Hardware, Hula Hoops, & Flow

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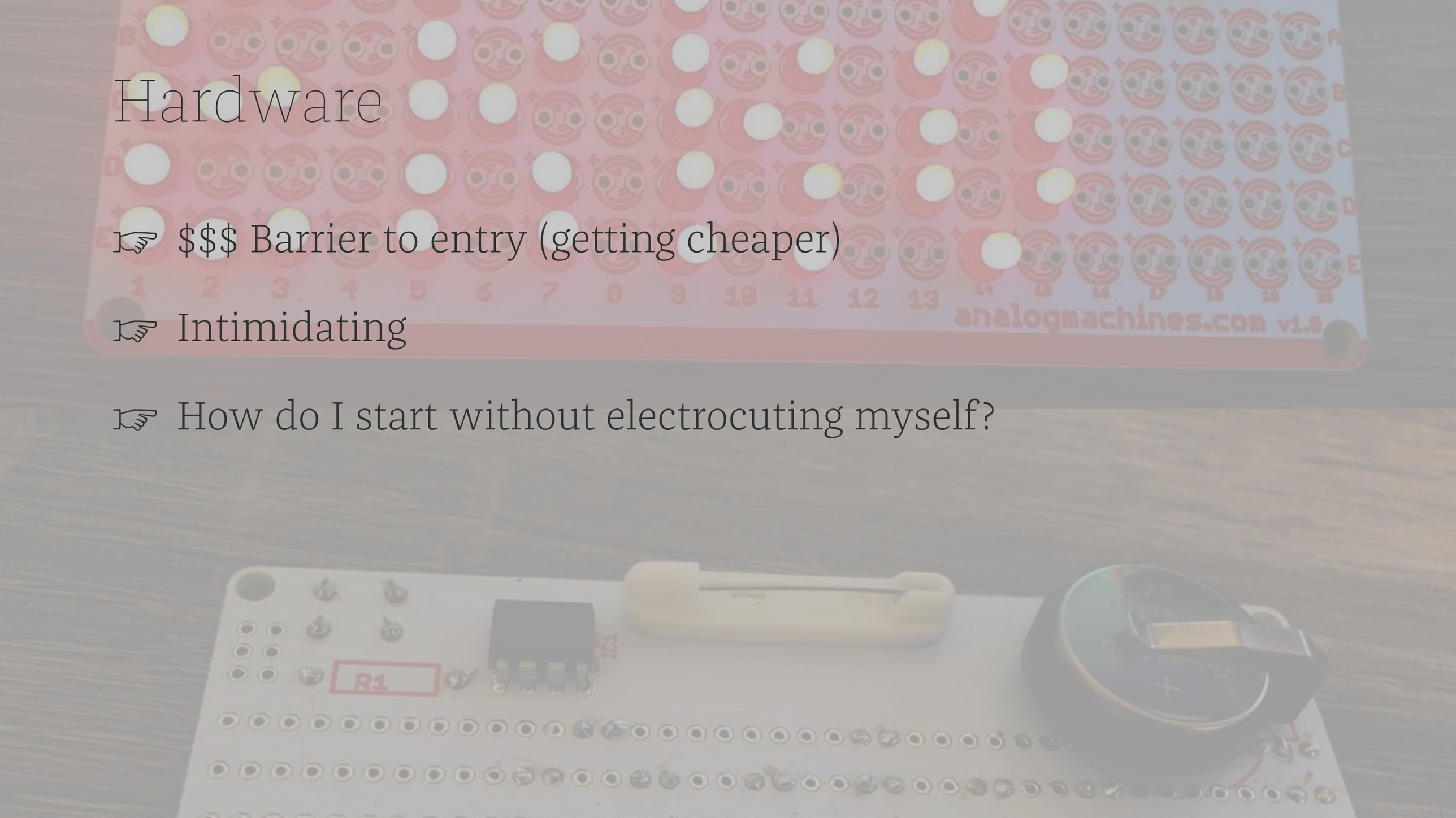
Who?

- 👉 Software Engineer (at Articulate)
- 👉 Beginner hula hooper
- 👉 Novice hardware tinkerer
- 👉 🍵🍵🍵🍵

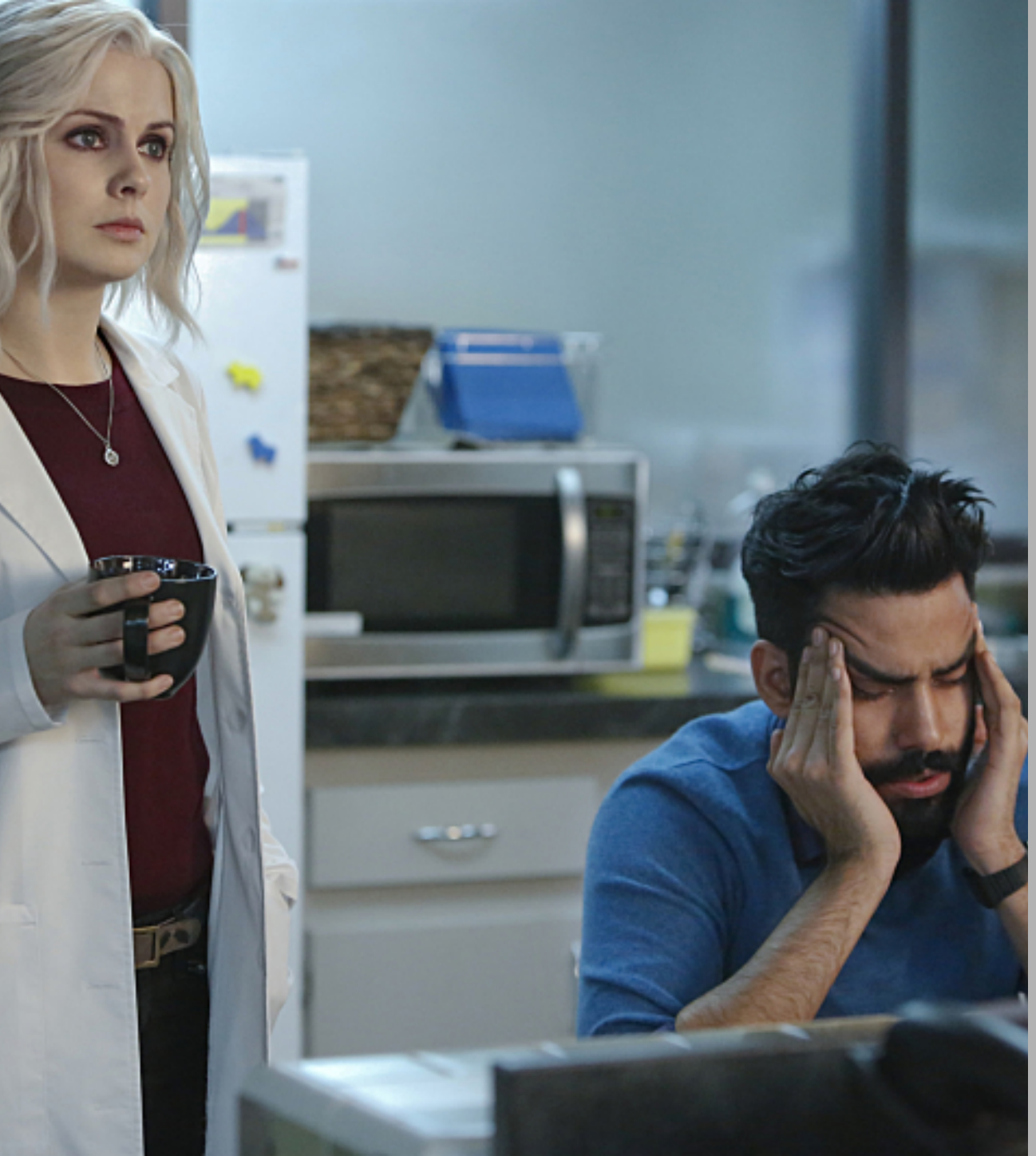
Hardware

- ☞ $$$ Barrier to entry (getting cheaper)
- ☞ Intimidating
- ☞ How do I start without electrocuting myself?



Hula Hooping

- ☞ $20 barrier to entry
- ☞ Hey I used to do that as a kid
- ☞ Wait that looks hard



Let's figure out an approach

Using SCIENCE!

① Internets!

② Friends

③ Failure?

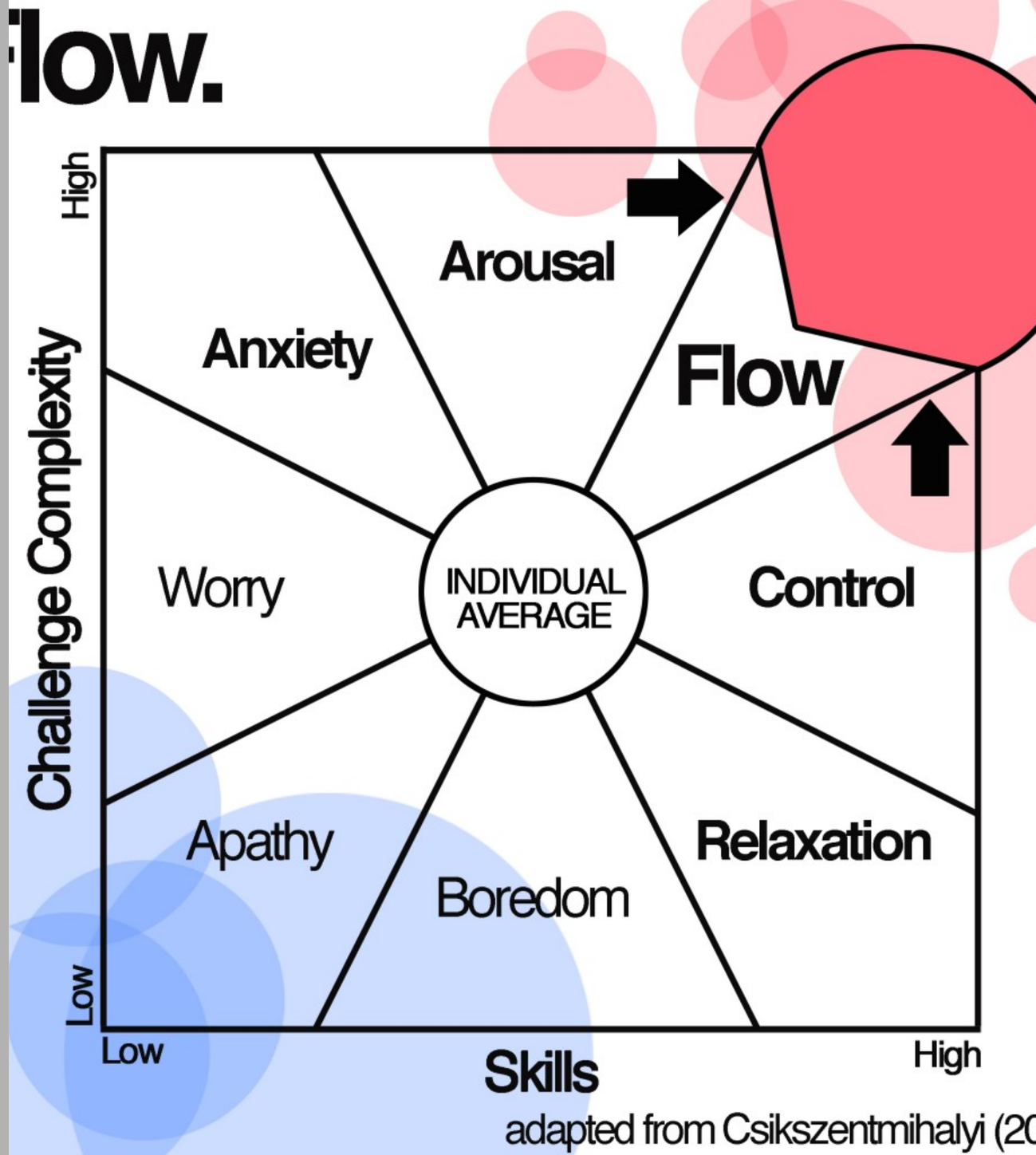
Flow

Flow

- ☞ When you are fully immersed in a task and have an energized focus
- ☞ Mihály Csíkszentmihályi (Me-High Cheek-sent-me-high)

High Skill + High Challenge = Flow

High Challenge?



“"Enjoyment appears at the boundary between boredom and anxiety"”

—Mihály Csíkszentmihályi

Why care about flow?

- ☞ Helps in improving skill
- ☞ Intellectually and emotionally stimulating
- ☞ Fun!

“"[Flow] makes the present instant more enjoyable, and it builds the self-confidence that allows us to develop skills..."”

—Mihály Csíkszentmihályi

Recall:

- ☞ Hardware: high challenge
- ☞ Hula hooping: high challenge


Let's Flow!

LED Hula Hoop steps:

① Design

② Solder

③ Code

④ Dance

Chance for flow at every step!

Mistakes Happen

Things Break

The Hoop Will Drop

Curse you gravity

This is okay!

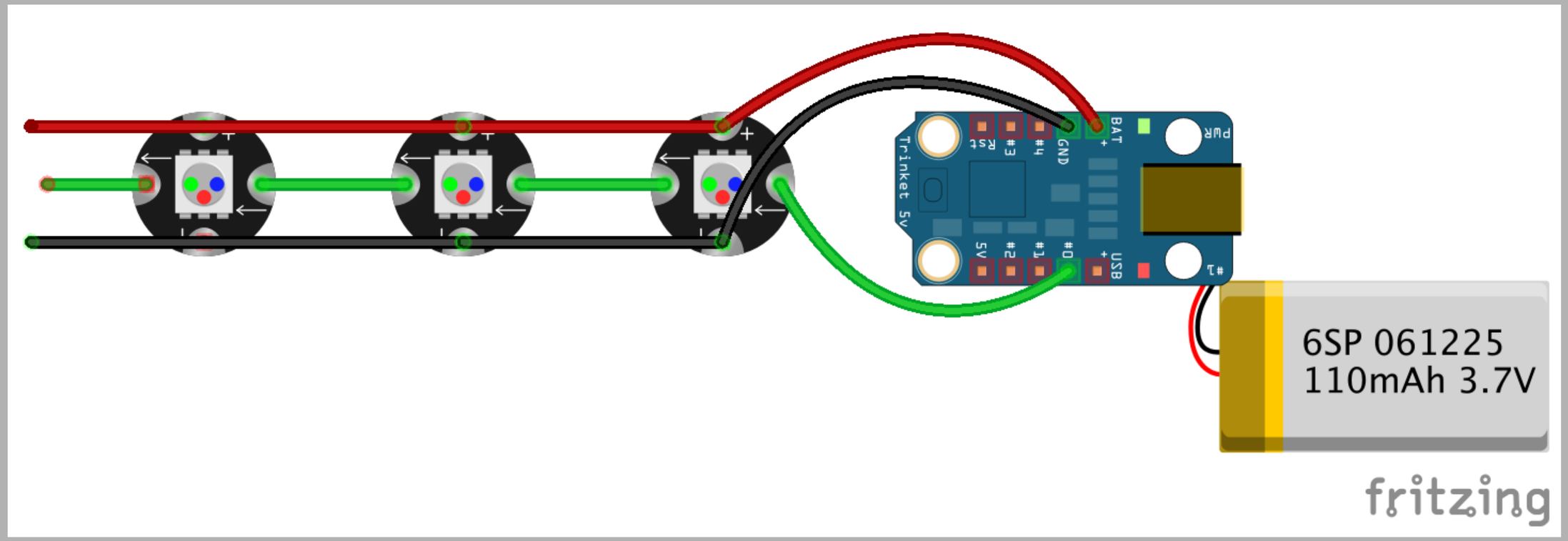
This is GOOD!

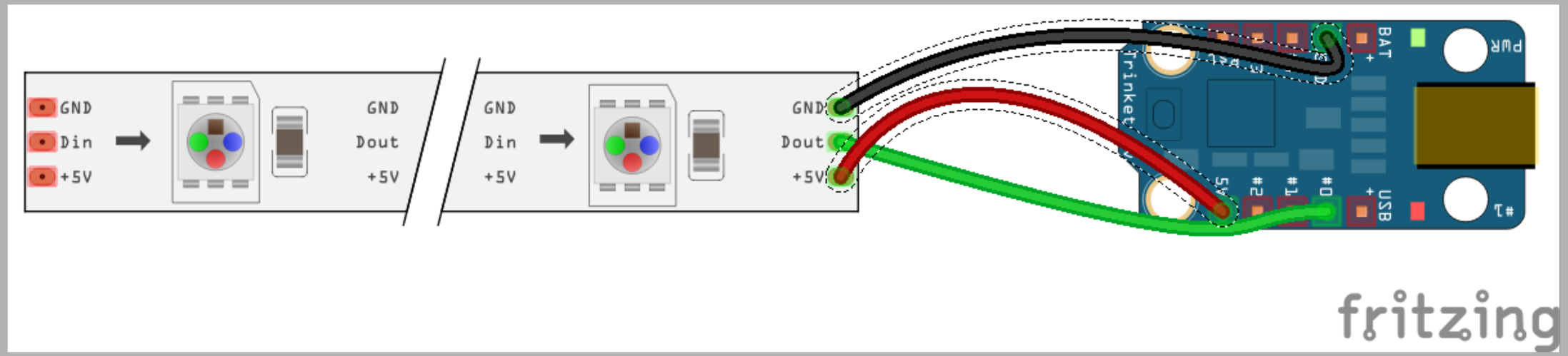
Hard things are important to flow

Flow is good for your brain

Therefore, hard things are good for your brain

Failure is just a step on the way to a happy brain! 💙


Trinket 5v
RST
#3
#4
GND
BAT
PWR
5V
#2
#1
#0
USB
#L
6SP 061225
110mAh 3.7V
fritzing


GND
Din
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GND
Din
+5V
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+5V
Trinket
BAT
USB
PWR
#2
#1
#0
fritzing

```
#include <Adafruit_NeoPixel.h>
#ifdef __AVR__
  #include <avr/power.h>
#endif

#define PIN 0

Adafruit_NeoPixel strip = Adafruit_NeoPixel(40, PIN, NEO_GRB + NEO_KHZ800);

void setup() {
  strip.setBrightness(127);
  strip.begin();
  strip.show(); // Initialize all pixels to 'off'
}

void loop() {
  uint16_t i;
  uint16_t c = 1;

  // go through all the pixels and change the color
  for(i=0; i<strip.numPixels(); i++){
    strip.setPixelColor(i, c, c, c);
  }

  c++; // increment the color
  delay(20); // sleep for a bit so we can see it
}
```

```
void loop() {
  uint16_t i;
  uint16_t c = 1;

  for(i=0; i<strip.numPixels(); i++){
    strip.setPixelColor(i, c, c, c);
  }

  c++;
  delay(20);
}
```

Flicker fusion threshold:

Around 13 milliseconds

Basic electronics kit (or MVHardware stuff)

- ☞ Soldering iron (hopefully with a stand)
- ☞ Solder
- ☞ Desoldering pump
- ☞ Helping hand tool


Thank you
PHARAH

Some kits to practice soldering

- ☞ Make: Color Visualizer Kit
- ☞ Solder: Time II Watch Kit
- ☞ LED Dice (Die) Kit
- ☞ Adafruit MintyBoost USB Charger Kit
- ☞ MiniPOV 4 Kit - DIY Full-Color POV and Light Painting Kit (my first ever)
- ☞ Conway's Game of Life Kit

References & Resources

- ☞ Flow by Mihaly Csikszentmihalyi
- ☞ Beyond Boredom and Anxiety by Mihaly Csikszentmihalyi
- ☞ Adafruit Guide To Excellent Soldering
- ☞ Adafruit NeoPixel Überguide
- ☞ Instructables: Make a Hula Hoop