

Introducing Bangle.js (the NodeWatch)



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**"any application that can be written in
JavaScript, will eventually be written in
JavaScript."**

Atwood's Law

<https://blog.codinghorror.com/the-principle-of-least-power>



Bangle

The Open Smart Watch



<https://banglejs.com/>



The world's first hackable open source JavaScript-powered and TensorFlow- powered smartwatch



<https://nodewatch.dev/>

NodeConf EU 2019



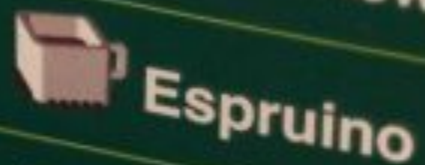


Say hello to Bangle.js. Get started with your Bangle.js on nodewatch.dev

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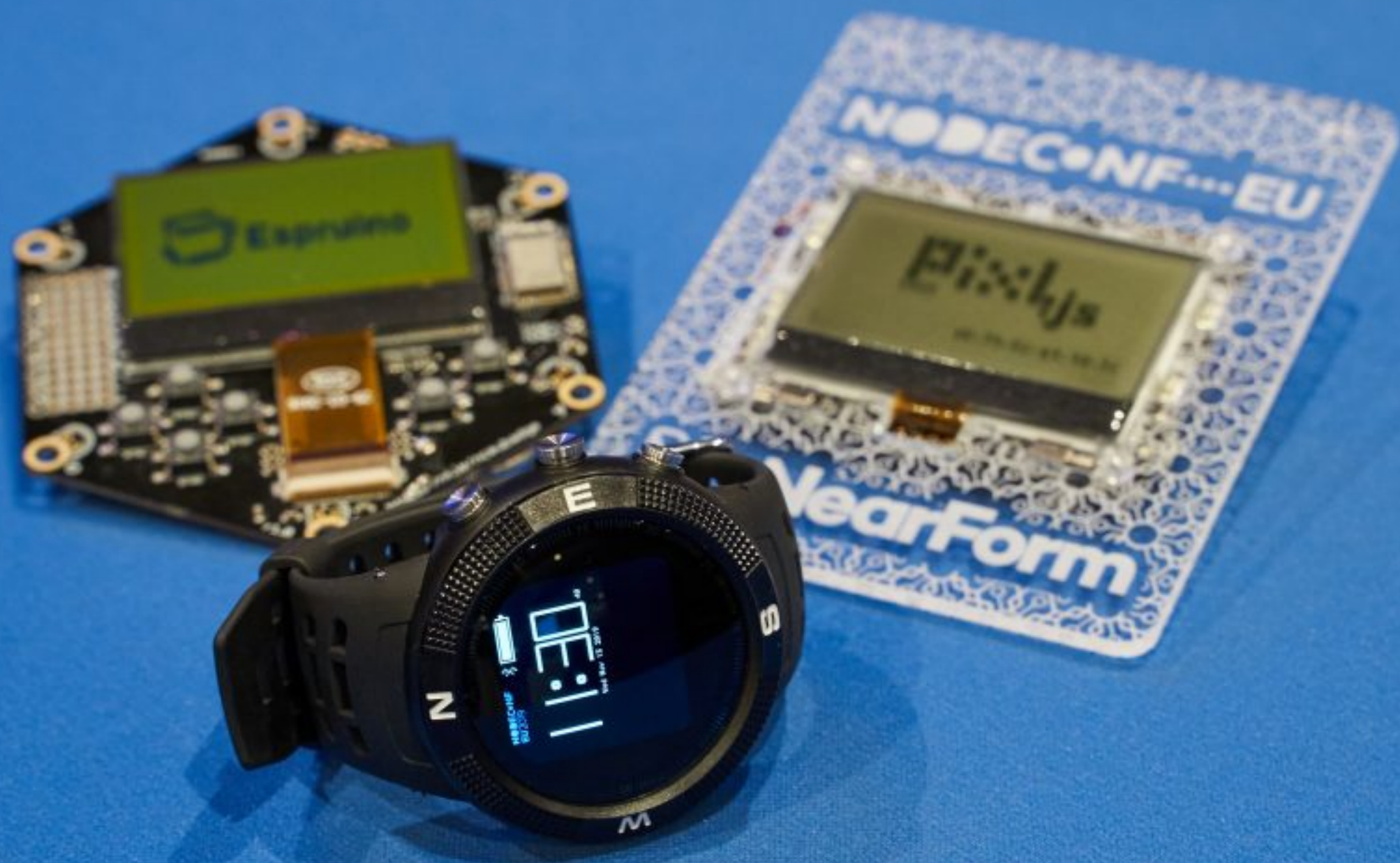


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With love from





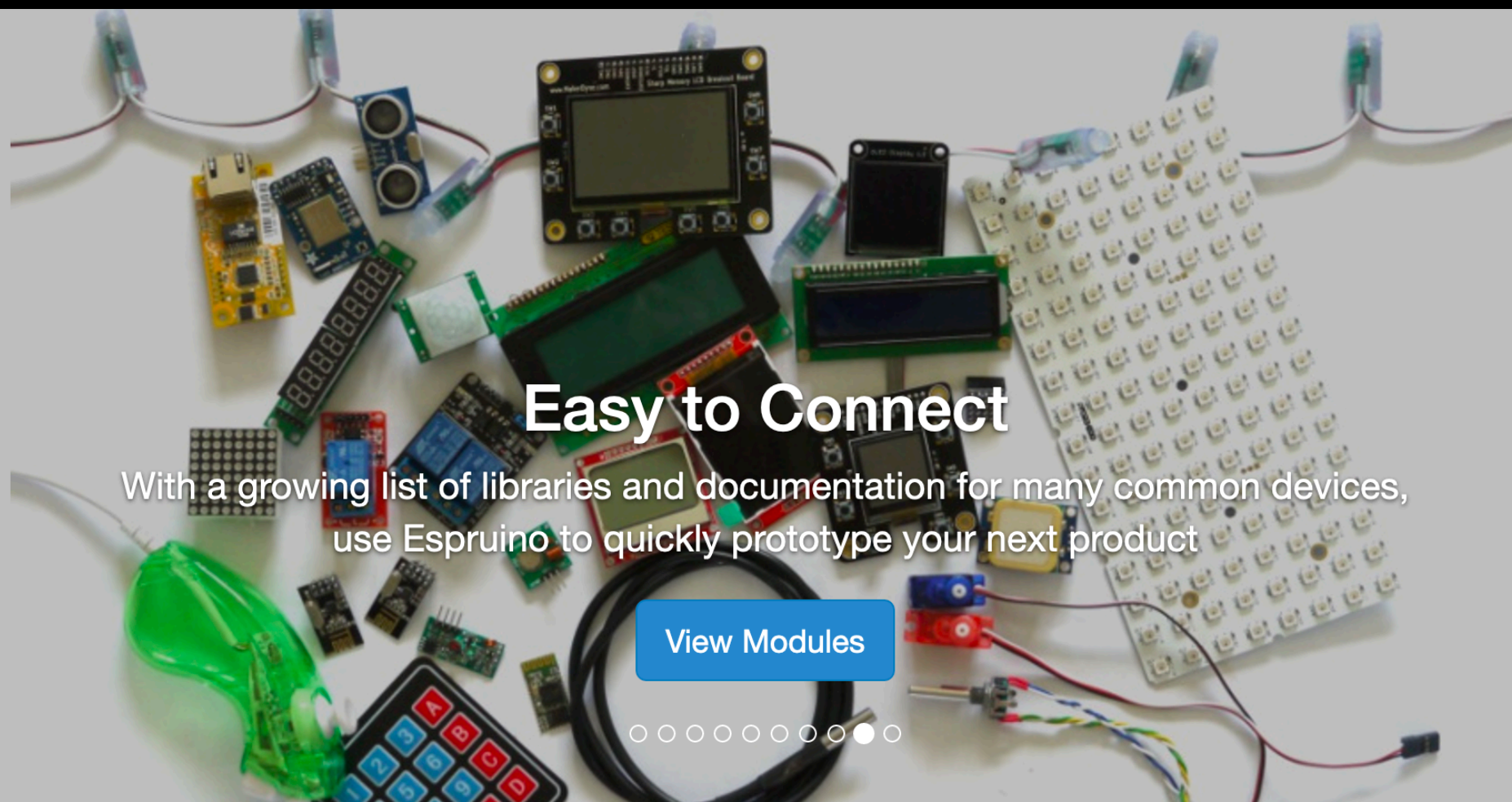


Hardware

High-Level Hardware

- Nordic Semiconductor [NRF52832](#) SoC with Bluetooth LE 4.2
- [KX023 accelerometer](#)
- 3 axis compass
- BD 1668 heart rate monitor
- 32 mbit flash - similar command set to [this](#)
- [240x240 Colour LCD](#)
- Holtek touch controller - [bs83a02a with 2 zone on/off](#)
- [GPS UBX-M8130](#), ROM CORE 3.01, PROTVER=18.00*11
- Buzzer

<https://nodewatch.dev/software>



Easy to Connect

With a growing list of libraries and documentation for many common devices, use Espruino to quickly prototype your next product

[View Modules](#)



Got my [@Espruino](#) running nicely in 15 mins on Win 8.1. This is the perfect hardware to introduce students to ICT in schools.

by Ward De Backer —



JavaScript



Responsive



Fully Open Source




Crowdfunded

<http://www.espruino.com/>


























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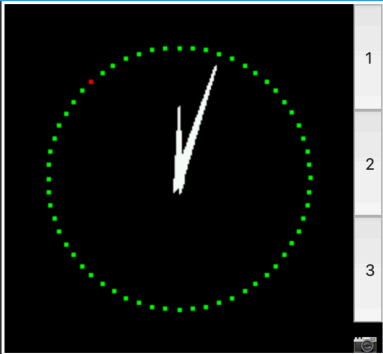
Search

 Bootloader (0.03) This is needed by Bangle.js to automatically load the clock, menu, widgets and settings	 Centerclock (0.01) Watch-centered digital 24h clock with date in dd.mm.yyyy format.
 Morphing Clock (0.01) 7 segment clock that morphs between minutes and hours	 Settings (0.02) A menu for setting up Bangle.js - by default this disables Bluetooth unless you enable 'BLE' AND 'Dev'
 NCEU 5K Fun Run (0.01) Display a map of the NodeConf EU 2019 5K Fun Run route and your location on it	 NCEU Logo Widget (0.01) Show the NodeConf EU logo in the top left
 NCEU Startup (0.01) NodeConfEU 2019 Startup Sequence	 3x2 Pixel Clock (0.01) This is a simple clock using minimalistic 3x2 pixel numerical digits
 Analog Clock (0.01) An Analog Clock	 App Manager (0.01) Show currently installed apps, free space, and allow their deletion from the watch
 Asteroids! (0.01) Retro asteroids game	 BLE Scanner (0.01) Scan for advertising BLE devices
 Battery Level Widget (0.01) Show the current battery level and charging status in the top right of the clock	 Beer Compass (0.01) Uploads all the pubs in an area onto your watch, so it can always point you at the nearest one
 Berlin Clock Berlin Clock (see https://en.wikipedia.org/wiki/Mengenlehreuhr)	 Binary Bluetooth Keyboard (0.01) Enable HID in settings, pair with your phone/PC, then type messages using the onscreen keyboard by tapping repeatedly on the key you want
 Binary Clock (0.01)	 Bluetooth Keyboard (0.01)




<https://banglejs.com/apps/>



>
espruino.com
2v04.323 (c) 2019 G.Williams
>
>



1
2
3



```
1 (function(){
2   g.clear();
3   const p = Math.PI/2;
4   const PRad = Math.PI/180;
5
6   let intervalRefMin = null;
7   let intervalRefSec = null;
8
9   let minuteDate = new Date();
10  let secondDate = new Date();
11
12  function seconds(angle, r) {
13    const a = angle*PRad;
14    const x = 120+Math.sin(a)*r;
15    const y = 120-Math.cos(a)*r;
16    g.fillRect(x-1,y-1,x+1,y+1);
17  }
18  function hand(angle, r1,r2) {
19    const a = angle*PRad;
20    const r3 = 3;
21    g.fillPoly([
22      120+Math.sin(a)*r1,
23      120-Math.cos(a)*r1,
24      120+Math.sin(a+p)*r3,
25      120-Math.cos(a+p)*r3,
26      120+Math.sin(a)*r2,
27      120-Math.cos(a)*r2,
28      120+Math.sin(a-p)*r3,
29      120-Math.cos(a-p)*r3]);
30  }
31
32  function drawAll() {
33    g.clear();
34    secondDate = minuteDate = new Date();
35    // draw hands first
36    onMinute();
37    // draw seconds
38    g.setColor(0,1,0);
39    for (let i=0;i<60;i++)
40      seconds(360*i/60, 90);
41    onSecond();
42  }
43
44  function onSecond() {
45    g.setColor(0,1,0);
46    seconds(360*secondDate.getSeconds()/60, 90);
47    g.setColor(1,0,0);
48    secondDate = new Date();
49    seconds(360*secondDate.getSeconds()/60, 90);
50    g.setColor(1,1,1);
51  }
52
53  function onMinute() {
54    g.setColor(0,0,0);
55    hand(360*minuteDate.getHours()/12, -10, 50);
56    hand(360*minuteDate.getMinutes()/60, -10, 82);
57    minuteDate = new Date();
58    g.setColor(1,1,1);
59    hand(360*minuteDate.getHours()/12, -10, 50);
60    hand(360*minuteDate.getMinutes()/60, -10, 82);
61    if(minuteDate.getHours() >= 0 && minuteDate.getMinutes() === 0) {
62      Bangle.buzz();
63    }
64  }
65
66  function clearTimers() {
67    if(intervalRefMin) {clearInterval(intervalRefMin);}
68  }
```

SENT

EMULATOR

<https://www.espruino.com/ide/emulator.html>



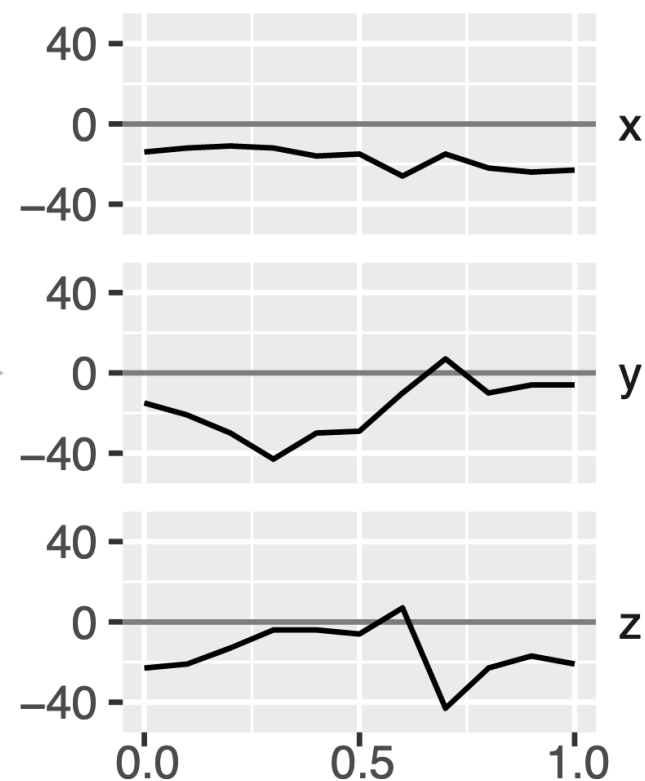
Powered by
TensorFlow

onboard
accelerometer

provides
realtime data

analyzed on
System-on-Chip
by TensorFlow

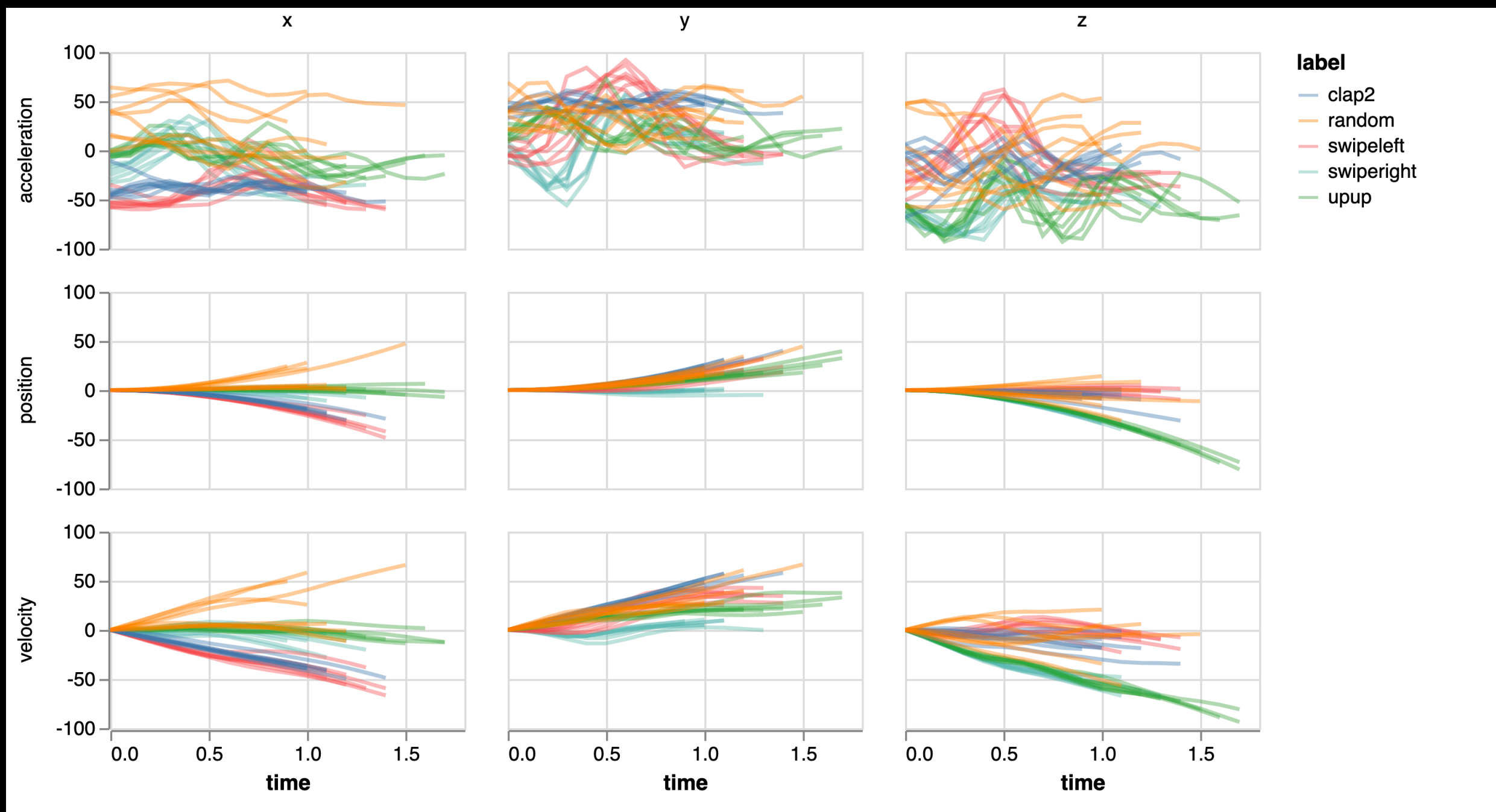
classify into
hand-gesture



TensorFlow
Lite for Microprocessors

Swipe_left
Swipe_right
...
random

<https://www.nearform.com/blog/running-tensorflow-lite-on-nodewatch-bangle-js/>



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nodewatch.dev

banglejs.com