

DÉVELOPPEURS WEB,

JE VOUS PRÉSENTE...  
LE MONDE RÉEL!





1994

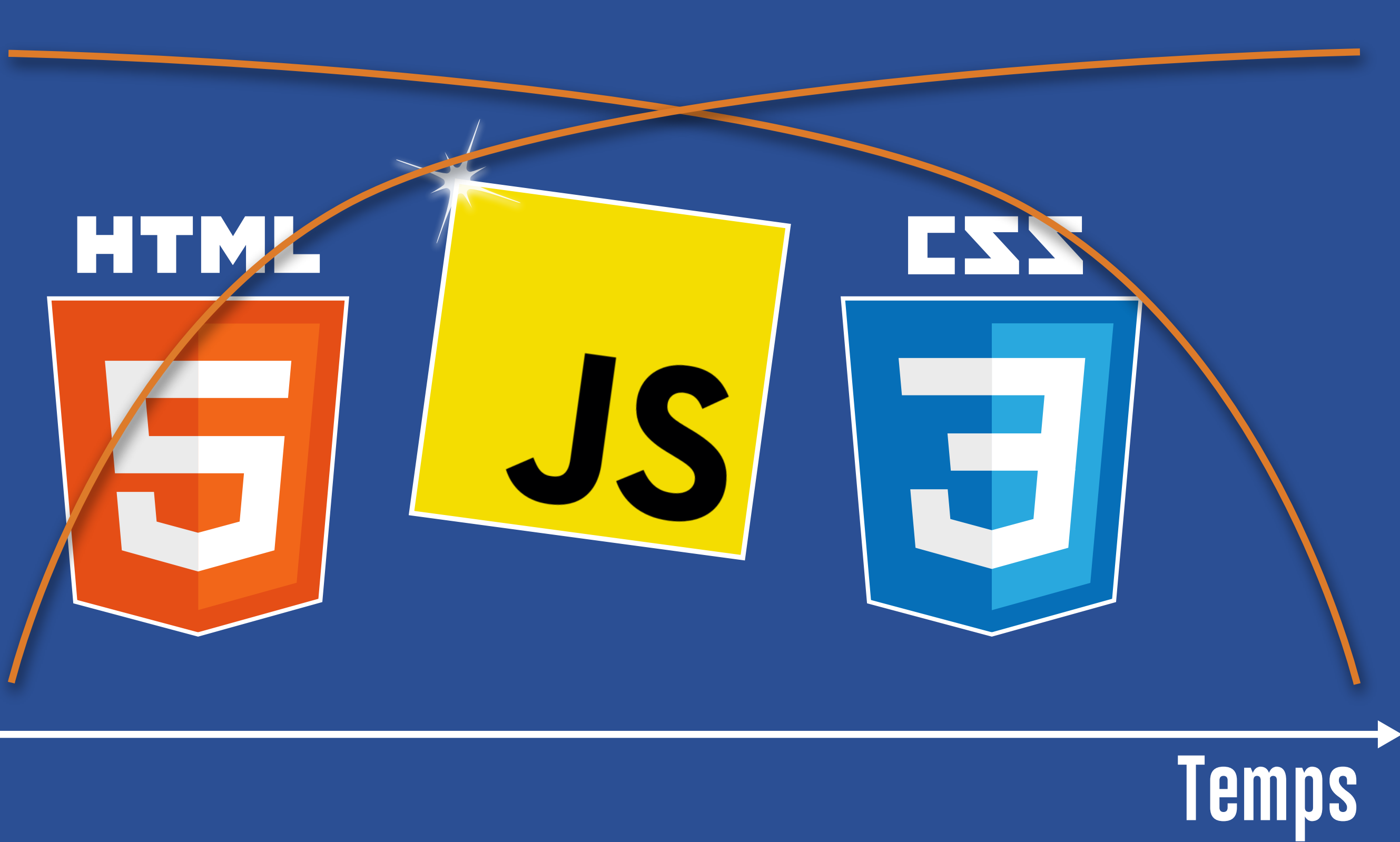
**HTML**



**CSS**



Excitation



HTML



JS



CSS



Temps





Qu'est-ce que l'**Interactivité tangible**?

 PHYSICAL COMPUTING

# Est-ce...

Médias interactifs  
ou tangibles?

La réalité  
augmentée,  
mixte, virtuelle  
ou artificielle?

L'Internet  
des objets?

Interfaces  
fluides  
naturelles,  
physiques,  
matérielles?

Robotique &  
mécatronique?

Installations  
interactives?

Design  
expérientiel?

Wearables,  
hearables,  
embeddables?

# OUI.



# INTERACTIVITÉ TANGIBLE

L'interactivité  
tangible,  
au sens large,  
c'est...

... la création de  
systèmes interactifs  
utilisant **logiciels et**  
**équipements** pour  
**sentir et agir** sur le  
monde physique.



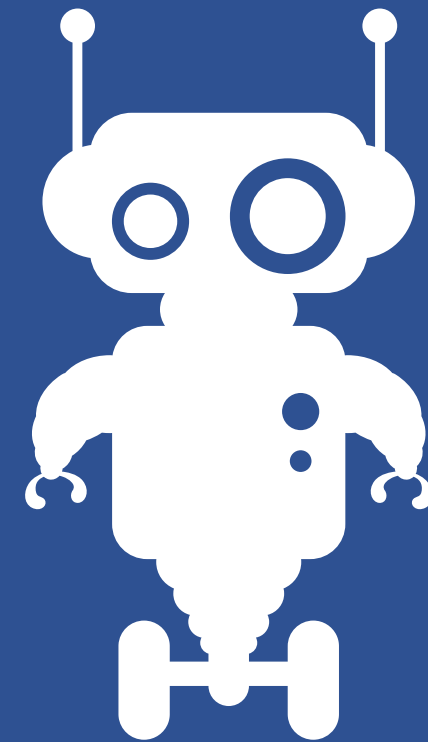
**Art  
interactif**

**P5.JS**



**Réalité  
virtuelle**

**WEBVR API**



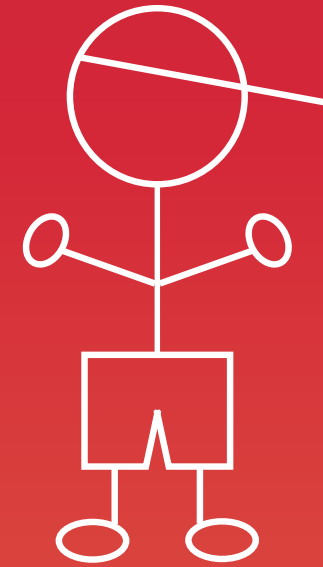
**Robot  
tueur**

**JOHNNY-FIVE.JS**





PLATEFORME  
WEB



INTERACTIVITÉ  
TANGIBLE



1

NW.js



Chromium



Node.js

2

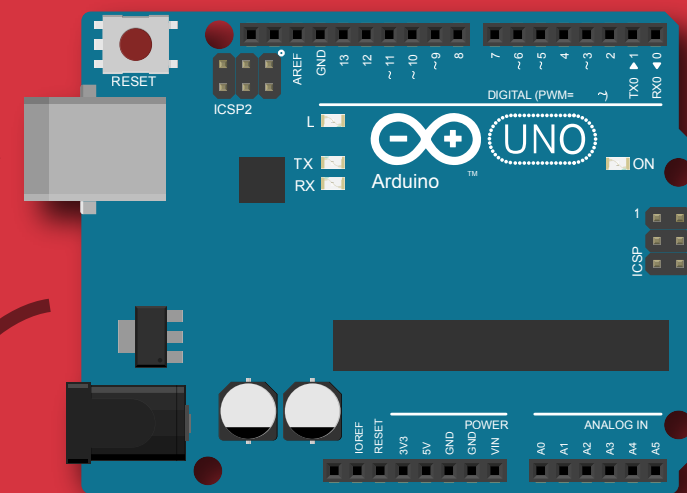
Johnny-Five



Firmata

3

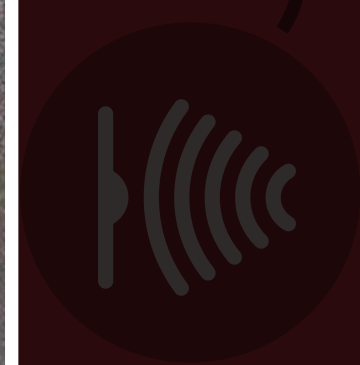
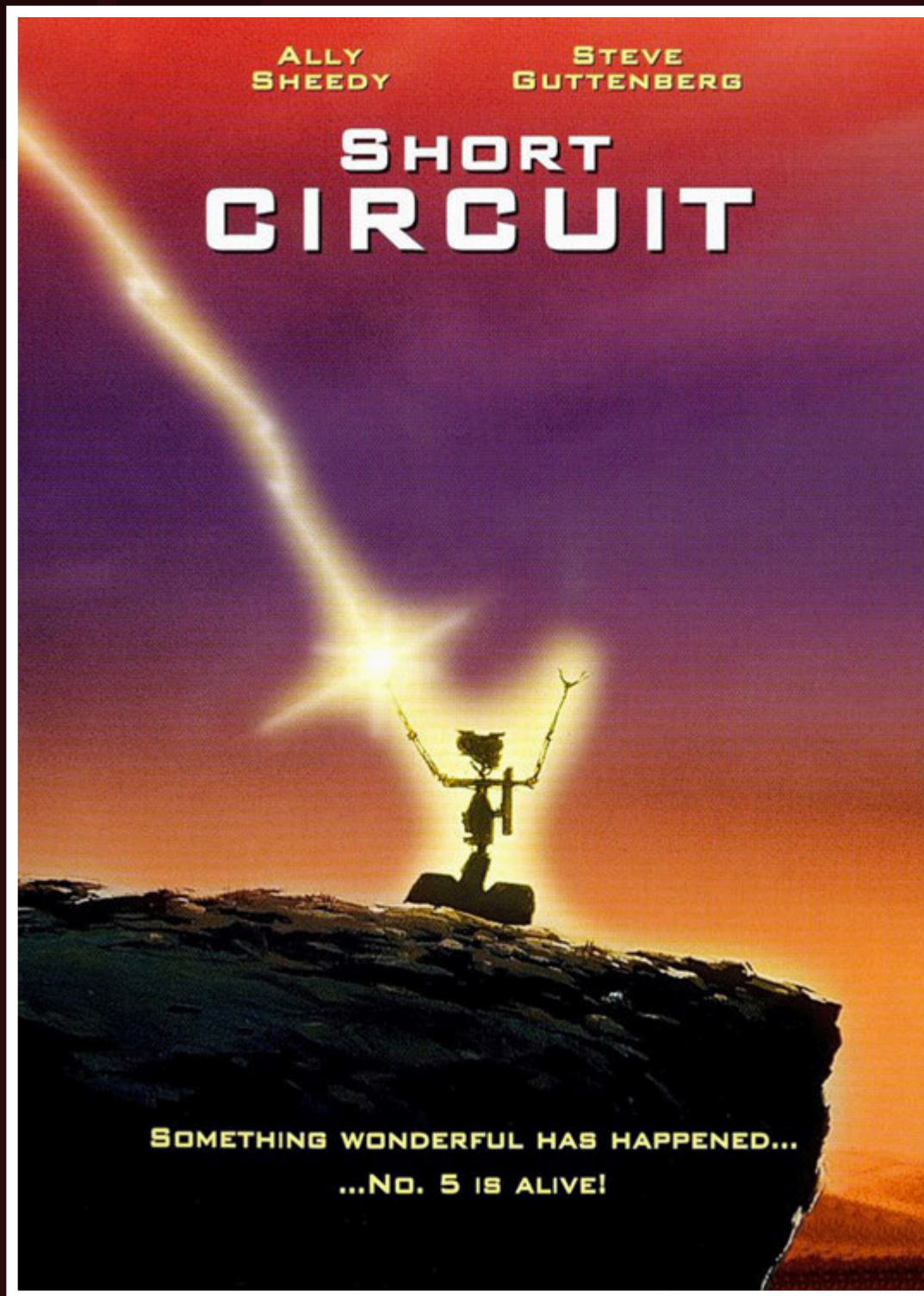
Arduino



Actuateurs



Capteurs



Capteurs

1

NW.js

N

2

Johnny-Five

J

3

Arduino

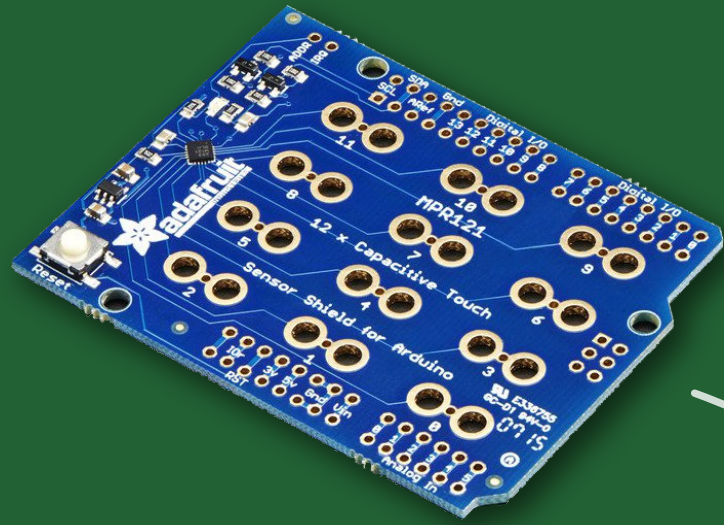
A



# Démonstrations



Capteur tactile

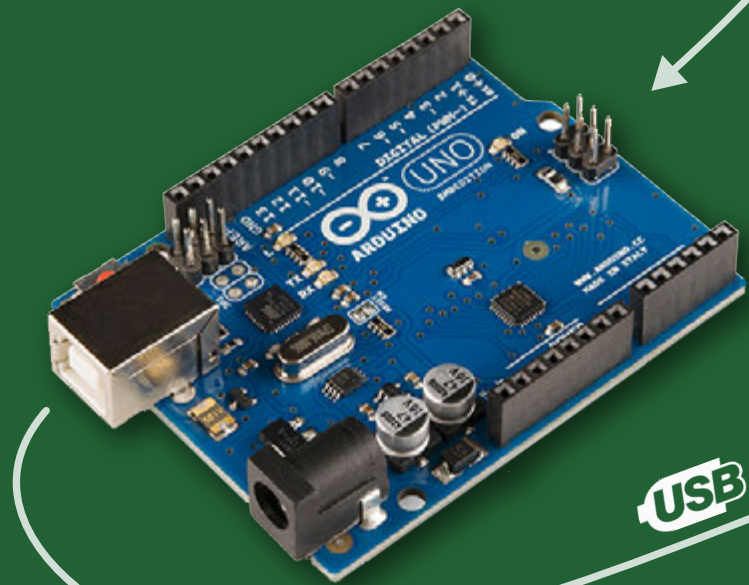


LE FLOT...

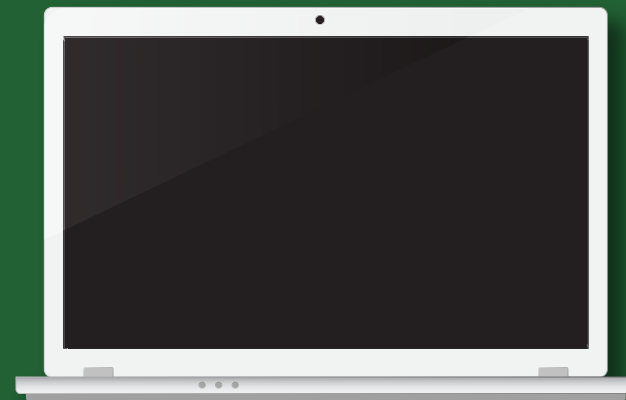
NW.js



Arduino



Ordinateur



Johnny-Five



# 1.

## Création d'un manifeste package.json

```
{  
  "name": "water-tones",  
  "main": "index.html",  
  
  "window": {  
    "width": 960,  
    "height": 600  
  }  
}
```

# 2.

## Installation du module Johnny-Five

```
npm install johnny-five --save
```

```
{  
  "name": "water-tones",  
  "main": "index.html",  
  "window": {  
    "width": 960,  
    "height": 600  
  },  
  "dependencies": {  
    "johnny-five": "^0.9.34"  
  }  
}
```




# 3.

## Installation du module nwjs-j5-fix

```
npm install nwjs-j5-fix --save
```

```
{  
  "name": "water-tones",  
  "main": "index.html",  
  
  "window": {  
    "width": 960,  
    "height": 600  
  },  
  
  "dependencies": {  
    "johnny-five": "^0.9.34",  
    "nwjs-j5-fix": "^1.0.3"  
  }  
}
```



# 4.

## Création du fichier index.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <title>Water Tones</title>
    <link rel="stylesheet" href="styles.css">
    <script src="libs/Tone.min.js"></script>
    <script src="script.js"></script>
  </head>
  <body>
    <div id="G3"></div>
    <div id="A3"></div>
    <div id="F3"></div>
    <div id="F2"></div>
    <div id="C3"></div>
  </body>
</html>
```

# 5.

## Ajout du code JavaScript

```
nw.require("nwjs-j5-fix").fix();
var five = nw.require("johnny-five");

new five.Board().on("ready", function() {

  var synth = new Tone.PolySynth().toMaster();
  var reverb = new Tone.Freeverb(0.92).toMaster();
  synth.connect(reverb);

  var notes = ["G3", "A3", "F3", "F2", "C3"];

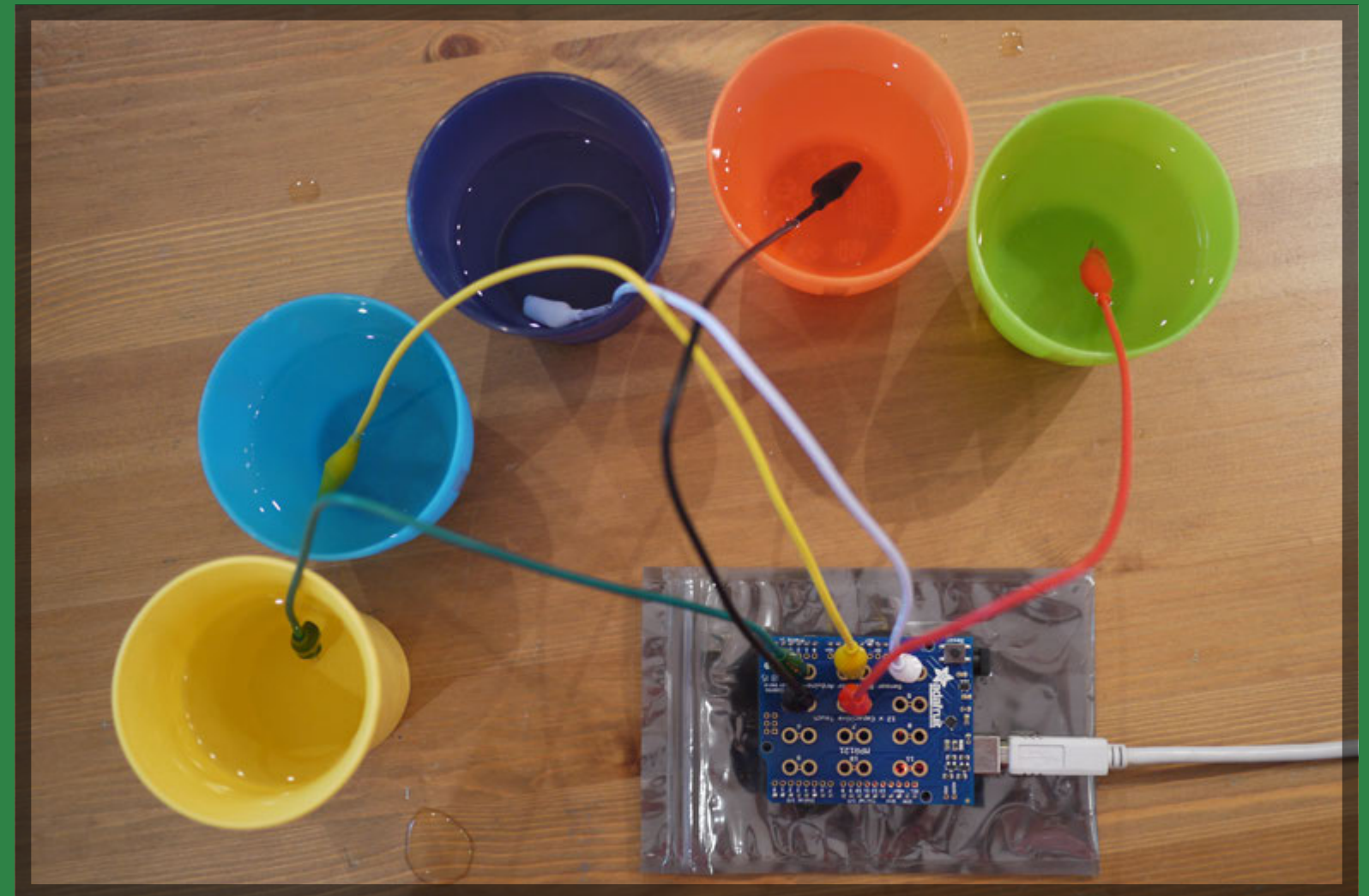
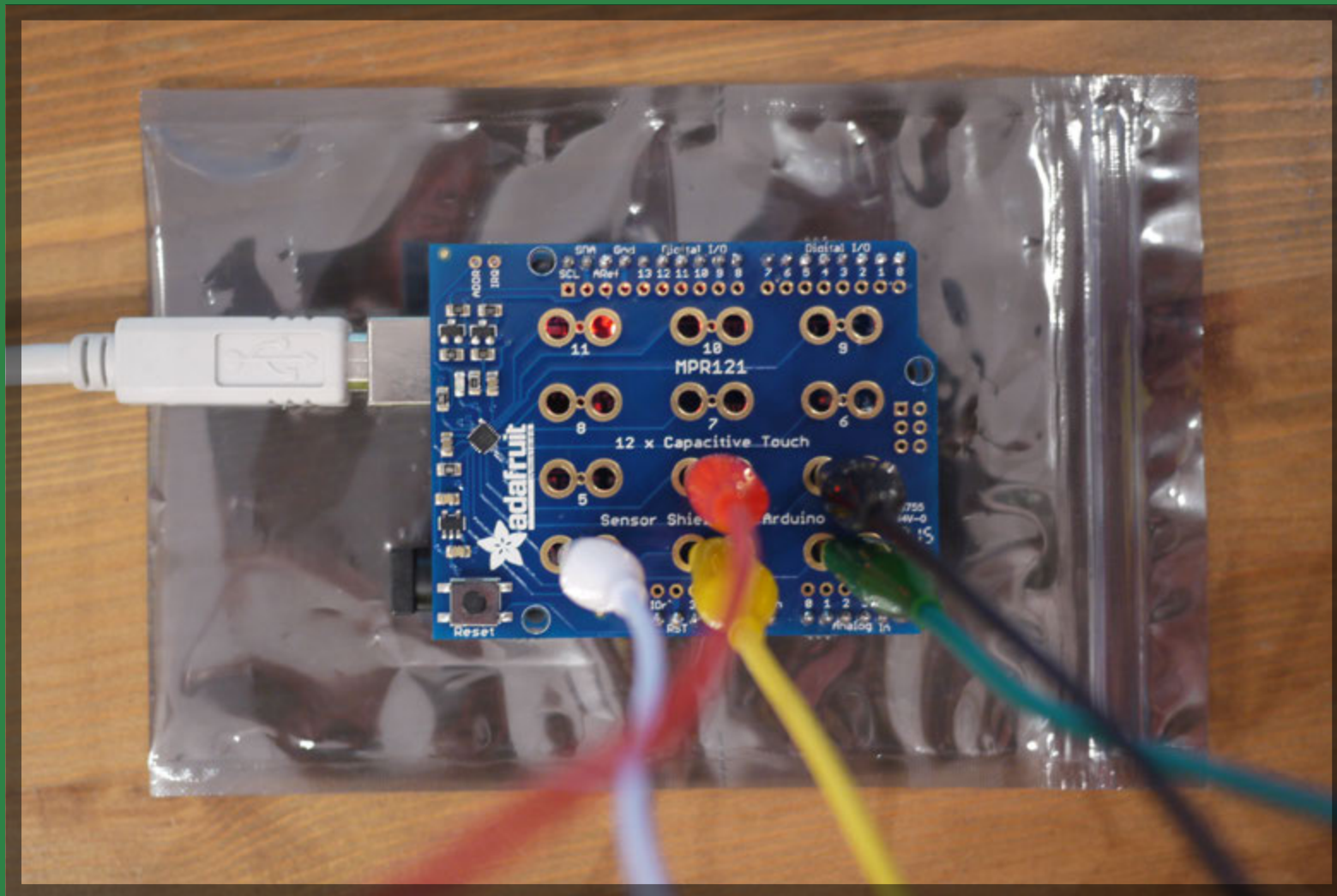
  var keypad = new five.Keypad({controller: "MPR121_SHIELD"});

  keypad.on("press", function(data) {
    data.which.forEach(function(index) {
      if (index < notes.length) {
        synth.triggerAttack(notes[index]);
        document.getElementById(notes[index]).classList.add("active");
      }
    });
  });

  keypad.on("release", function(data) {
    // Similar to above...
  });

});
```

# WaterTones



# 5.

## Ajout du code JavaScript

```
nw.require("nwjs-j5-fix").fix();
var five = nw.require("johnny-five");

new five.Board().on("ready", function() {

  var synth = new Tone.PolySynth().toMaster();
  var reverb = new Tone.Freeverb(0.92).toMaster();
  synth.connect(reverb);

  var notes = ["G3", "A3", "F3", "F2", "C3"];

  var keypad = new five.Keypad({controller: "MPR121_SHIELD"});

  keypad.on("press", function(data) {
    data.which.forEach(function(index) {
      if (index < notes.length) {
        synth.triggerAttack(notes[index]);
        document.getElementById(notes[index]).classList.add("active");
      }
    });
  });

  keypad.on("release", function(data) {
    // Similar to above...
  });

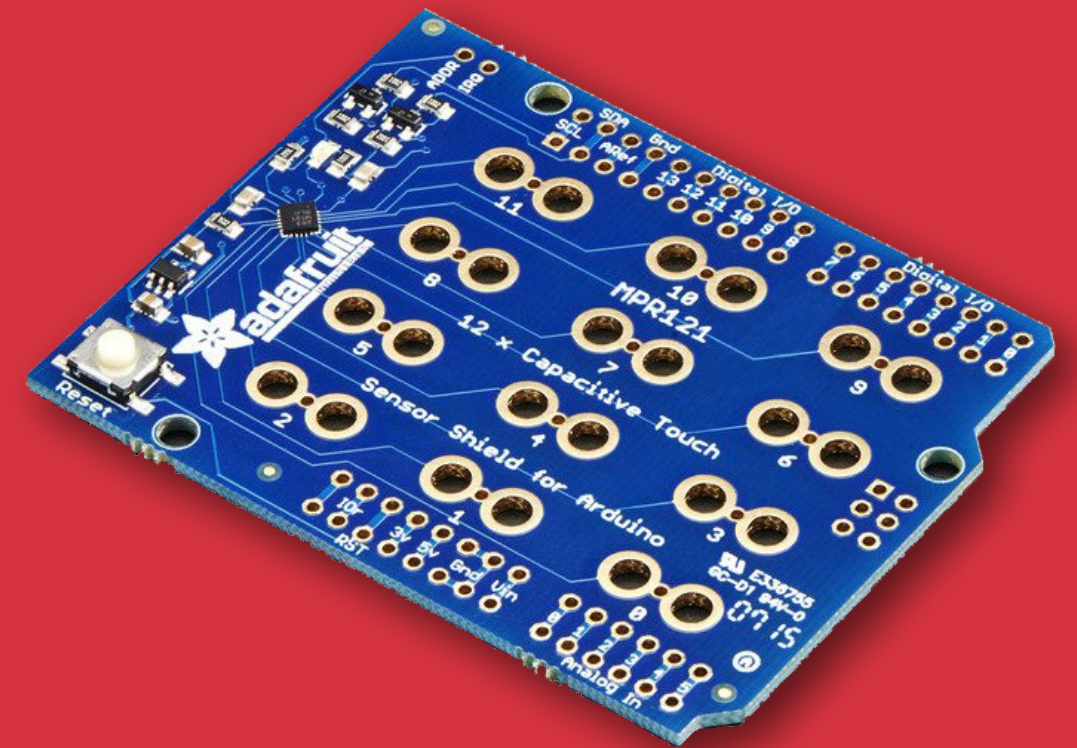
});
```

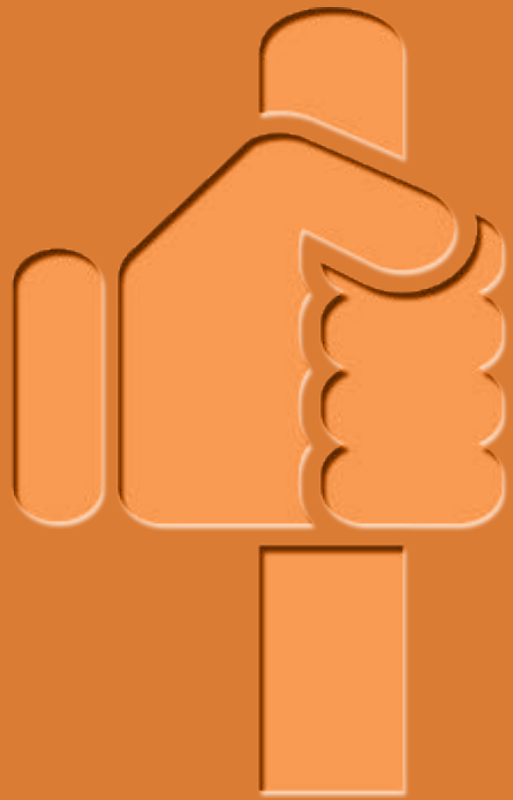


Langages  
de  
haut niveau



Composants  
électroniques  
prêts-à-utiliser



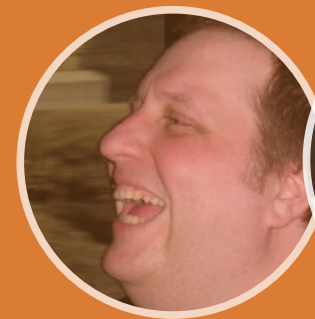


# FORCE-O-MAX

3000

QUI SERA LE PLUS FORT JAVASCRIPTEUR?

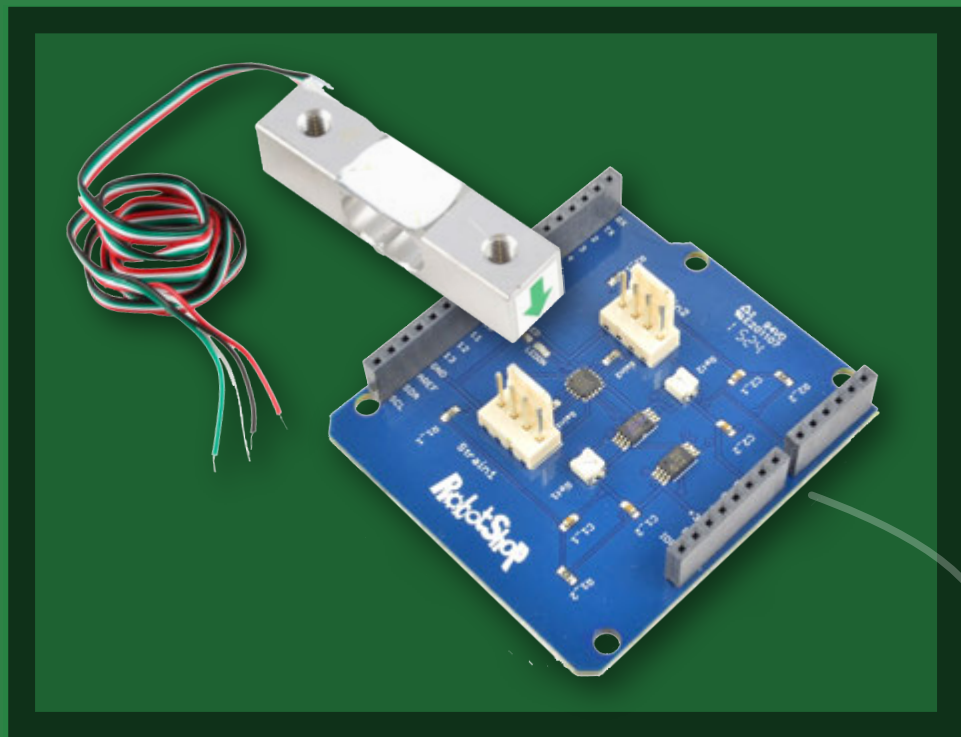
Avec la  
participation de:



**Benoît**  
Construction



**Christian**  
Design

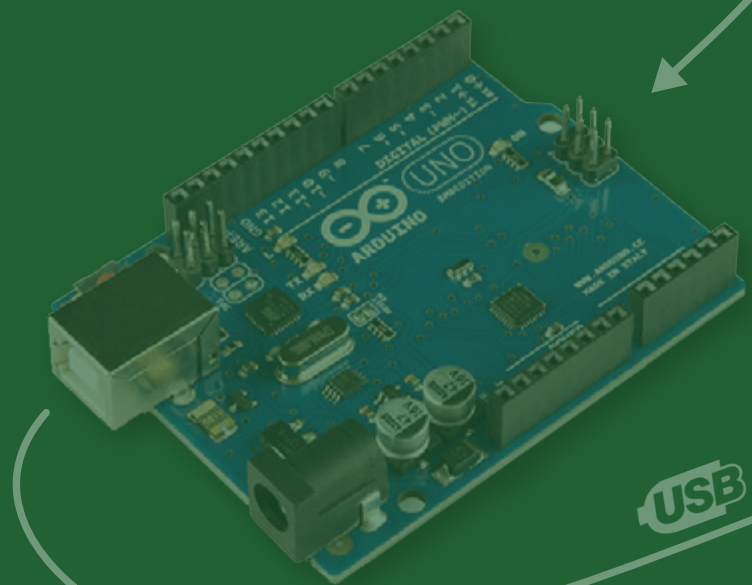


LE FLOT...

NW.js



Arduino



USB

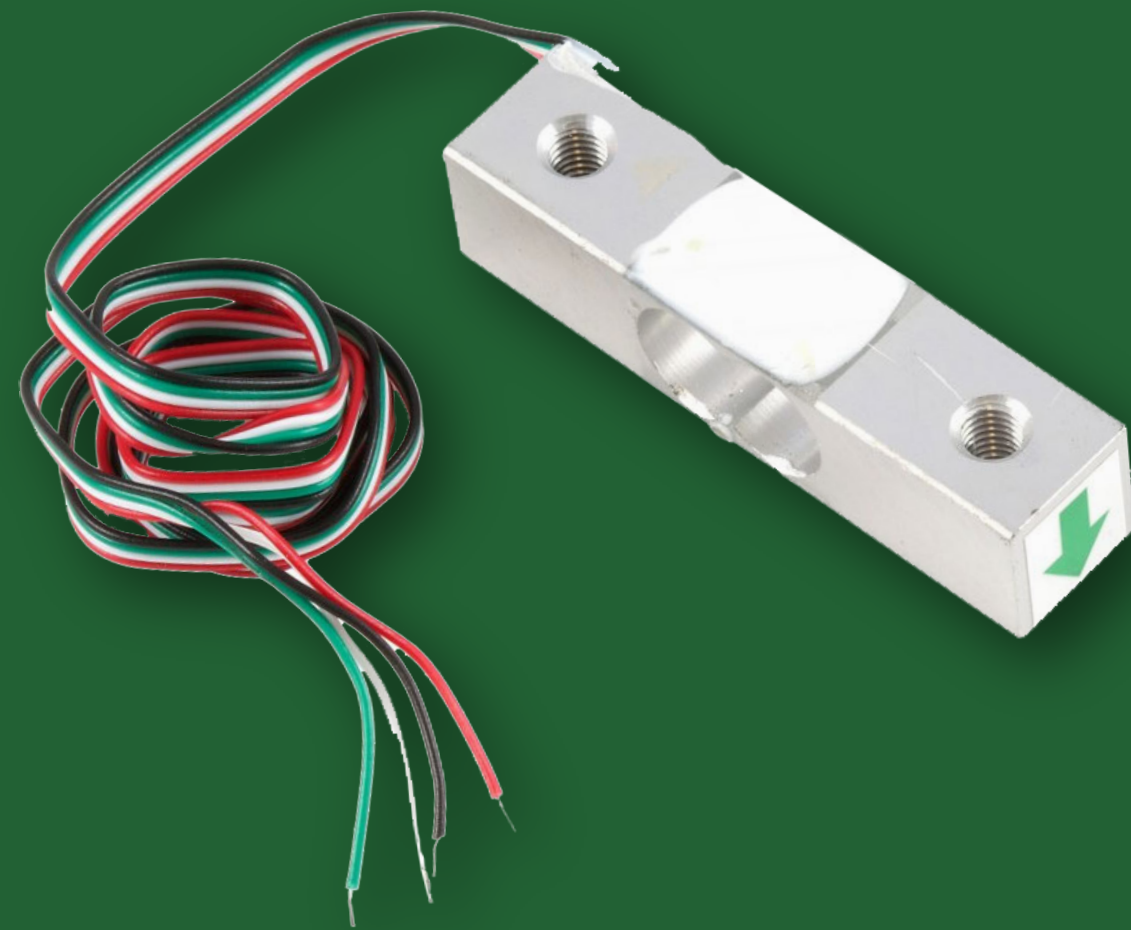
Ordinateur



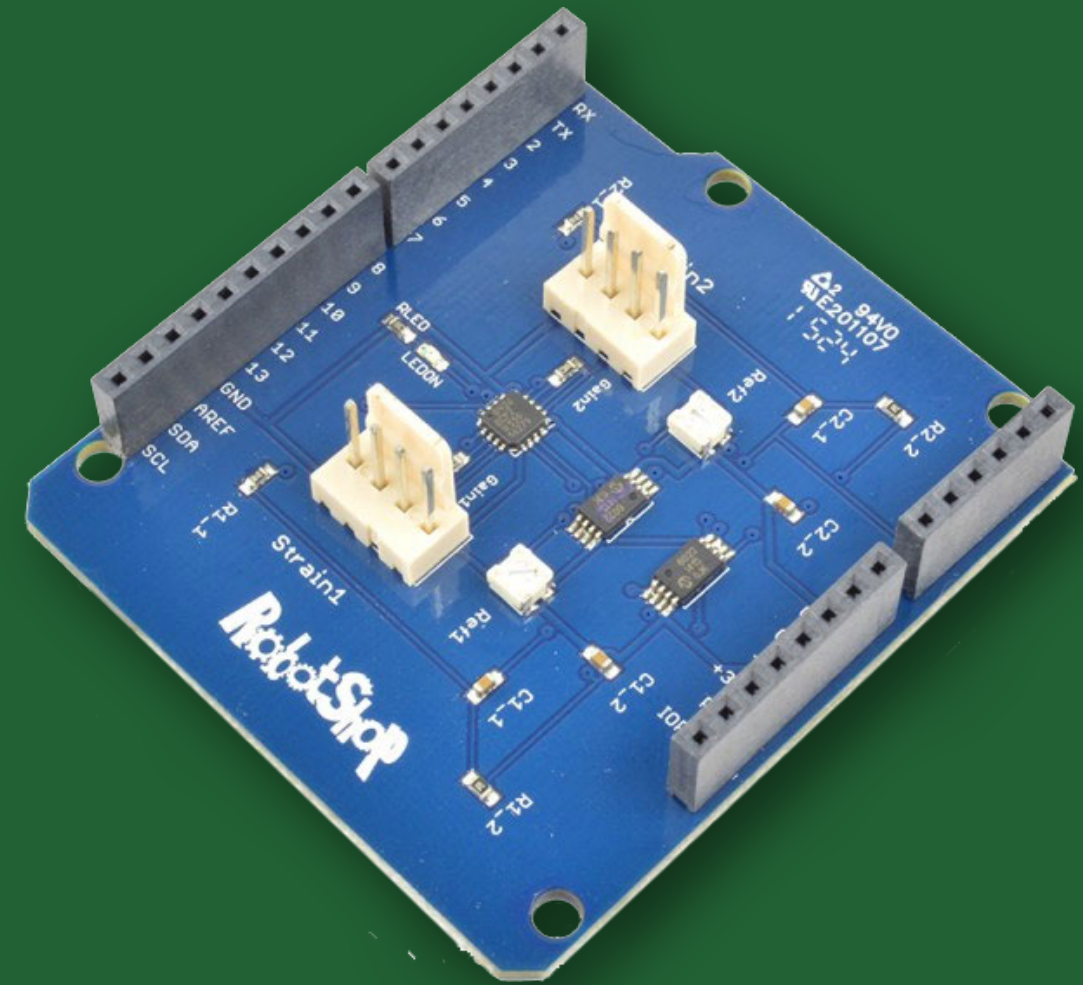
Firmata

Johnny-Five



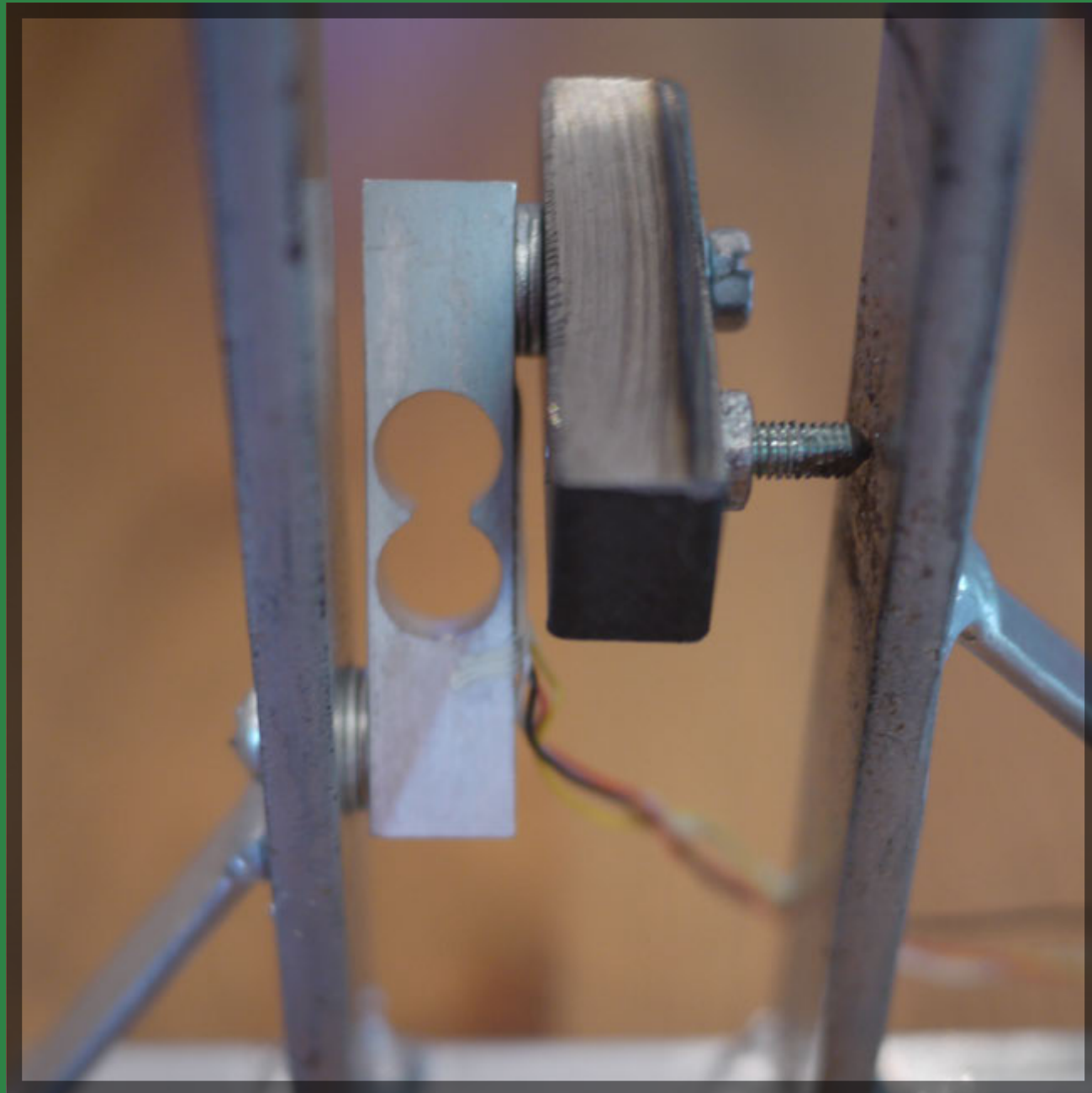


**CAPTEUR DE FORCE**



**AMPLIFICATEUR**

# FORCE-O-MAX





# Physical Computing for Web Developers

Atelier d'une journée - 7 avril, Ottawa



<https://forwardjs.com/ottawa>

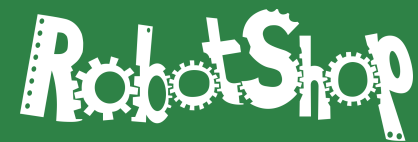
# Équipements de base

**25.99\$** **Arduino Uno Rev3**

<http://www.robotshop.com/ca/fr/microcontroleur-arduino-uno-r3-usb.html>

**2.60\$** **Fil USB**

<http://www.robotshop.com/ca/fr/cable-usb-15m-type-a-vers-b.html>



# WaterTones

**16.00\$** **Blindage tactile**

<https://www.adafruit.com/products/2024>

**7.61\$** **Cavaliers à pincés crocodile**

<http://www.robotshop.com/ca/fr/prises-elenco-tl-6.html>

# Force-0-Max

**26.60\$** **Blindage d'amplification**

<http://www.robotshop.com/ca/fr/blindage-amplificateur-cellule-force-2ch.html>

**9.45\$** **Jauge de déformation**

<http://www.robotshop.com/ca/fr/micro-cellule-force-20-kg.html>

**4.20\$** **Fil à 4 broches pour cavalier femelle**

<http://www.robotshop.com/ca/fr/kit-5-fils-300mm-4-pins.html>





<http://tangiblejs.com/confoo2017>

 <http://tangiblejs.com>

 @tangiblejs

 <http://cote.cc>

 @jpcote

 <http://github.com/cotejp>

MERCI.