Session 10

During this session, which served as a presentation of the end of the accomplishments during the 1st semester, I mounted the last missing part of the arm, the clamp. A model that I took from Grabcad – robot adaptive clamp- [1]. I then only modeled the arm-gripper connection.

This done, I mounted the parts together, and ensure that the 3 servomotors of the waist- and elbow base are powered at 6v with an external power supply and a DC DC converter while the other 3 servos are linked to 5V provided by the Arduino Uno.

The design part being finished (fig1), we now move on to the code.

Fig 1: complete assembly of the robotic arm

First of all, the servos worked with potentiometers, one potentiometer per servo telling it the angle it has to go (fig2).

```
servo1.attach(5);
servo2.attach(6);
servo3.attach(9);
servo4.attach(10);
servo5.attach(11);
servo6.attach(3);
Serial.begin(9600);
}

void loop() {
  // put your main code here, to run repeatedly:
val1=analogRead(pot1);
val1=map(val1,0,1023,0,180);
servo1.write(val1);
delay(15);
Serial.print(val1);
Serial.print("   ");

val2=analogRead(pot2);
val2=map(val2,0,1023,0,180);
servo2.write(val2);
delay(15);
Serial.print(val2);
Serial.print("   ");

val3=analogRead(pot3);
val3=map(val3,0,1023,0,180);
servo3.write(val3);
delay(15);
Serial.println(val3);
```

Fig 2: Knob code to control a servo with a potentiometer

The arm is now functional, I am now trying to order it with a Bluetooth module, first I establish the connection between the HC -05 module and my smartphone (fig 3) by following the technical sheet provided Go tonic [2]. However, two-way communication is not established, the transmission is successful, however I do not receive the reception message

```
#include <SoftwareSerial.h>
#define rxPin 11 // Broche 11 en tant que RX, à raccorder sur TX du HC-05
#define txPin 10 // Broche 10 en tant que TX, à raccorder sur RX du HC-05
SoftwareSerial mySerial(rxPin, txPin);
void setup()
{
 // define pin modes for tx, rx pins:
 pinMode(rxPin, INPUT);
 pinMode(txPin, OUTPUT);
 mySerial.begin(38400);
 Serial.begin(38400);
}
void loop()
{
int i = 0;
char someChar[32] = {0};
// when characters arrive over the serial port...
if(Serial.available()) {
 do{
 someChar[i++] = Serial.read();
 delay(3);
 }while (Serial.available() > 0);
 mySerial.println(someChar);
 Serial.println(someChar);
}
while(mySerial.available())
 Serial.print((char)mySerial.read());
}
```

Fig 3: HC-05 / smartphone pairing code

[1] https://grabcad.com/library/tag/pince

[2] https://www.gotronic.fr/pj2-guide-de-mise-en-marche-du-module-bluetooth-hc-1546.pdf