

Repair Café

Orsay

Jeter ? Pas question !

Arduino



8/16 MHz

80/160 MHz

2x240 MHz

Esp (8266)

Esp (32)

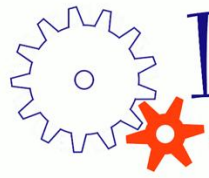


Modules M5 tout prêt
À base ESP32

O-Tomat Repair Café Orsay

Démonstration d'automates

Arnaud Reichart

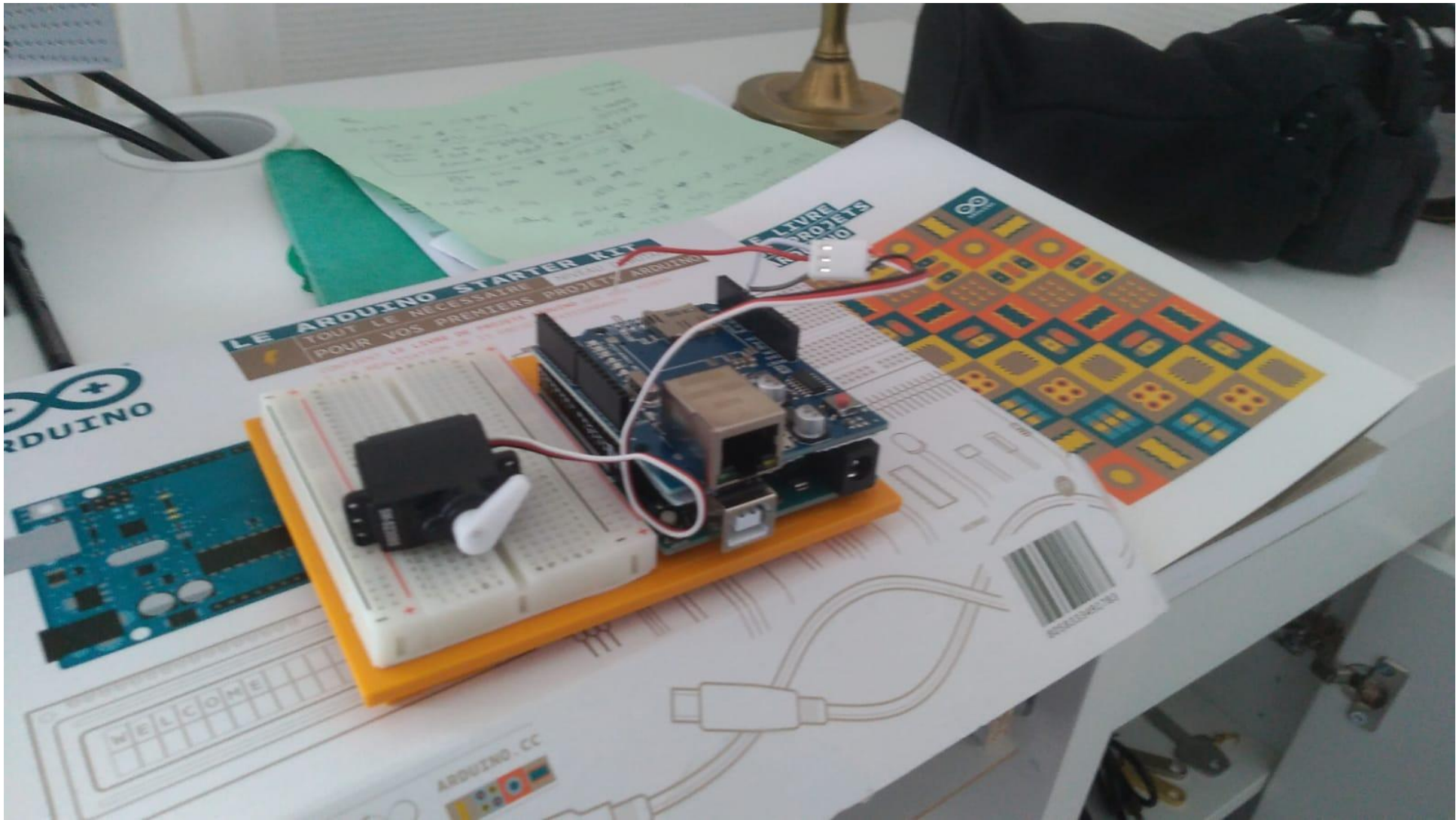


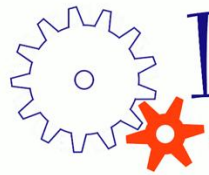
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Arduino : des kits tout prêt ou presque



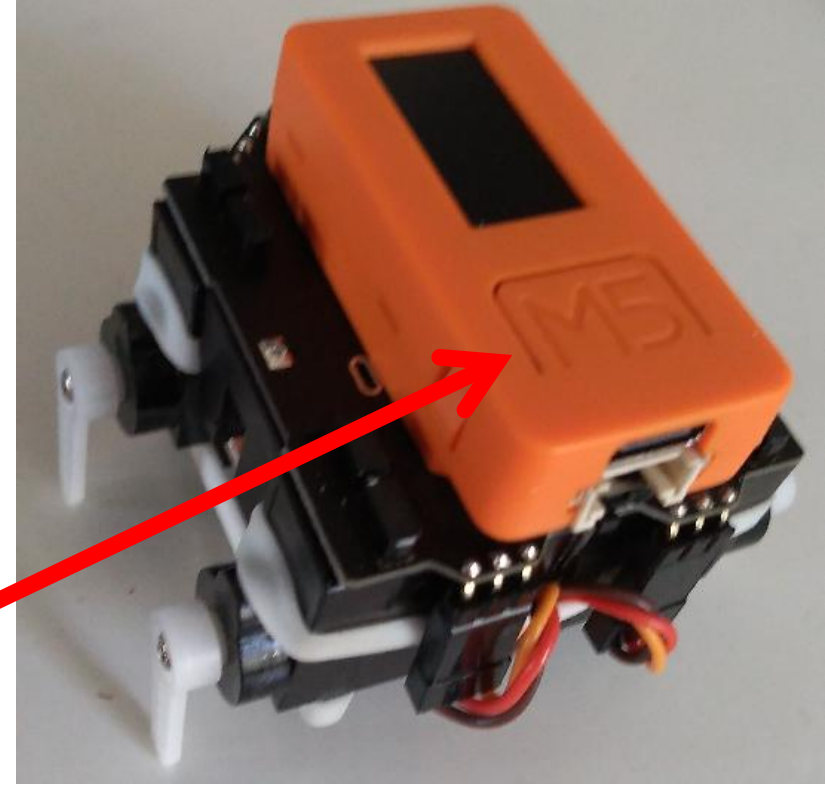


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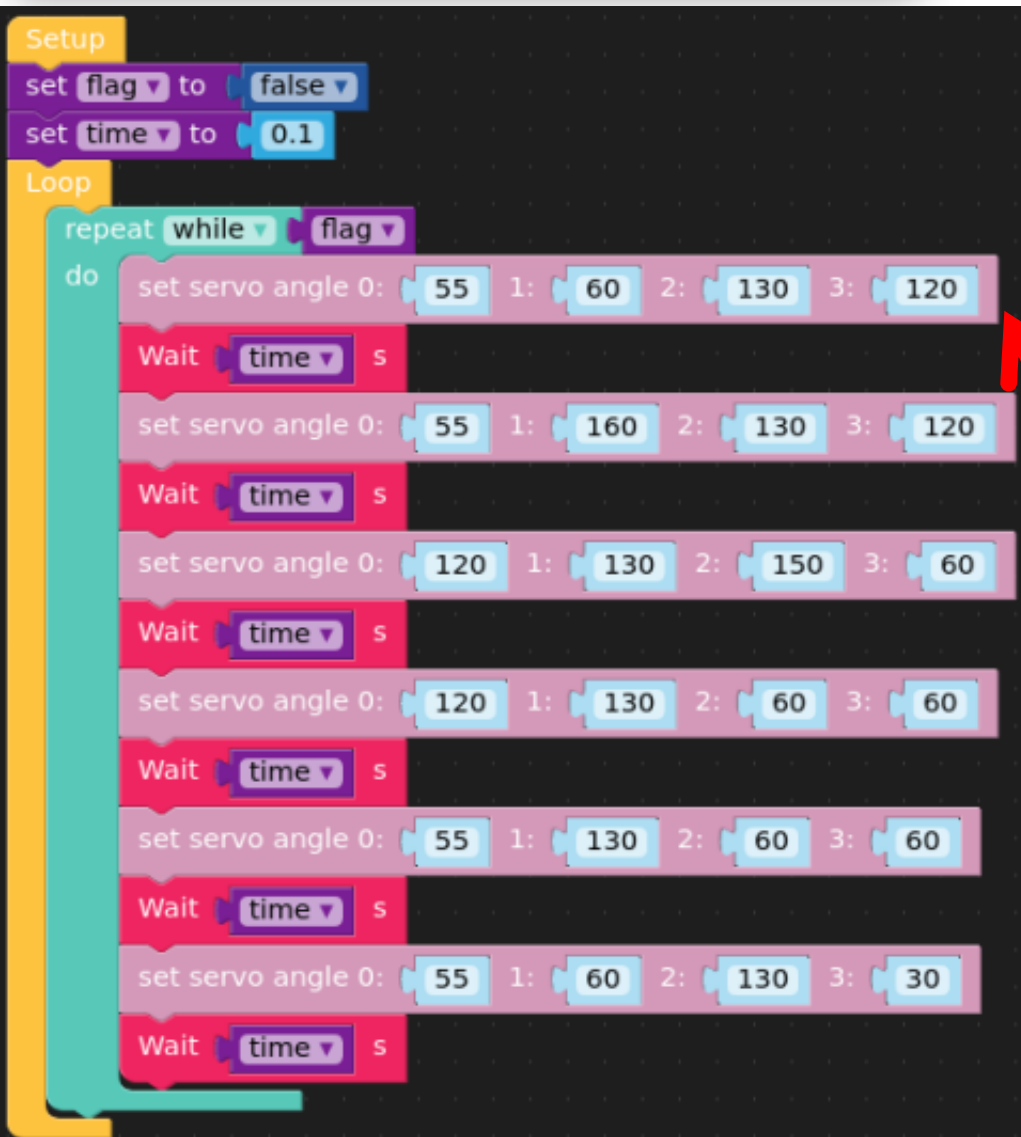
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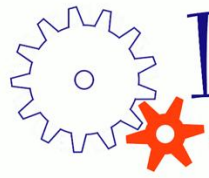
Esp en scratch Exemple de « puppy »



Bouton
Marche/arrêt

Action des servos
moteurs





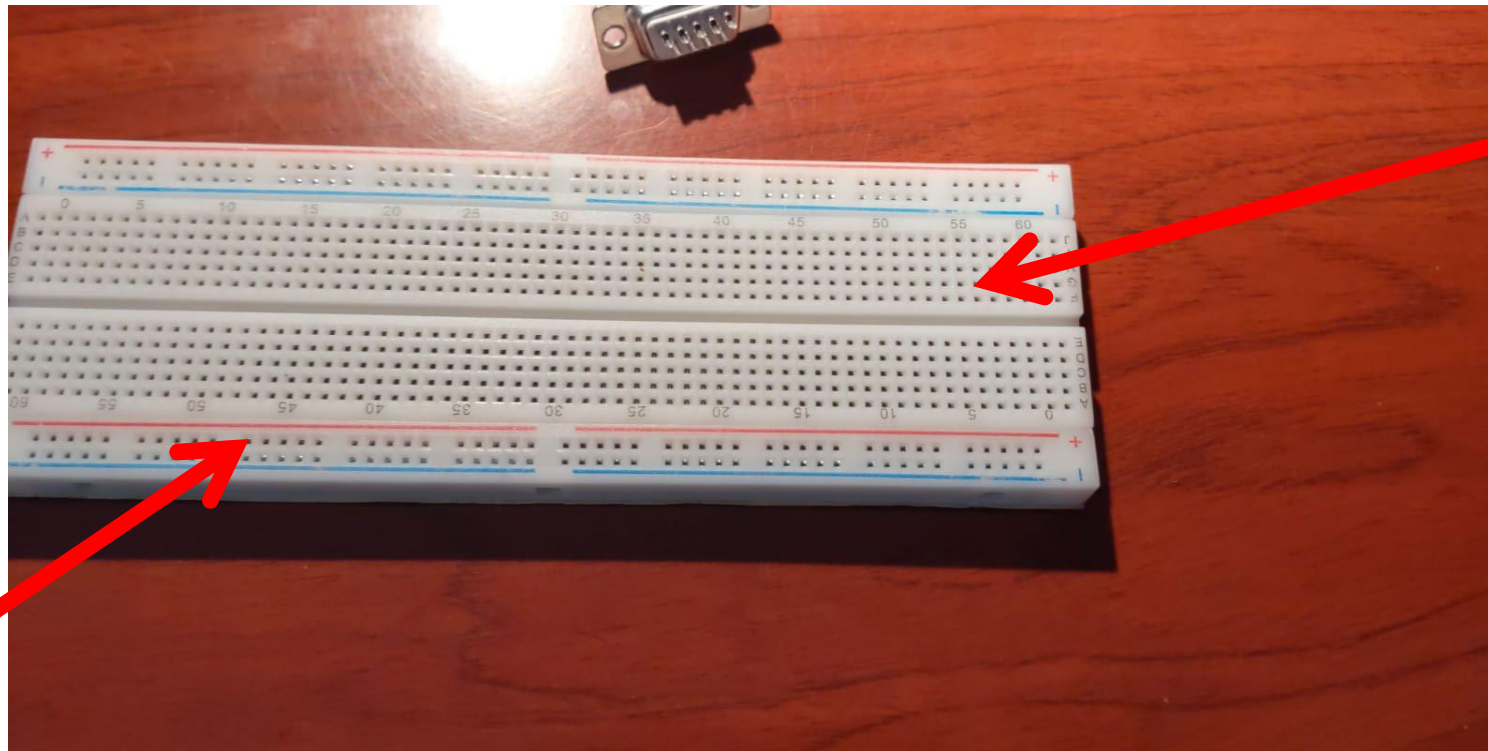
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Arduino ou Esp : monter sans souder !

(mais cela n'aurait pas fait peur au Repair Café)



Ligne de contacts
horizontale

Ligne de contacts
verticale



Esp : paramétrer sans programmer
entrez sur le navigateur l'adresse
192.168.4.1 pour relier au wifi



← → ↻ 🏠 ⚠ Non sécurisé | 192.168.4.1

📱 Applications 🗨 Community

ESP32_642A03A8

WiFiManager

Configure WiFi

Info

Exit

No AP set

NUMERICABLE-63_Ext



NUMERICABLE-63



SSID

Password

Save

Refresh

No AP set



Esp-easy : introduire les composants avec le mode « edit »

← → ↺ 🏠 192.168.1.36

ESP Easy Mega: Cave_36

△Main ⚙️Config 💬Controllers 📌Hardware 🖱️Devices 📧Notifications 🔧Tools

System Info

Unit: 36
GIT version: mega-20190116
Local Time: 2021-03-05 16:11:44
Uptime: 11 days 18 hours 30 minutes
Load: 9.80% (LC=5983)
Free Mem: 14144 (11384 - LoadControllerSettings)
Free Stack: 3600 (1740 - LoadControllerSettings)
IP: 192.168.1.36
Wifi RSSI: -79 dB (NUMERICABLE-63)
[More info](#)

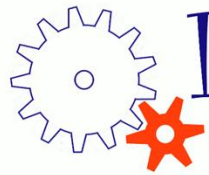
Accès direct à l'automate

Ajout de composant (Edit)

ESP Easy Mega: SonOffExp

△Main ⚙️Config 💬Controllers 📌Hardware 🖱️**Devices** ➡️Rules 📧Notifications 🔧Tools

	Task	Enabled	Device	Name	Port	Ctr (IDX)	GPIO	Values
Edit	1	✓	Switch input - Switch	button			GPIO-0	button: 0
Edit	2	✓	Switch input - Switch	Relay			GPIO-12	Relay: 0
Edit	3	✓	Environment - DHT11/12/22 SONOFF2301/7021	DHT		1	GPIO-0	temperature: 21 humidity: 46



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Esp : un meccano logiciel : micro Python

The screenshot shows the uPyCraft V1.1 application window. The title bar reads "uPyCraft V1.1". The menu bar includes "File", "Edit", "Tools", and "Help". On the left, a file explorer shows a tree structure with folders: "device", "sd", "uPy_lib", and "workSpace". The main editor area displays a file named "blink.py" with the following Python code:

```
1  #hardware platform: FireBeetle-ESP32
2  #Result: Blink
3  #The information below shows blink is unavailable for the current version
4  #IO0 IO4 IO10 IO12~19 IO21~23 IO25~27
5  #Except the connection between IO2 and onboard LED, other pins need to connect to external LEDs.
6
7  import time
8  from machine import Pin
9  led=Pin(2,Pin.OUT)    #create LED object from pin2 Set Pin2 to output
10
11 =while True:
12     led.value(1)      #Set led turn on
13     time.sleep(0.5)
14     led.value(0)      #Set led turn off
15     time.sleep(0.5)
```

On the right side of the editor, there is a vertical toolbar with icons for: opening a file, saving a file, running the code (a play button), stopping the code (a stop sign), undoing the last action, redoing the last action, and deleting the current file.

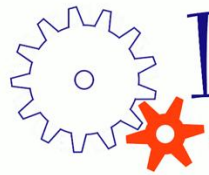
Un meccano logiciel : arduino

★ Des composants

un compilateur

des logiciels avec des bibliothèques à assembler





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Arduino ou esp : des exemples nombreux de programmes

```
Blink | Arduino 1.8.13
Fichier Édition Croquis Outils Aide

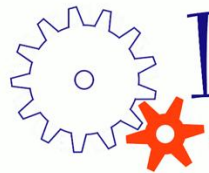
Blink $

void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(1000);                      // wait for a second
  digitalWrite(LED_BUILTIN, LOW);  // turn the LED off by making the voltage LOW
  delay(1000);                      // wait for a second
}
```

initialisation

Boucle d'automate

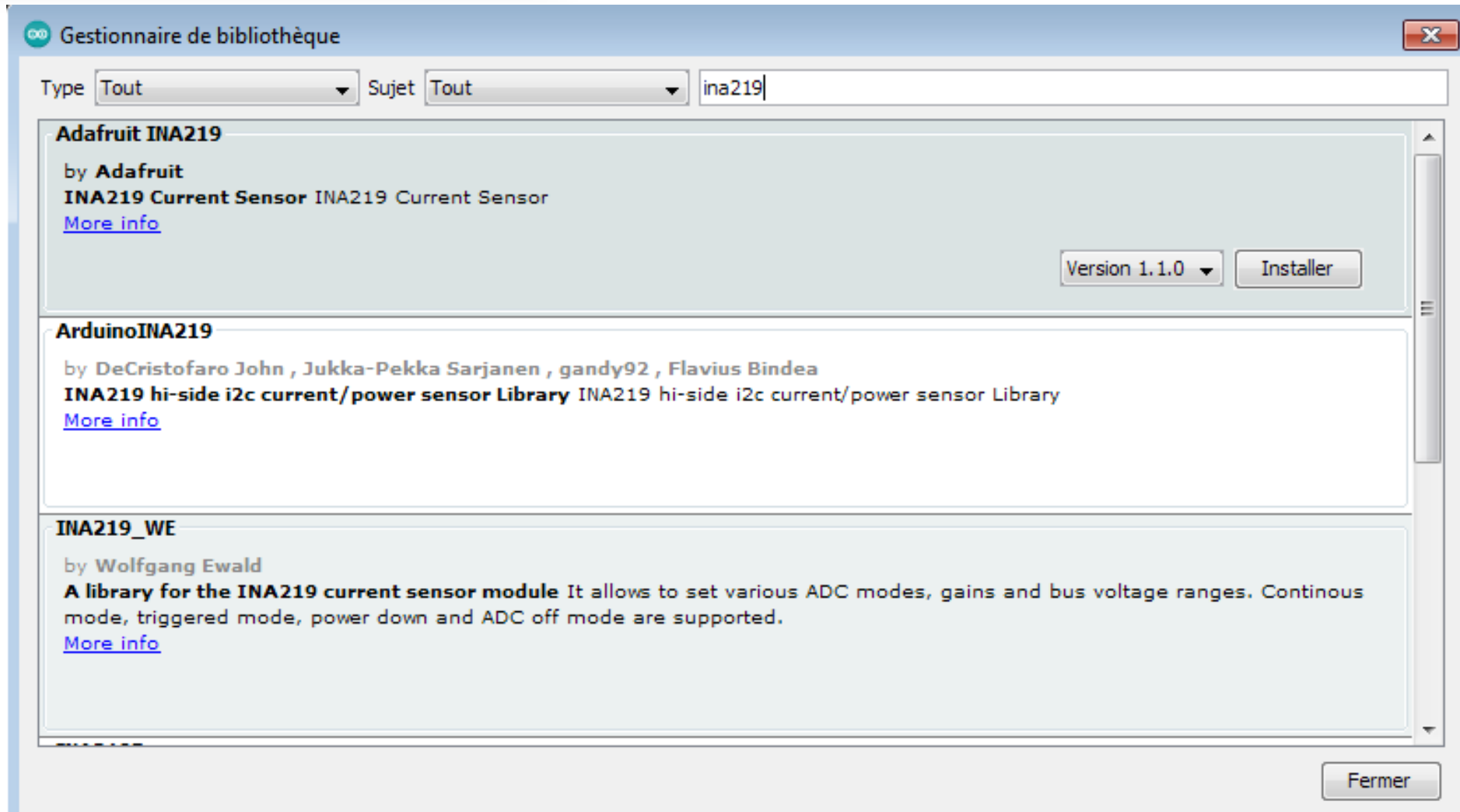


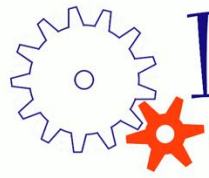
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Arduino ou esp : des bibliothèques bien fournies



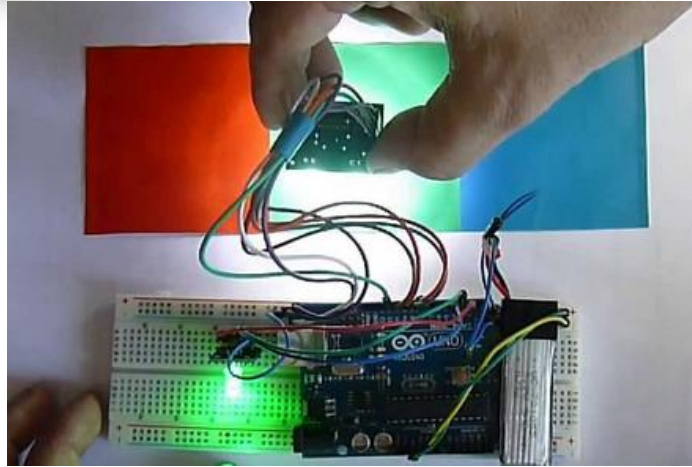


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Arduino ou esp : une multitude de bibliothèques



✳ mesure de courant INA 219

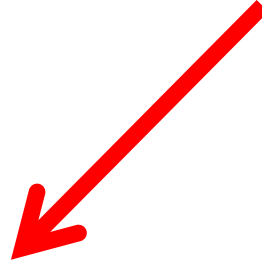
✳ centrales inertielles MPU 9250

✳ radar HB 100

✳ capteur de couleur "caméléon"

✳ horloge RTC DS 1307

TCS-34725



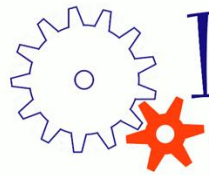
✳ Afficheur grand format MAX 7219

✳ Afficheur LCD 1602

✳ Sapin de Noel (NeoPixel)

✳ Servo moteur

✳ Détecteur gestuel 9960 ...



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Questions ?



☰ Toggle OV2640 settings

Resolution	CIF(400x296)
Quality	10
Brightness	-2
Contrast	-2
Saturation	-2
Special Effect	No Effect
AWB	<input checked="" type="checkbox"/>
AWB Gain	<input checked="" type="checkbox"/>
WB Mode	Auto
AEC SENSOR	<input checked="" type="checkbox"/>
AEC DSP	<input type="checkbox"/>
AE Level	-2 2
AGC	<input checked="" type="checkbox"/>
Gain Ceiling	2x 128x
BPC	<input type="checkbox"/>
WPC	<input checked="" type="checkbox"/>
Raw GMA	<input checked="" type="checkbox"/>
Lens Correction	<input checked="" type="checkbox"/>
H-Mirror	<input type="checkbox"/>
V-Flip	<input type="checkbox"/>
DCW (Downsize EN)	<input checked="" type="checkbox"/>
Color Bar	<input type="checkbox"/>
Face Detection	<input checked="" type="checkbox"/>
Face Recognition	<input checked="" type="checkbox"/>

Get Still Start Stream Enroll Face

Hello Friend 1

Pour aller plus loin ...

★ Liste d'applications (non exhaustive)

- station météo
- Robot
- appareils de mesure R-L-C
- jeux d'arcades
- Boussole
- Capteurs de mouvement 6 axes

★ Cheminement: réalisation d'un exemple :

- Le choix d'une application, d'un prototype
- Le support : plaquettes = "matrices de connexion"
- Les composants : Alimentation, CPU, entrées sorties
- Les logiciels: Kit de dev, Langage de programmation, bibliothèques, applicatifs.
- La compatibilité / portabilité entre plateformes (SW + HW)
- Les moyens de test, de debug