# **TD 3 Motors**

#### **Hardware** (not exhaustive):

- 1 Arduino (UNO)
- 1 Arduino USB power cable
- 1 Breadboard
- 2 Push buttons
- 1 DC Motor
- 1 Servomotor
- Resistors
- 1 Buzzer
- 1 Potentiometer
- About 10 Dupont cables male/male
- About 10 Dupont cables male/female

## 1. DC Motor Control 🝥



Goal: Control the speed of a DC motor



- 1. The motor must be properly wired, we use a transistor to control the motor circuit. This time only, we will use the 5V power from the Arduino, but in a real-life scenario the motor's circuit power source should be external.
- 2. A push button will be used to accelerate the motor
- 3. Another push button will be used to decelerate the motor
- ? Reference: https://www.tutorialspoint.com/arduino/arduino\_dc\_motor.htm section "Motor Speed Control"
- b Call the teacher for verification once the setup is complete
- Keep the setup for later

### 2. Servomotor

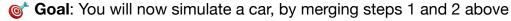


of Goal: Control a servomotor position with a potentiometer

#### 嶐 Rules:

- 1. The potentiometer is used to adjust the servomotor position
- 2. The servo holds the position, if you change the position manually (physically) it should come back to its original position
- **Reference**: https://docs.arduino.cc/learn/electronics/servo-motors
- Call the teacher for verification once the setup is complete
- Keep the setup for later

#### 3. Become a carmaker!



#### Rules:

- 1. A buzzer will act as the car horn
- 2. Reuse the 2 previous buttons:
  - 1. One will activate the horn while pressed
  - 2. The other will trigger (on/off) the windshield wipers (servomotor moves back and forth until stopped)
- 3. The potentiometer will act as an accelerator pedal and make the wheels (the DC motor) turn faster or slower
- de Call the teacher for verification once the setup is complete