Your Own JavaScript Army

(prototyping devices doesn't have to suck)

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hardware enthusiast

If you dare

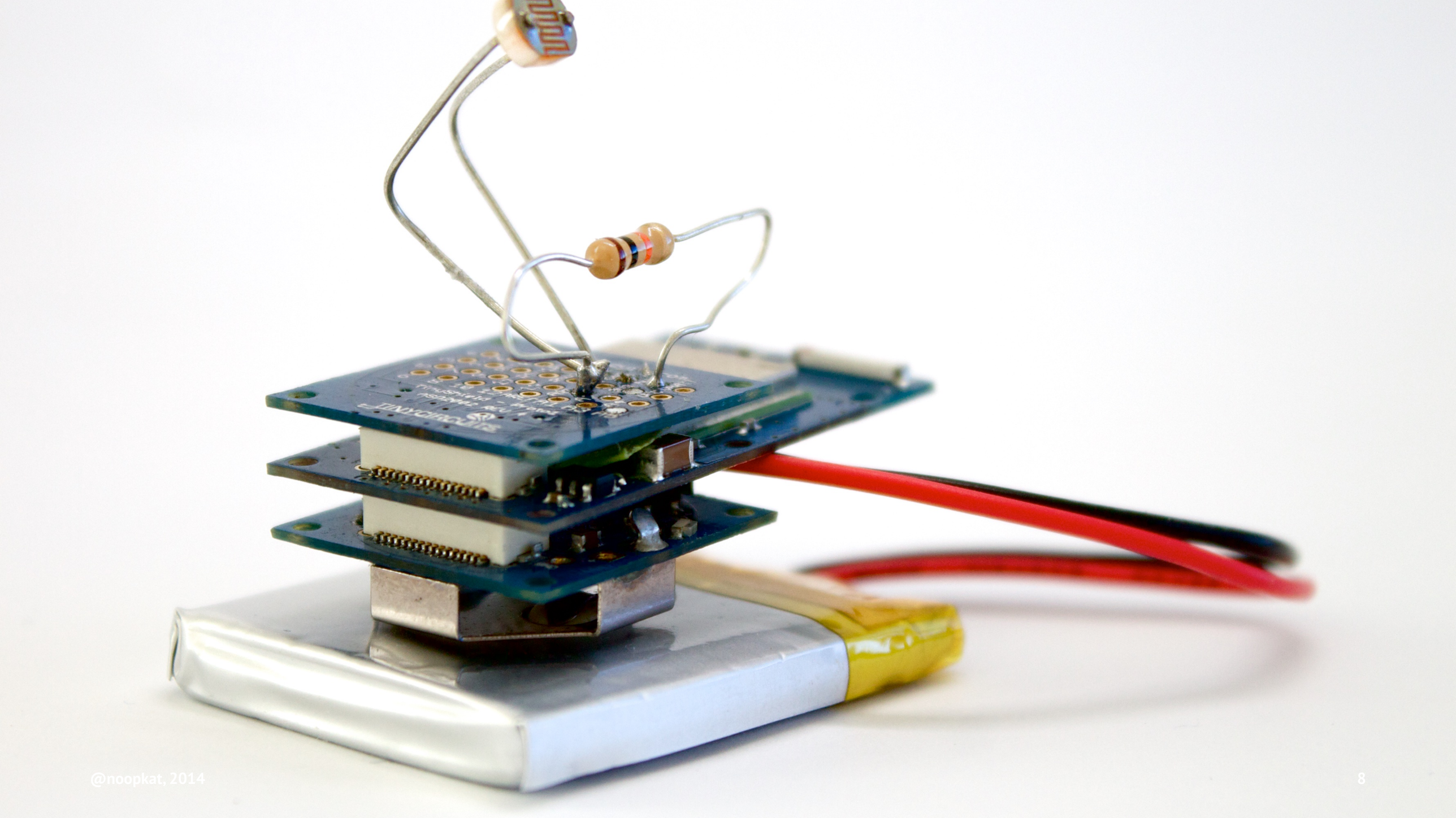
```
git clone https://github.com/noopkat/blend-micro-io.git
npm install
node test.js
```

edit test.js for fun!

NodeJS/npm assumed to be installed already

I like to make stuff

I like to make **fun** stuff



IoT

— Application code

— Data

— Security

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— Security

— **Devices**

Internet of Things

Internet of **Things**

Building hardware

Building **hard**ware

Standard Prototyping Workflow

1. Arduino

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Standard Prototyping Workflow

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4. **Write -> compile -> upload**
5. **Write -> compile -> upload**
6. **Write -> compile -> upload**

More Pain

— Dependency management

— fragmented library sources

• • •

(this is actually supposed to be more fun)

NodeJS

— platform built on Chrome's JavaScript runtime (V8)
— build services with JavaScript
— event driven, ideal for handling external events, such as those from devices
— small module mentality (over 100k packages available for d/l)

Johnny-Five

— Library for interacting with hardware in NodeJS
— Rich, easy to use API
— Fast to get up and running with Arduino

Getting started

```
npm install johnny-five
```

Getting started

```
var five = require("johnny-five"),
    board = new five.Board();

board.on("ready", function() {
  // do Arduino things here
});
```

The 'Hello World' of hardware

```
var five = require("johnny-five"),
    board = new five.Board();

board.on("ready", function() {

  var myLed = new five.Led(13);
  myLed.strobe();

});
```

Can I prototype "real things" with this?

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- yes!

What's in an off the shelf device?

Fitness Device

1. 3 axis accelerometer

Fitness Device

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2. Vibration motor

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3. OLED screen

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Fitness Device

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5. Bluetooth enabled micro-controller

Fitness Device

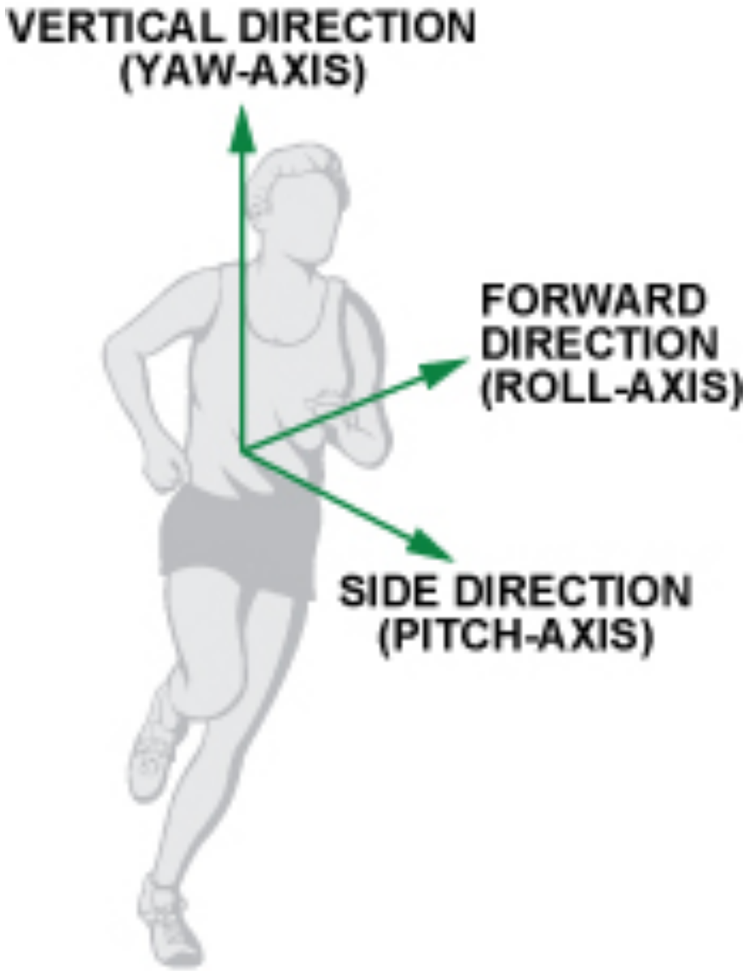
1. **3 axis accelerometer**
2. Vibration motor
3. **OLED screen**
4. Battery
5. **Bluetooth enabled micro-controller**

Accelerometer

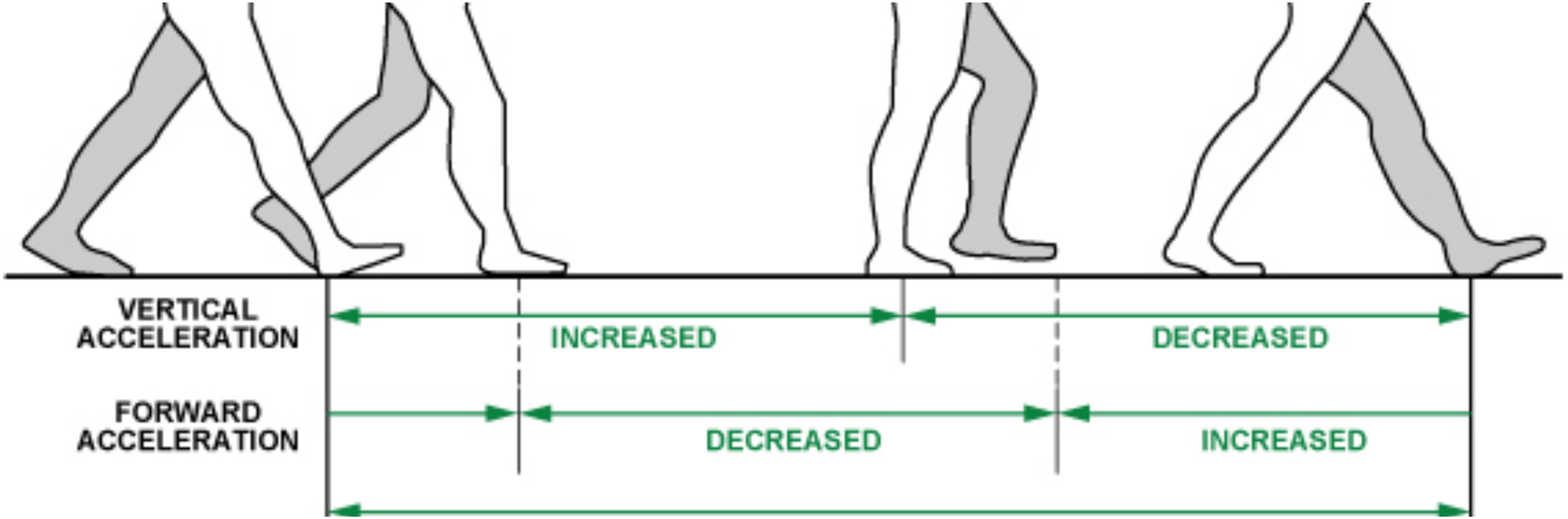
```
board.on("ready", function() {

  var accel = new five.Accelerometer({
    pins: ["A3", "A4", "A5"],
    sensitivity: 96, // mV/degree/seconds
    zeroV: 478 // volts in ADC
  });

  accel.on("data", function(data) {
    console.log("raw: ", data);
  });
```



credit: analog.com



credit: analog.com
check out: http://www.analog.com/library/analogdialogue/archives/44-06/pedometer.html

OLED display

```
var Oled = require("oled-js");

board.on("ready", function() {

  var oled = new Oled(board, five, 128, 32, 0x3C, "I2C");

});
```

Bluetooth Low Energy

```
var BLEFirmata = require("./");

var board = new five.Board({
  io: new BLEFirmata({"name": "BlendMicro"})
});

board.on("ready", function() {
  // carry on as normal here
});
```

Building **hard**ware

Don't let hardware scare you

photo credit: jmorgan via Flickr

Build things for the fun of it

(Thank you)