*Numbers in the item description refers to Mcmaster-Carr numbers

Assembling guide of the campus robot

Number given to the items	Item	Description	Quantity needed
1	DC-Powered Electromagnet	5698K112*	4
2	Screw no 1	91251A342*	4
3	Magnet ring	Receptacle for the magnet	4
4	Leg		4
5	Link-1	Connects the leg to the motor	4
6	Link-2	Connects the leg to the motor	4
7	Link-3	Connects the leg to the motor	4
8	Motor attachment	Connects the leg to the motor	4
9	Motor	DYNAMIXEL XL430-W250-T	4
10	Motor mount	Receptacle for the motor	4
11	Servo mount	Receptacle for the servomotor	4
12	Servomotor		4
13	Frame	Main piece for carrying the legs	1
14	Servo support	Makes sur the leg is fixed	4

1-foot assembly

- Materials needed for foot:

1 of item 1

1 of item 2

1 of item 3

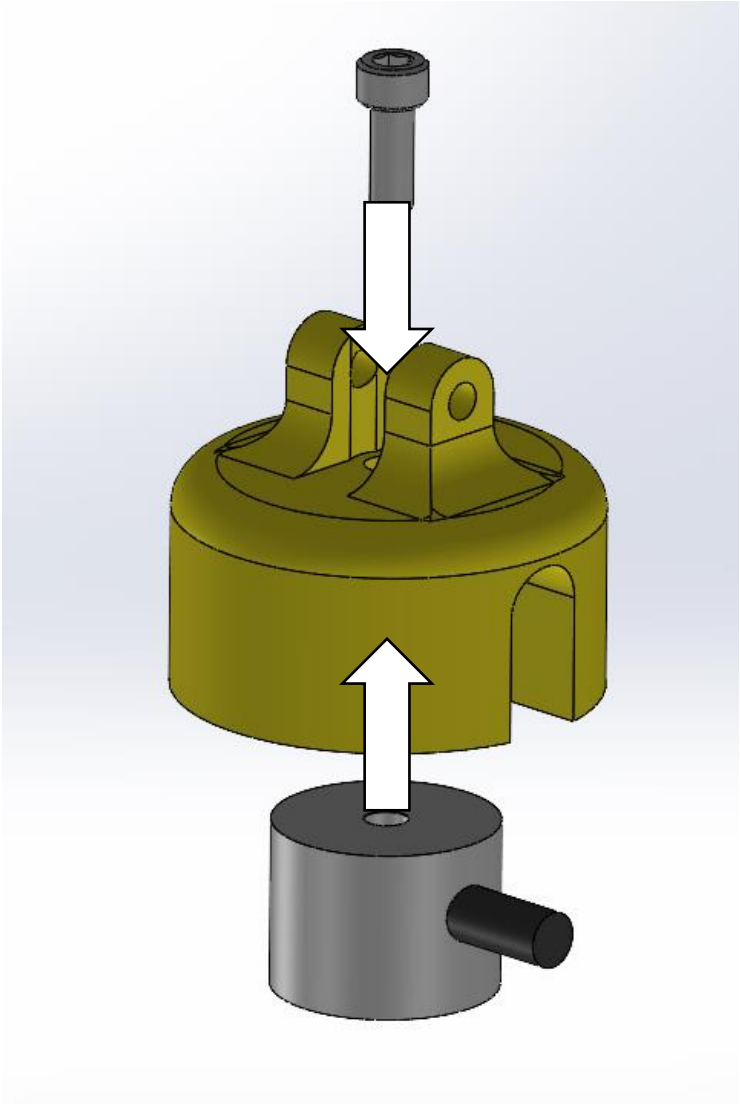
- Instructions:

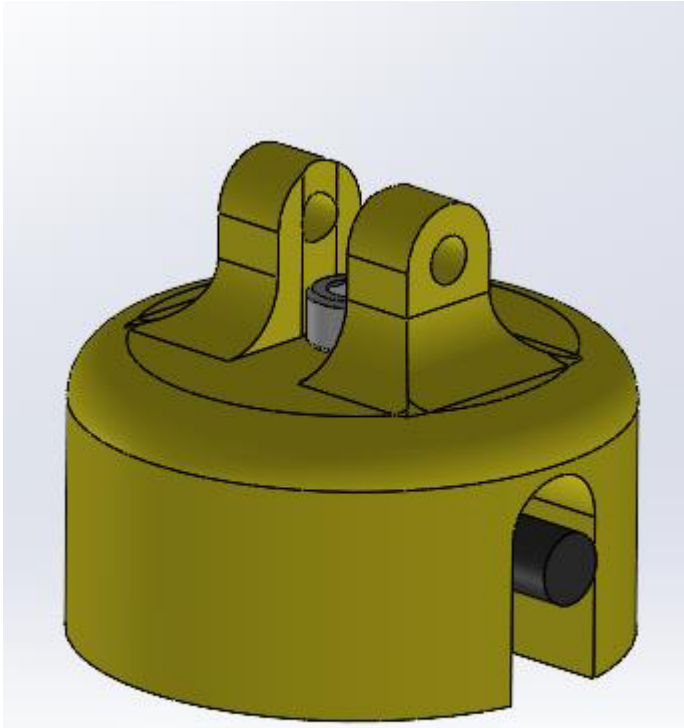
1- Insert the electromagnet in the ring

2-Screw the electromagnet with the ring.

3- Make sure the electromagnet and the ring touches the ground at the same time

4-Repeat 3 other times





*Each part that needs to be screwed and isn't a motor takes a screw of 4mm of diameter. The length used is at your discretion

2-leg assembly part 1

- Materials needed for leg part 1:

1 of item 4

1 of item 5

1 of item 6

1 of item 7

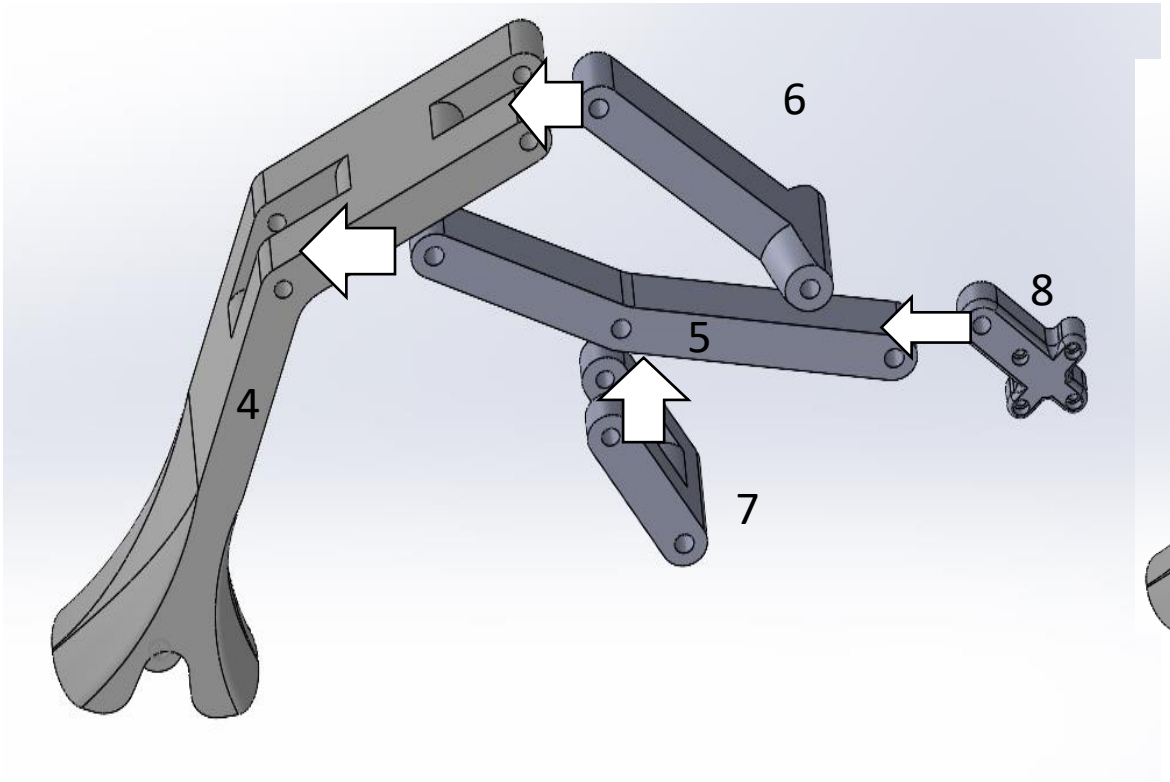
1 of item 8

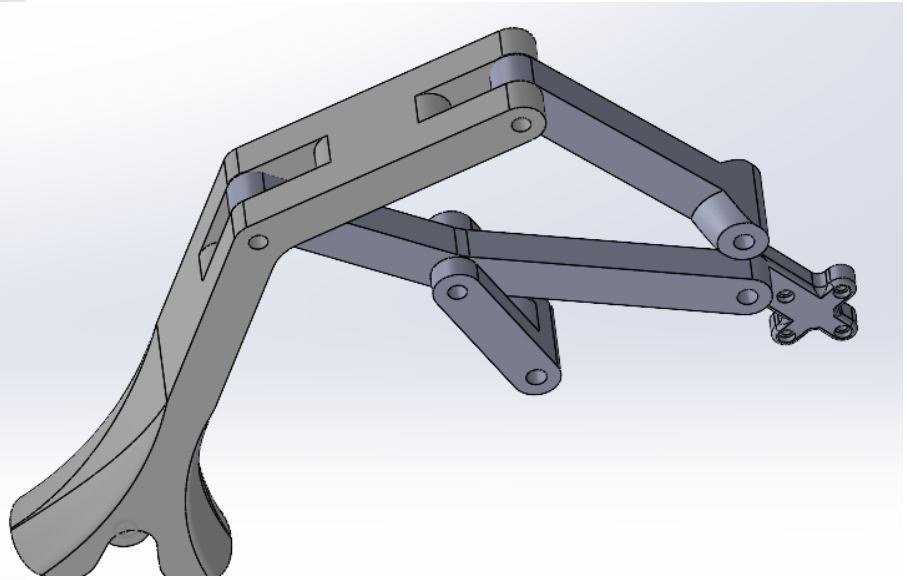
4 screws

- Instructions:

1- Align the correspondant holes of any connected part and screw them together (the order doesnt matter)

2-Repeat 3 other times





*The diameter for all motor and servomotor screws is 2mm

4-leg assembly part 2

- Materials needed for leg part 2:

1 leg from part 1

1 of item 9

1 of item 10

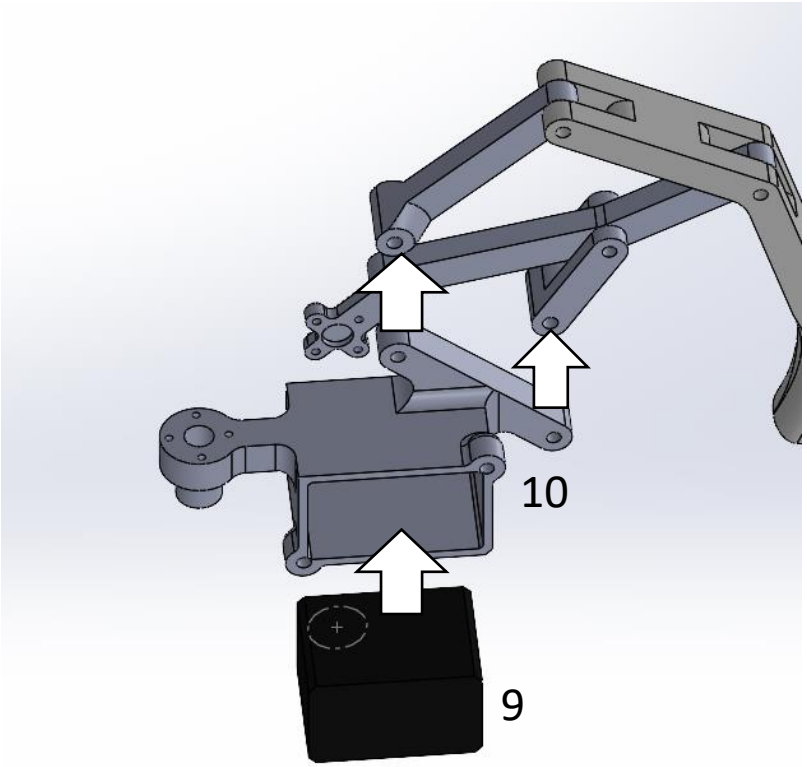
4 screws

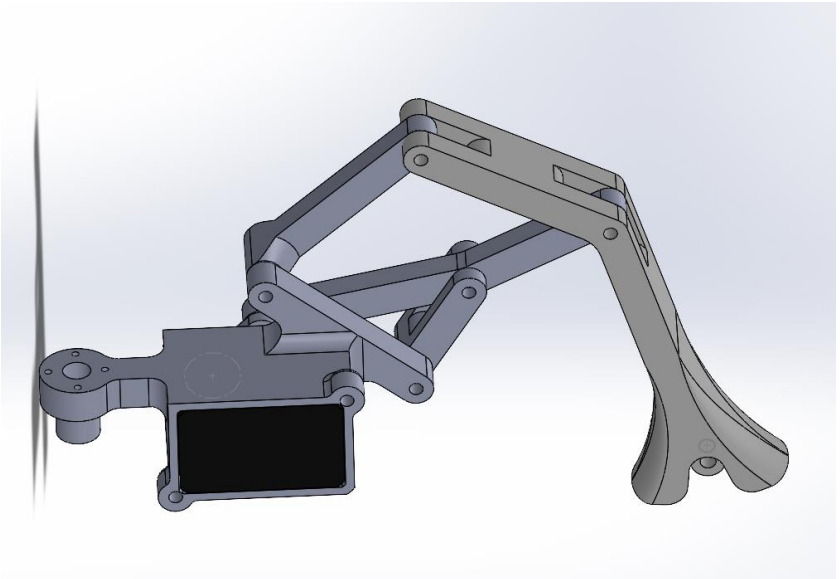
- Instructions:

1- Insert the motor in the receptacle

2- Align the correspondant holes of any connected part and screw them together (the order doesnt matter)

3-Repeat 3 other times





5-leg assembly part 3

- Materials needed for leg part 3:

1 leg from part 2

1 of item 11

1 of item 12

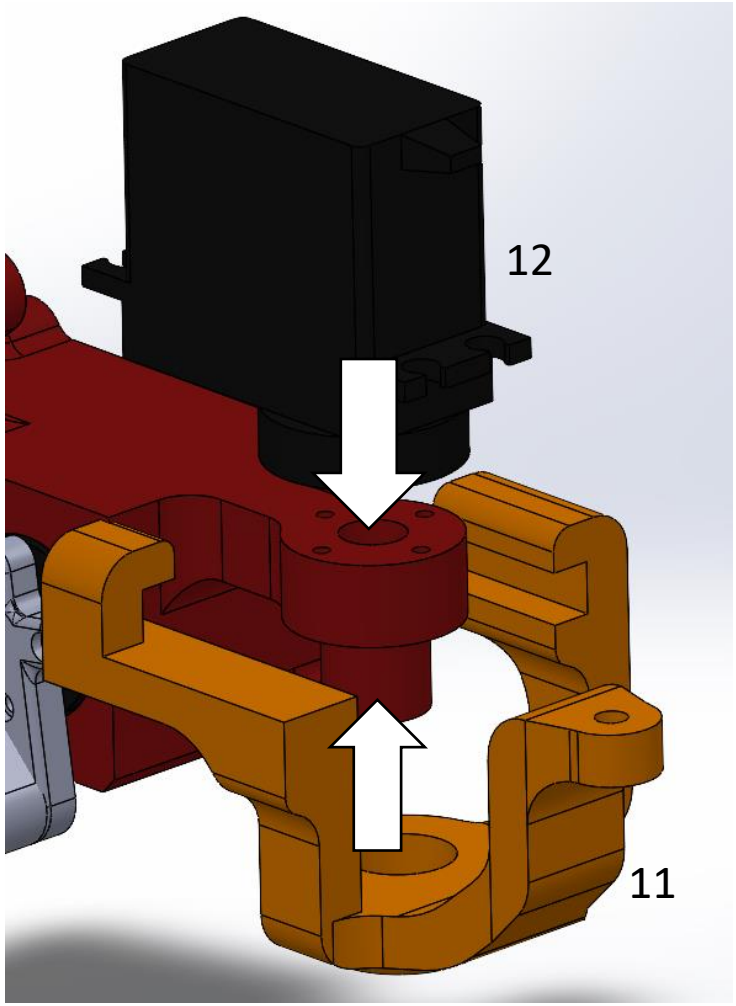
4 screws

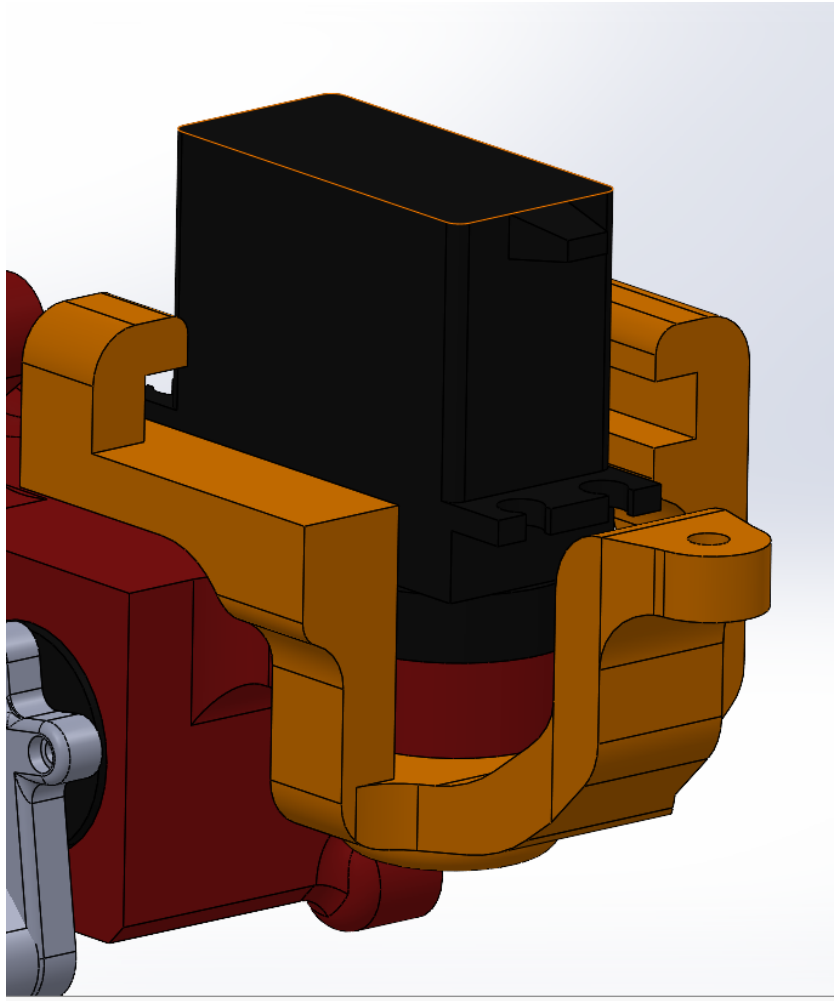
- Instructions:

1- Tight fit the servo mount with the motor mount

2- Align the correspondant holes of any connected part and screw them together (the order doesnt matter)

3-Repeat 3 other times





6-leg assembly part 4

- Materials needed for leg part 3:

1 leg from part 3

1 of item 13

1 of item 14

6 screws

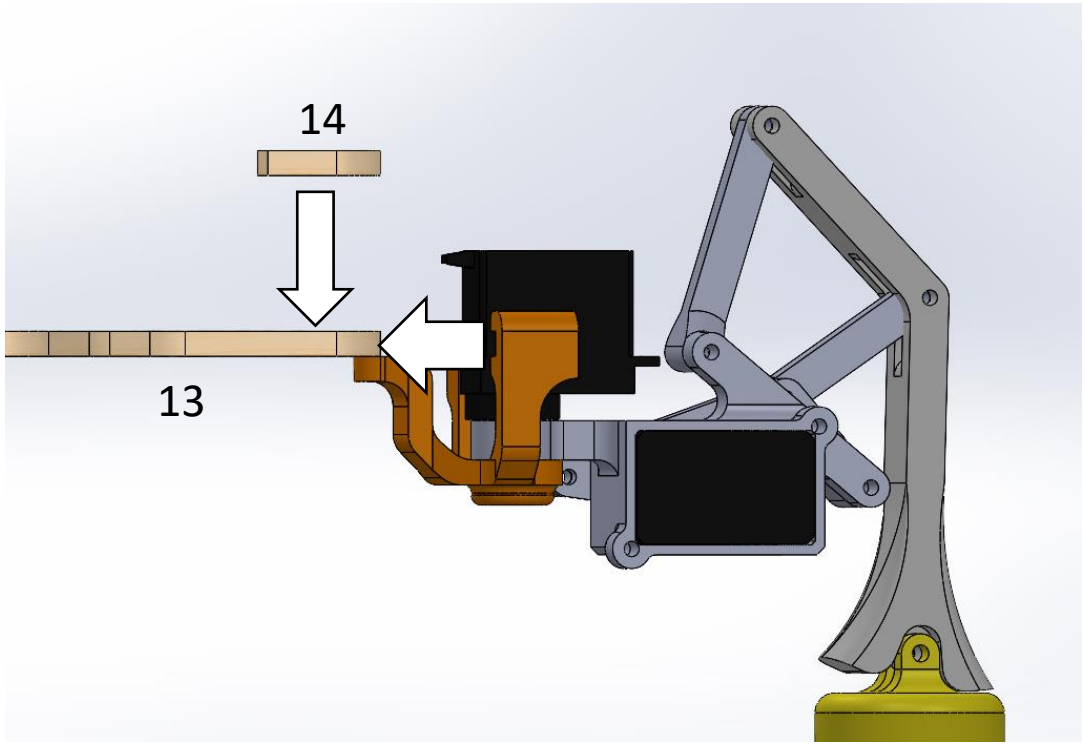
- Instructions:

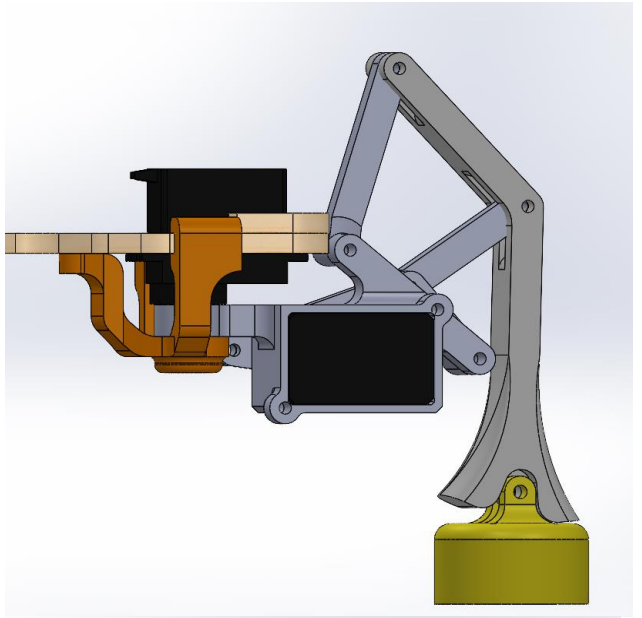
1- Slide the servo mount through the frame so the servomotor is in the dedicated spot

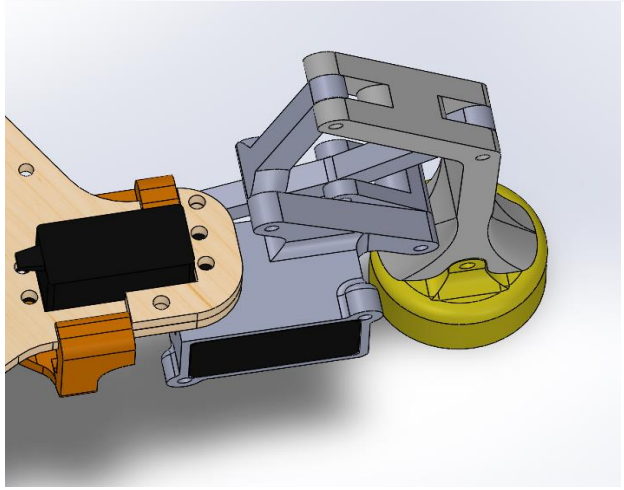
2-Put the servo support down ont the servomotor

3- Align the correspondant holes of any connected part and screw them together (the order doesnt matter)

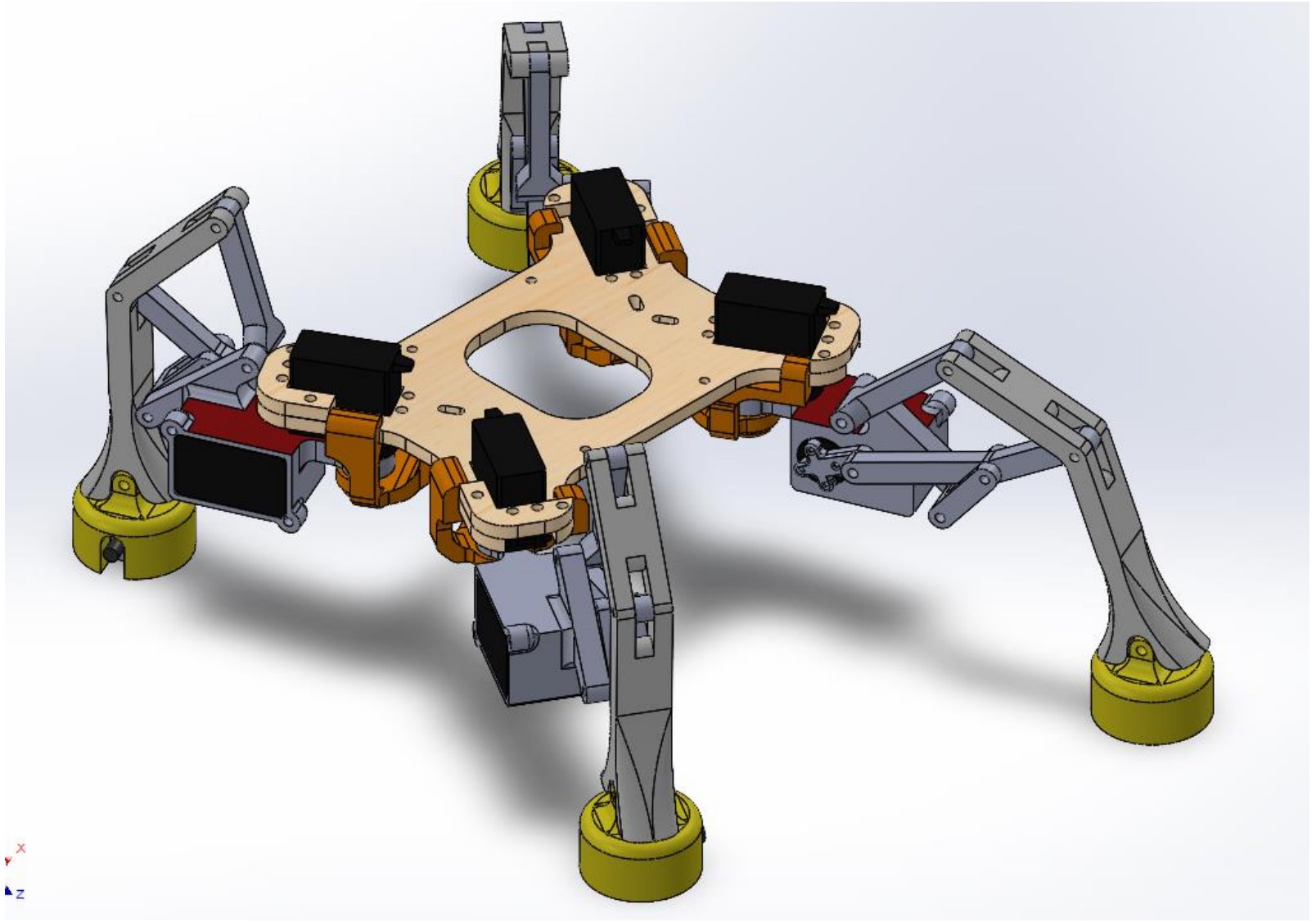
4-Repeat 3 other times



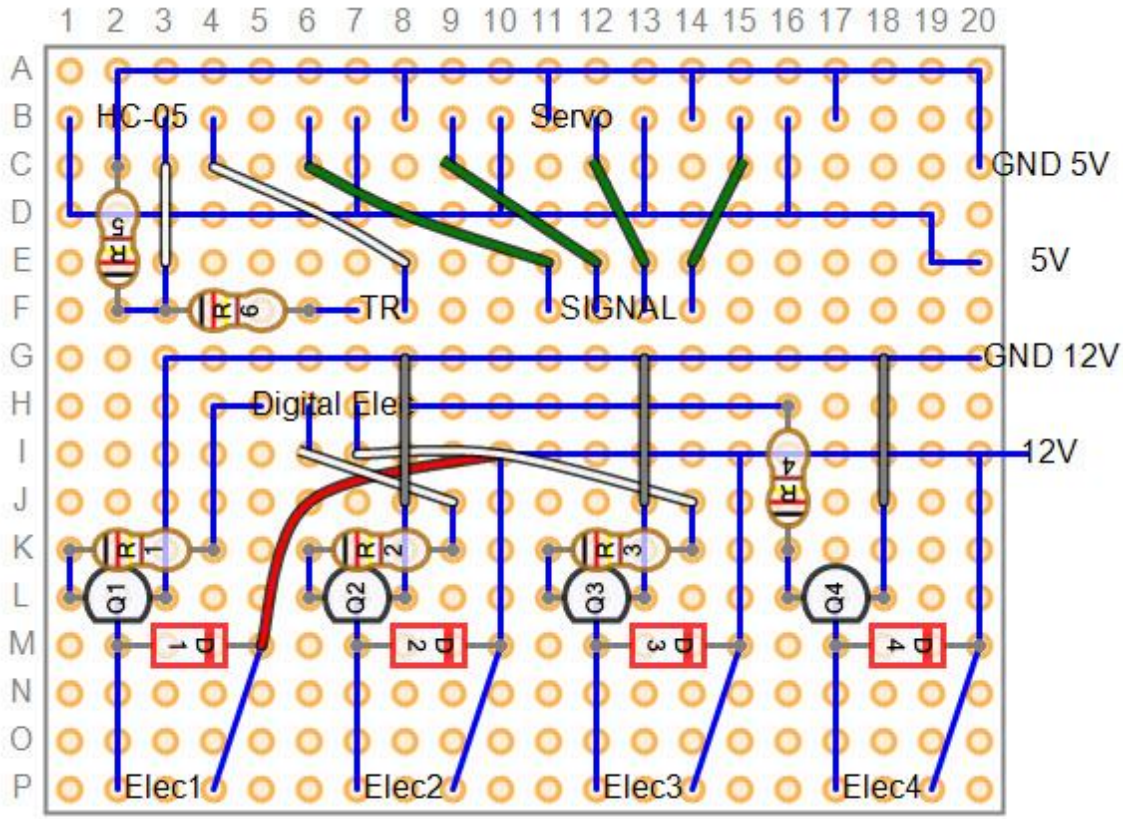


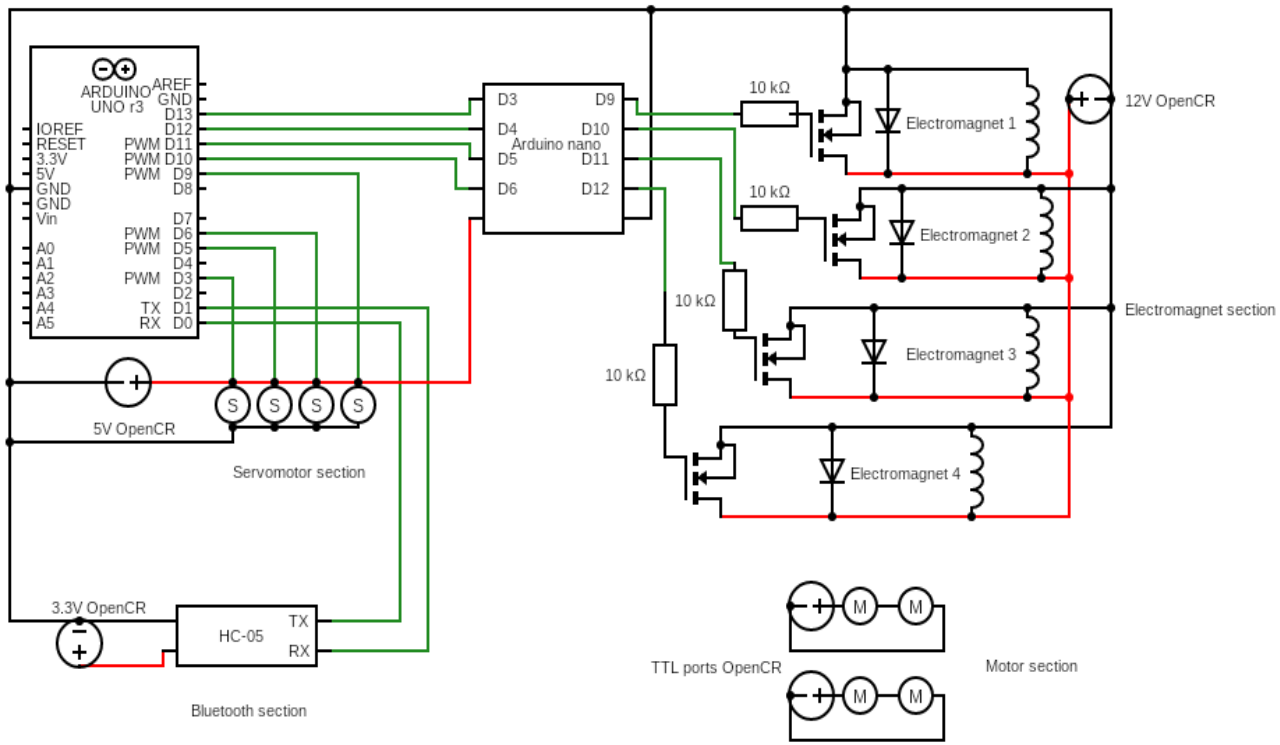


7-Result without open cr card

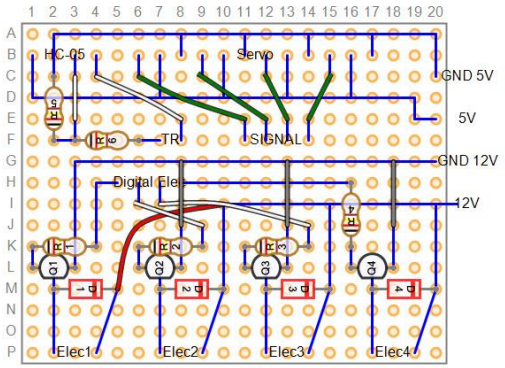


Electrical assembly guide





List of Items used for the protoboard



Item	Description	Quantity needed
Mosfet	IRFZ44N	4
Resistor for electromagnets	10kΩ	4
Diode	1N4007	4
Terminal block for pcb	2 screws	4

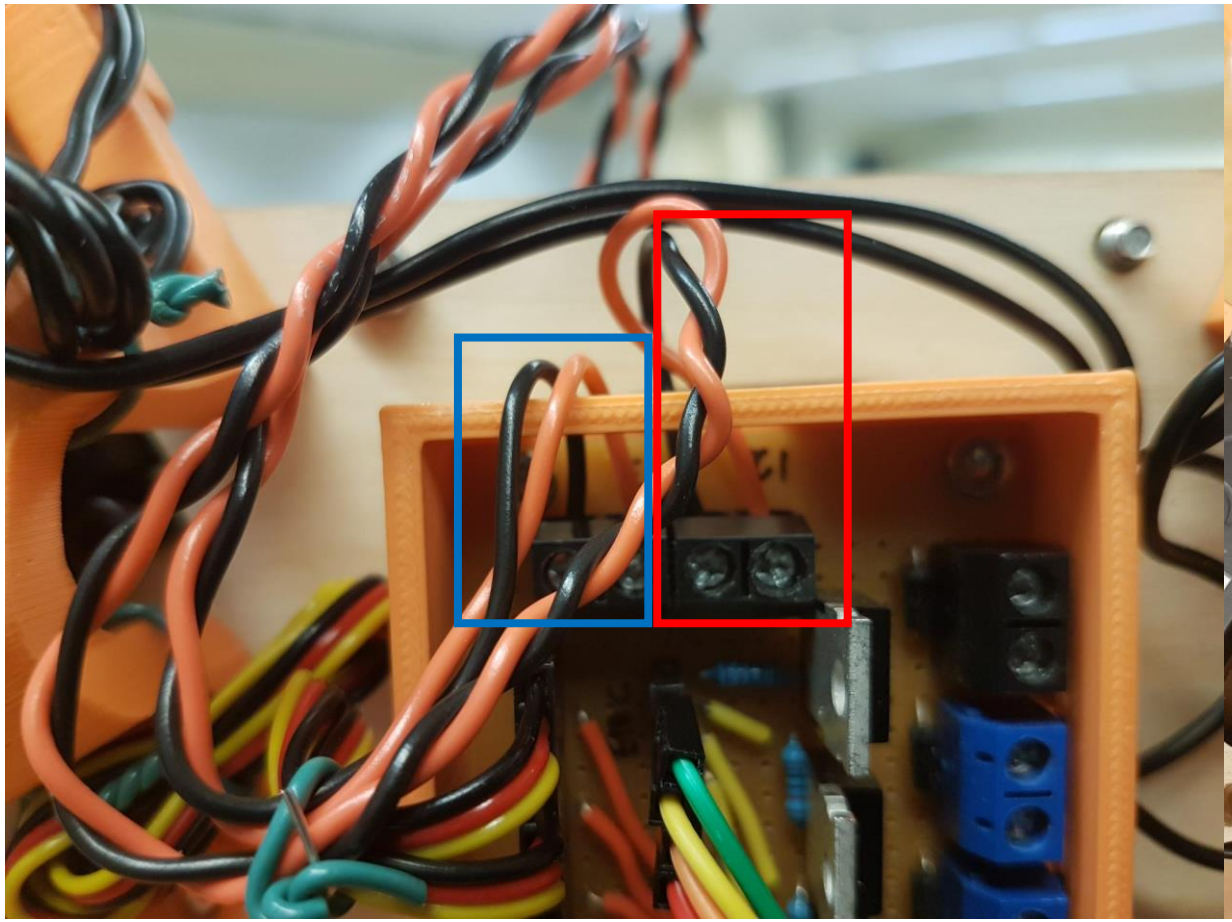
1- Explanations about previous images

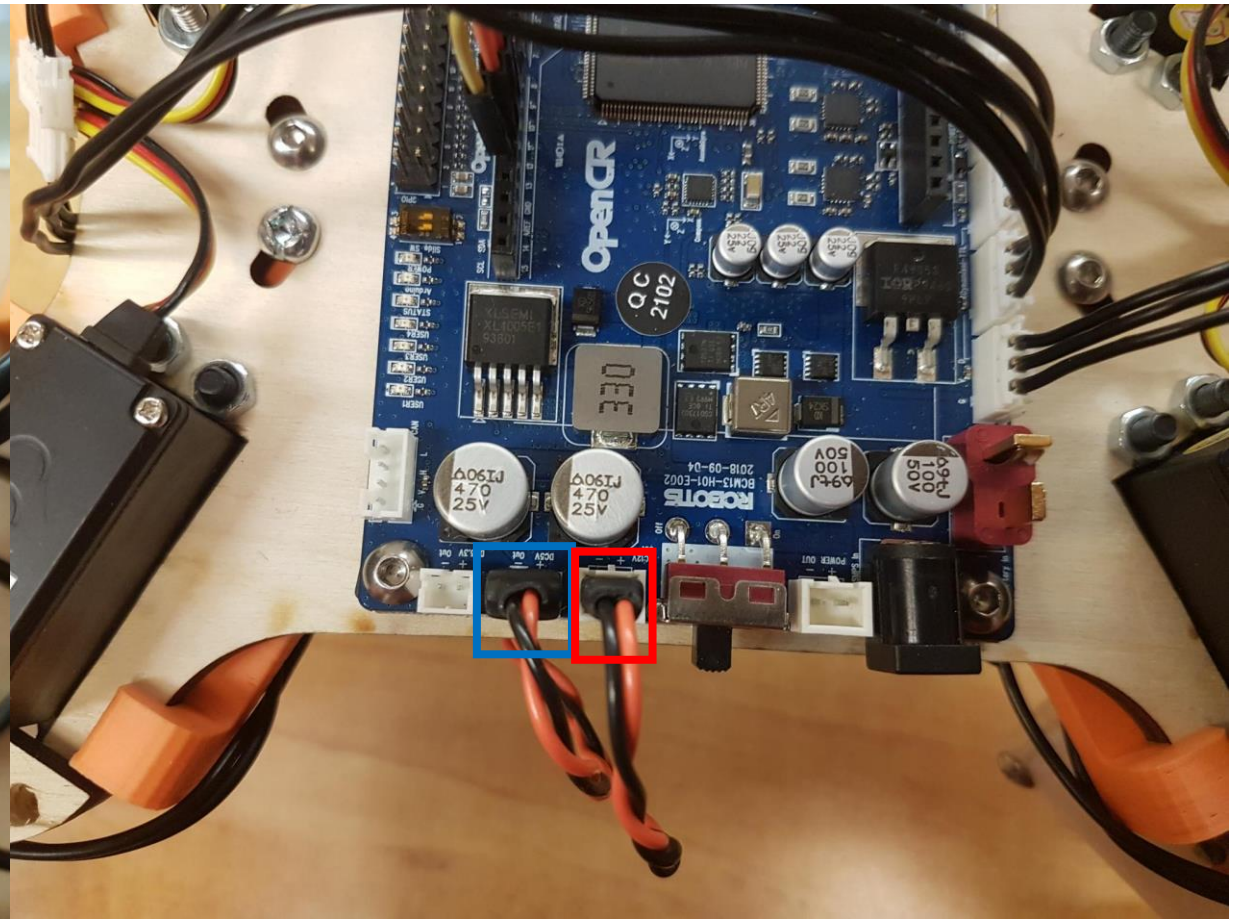
- You can base yourself on the previous photos to do the electrical assembly, just mind that depending on your open cr card, some pins might not work. You can change them as necessary, just remember to change the code later depending on your choices.

*Note that a tension divider as been installed for the bluetooth which is useless. We thought the openCR pins were 5V but they are 3.3V so it’s safe to plug the bluetooth directly to the openCR card.

*Red=12V
*Blue=5V

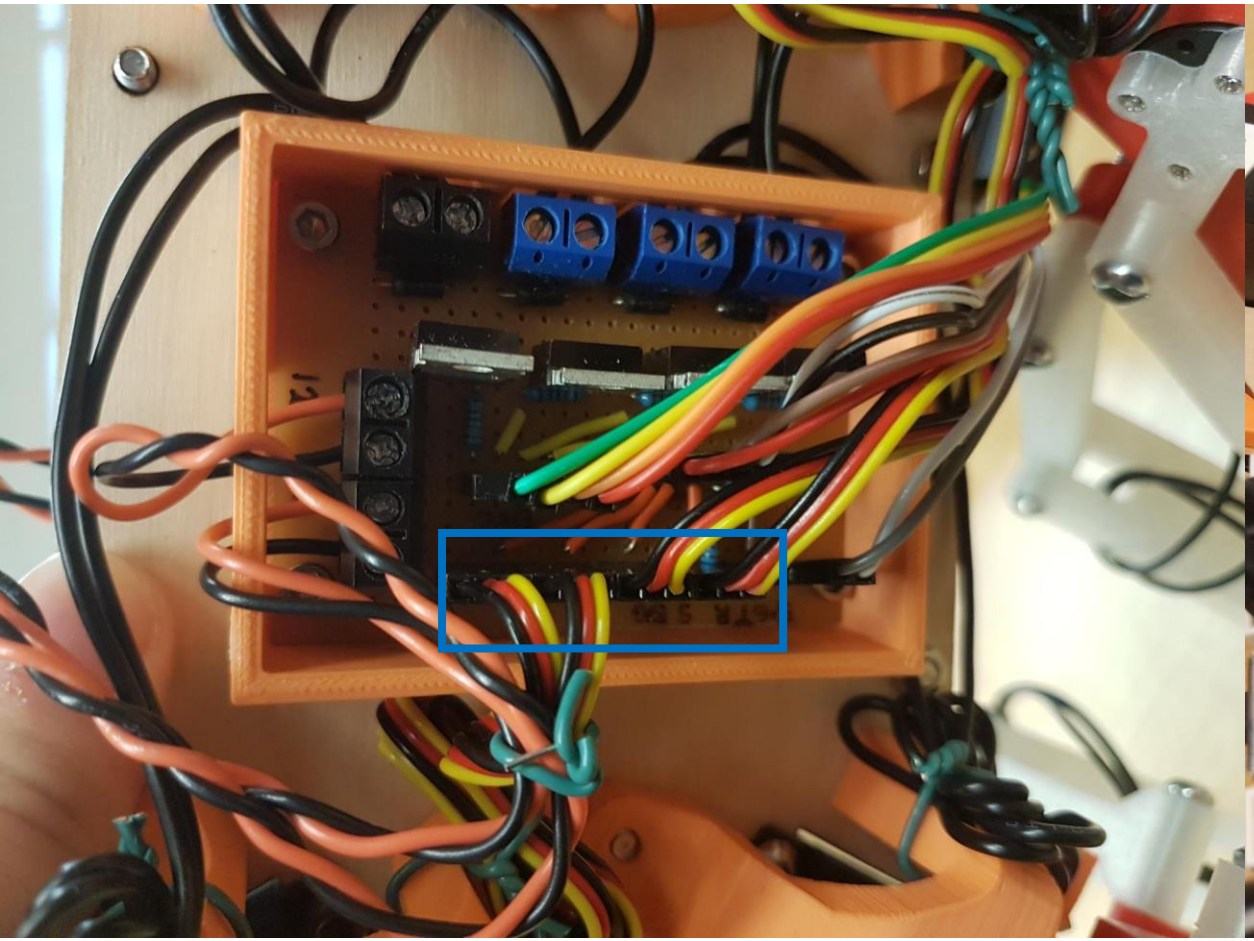
2- IRL demo of the protoboard 1

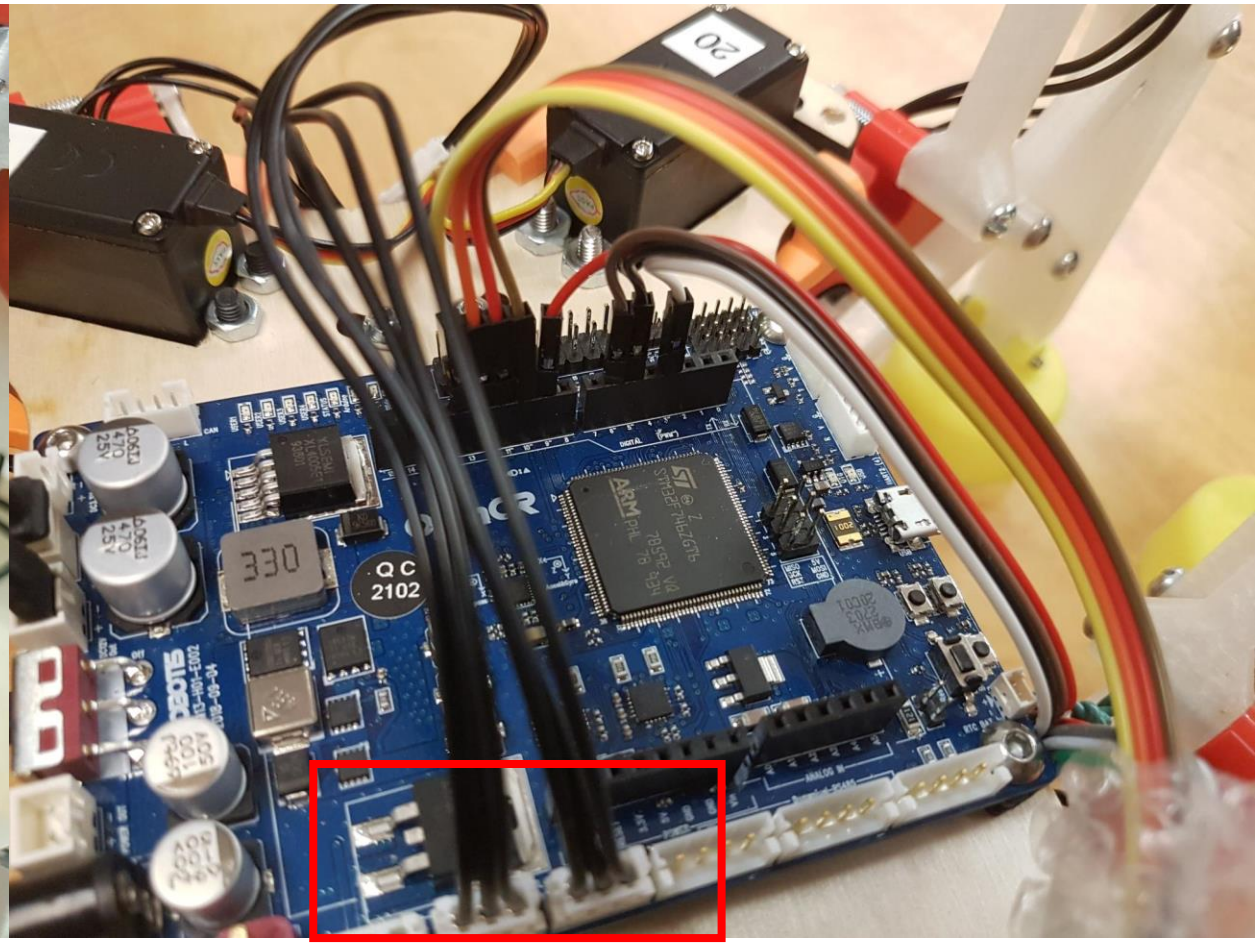




*Red=Motor
*Blue=servomotor

2- IRL demo of the protoboard 2





*Red=signals for the electromagnets
*Blue=signals for the servomotor

2- IRL demo of the protoboard 3