Simulink, Arduino and Raspberry PI

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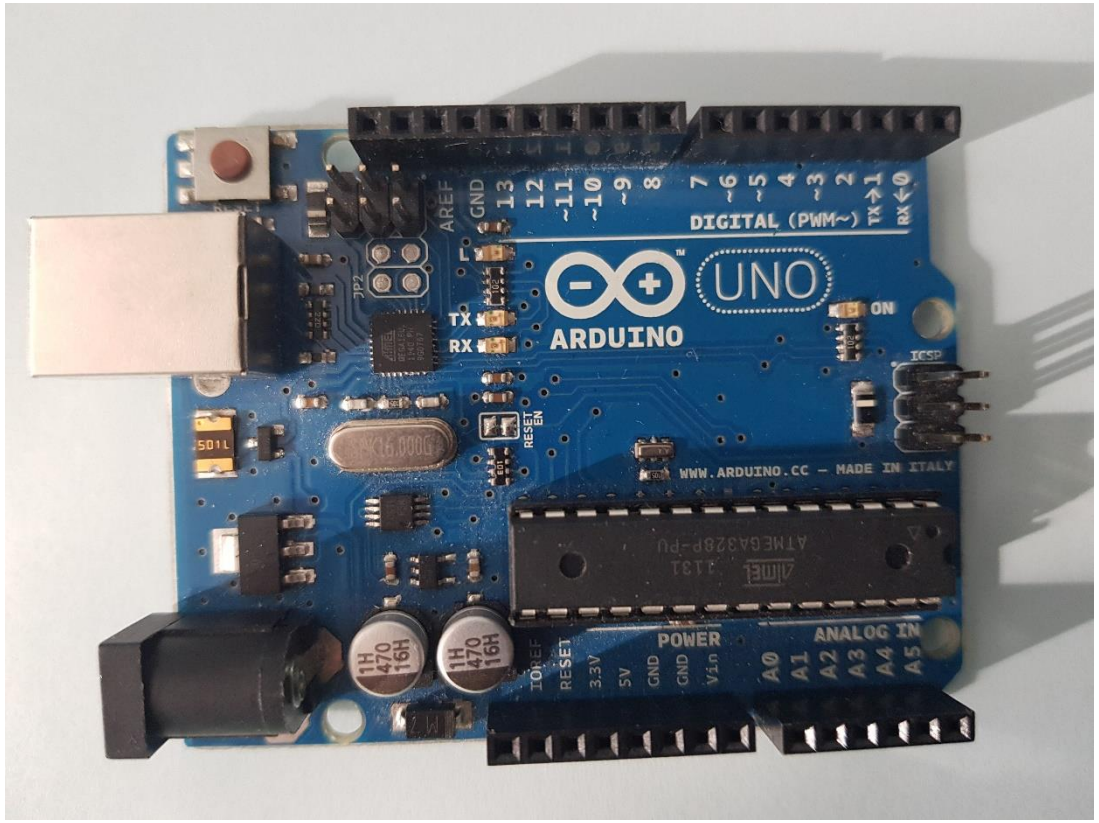
Arduino Uno

Digital Pins 0-13

USB port

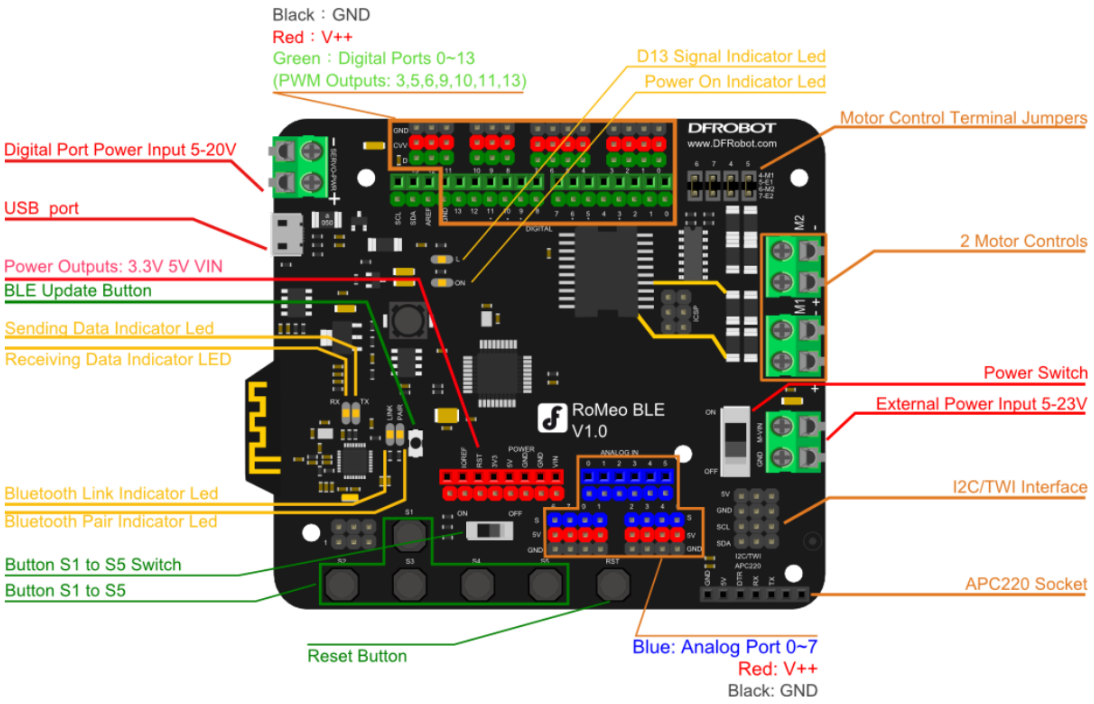


Microcontroller
ATmega328P

Power

Analog Pins 0-5

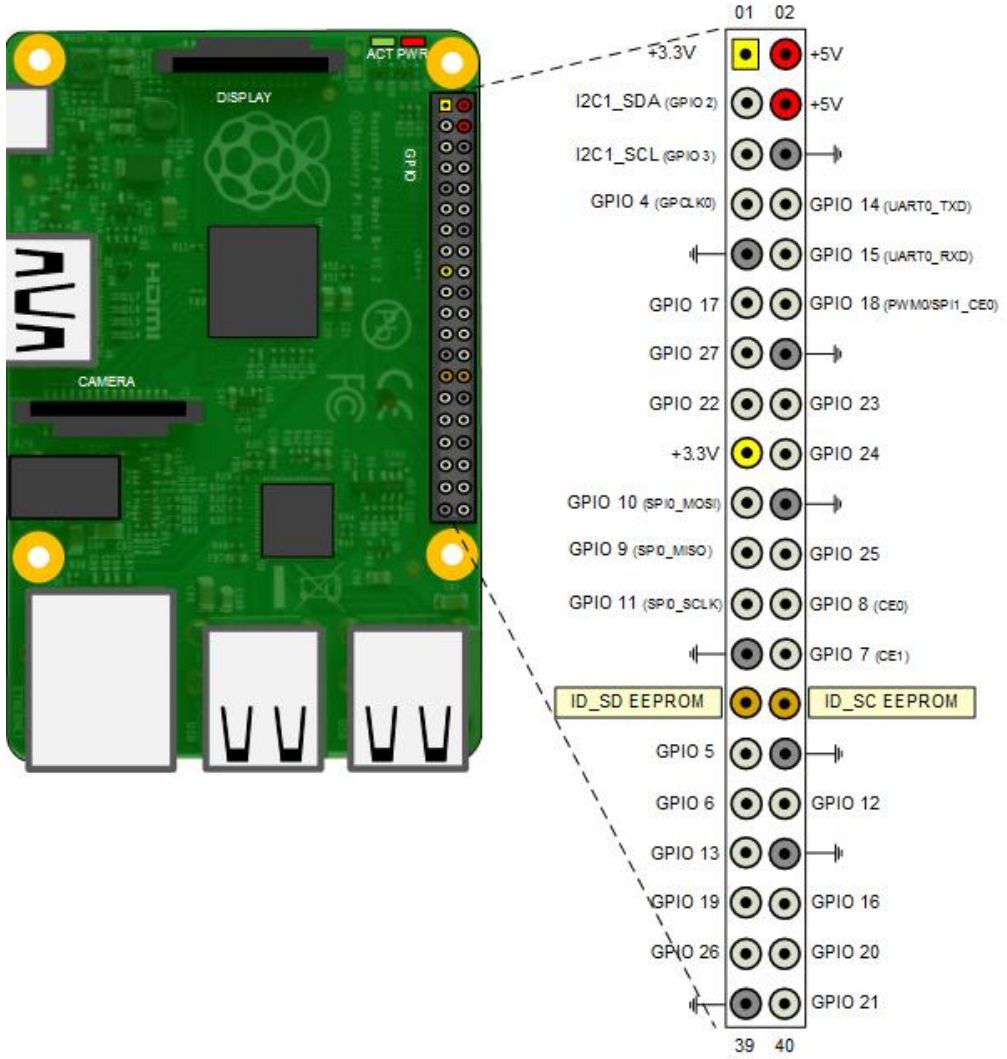
DFRobot Romeo BLE 1.0



- Same bootloader and microcontroller as Arduino UNO
- Changes: BLE, pins, connexions

Raspberry PI Model 3 B+

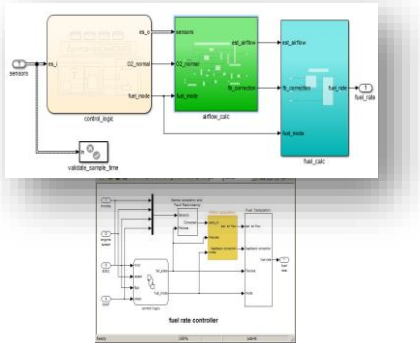
- Processor: Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
- 1GB LPDDR2 SDRAM
- 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2, BLE
- Gigabit Ethernet (maximum throughput 300 Mbps)
- HDMI
- 4 USB 2.0 ports (mouse, keyboard, webcam, etc…)
- CSI camera port for connecting a Raspberry Pi camera
- DSI display port for connecting a Raspberry Pi touchscreen display
- 4-pole stereo output and composite video port
- Micro SD port for loading your operating system and storing data
- 5V/2.5A DC power input



Arduino Uno vs Raspberry PI

	Raspberry Pi 3 Model B+	Carte Arduino Uno
RAM	1 Gb	2 ko
Processor	1.4 Ghz 64 bits	16 Mhz
Network	Ethernet + WIFI 2.4 et 5 Ghz	non
Storage	2 à 128 Go par micro SD	32 ko
USB	4	1 to program
OS	Linux distributions (Raspian)	No
Others	Audio and Video	No

Code generation



Automatic code generation

STM32 Nucleo

Raspberry Pi®

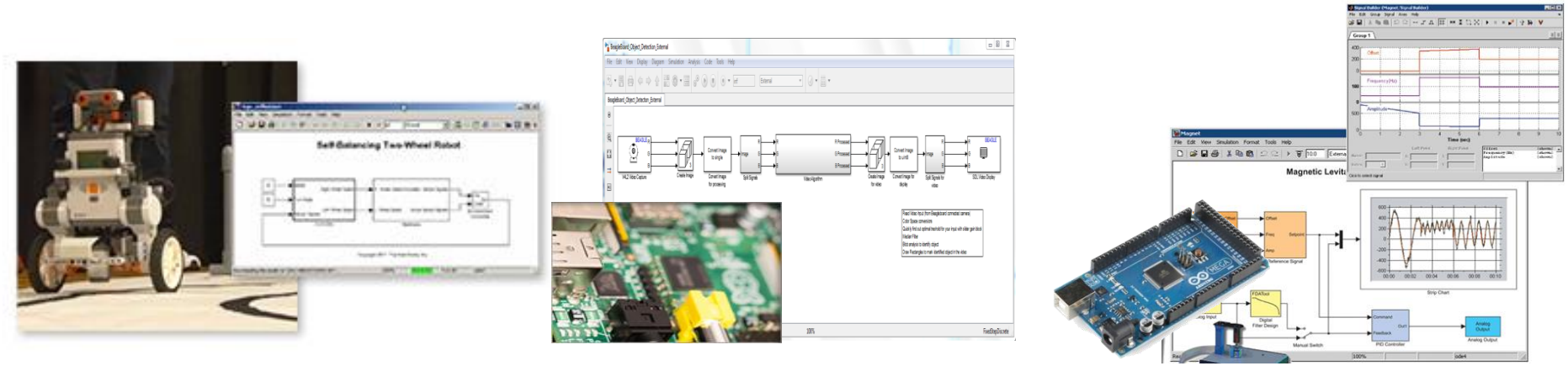
ARDUINO

micro:bit

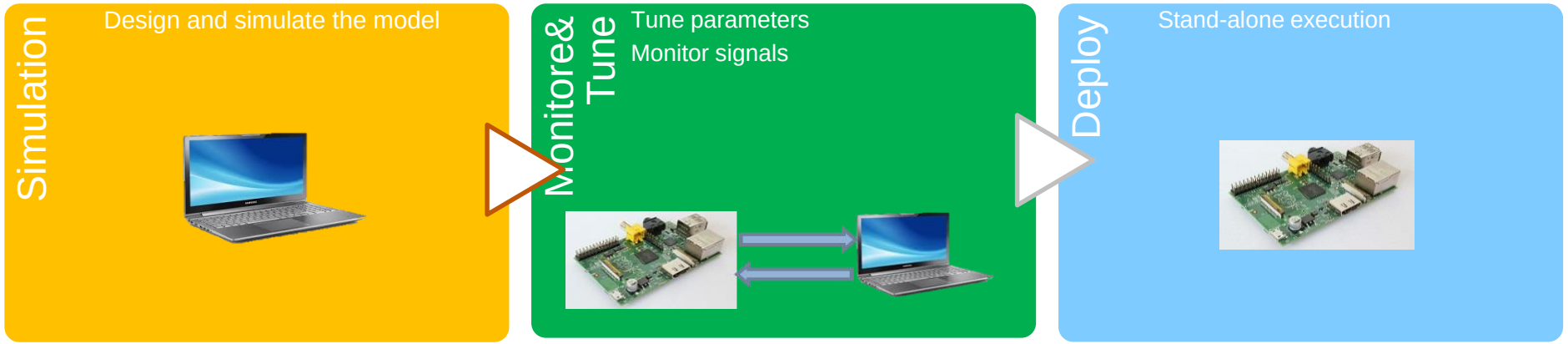
Parrot

LEGO mindstorms education EV3

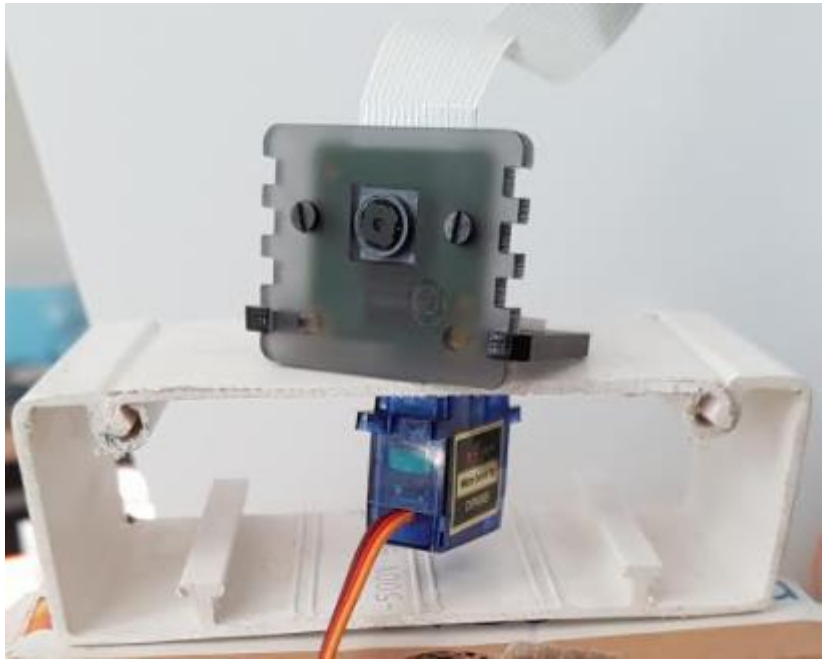
Use of Simulink Support for low cost hardware



- Same workflow for all targets



Your mission: track a green object



Control the servo motor with the Romeo board to rotate a web cam

1- Deploy on the Romeo
And control the servo motor

2- Monitore&Tune on the Rapberry PI and tests the tracking algorithm

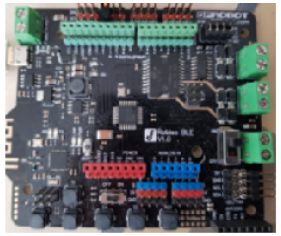
3- Combine both boards, create your own control depending on the object position

Arduino and the Servo motor

1- Deploy on the Romeo
And control the servo motor

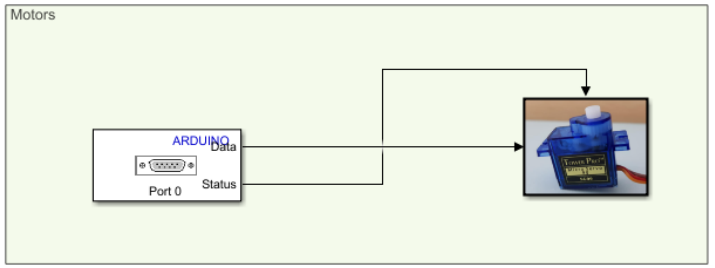
1 >> Servo_control

Préparation de la communication avec la carte Romeo BLE V1.0

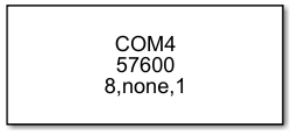


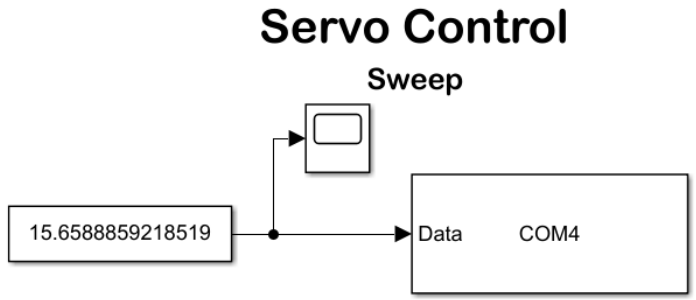
Etapes à suivre:
1- Dans Hardware Settings, vérifier le port COM et le Baud Rate du Serial port properties qui doit être égal à 57600

2- Faites un Build, Deploy& Start



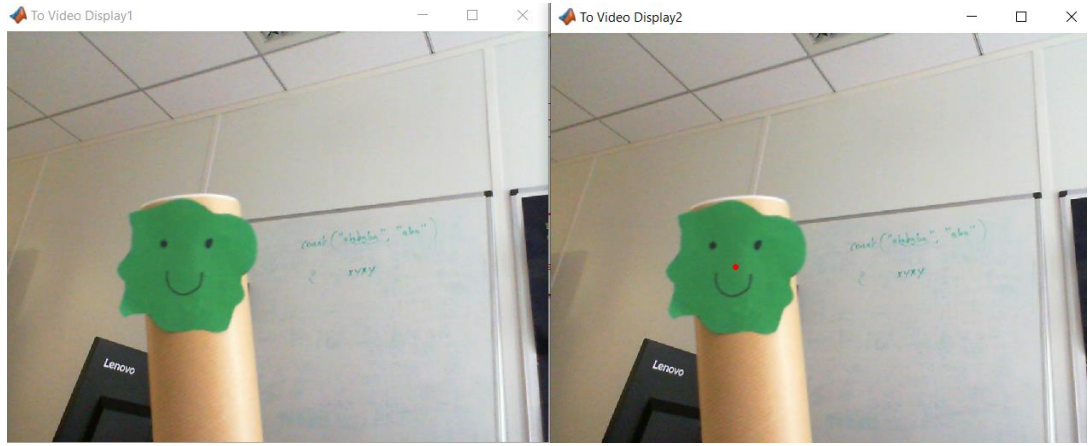
2 >> Servocontrol_sweep





Raspberry PI web cam

2- Monitore&Tune on the Rapberry PI and tests the tracking algorithm

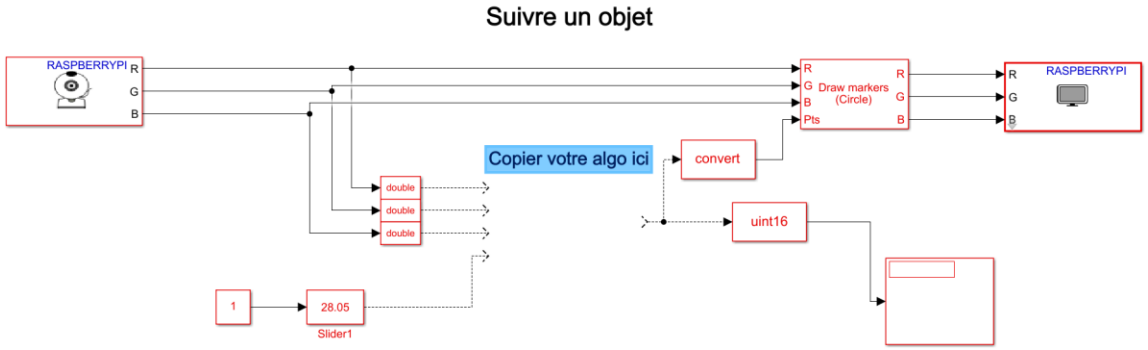


1- Simulation

>> Track_green_simulation_eleve

2- Test sur la carte

>> Track_green_eleve



Track a green object

3- Combine both boards, create your own control depending on the object position

>> Track_green_arduino_eleve