

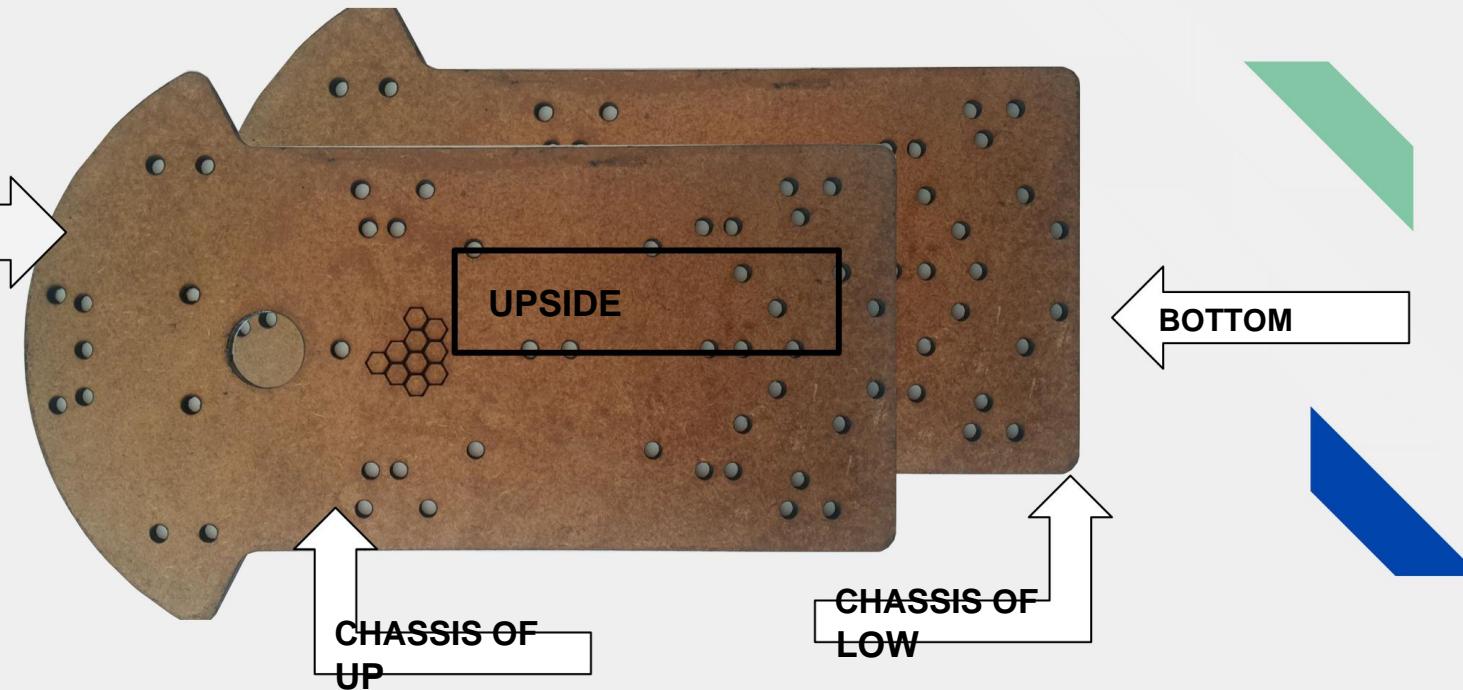
# 2WD Car Robot arduino

2wd kit assembly.

Prof. Rafael Levi

# List of materials

- 2 MDF robot car chassis



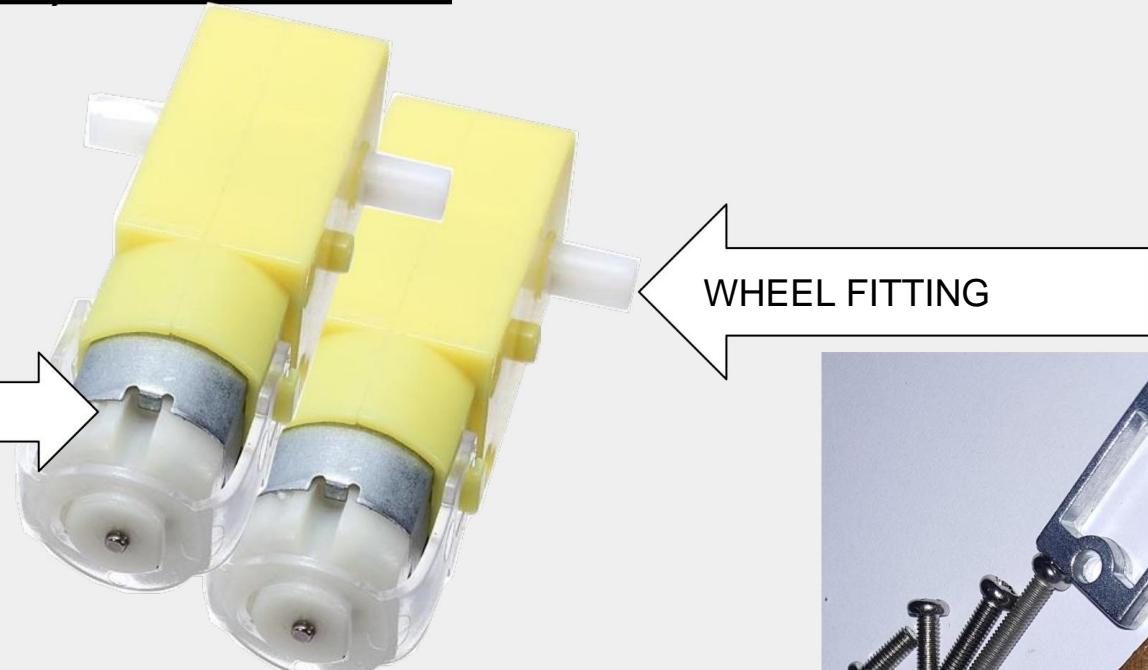
# List of materials

- 2 wheels 68mm



# List of materials

- 2 DC motors (3-6V) + 2 brackets



# List of materials

- 1 set of screws, nuts, washers



# List of materials

- 1 Silicone support wheel 35mm



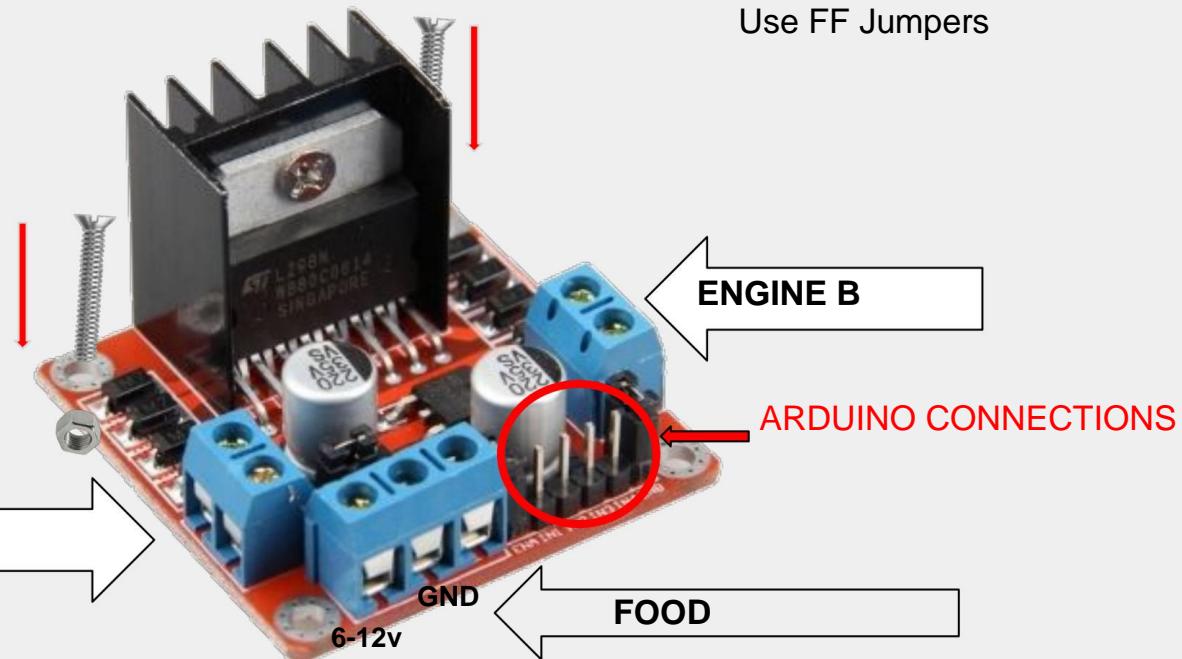
# List of materials

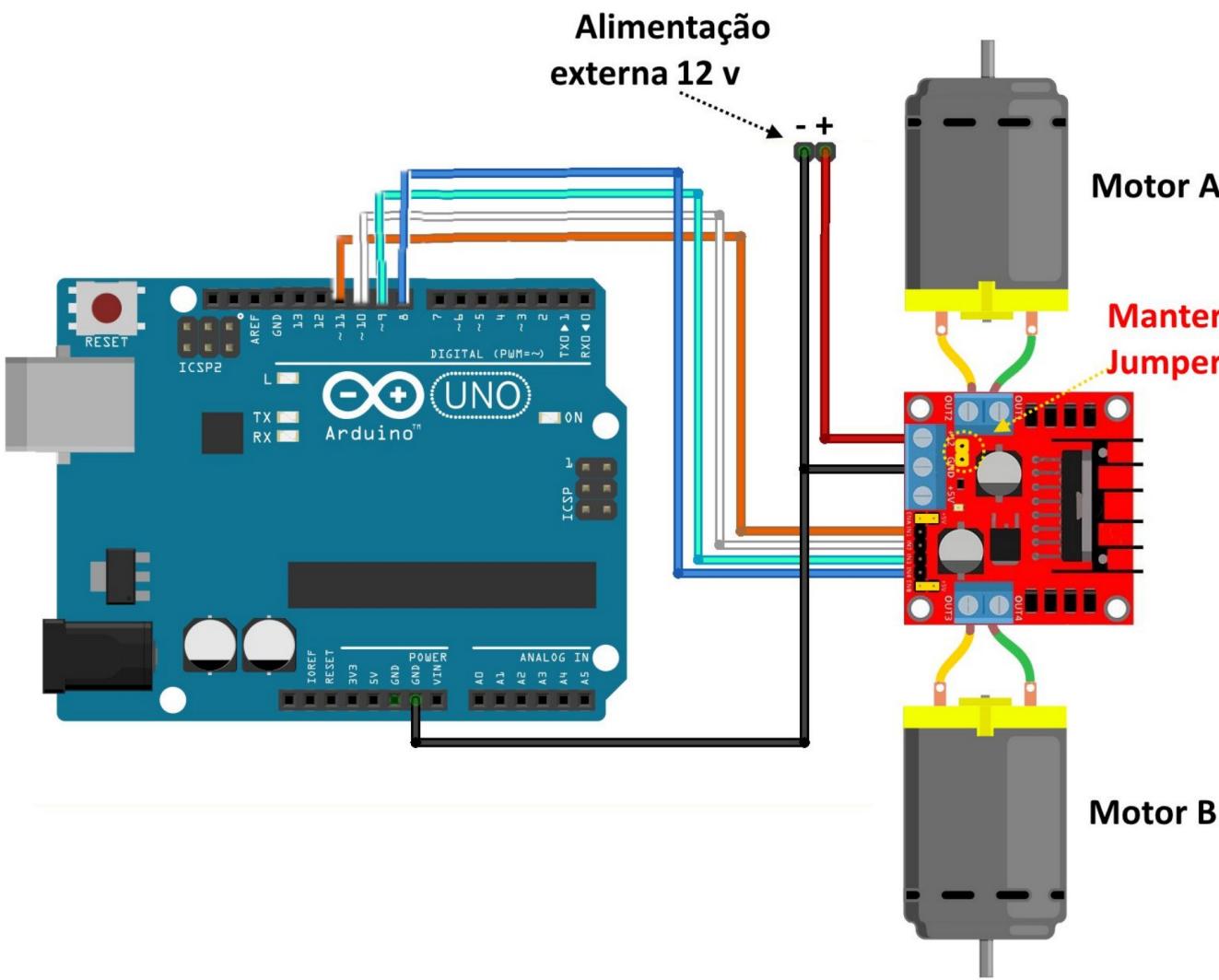
- 1 Bridge H L298N

FROM THE LEFT  
TO THE RIGHT:

PIN1, PIN2,  
PIN3, PIN4

(CONNECTIONS  
ON ARDUINO)  
11, 10, 9, 8





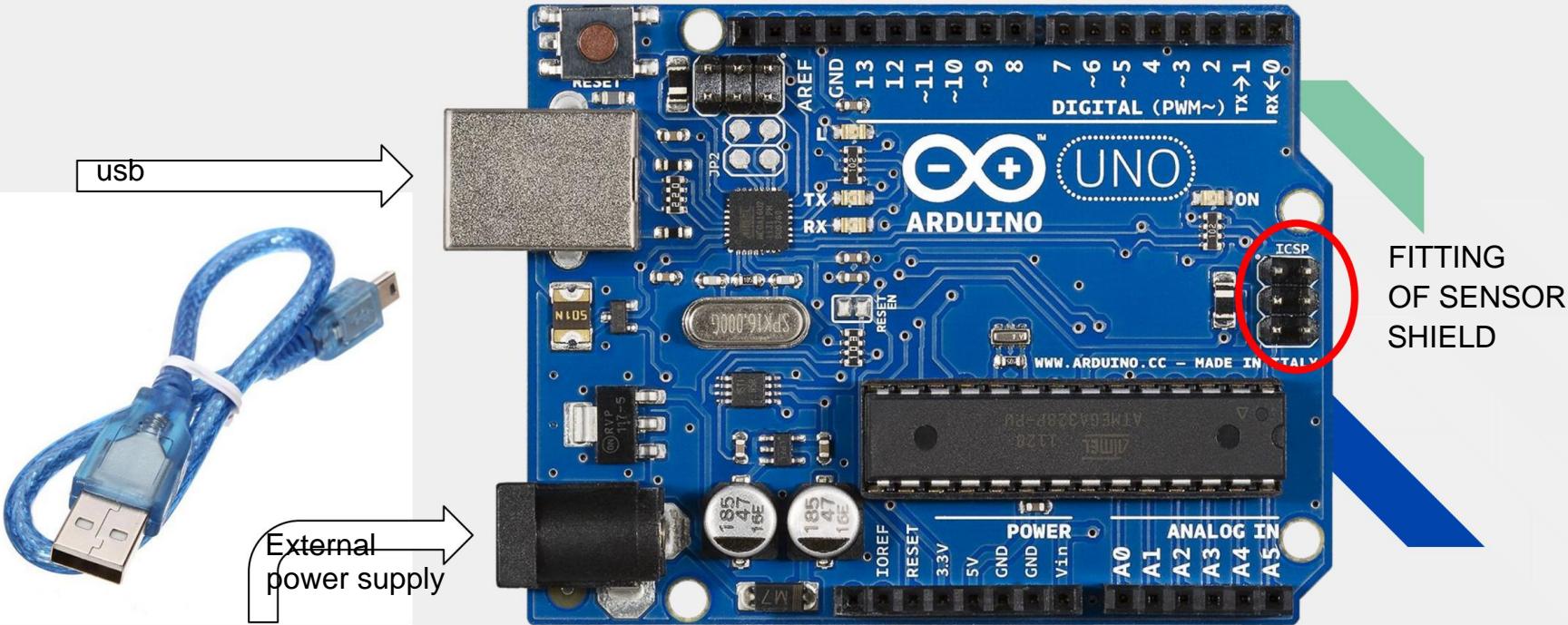
# List of materials

- 1 kit of FF and MF jumpers



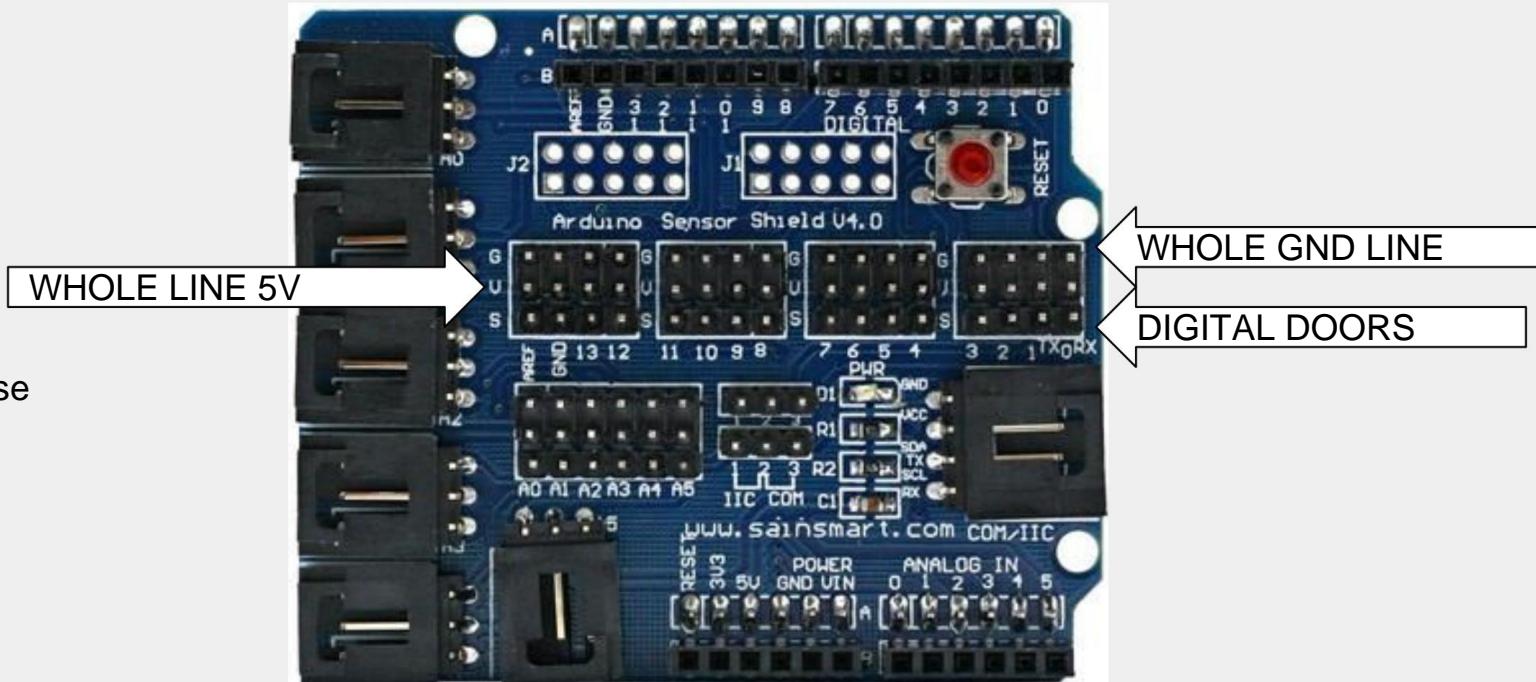
# List of materials

- 1 Arduino Uno R3 + USB Cable



# List of materials

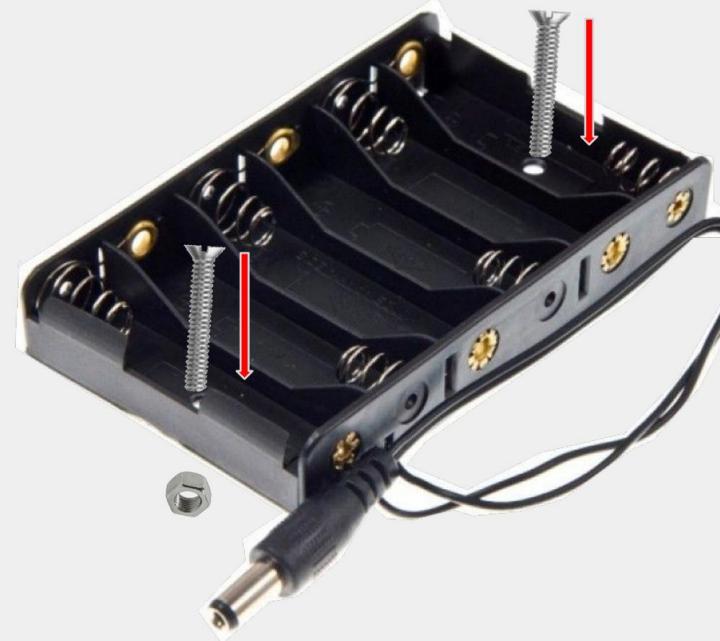
- 1 Sensor shield V4 (or V5)



We will not use  
analog  
ports.

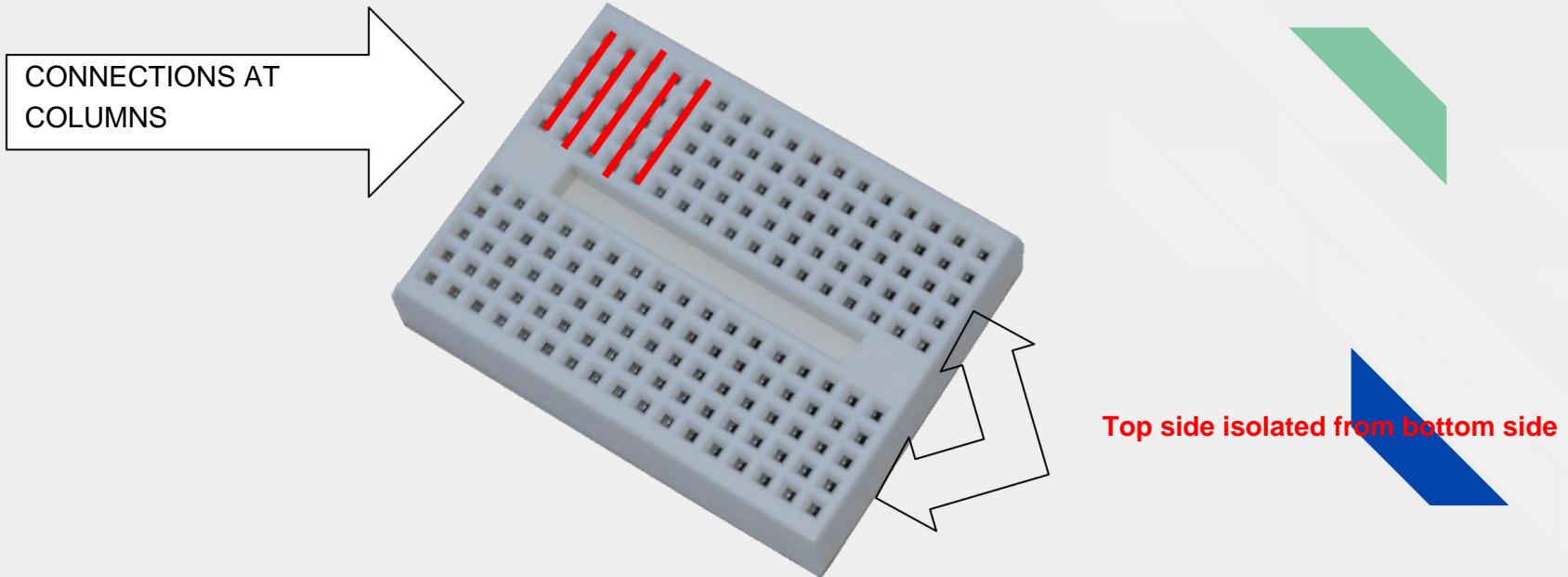
# List of materials

- 1 x6 AA battery holder



# List of materials

- 1 breadboard 170 pins (any color)

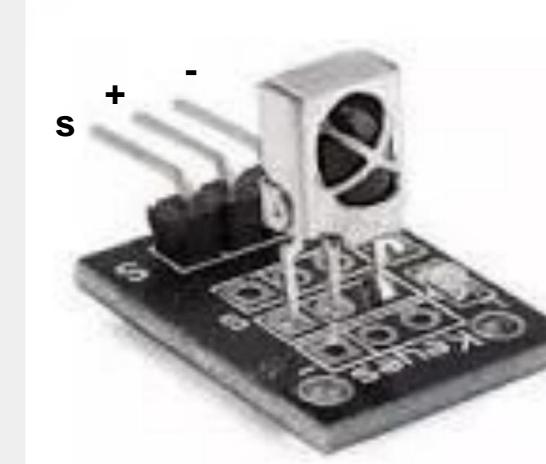


# List of materials

- 1 IR Control kit (Control + Receiver)

Mapping  
on arduino

S4 (digital)  
+ 5V  
- GND



Attach with hot glue. Use FF  
jumpers



# List of materials

- 1 HC-SR04 sonar sensor

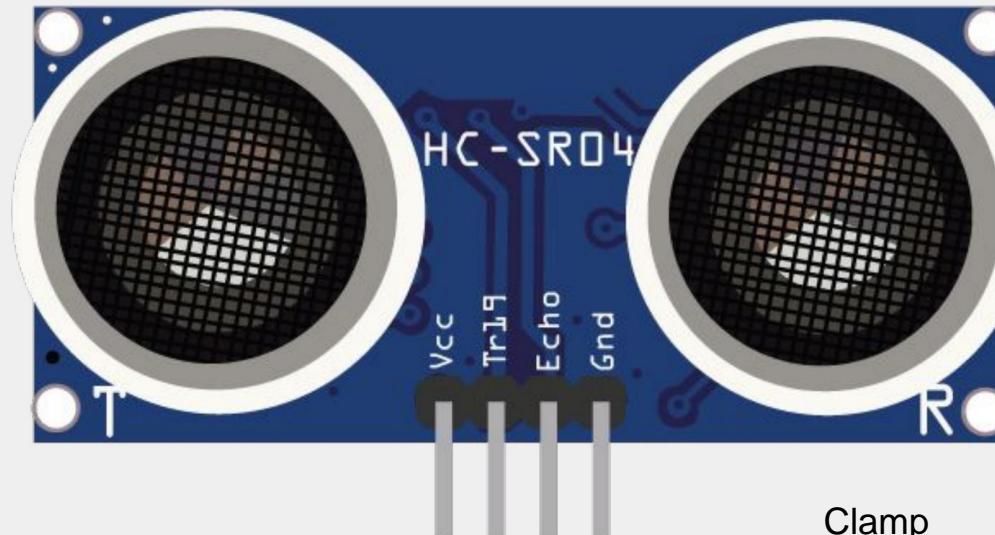
(ARDUINO)

VDC = 5V

GND = GND

TRIG = 6 (digital)

ECHO = 7 (digital)



Use FF jumpers

# List of materials

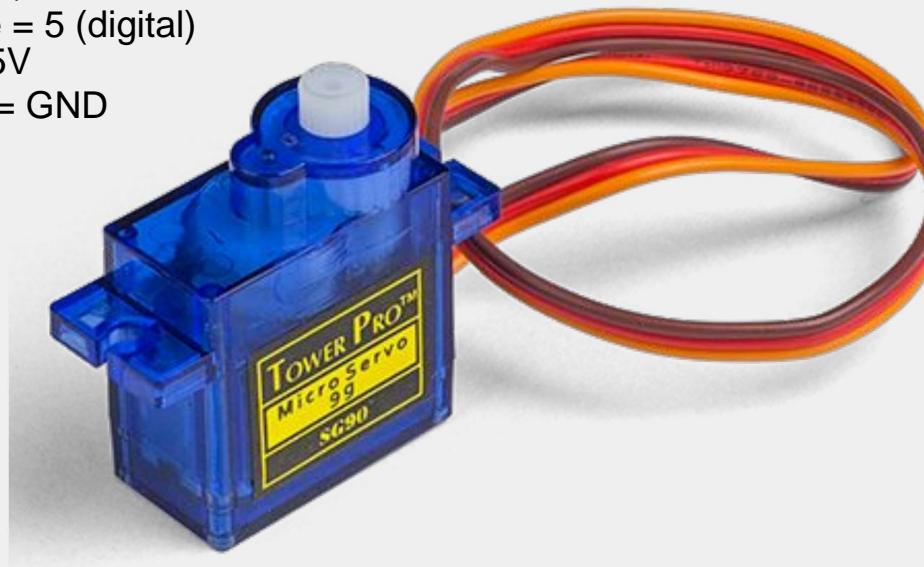
- 1 9g SG90 Tower Pro servomotor

(arduino)

Orange = 5 (digital)

Red = 5V

Brown = GND



clip on support



# List of materials

- Plastic clamp (Black or white)



# List of materials

- 1 Servo Motor Support 9g



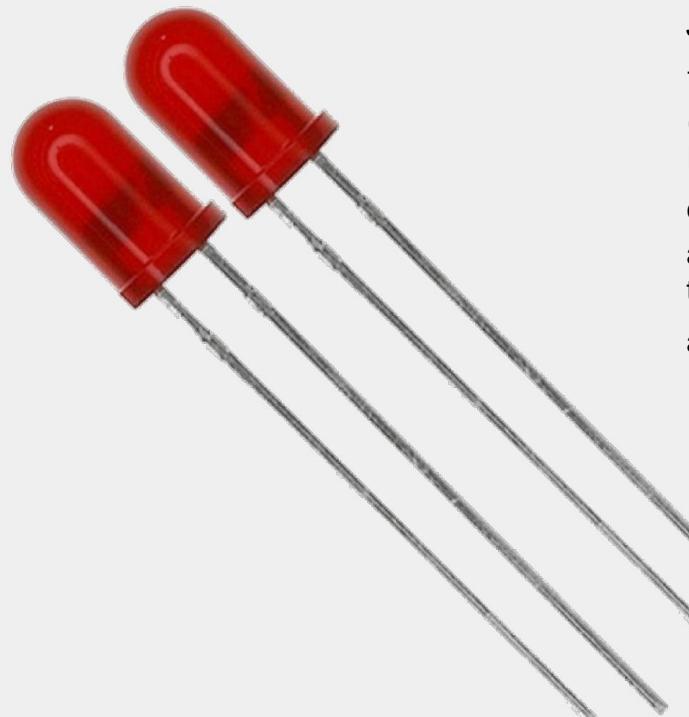
# List of materials

- 2 Red Leds 5mm

smaller leg  
Negative

Use the  
breadboard  
to  
intermediate

Arduino: Port 13



Join the 2 leds on  
the protoboard  
(positive of the  
leds in the same  
column of the proto  
and positive  
together in  
another column)

Use MF jumpers



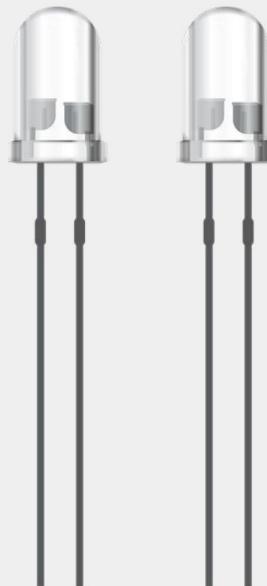
# List of materials

- 2 Yellow Leds 5mm

smaller leg  
Negative

use the  
breadboard  
to  
intermediate

(arduino)  
Door 3



Use MF jumpers

Join the 2 leds on  
the protoboard  
(positive of the  
leds in the same  
column of the proto  
and positive  
together in  
another column)



# List of materials

- 1 Buzzer 5V

bigger  
leg +

(arduino)  
door 12



Use MF jumpers

# List of materials

- Nose and cutting pliers, Screwdrivers and star wrenches,  
hot glue, soldering station.





# Step 1 - ASSEMBLY

**Place all materials on your table**



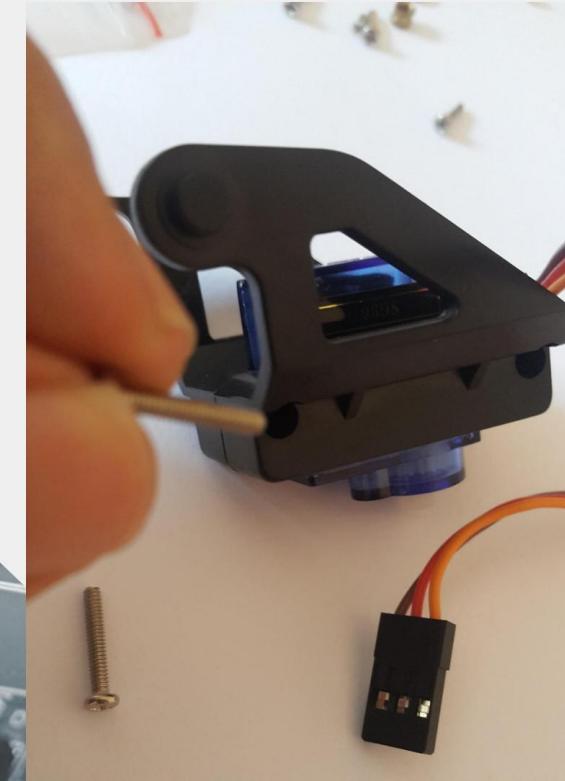
## Step 2 - ASSEMBLY

Connect 9g servo motor with bracket



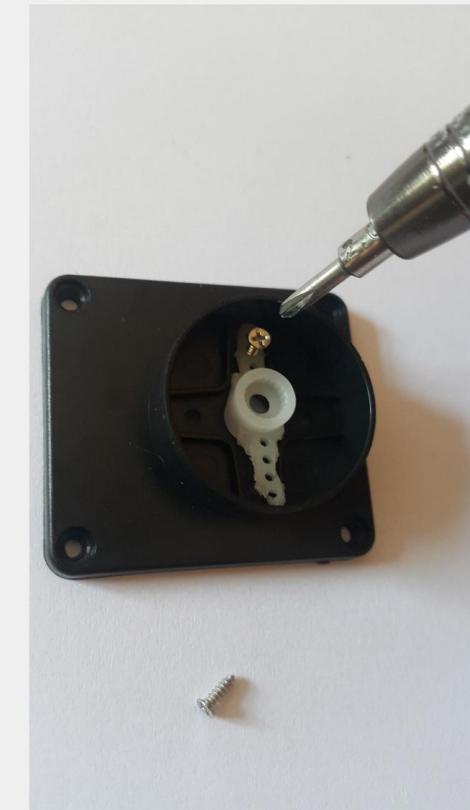
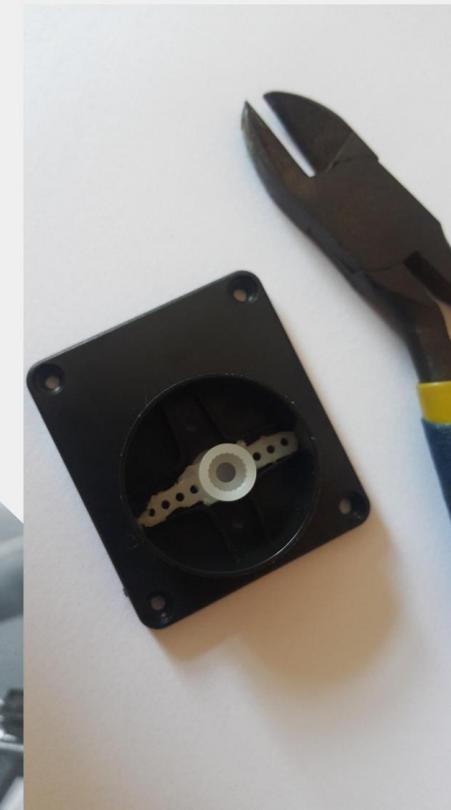
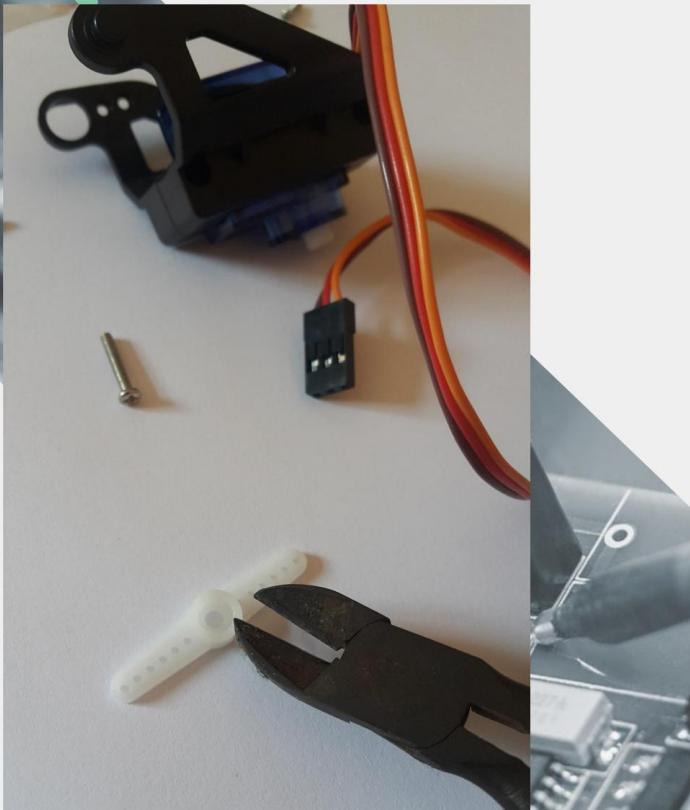
## Step 2.1 - ASSEMBLY

Screw the sides of the support



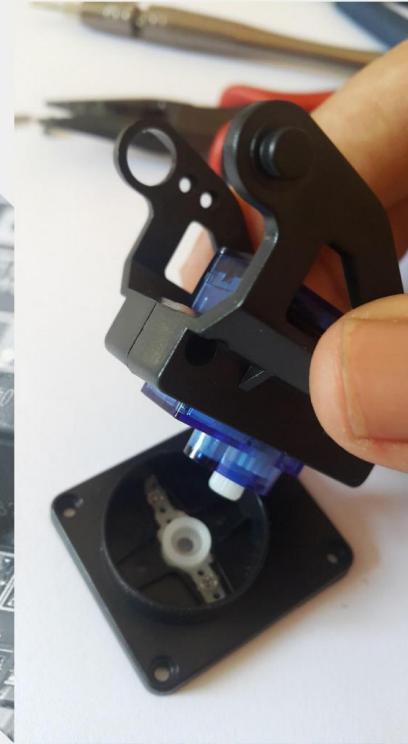
## Step 2.3 - ASSEMBLY

Cut and place the propeller on the base of the support



## Step 2.4 - ASSEMBLY

Attach the servo to the base of the support

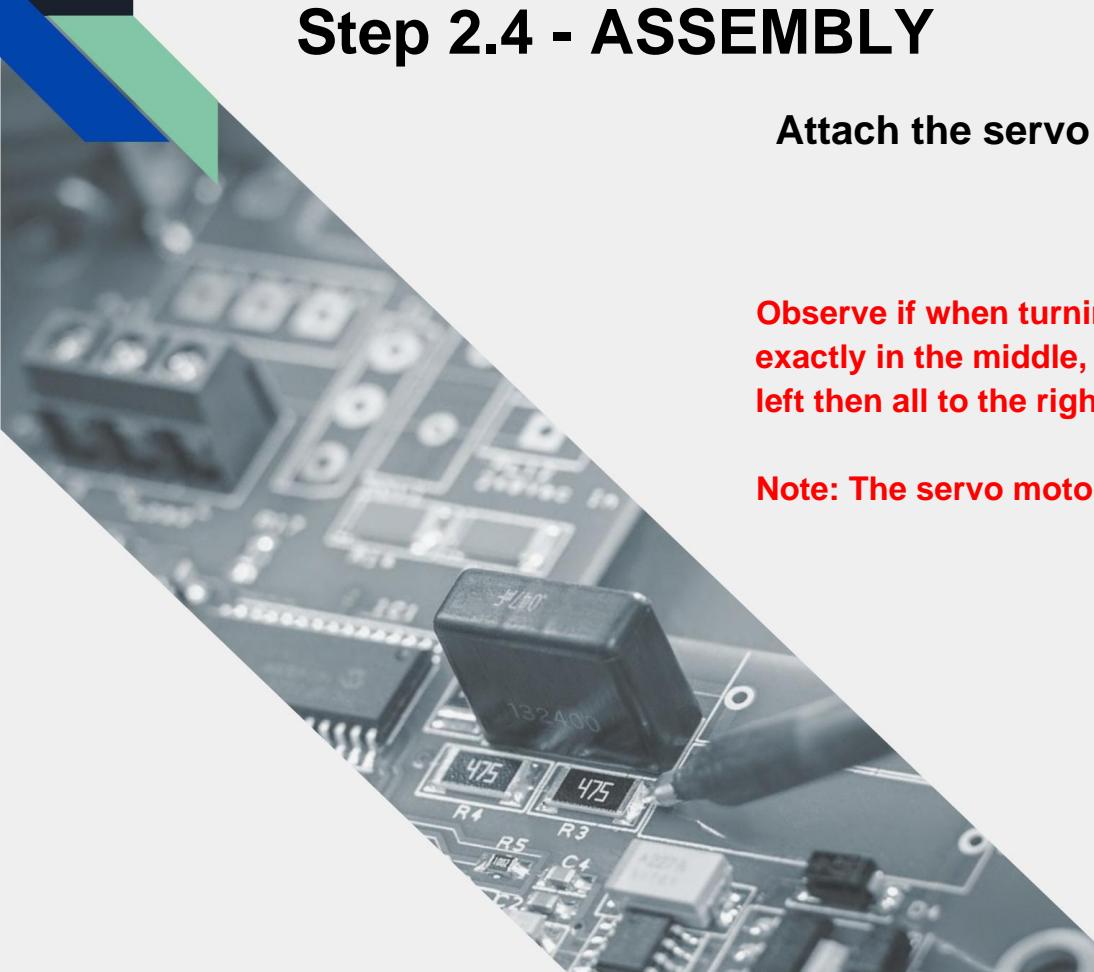


## Step 2.4 - ASSEMBLY

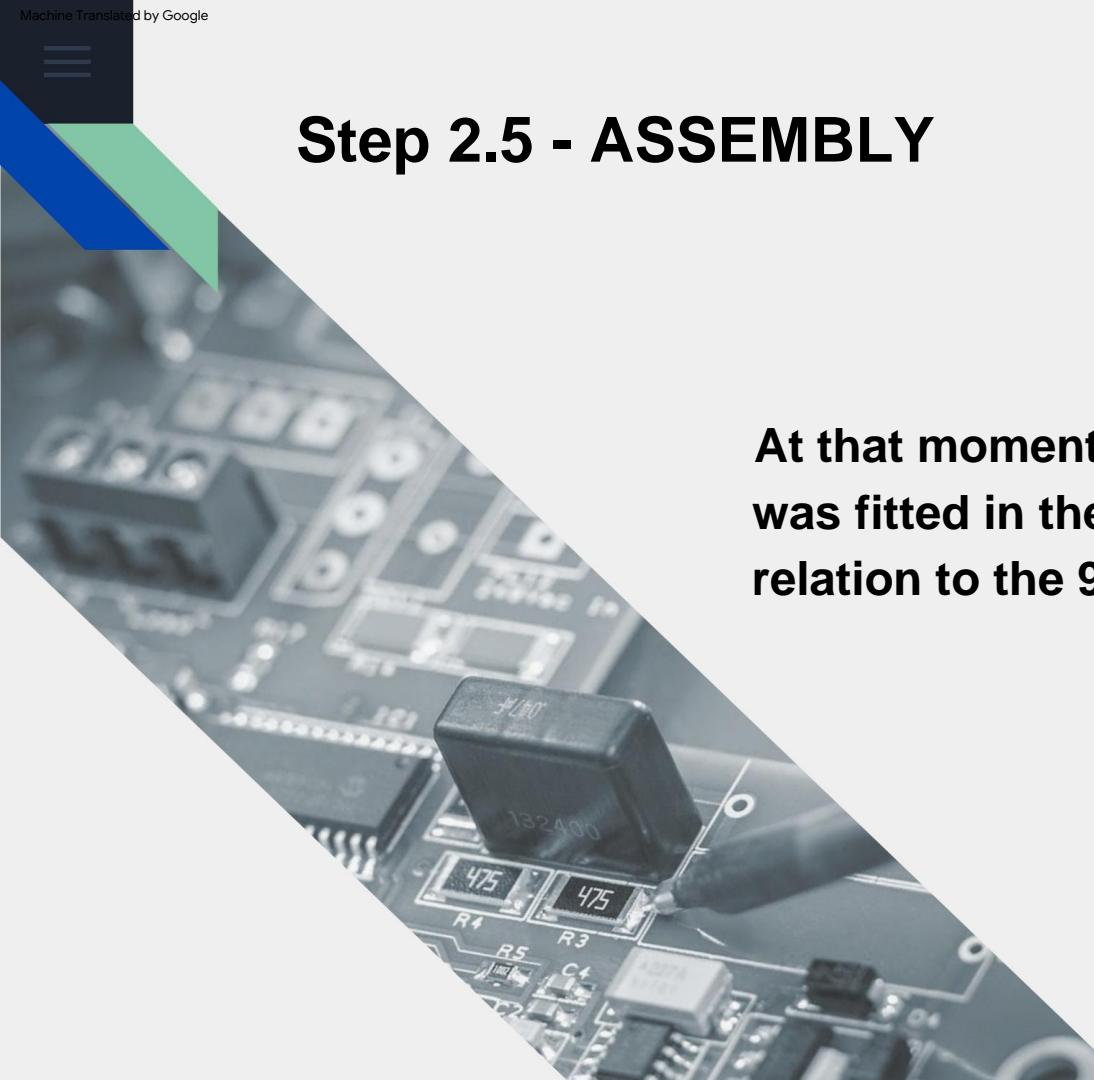
**Attach the servo to the base of the support**

**Observe if when turning the servomotor the front is exactly in the middle, turn it without forcing it, all to the left then all to the right.**

**Note: The servo motor only rotates 180°**



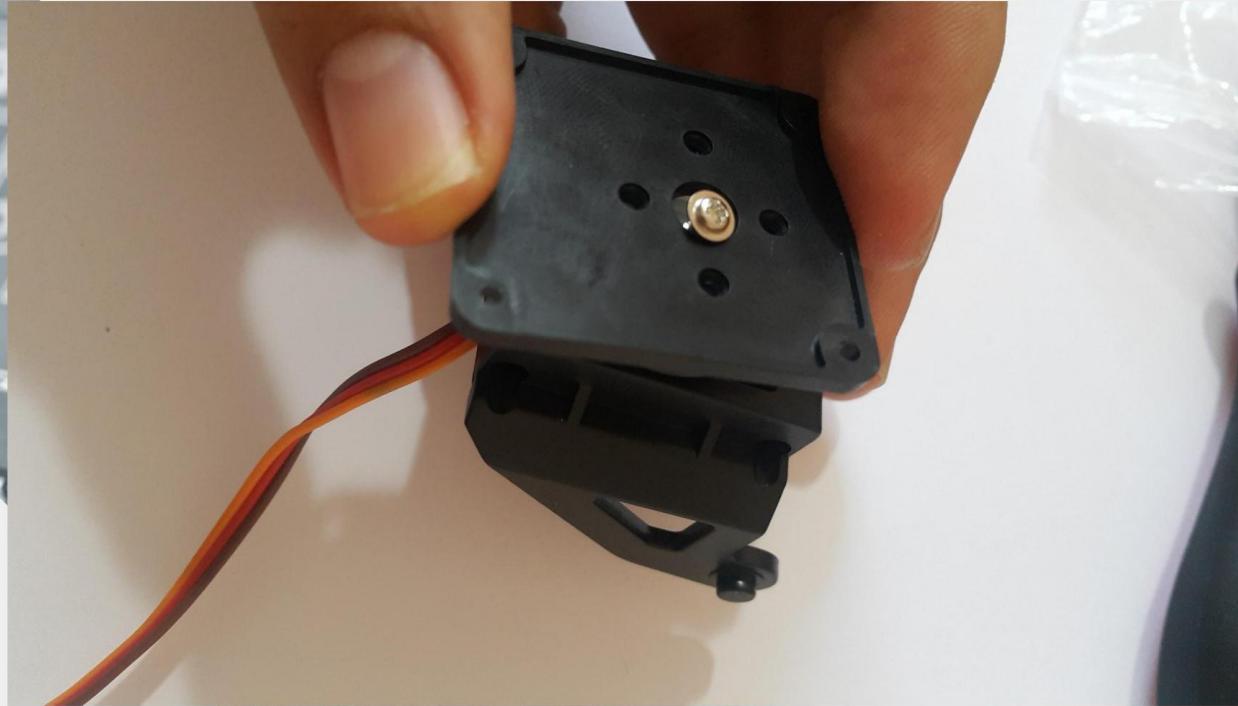
## Step 2.5 - ASSEMBLY



**At that moment, check if the support  
was fitted in the correct position in  
relation to the 9g servo motor. Review previous image**

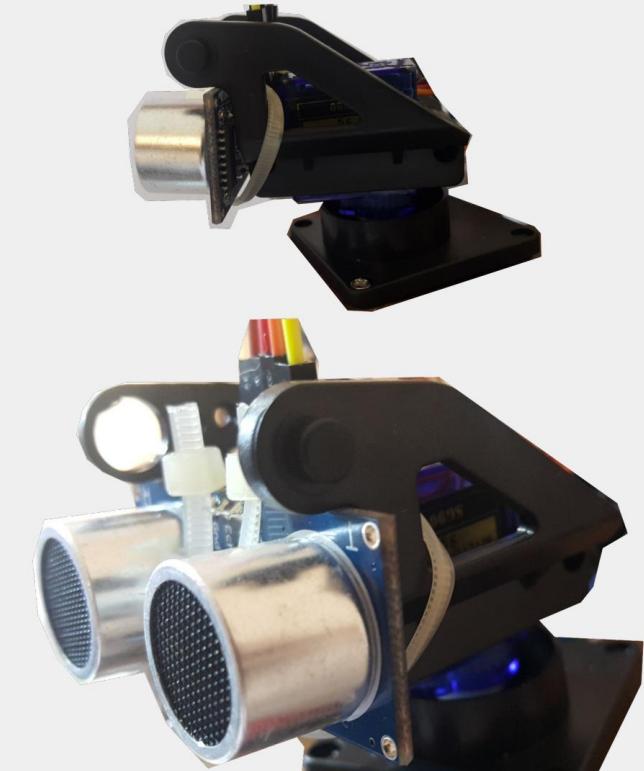
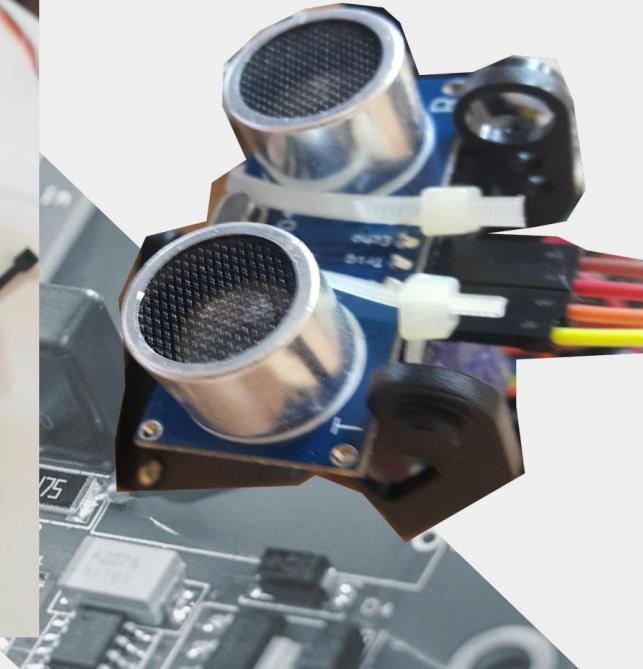
## Step 2.6 - ASSEMBLY

Screw the propeller onto the 9g servo motor, from the base



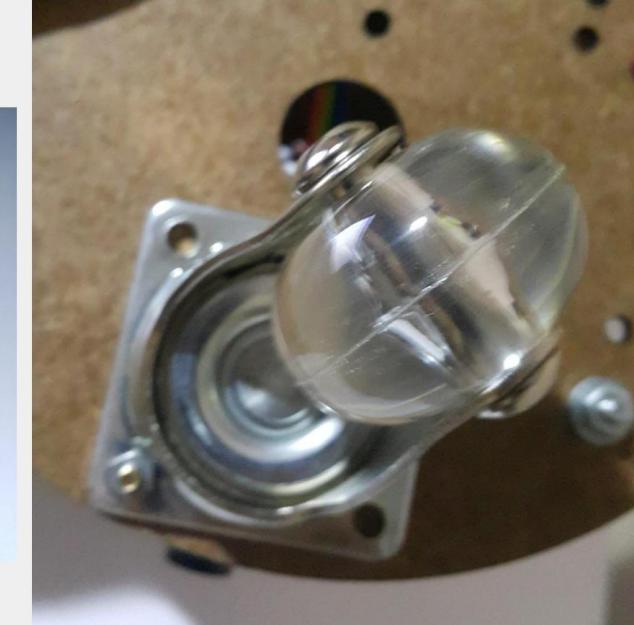
## Step 2.7 - ASSEMBLY

Attach the sonar to the bracket with the clamps



## Step 3 - ASSEMBLY

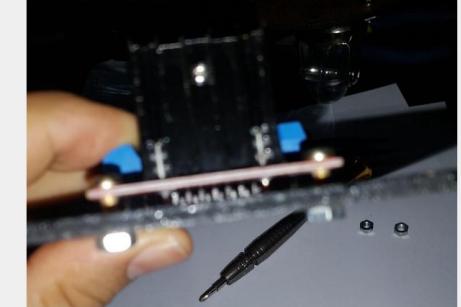
Attach the 35mm silicone support wheel to the chassis (bottom of the bottom chassis, at the front). 2 screws and 2 nuts



## Step 4 - ASSEMBLY

Attach H-bridge L298N to chassis (top or bottom chassis, bottom)

2 screws, 2 nuts



## Step 5 - ASSEMBLY

Attach DC Motors to the chassis (bottom of bottom chassis at the bottom)

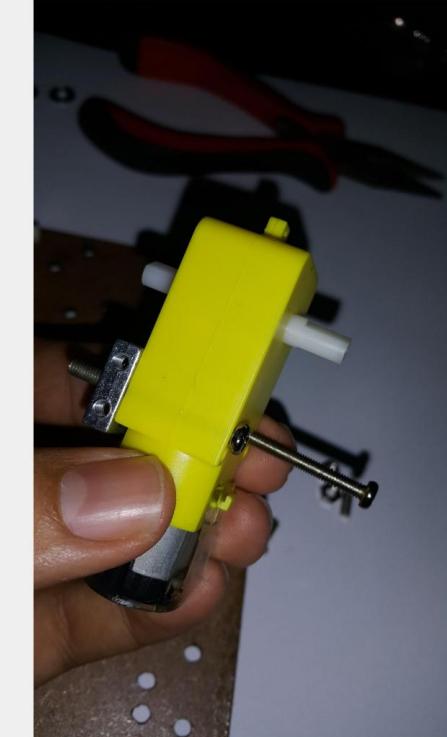
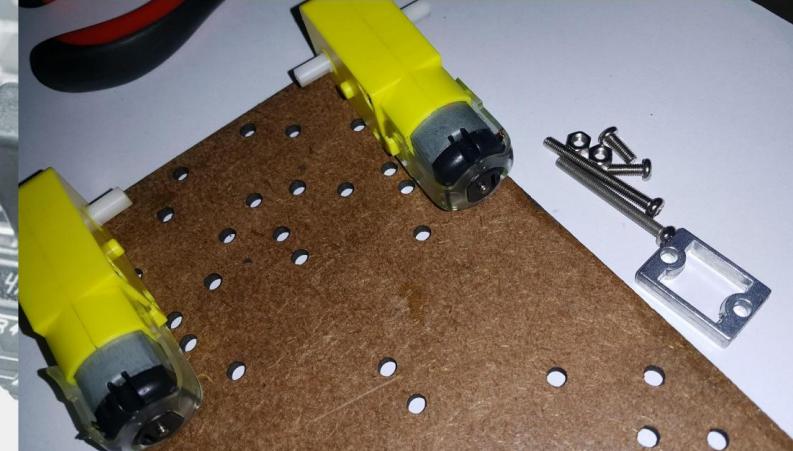
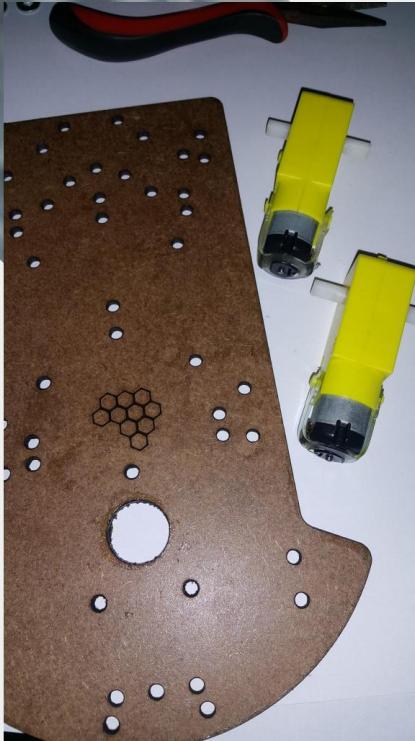
**VERY CAREFUL! THIS PART IS FULL OF  
DETAILS!**

A close-up photograph of a dark grey printed circuit board (PCB). A black rectangular motor component is mounted onto the board. Two small cylindrical resistors labeled "475" are visible near the motor. Other electronic components like capacitors and integrated circuits are also present. The background is white.

The part of the motor contacts must  
sticking out and the larger screw  
left on the opposite side of  
the wheel.

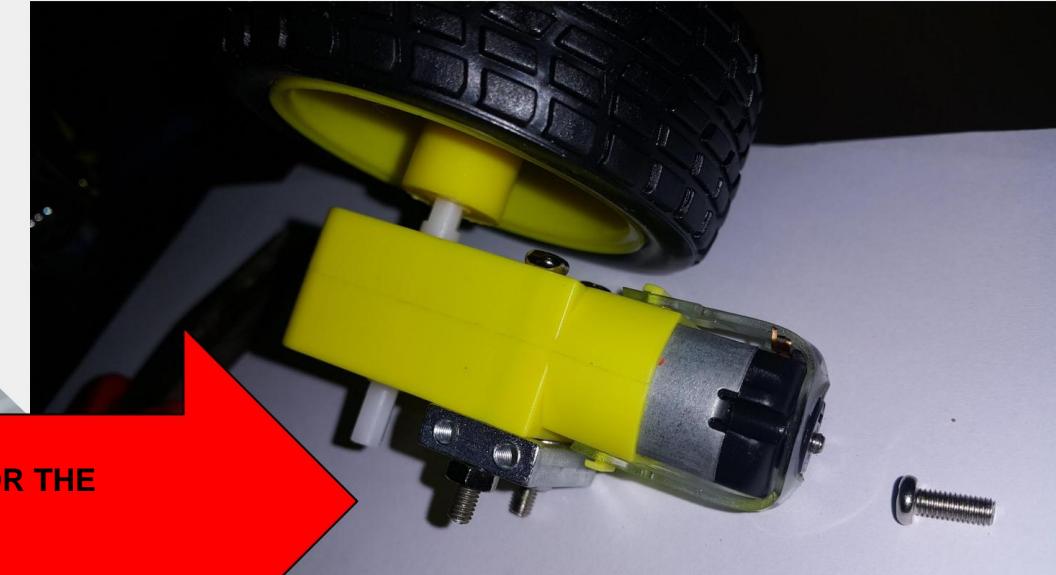
## Step 5.1 - ASSEMBLY

Attach DC Motors to the chassis (bottom of bottom chassis at the bottom)



## Step 5.2 - ASSEMBLY

Attach DC Motors to the chassis (bottom of bottom chassis at the bottom)



BIGGER SURPLUS OF THE SCREW FOR THE  
OTHER SIDE OF THE WHEEL

## Step 5.3 - ASSEMBLY

Attach DC Motors to the chassis (bottom of bottom chassis at the bottom)

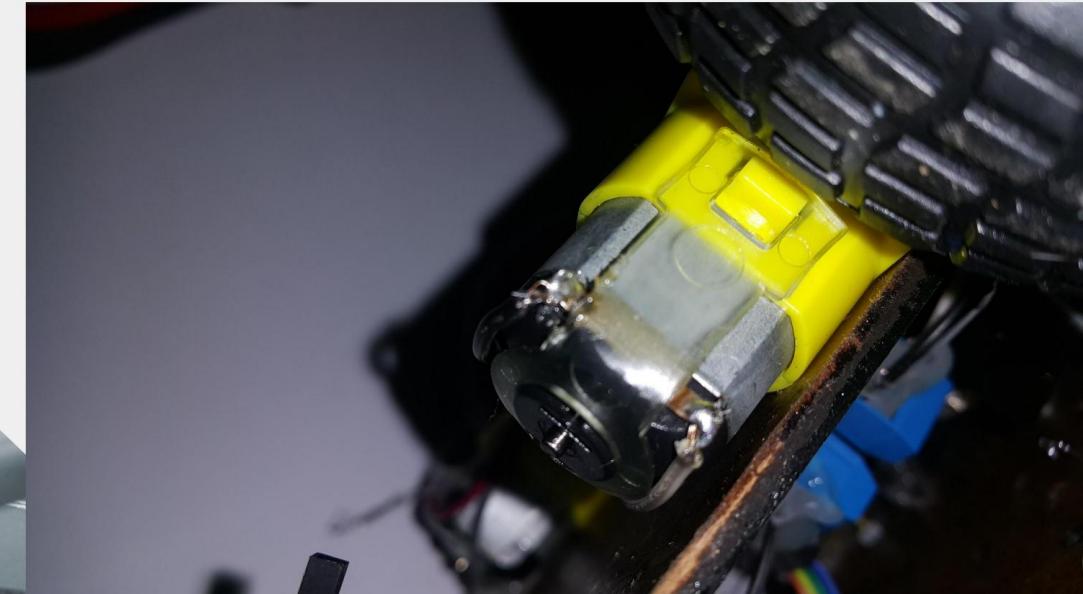
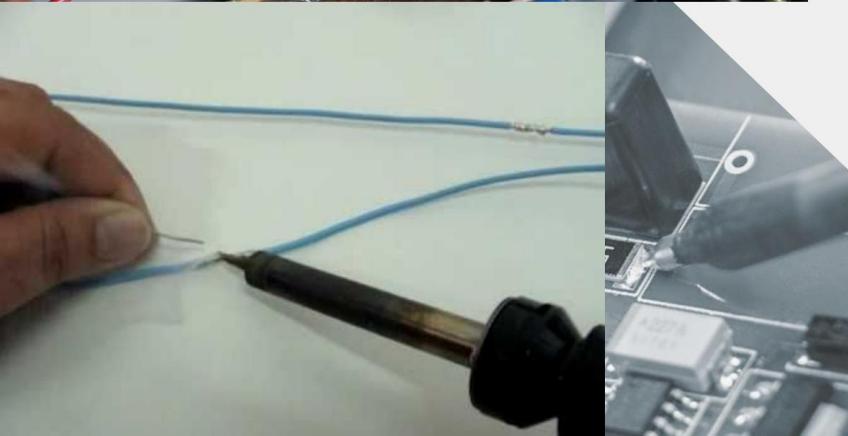
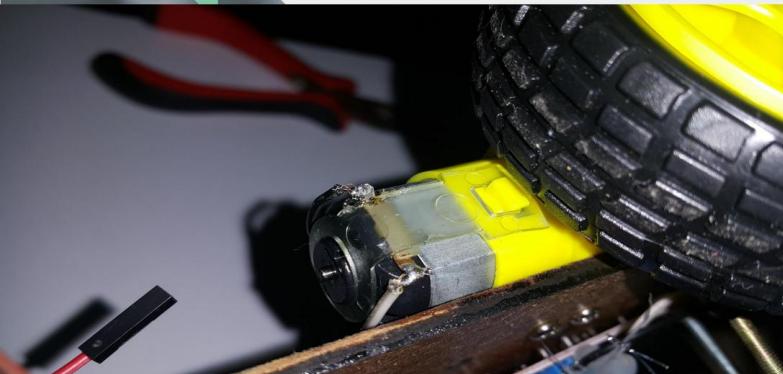


screwing over



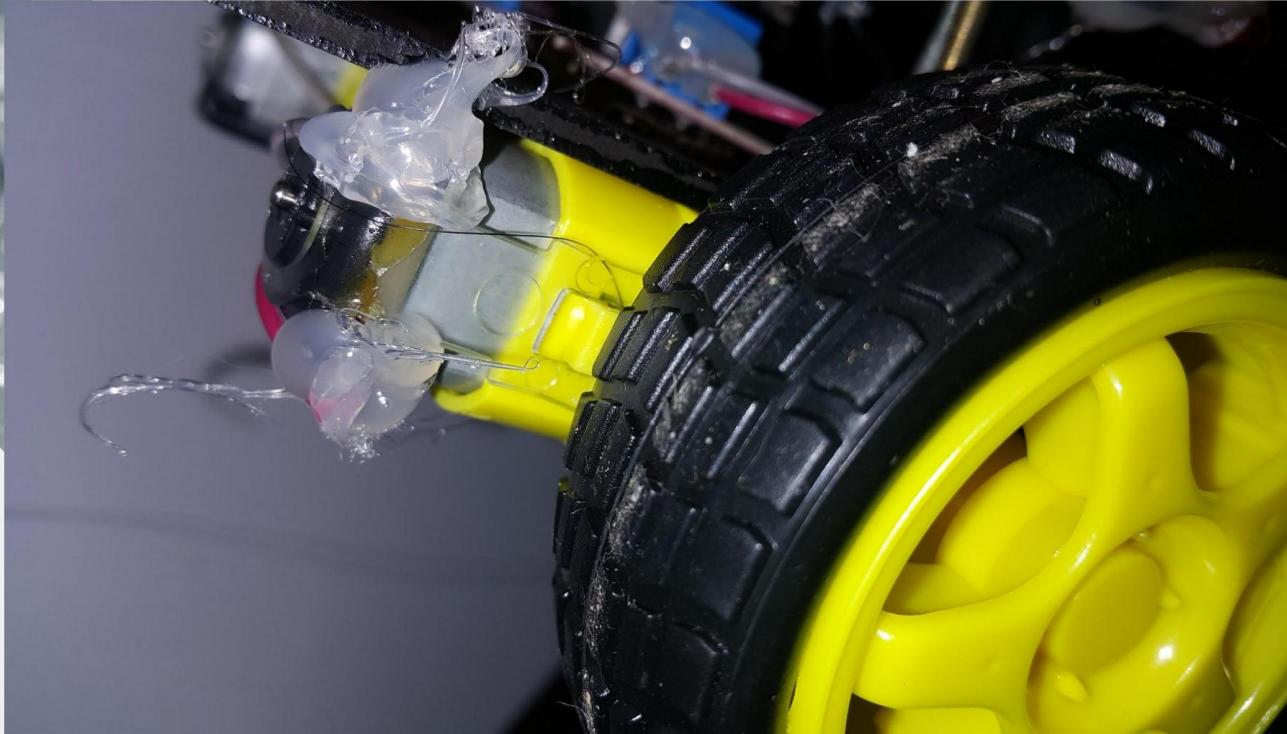
## Step 5.4 - ASSEMBLY

Solder motor contacts with jumper (FF)



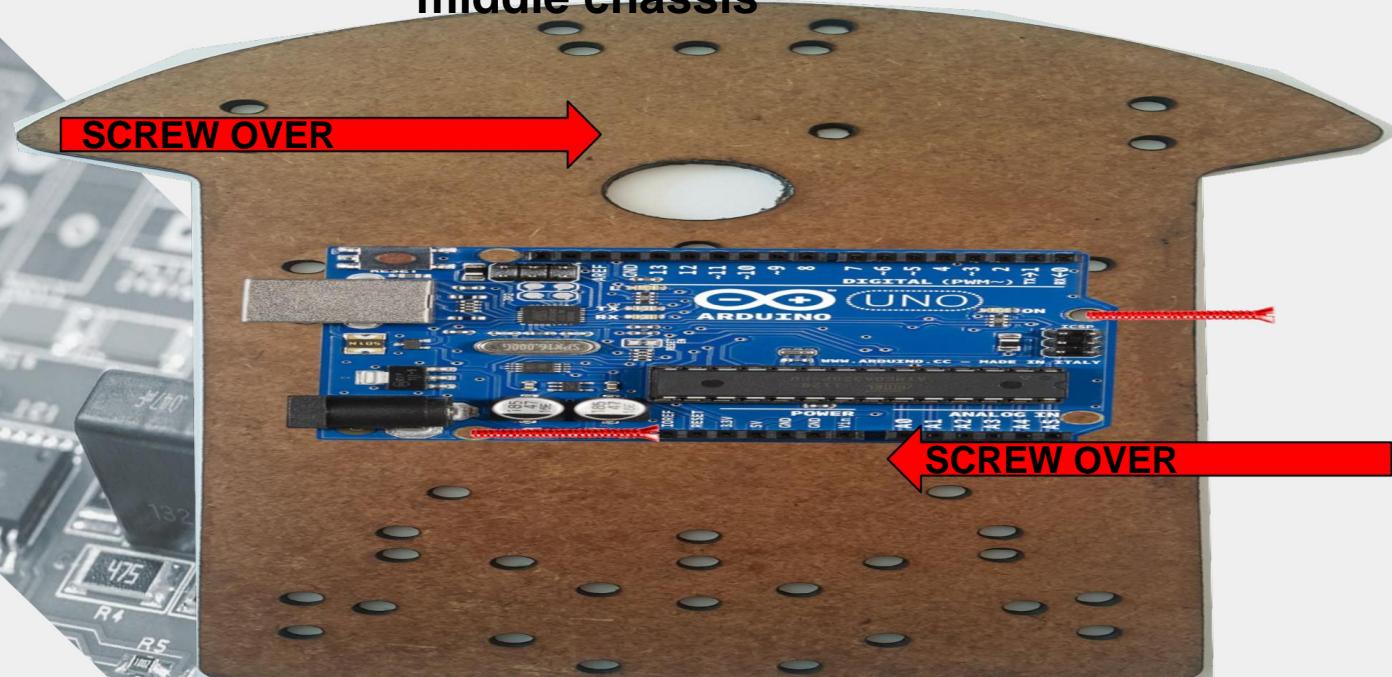
# Step 6 - ASSEMBLY

**Isolate motor contacts with hot glue**



# Step 7 - ASSEMBLY

Attach the Arduino to the top, top,  
middle chassis

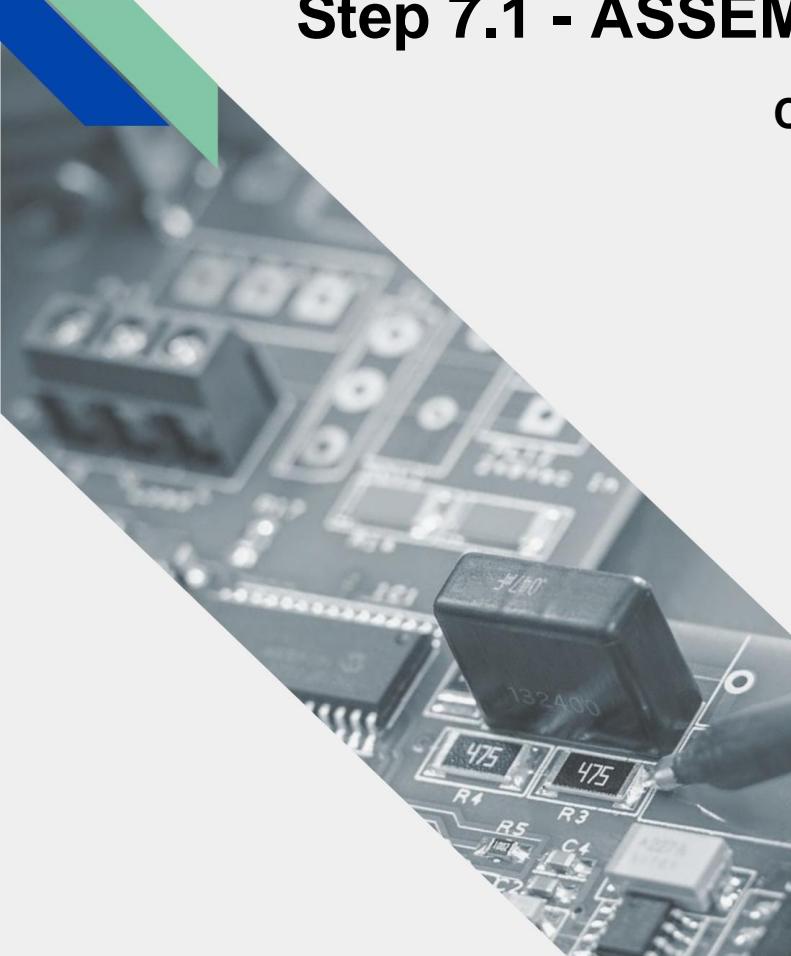


Nuts

underneath!  
2 screws 2 nuts

# Step 7.1 - ASSEMBLY

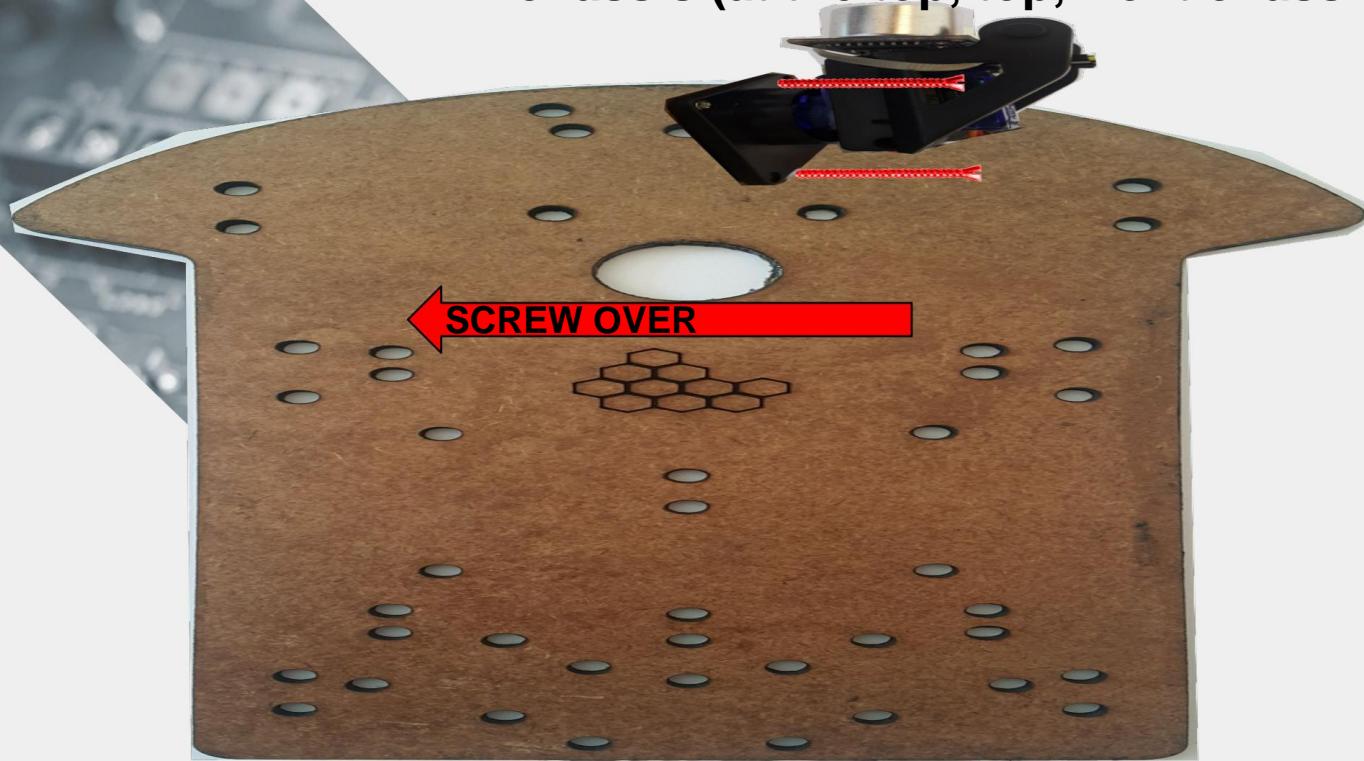
Connect the Sensor shield to the arduino



BotSheet

## Step 8 - ASSEMBLY

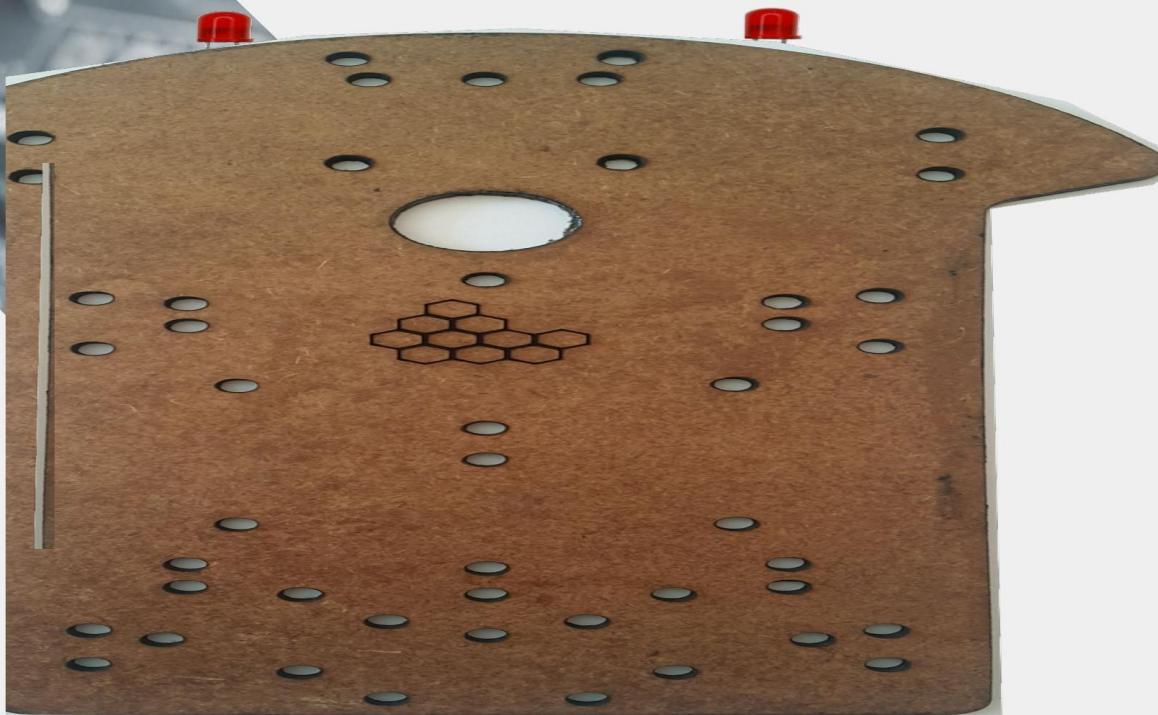
Attach the 9g servo motor bracket to the chassis (at the top, top, front chassis)



nuts by  
Low!  
2 screws  
2 nuts

## Step 9 - ASSEMBLY

Attach the red LEDs to the chassis (top, bottom, front chassis)

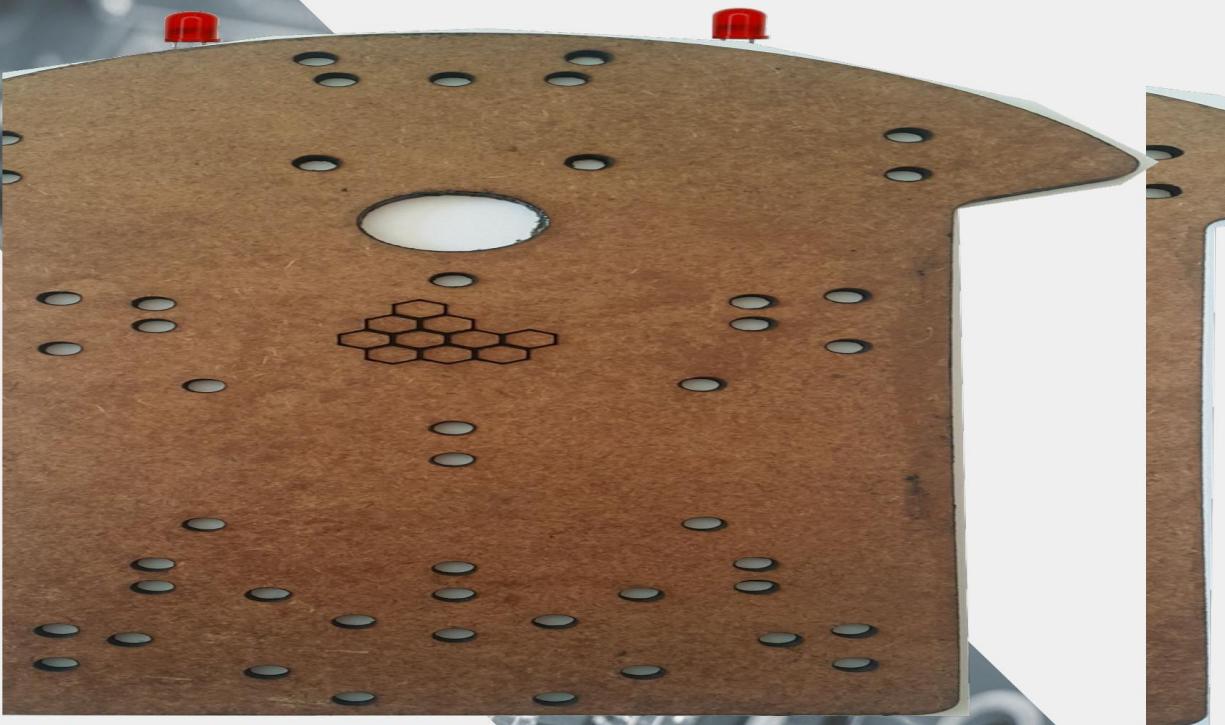


2 MF jumpers  
for each led

Fix with hot  
glue

## Step 10 - ASSEMBLY

Attach the yellow LEDs to the chassis (top, bottom, bottom chassis)



2 MF jumpers  
for each led

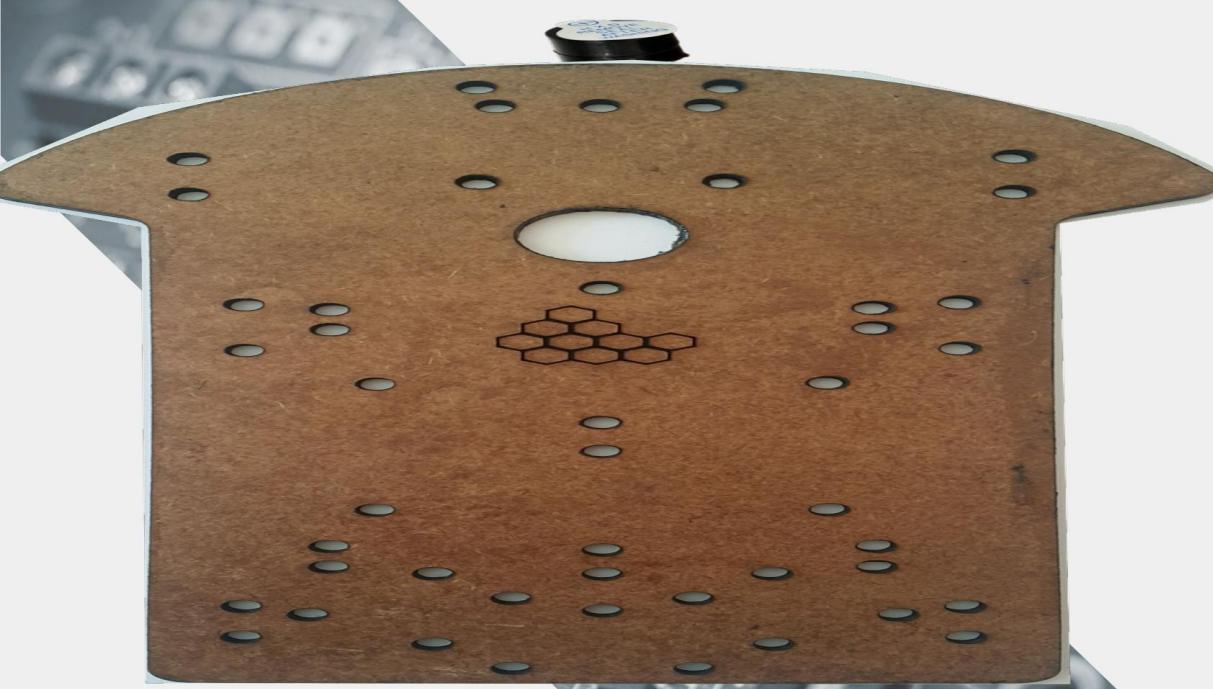
Fix with hot  
glue

## Step 11 - ASSEMBLY

Attach the buzzer to the chassis (top, bottom, front chassis)

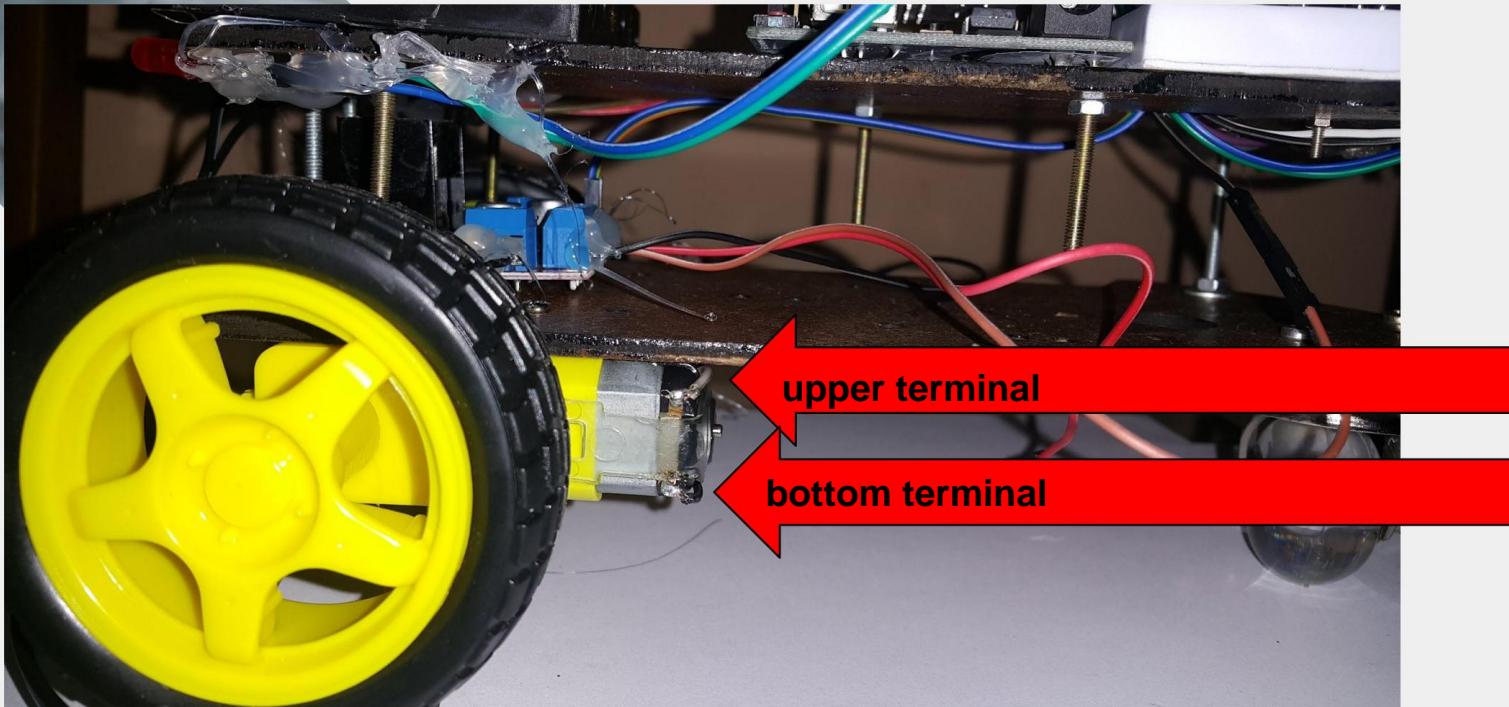
2 FF jumpers

Fix with hot  
glue



## Step 12 - ASSEMBLY

Detail about the motor terminals:

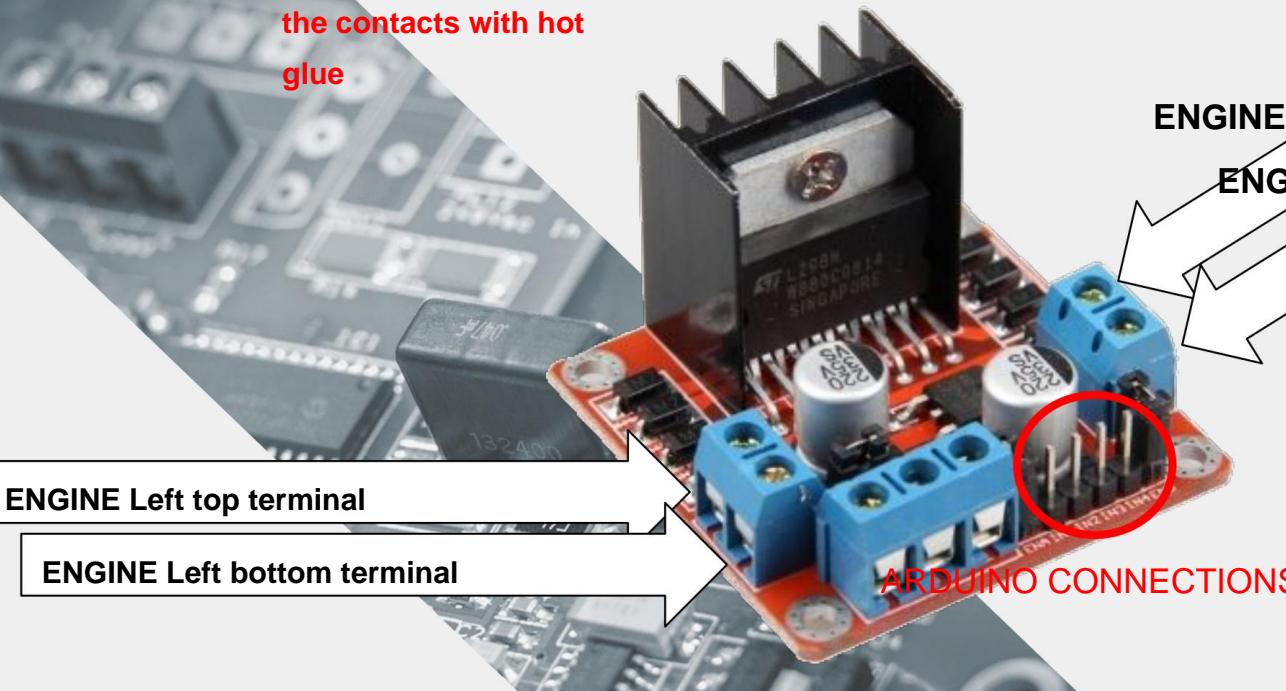


FROM THE LEFT  
TO THE RIGHT:  
PIN1, PIN2,  
PIN3, PIN4

# Step 12.1 - ASSEMBLY

Connect jumpers on the H bridge L298N

At the end, isolate  
the contacts with hot  
glue



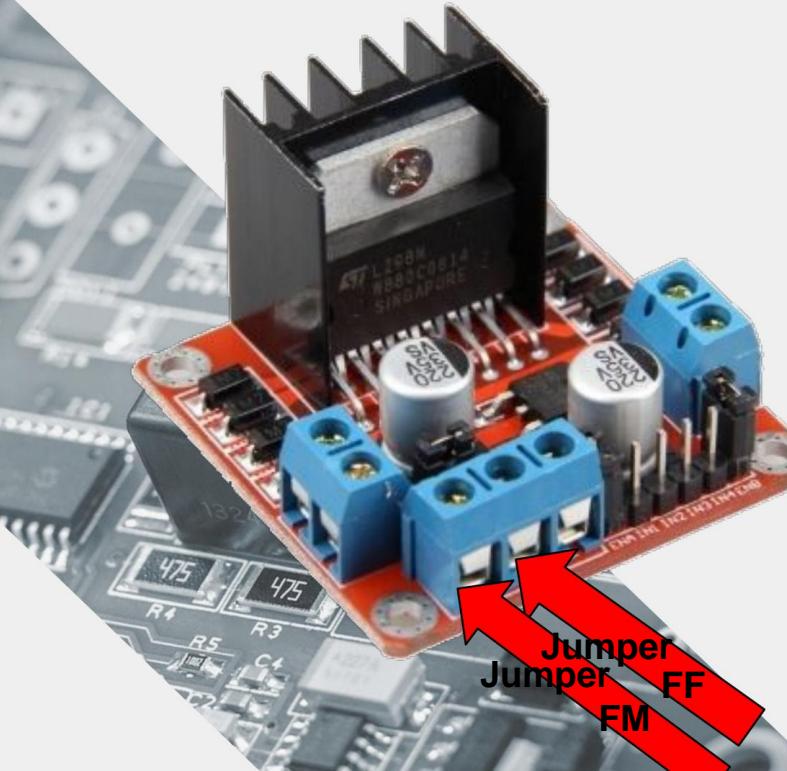
ENGINE Dir. bottom terminal  
ENGINE Dir. top terminal

(CONNECTIONS  
ON ARDUINO)  
11, 10, 9, 8

Consider  
yourself facing  
the robot

## Step 12.2 - ASSEMBLY

Connect jumpers on the H bridge L298N



the 3rd terminal  
After the red  
arrows will not be  
used

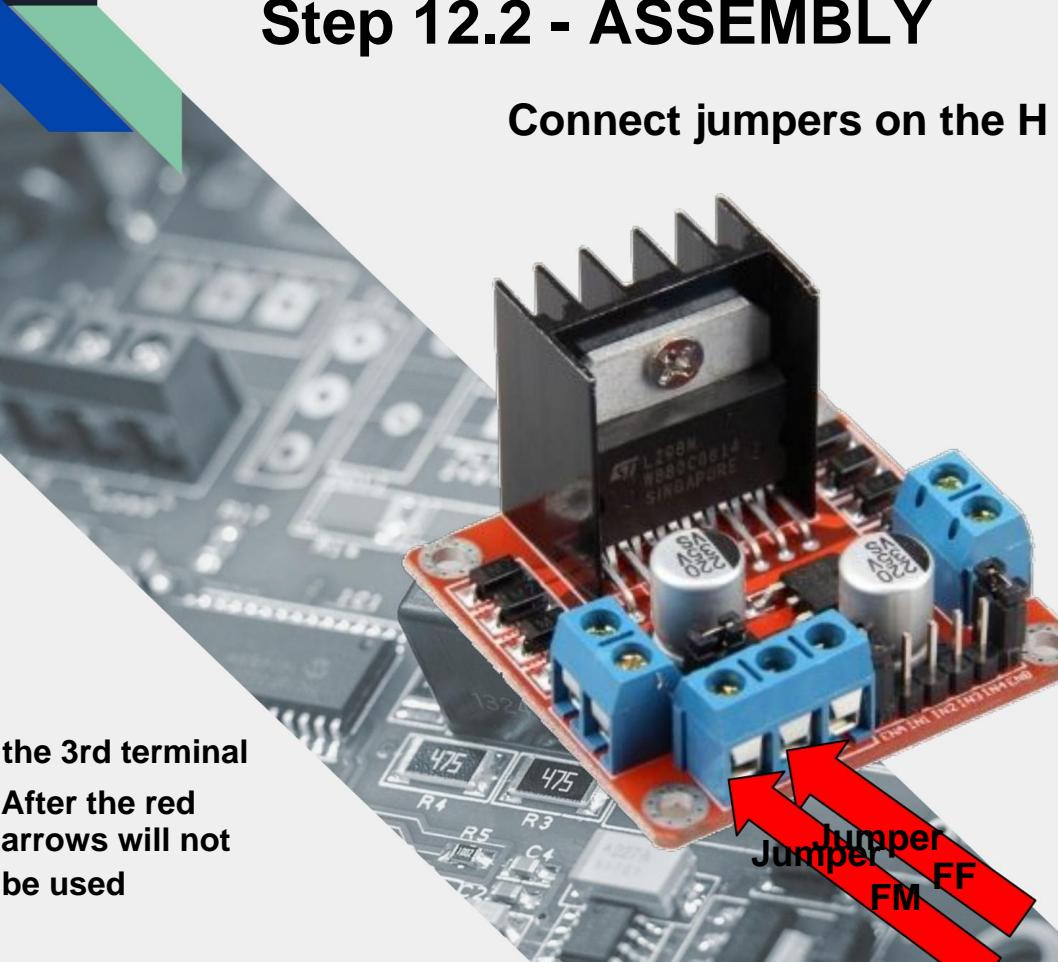
Consider  
yourself facing  
the robot

At the end, isolate  
the contacts  
with hot glue

Remove  
the plastic  
protection  
from the FF jumper  
before inserting  
it into the bridge  
(remove  
from 1 side of the jumper)

## Step 12.2 - ASSEMBLY

Connect jumpers on the H bridge L298N



the 3rd terminal  
After the red  
arrows will not  
be used

Consider  
yourself facing  
the robot

The first  
jumper, indicated  
by the red  
arrow on the  
left is negative,  
the other is positive.

The negative  
goes  
to the  
protoboard,  
the positive ask the te

## Step 13 - ASSEMBLY

Fasten the upper chassis to the lower one (use the largest screw)



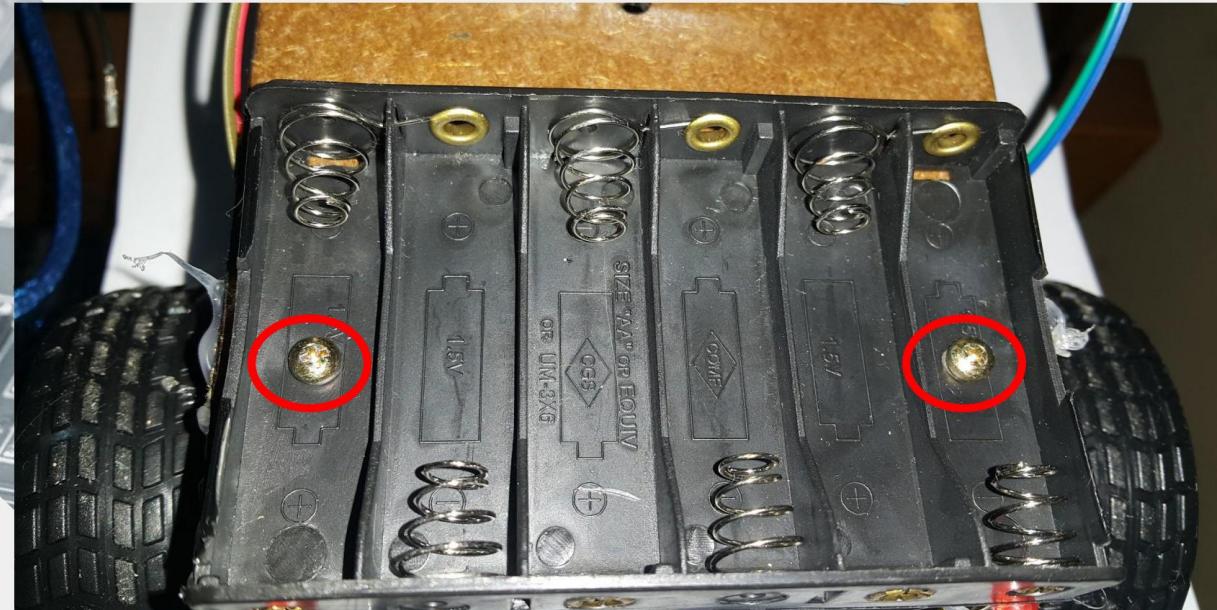
Follow the sandwich  
in the following order  
(top to bottom):

Screw  
Washer  
upper chassis  
Washer  
sow  
sow  
Washer  
lower chassis  
Washer  
sow

## Step 14 - ASSEMBLY

Attach AA battery holder (on top chassis, top, bottom)

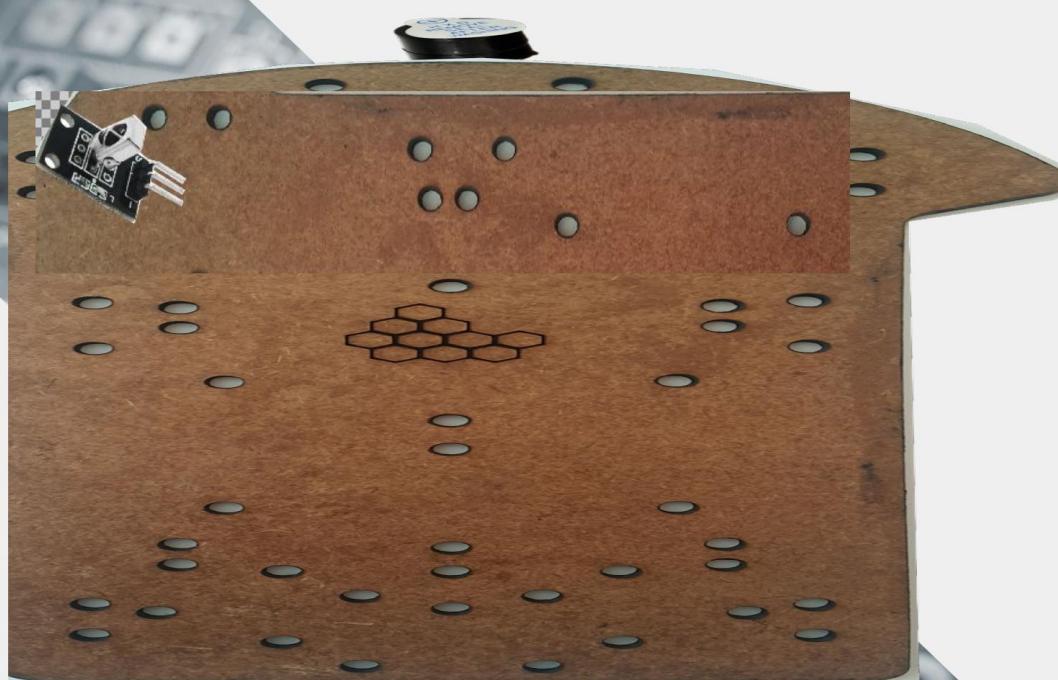
2 screws  
2 nuts



## Step 15 - ASSEMBLY

Attach the IR sensor to the chassis (top, top, front chassis)

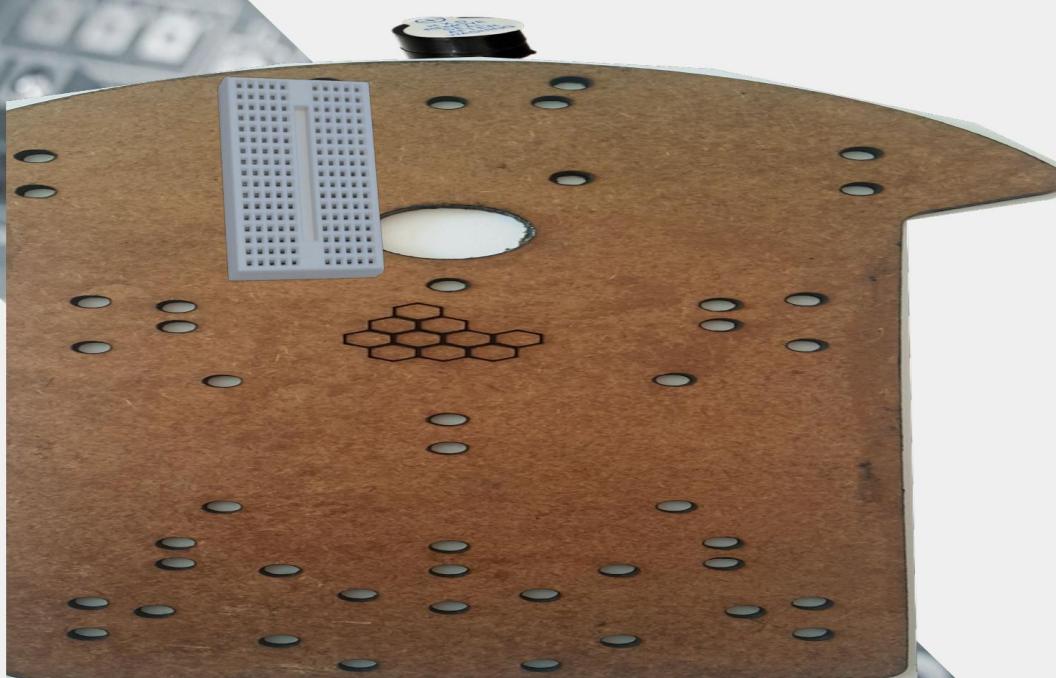
3 FF jumpers



Fix with hot  
glue

## Step 16 - ASSEMBLY

Attach 170-pin breadboard to chassis (top, top, front chassis)



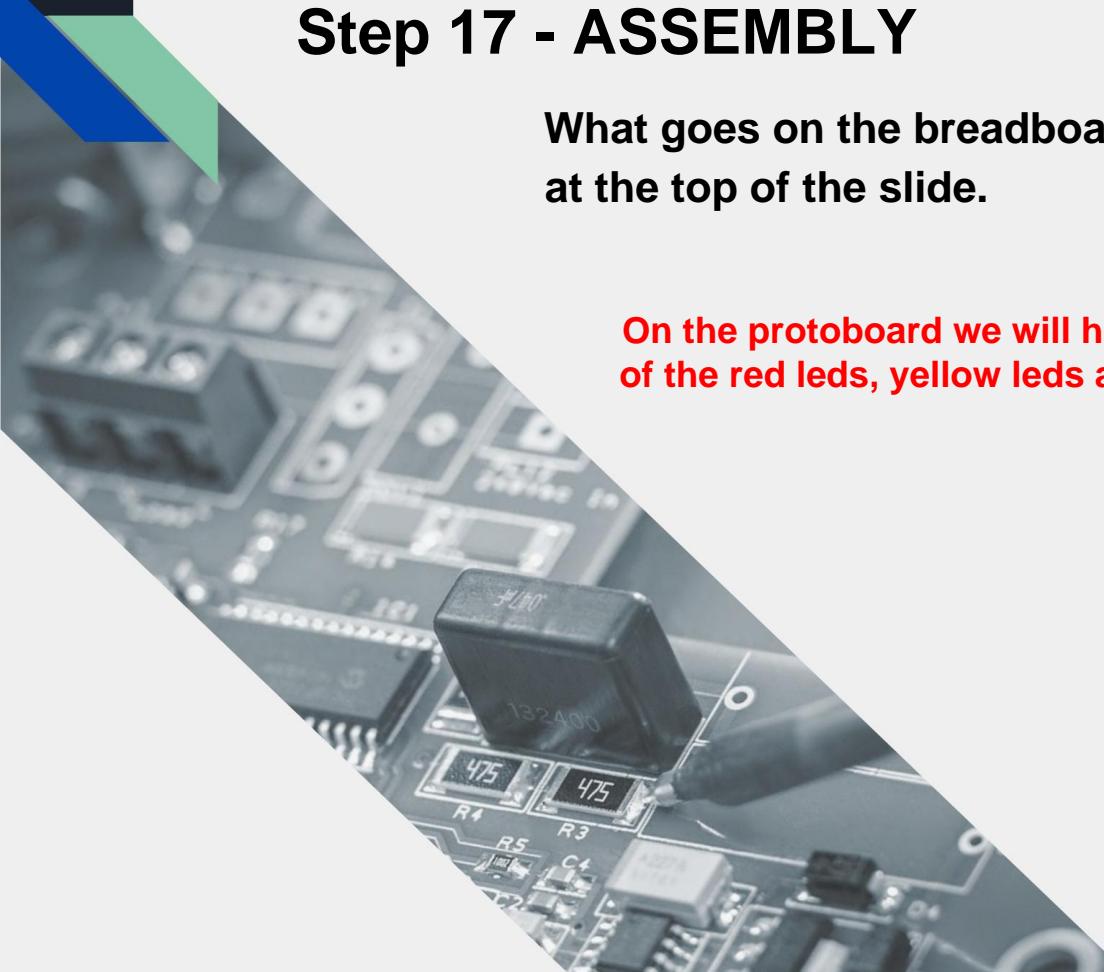
Do not use  
the self-adhesive  
tape, as we will  
reuse the protoboard !!!!

Attach with  
hot glue to the base

## Step 17 - ASSEMBLY

**What goes on the breadboard (use the pins referenced at the top of the slide.**

**On the protoboard we will have the positive and negative pins of the red leds, yellow leds and the negative of the H bridge.**



## Step 18 - ASSEMBLY

Put the 6 AA batteries I brought and the car will start working, you will only need to calibrate your remote control to do so, wait for the robot to stop beeping and press the following sequence on your controller.



- Forward arrow (accelerate)
- Arrow Back (Reverse)
- OK button (brake)
- Left arrow (rotate)
- Right arrow (rotate)
  - \* (turn on headlight)
  - # (turn off headlight)
- 1 (off servo motor)
- 0 (honk)