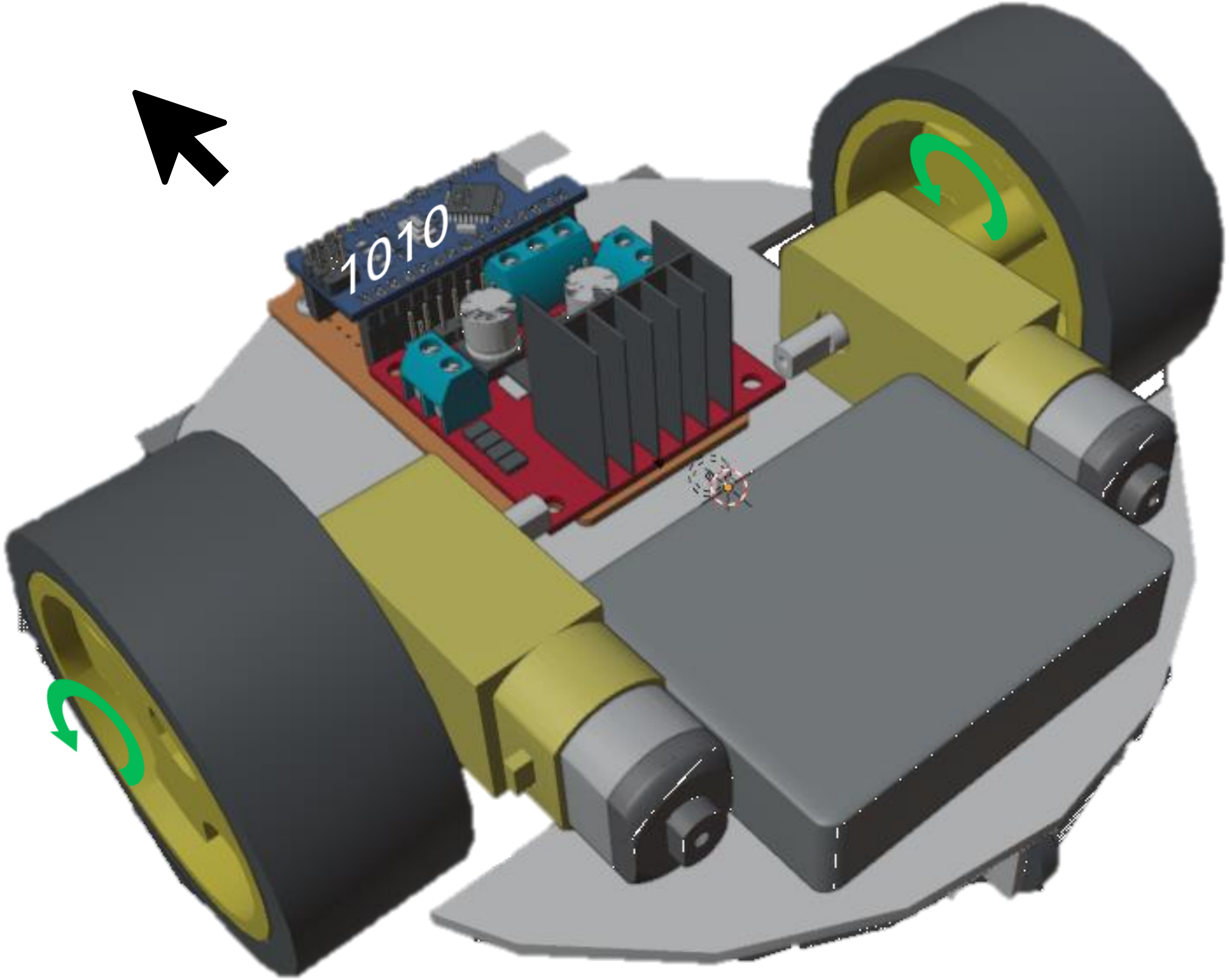
Raspberry
Pi Pico W

gmunoz@udistrital.edu.co

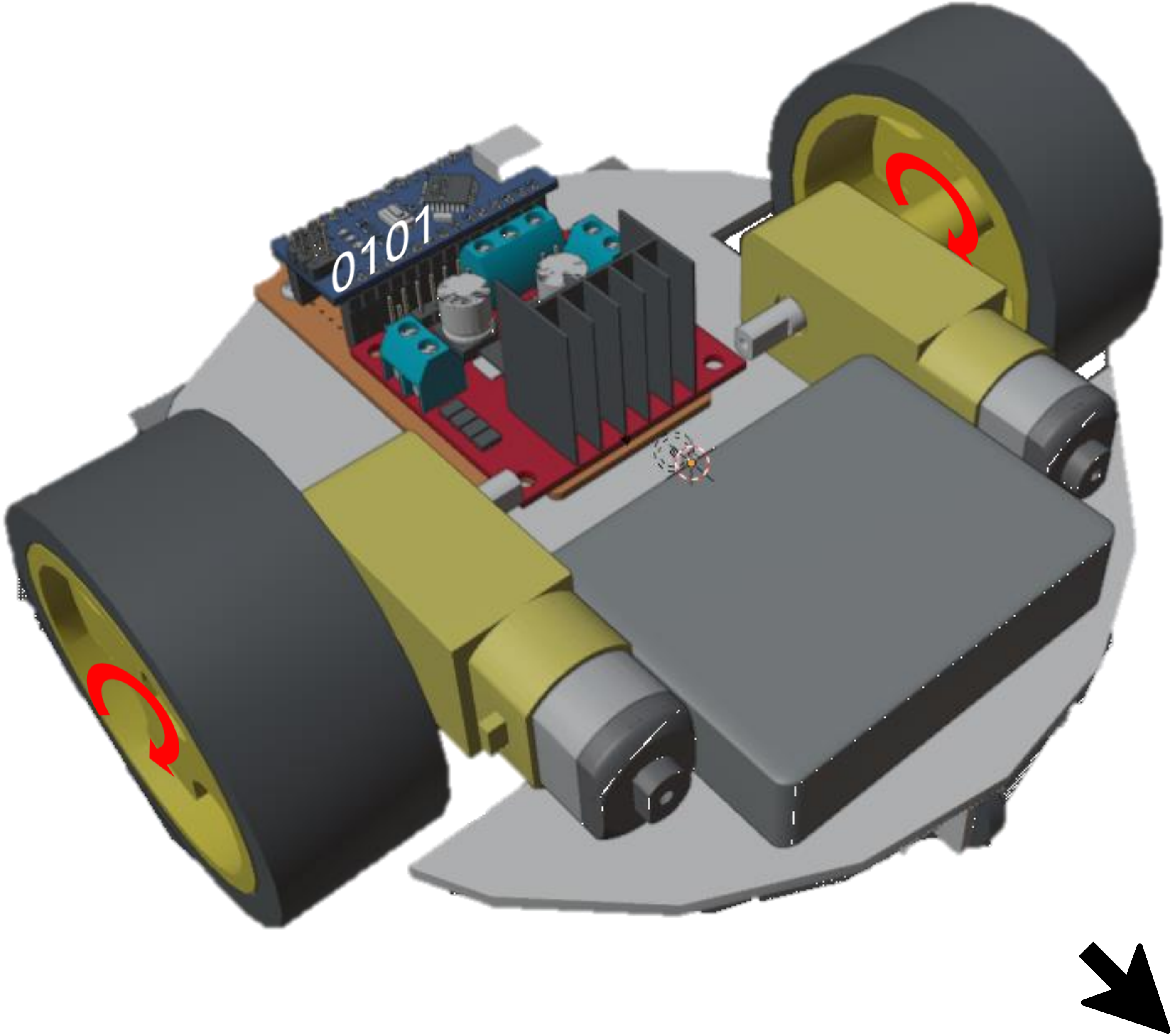


Raspberry
Pi Pico W

gmunoz@udistrital.edu.co



gmunoz@udistrital.edu.co



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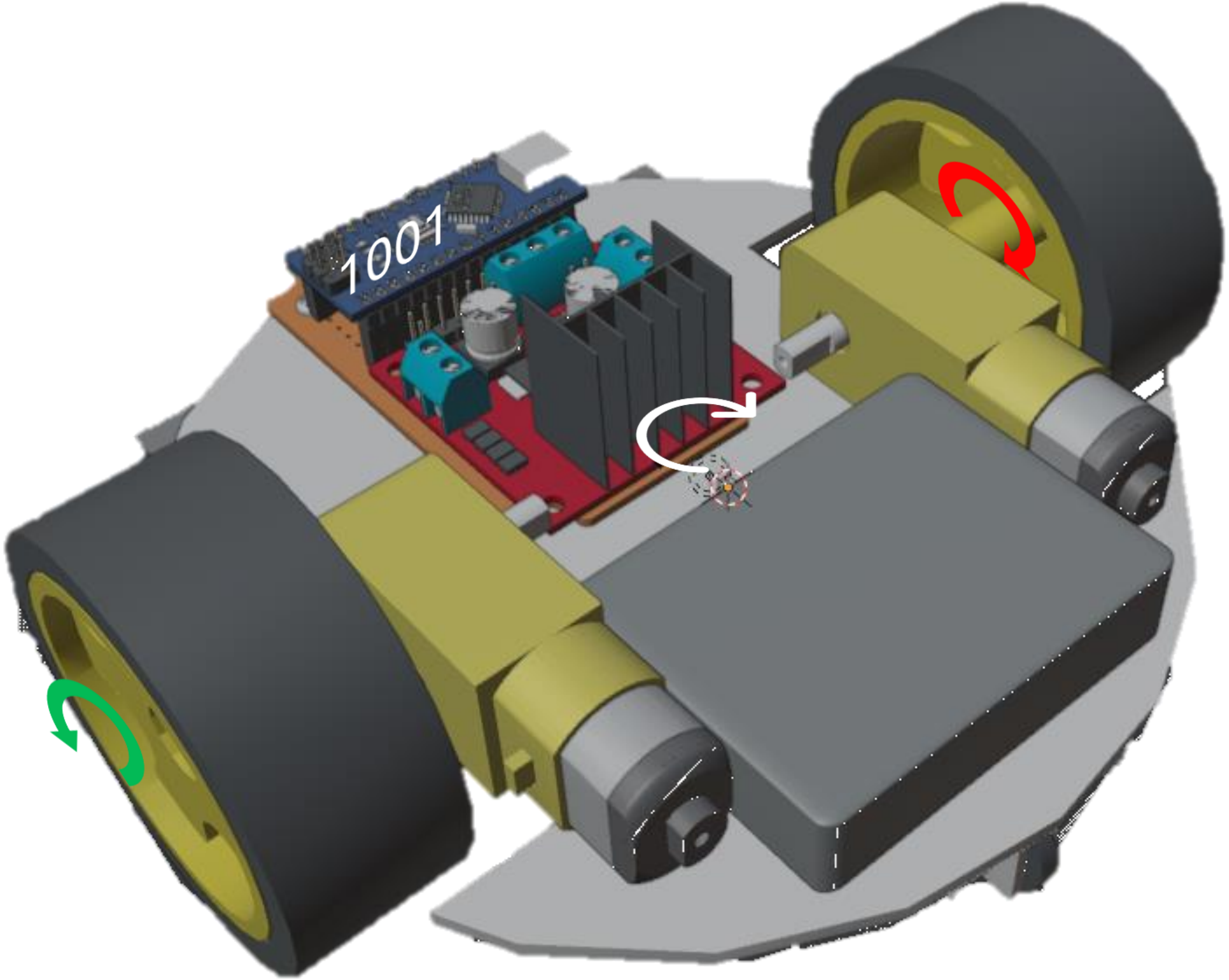
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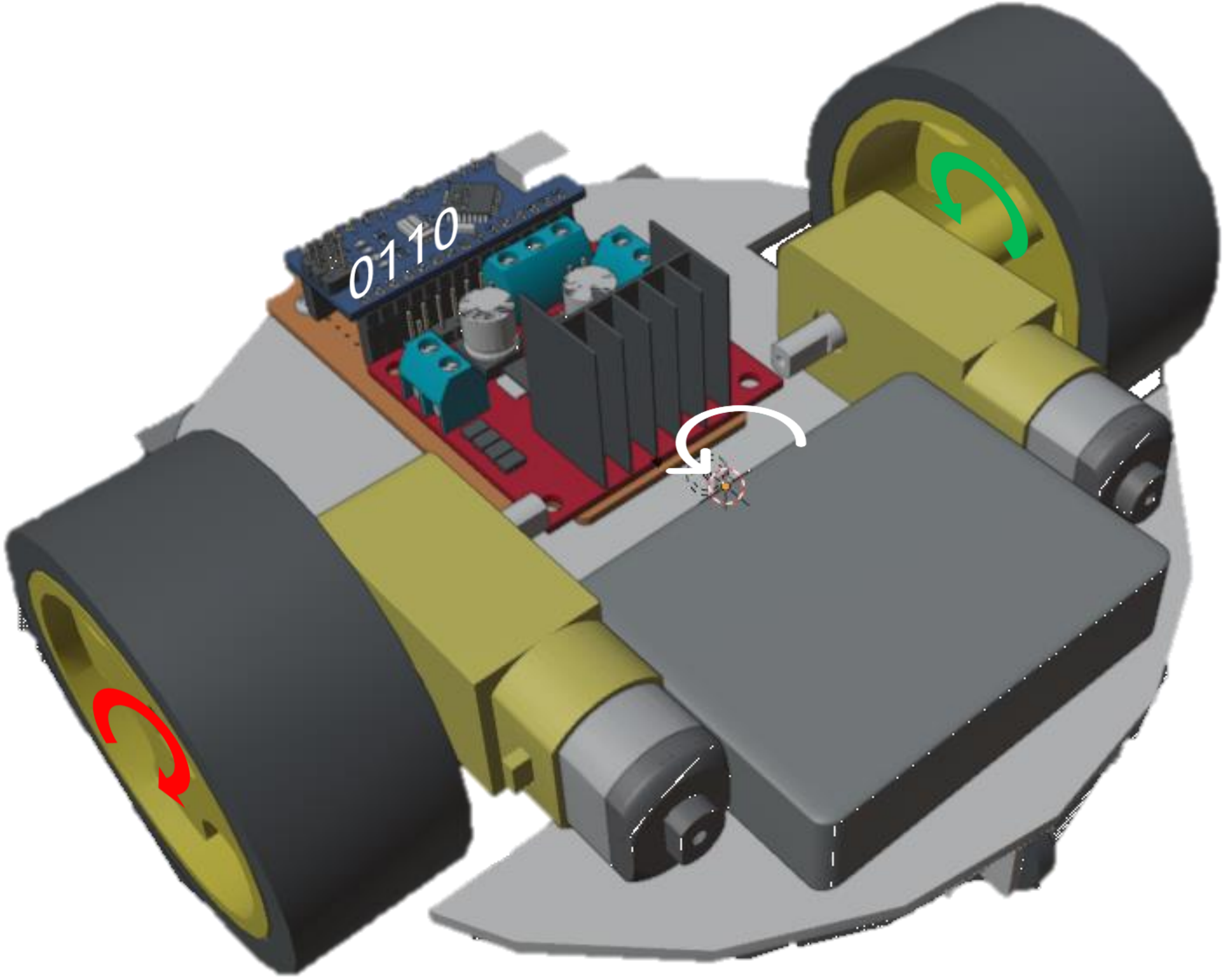
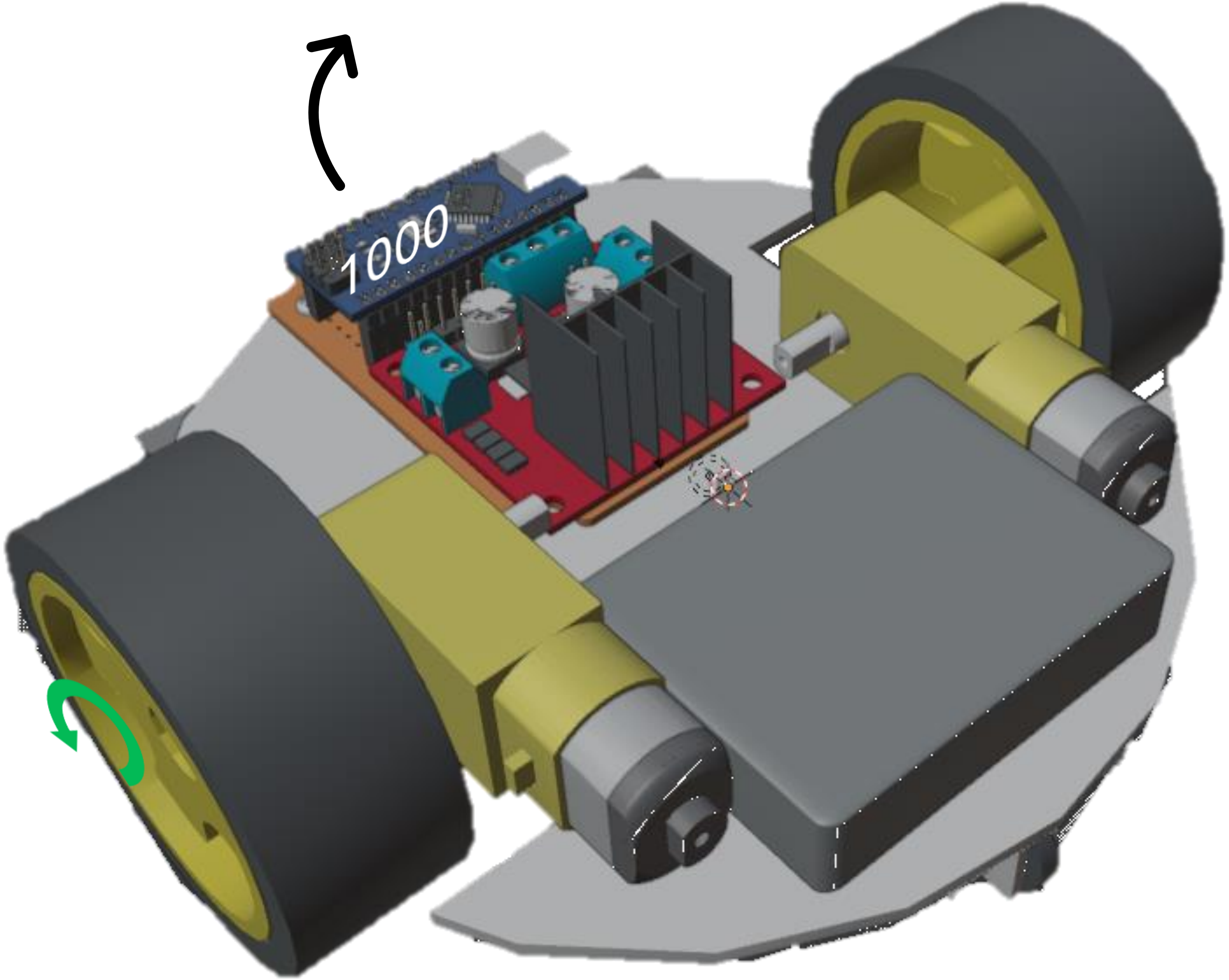
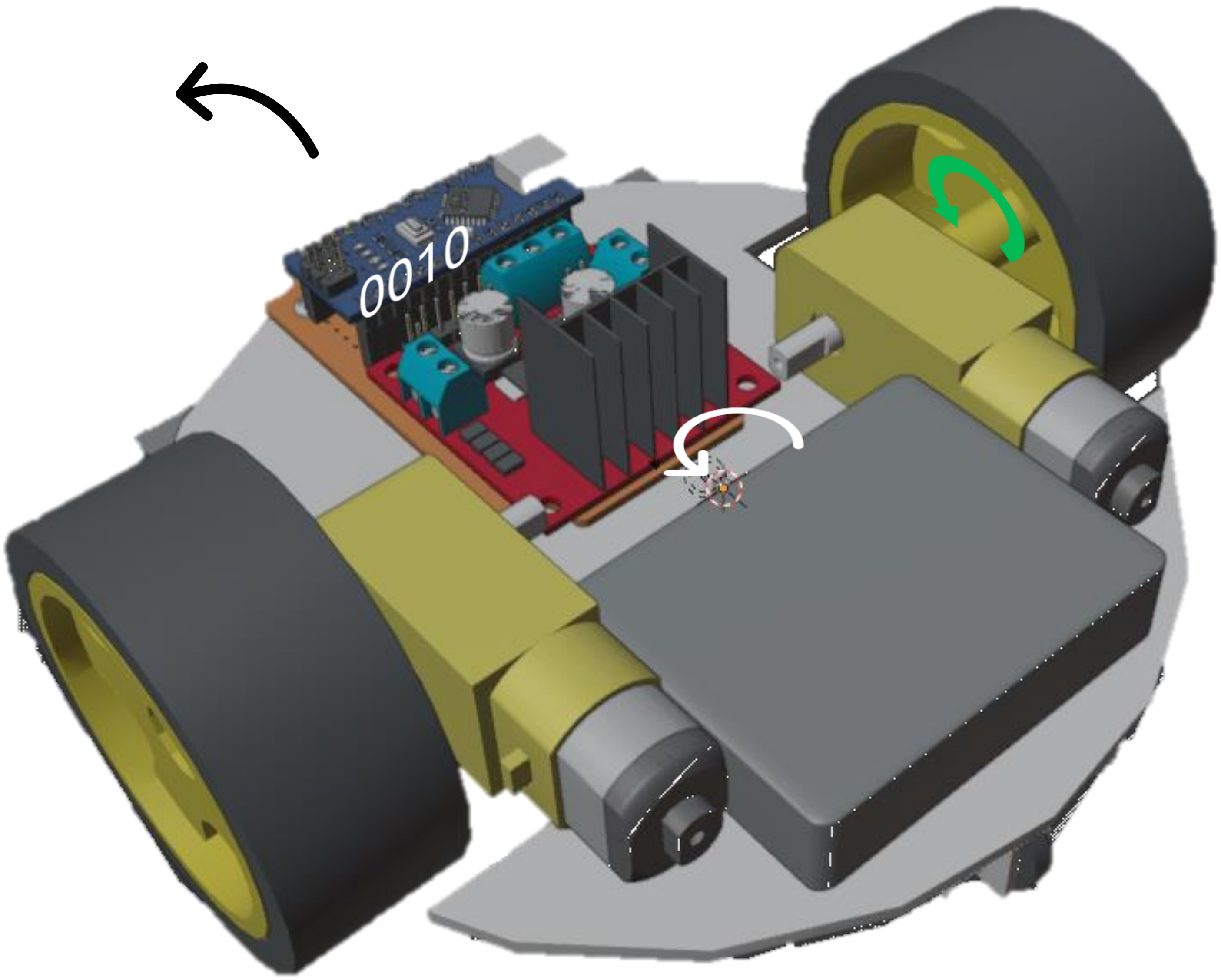


gmunoz@udistrital.edu.co


1000



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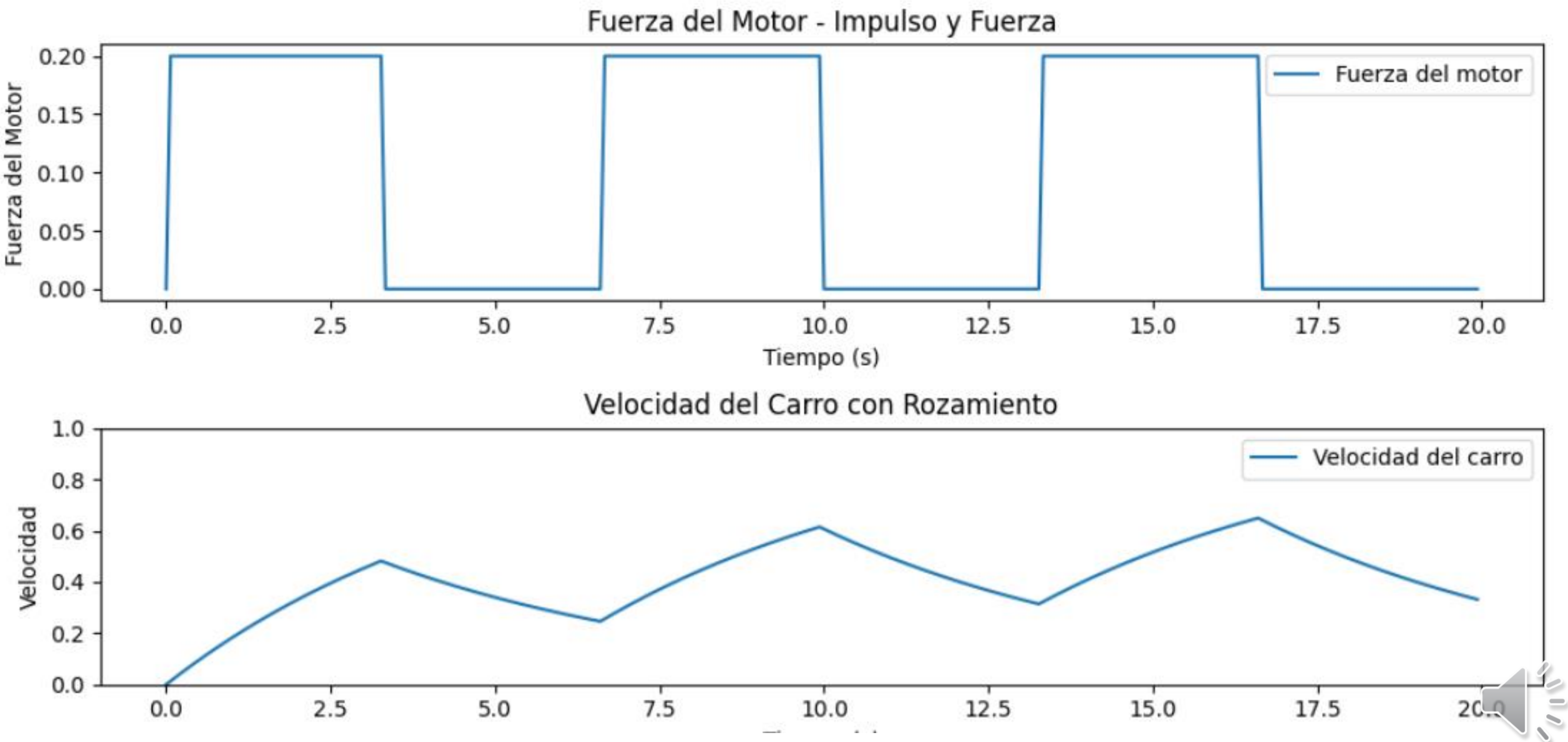
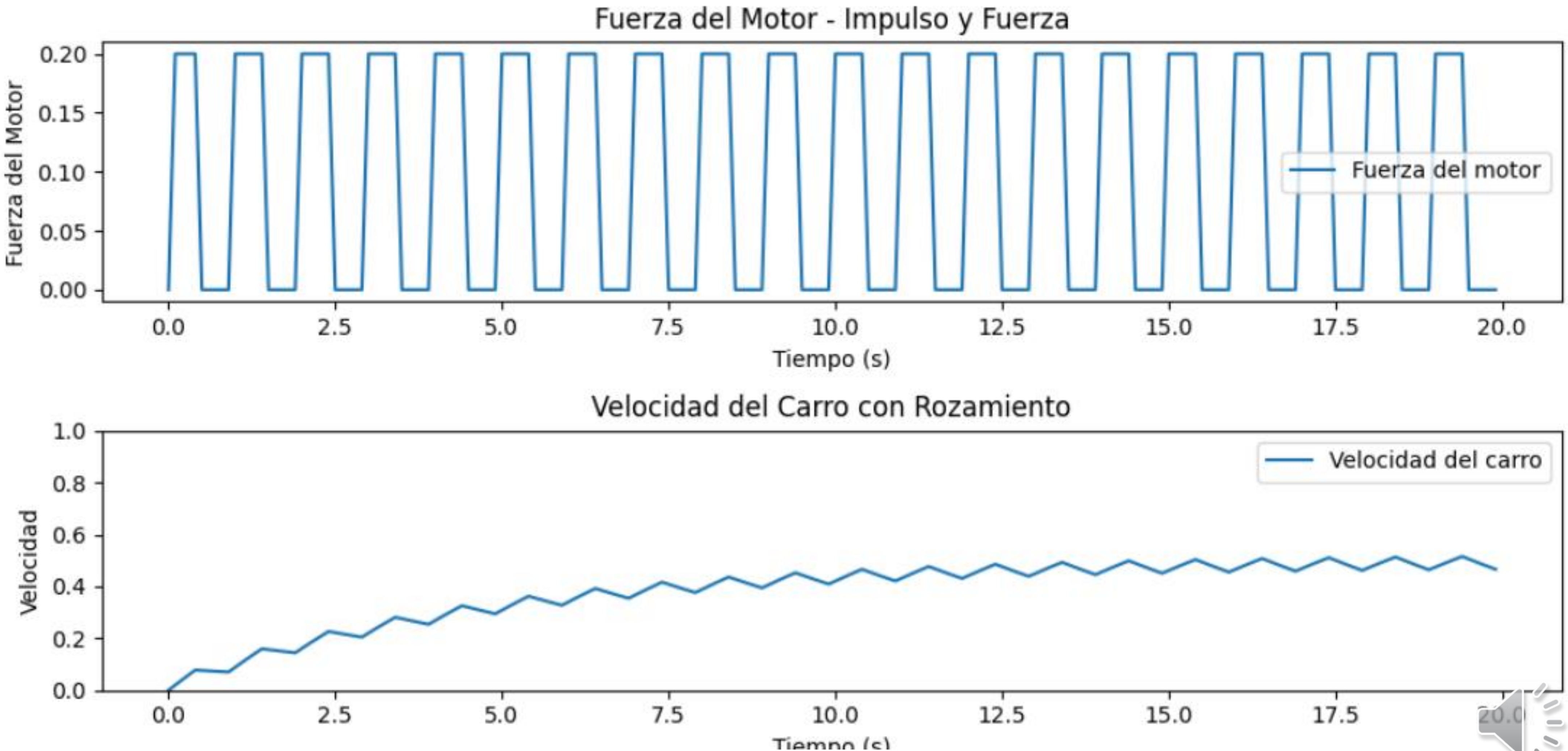
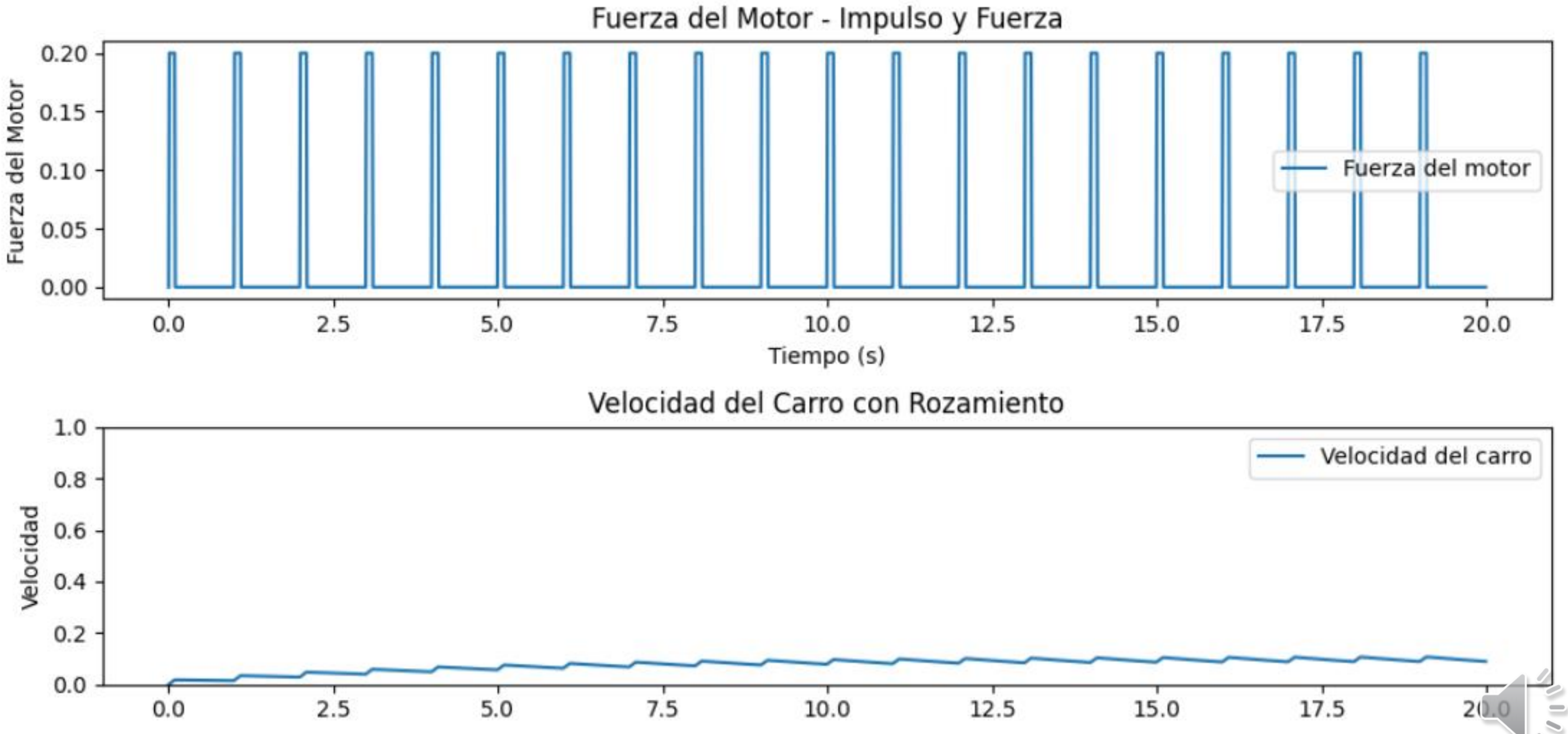

Fuerza del Motor - Impulso y Fuerza

Velocidad del Carro con Rozamiento

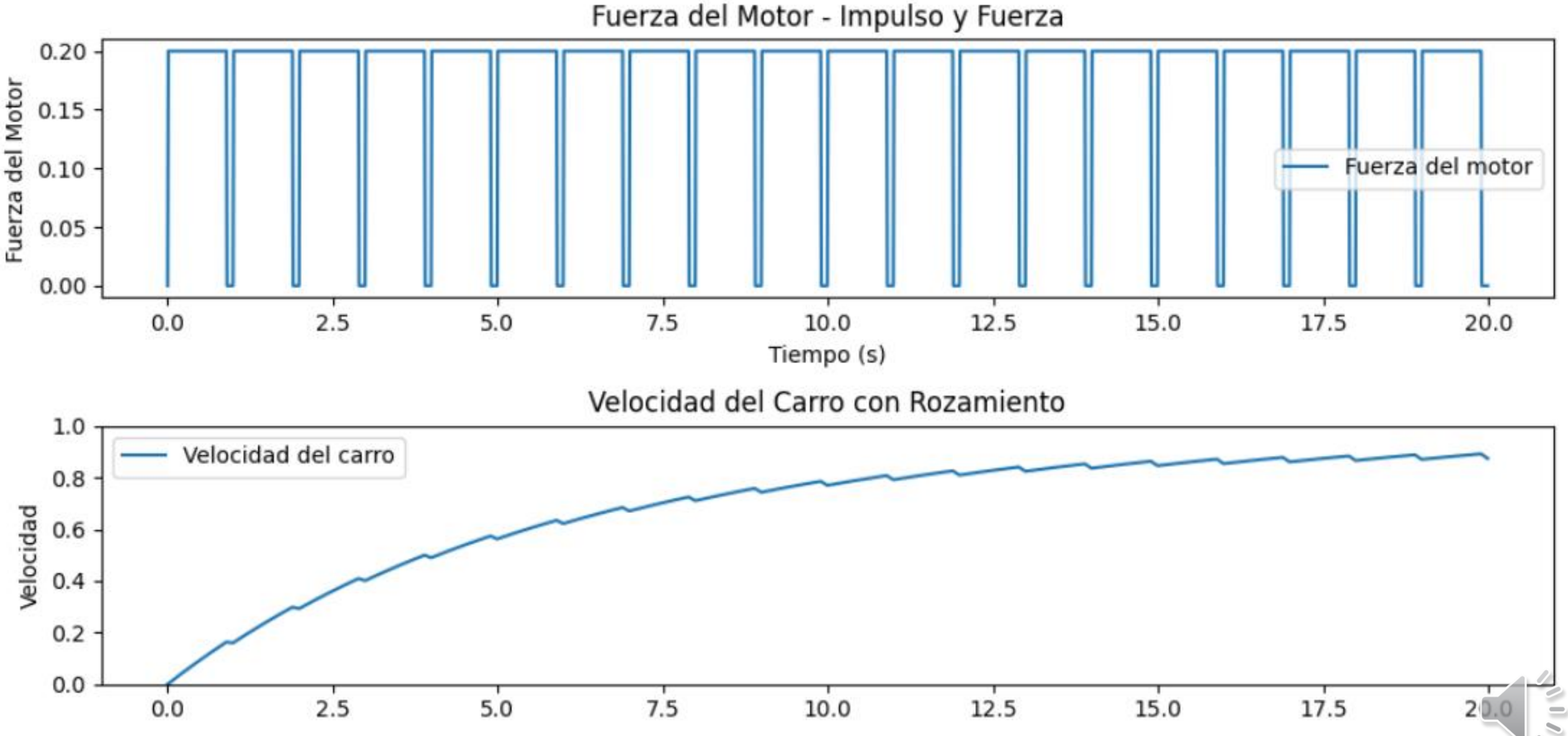


Fuerza del Motor - Impulso y Fuerza

Velocidad del Carro con Rozamiento

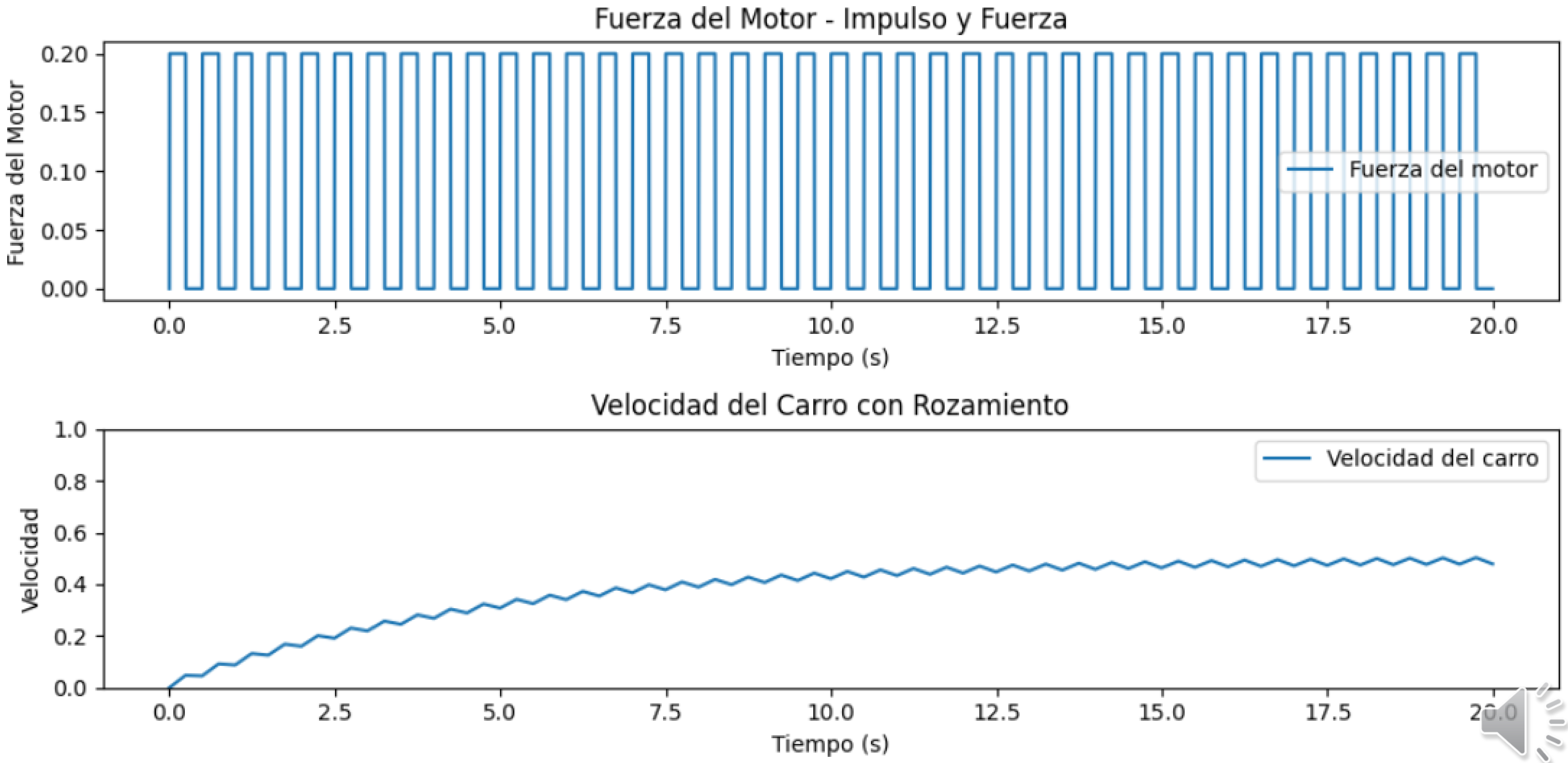

Fuerza del Motor - Impulso y Fuerza

Velocidad del Carro con Rozamiento

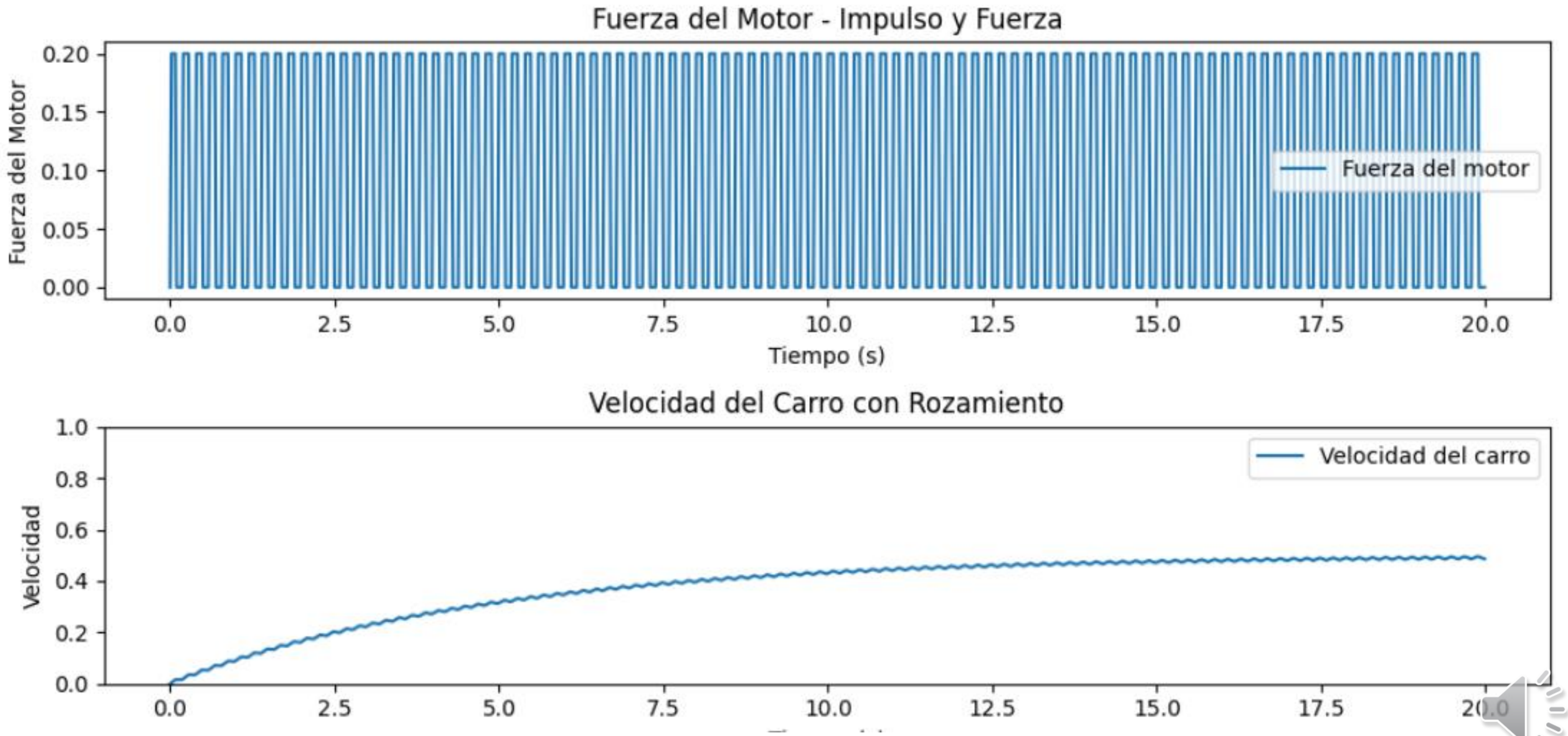


Fuerza del Motor - Impulso y Fuerza

Velocidad del Carro con Rozamiento

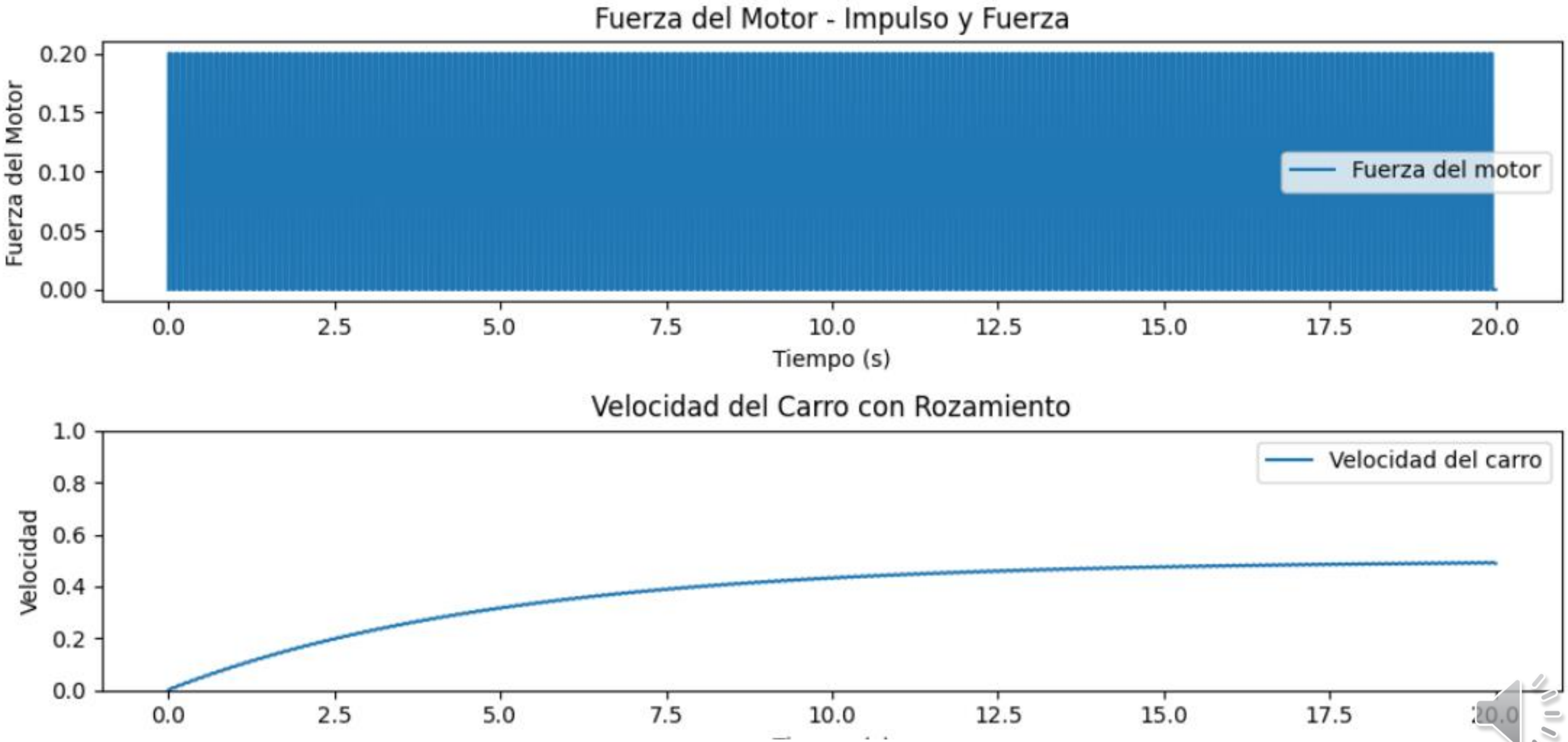

Fuerza del Motor - Impulso y Fuerza

Velocidad del Carro con Rozamiento



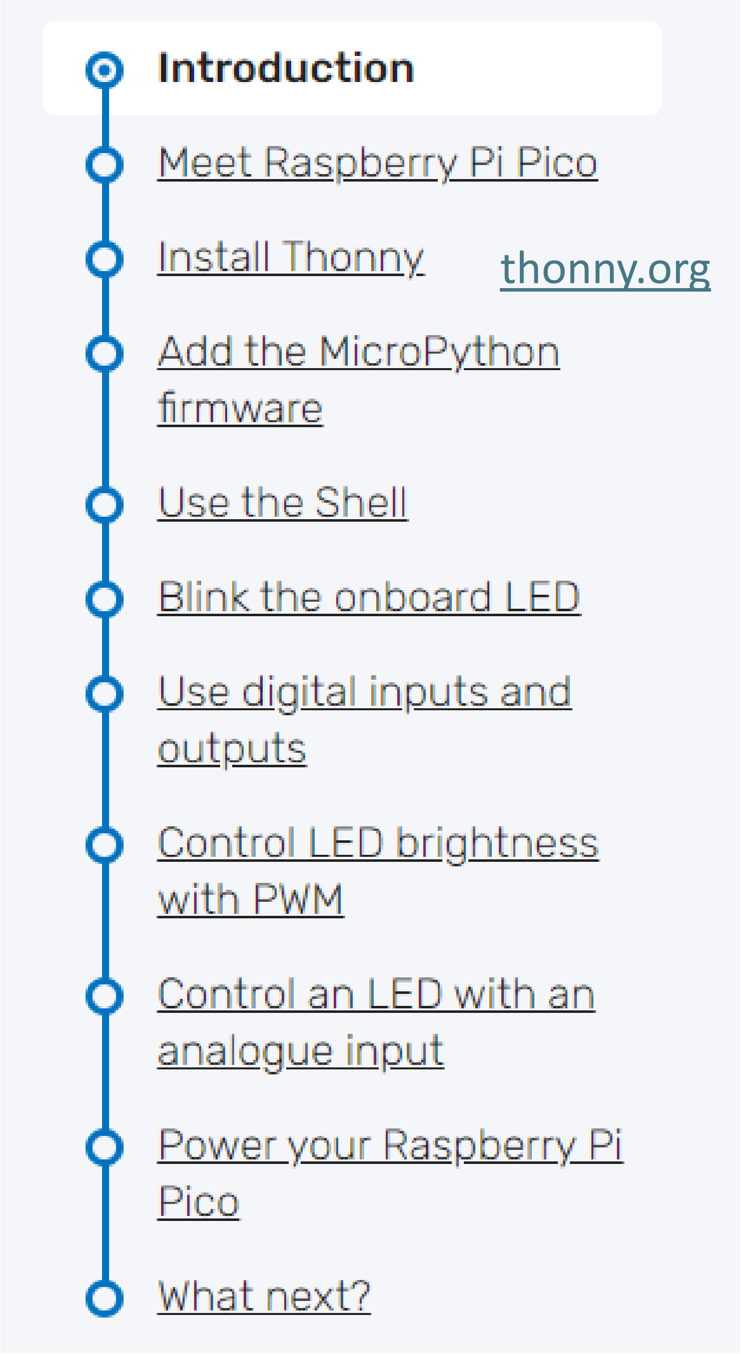
Fuerza del Motor - Impulso y Fuerza

Velocidad del Carro con Rozamiento



Fuerza del Motor - Impulso y Fuerza

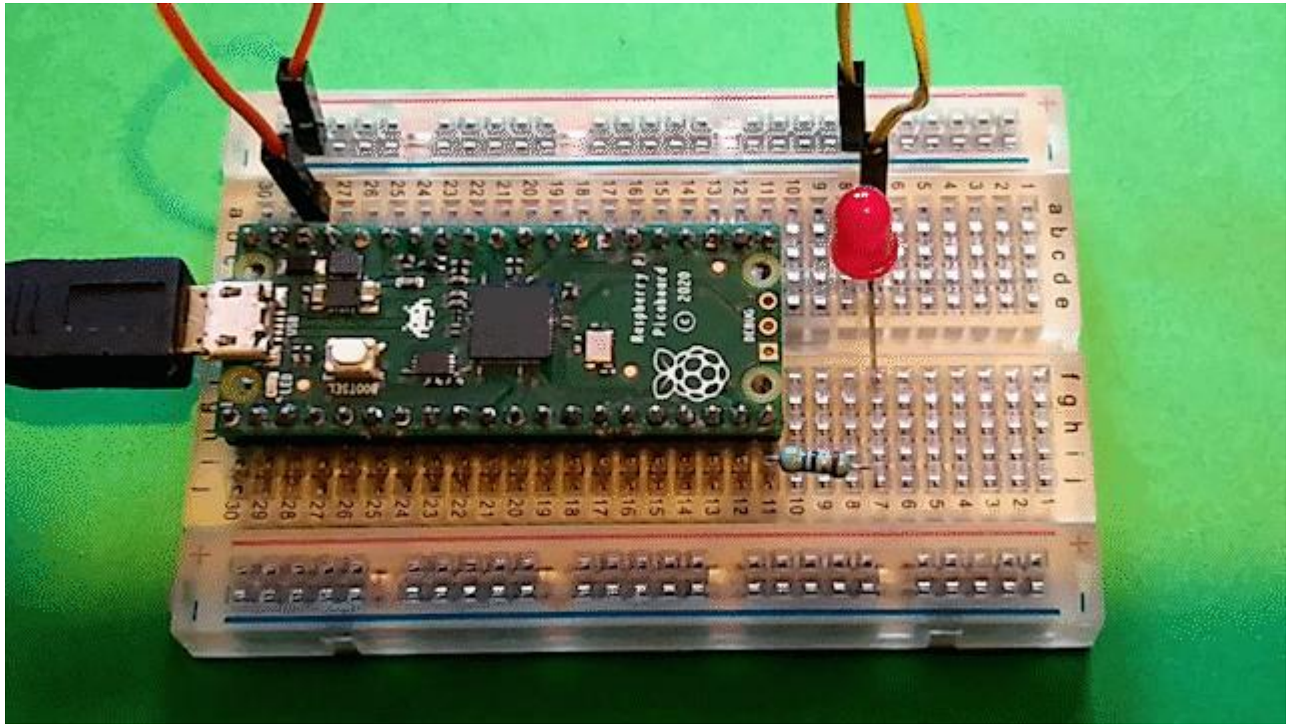
Velocidad del Carro con Rozamiento



- Introduction
- Meet Raspberry Pi Pico
- Install Thonny
- Add the MicroPython firmware
- Use the Shell
- Blink the onboard LED
- Use digital inputs and outputs
- Control LED brightness with PWM
- Control an LED with an analogue input
- Power your Raspberry Pi Pico
- What next?

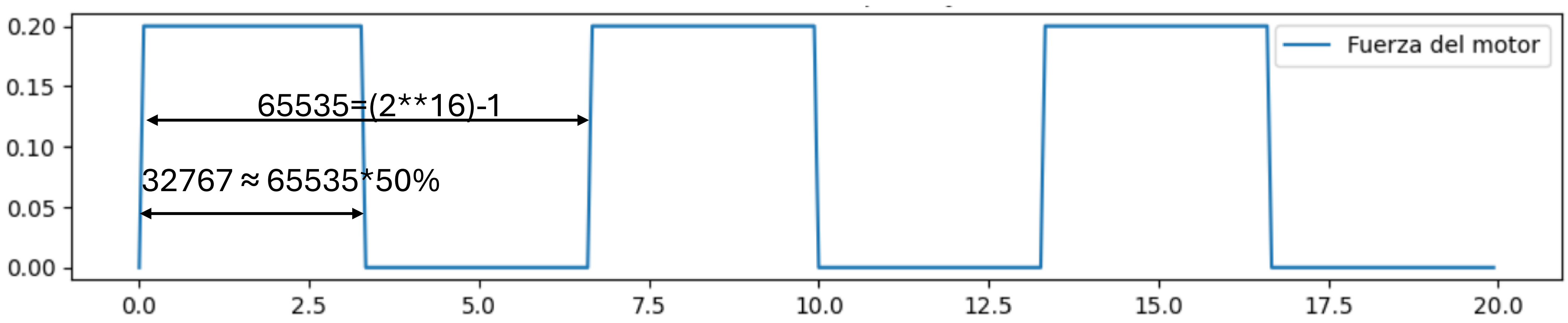
thonny.org

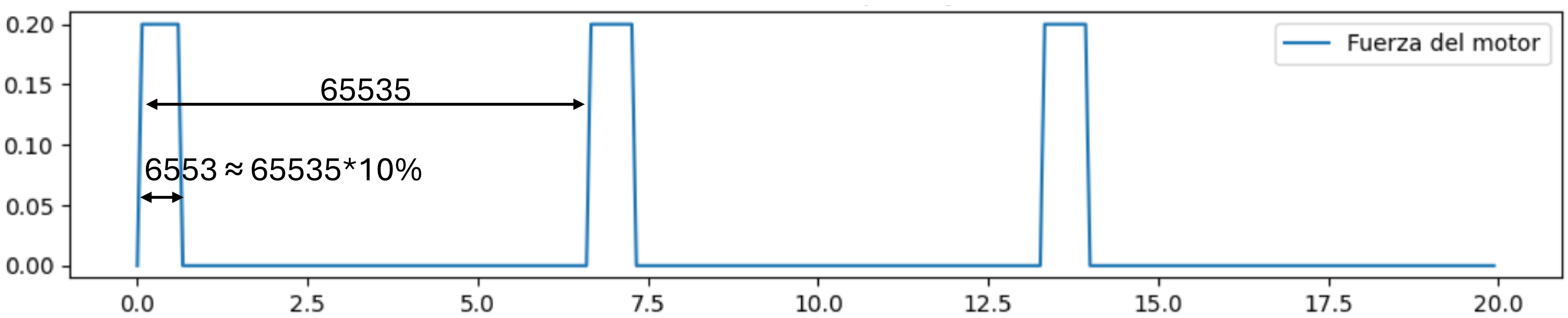
https://projects.raspberrypi.org/en/projects/getting-started-with-the-pico/0

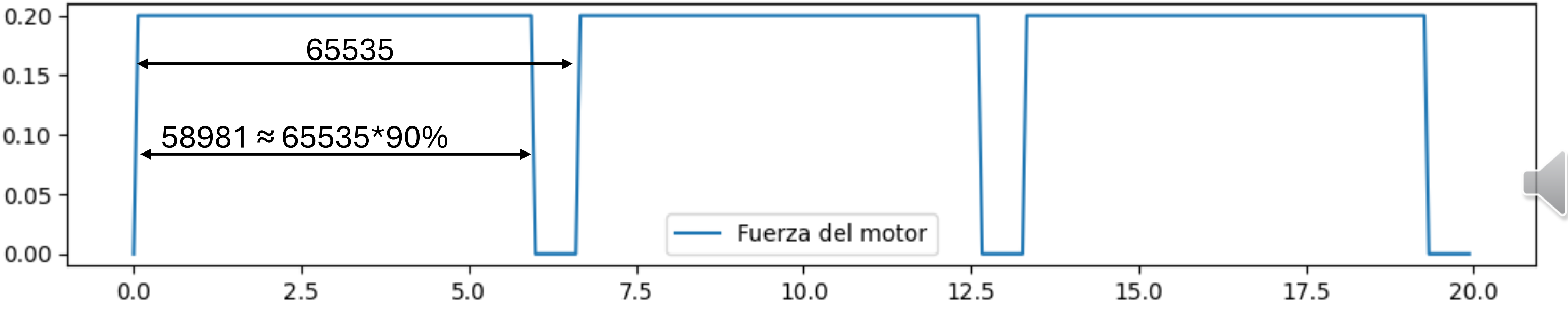


```
from machine import Pin
from utime import sleep_ms

pin16=Pin(16, Pin.OUT)
pin17=Pin(17, Pin.OUT)

pin16(1)
pin17(0)

sleep_ms(1000)

pin16(0)
pin17(0)
```

```
from machine import Pin, PWM
from utime import sleep_ms

pwm16 = PWM(Pin(16), freq=1000)
pwm17 = PWM(Pin(17), freq=1000)

duty=10
pwm16.duty_u16((2**16-1)*duty//100)
pwm17.duty_u16(0)

sleep_ms(1000)

pwm16.duty_u16(0)
pwm17.duty_u16(0)
```


0.20
0.15
0.10
0.05
0.00
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Fuerza del motor
65535=(2**16)-1
32767 ≈ 65535*50%


0.20
0.15
0.10
0.05
0.00
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Fuerza del motor
65535
6553 ≈ 65535*10%


0.20
0.15
0.10
0.05
0.00
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Fuerza del motor
65535
58981 ≈ 65535*90%

```
from machine import Pin
from utime import sleep_ms

pin16=Pin(16, Pin.OUT)
pin17=Pin(17, Pin.OUT)

pin16(1)
pin17(0)

sleep_ms(1000)

pin16(0)
pin17(0)
```

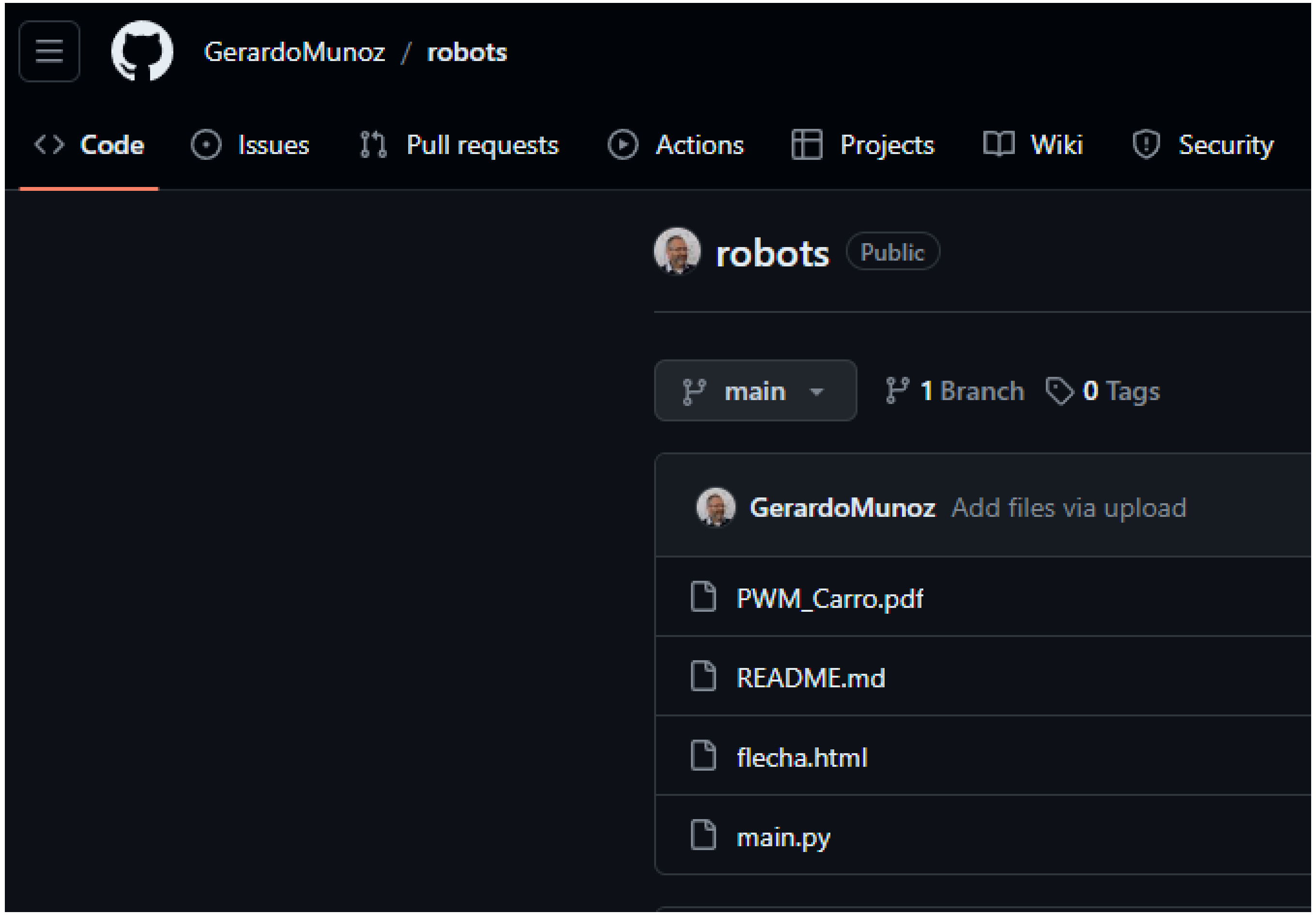
```
from machine import Pin, PWM
from utime import sleep_ms

pwm16 = PWM(Pin(16), freq=1000)
pwm17 = PWM(Pin(17), freq=1000)

duty=10
pwm16.duty_u16((2**16-1)*duty//100)
pwm17.duty_u16(0)

sleep_ms(1000)

pwm16.duty_u16(0)
pwm17.duty_u16(0)
```

```
import machine
from utime import sleep_ms

mot0dir0 = machine.PWM(machine.Pin(16))
mot0dir1 = machine.PWM(machine.Pin(17))
mot1dir0 = machine.PWM(machine.Pin(18))
mot1dir1 = machine.PWM(machine.Pin(20))
mot0dir0.freq(1000)
mot0dir1.freq(1000)
mot1dir0.freq(1000)
mot1dir1.freq(1000)
```

```
def set_PWMs(mot_dir0,mot_dir1,value):
  if value<0:
    mot_dir0.duty_u16(-value)
    mot_dir1.duty_u16(0)
  elif value>0:
    mot_dir0.duty_u16(0)
    mot_dir1.duty_u16(value)
  else:
    mot_dir0.duty_u16(0)
    mot_dir1.duty_u16(0)
```

```
set_PWMs(mot0dir0,mot0dir1,1000)
set_PWMs(mot1dir0,mot1dir1,1000)
sleep_ms(500)
set_PWMs(mot0dir0,mot0dir1,0)
set_PWMs(mot1dir0,mot1dir1,1000)
sleep_ms(500)
set_PWMs(mot0dir0,mot0dir1,1000)
set_PWMs(mot1dir0,mot1dir1,0)
sleep_ms(500)
set_PWMs(mot0dir0,mot0dir1,0)
set_PWMs(mot1dir0,mot1dir1,0)
sleep_ms(500)
```

https://github.com/GerardoMunoz/robots/tree/main



GerardoMunoz / robots

robots Public

GerardoMunoz Add files via upload

PWM_Carro.pdf

README.md

flecha.html

main.py