

HARDWARE.
HULAHOOPS. &
FLOW
LINDSEY BIEDA

WHO?

- > SOFTWARE ENGINEER (AT ARTICULATE)
- > BEGINNER HULA HOOPER
- > NOVICE HARDWARE TINKERER



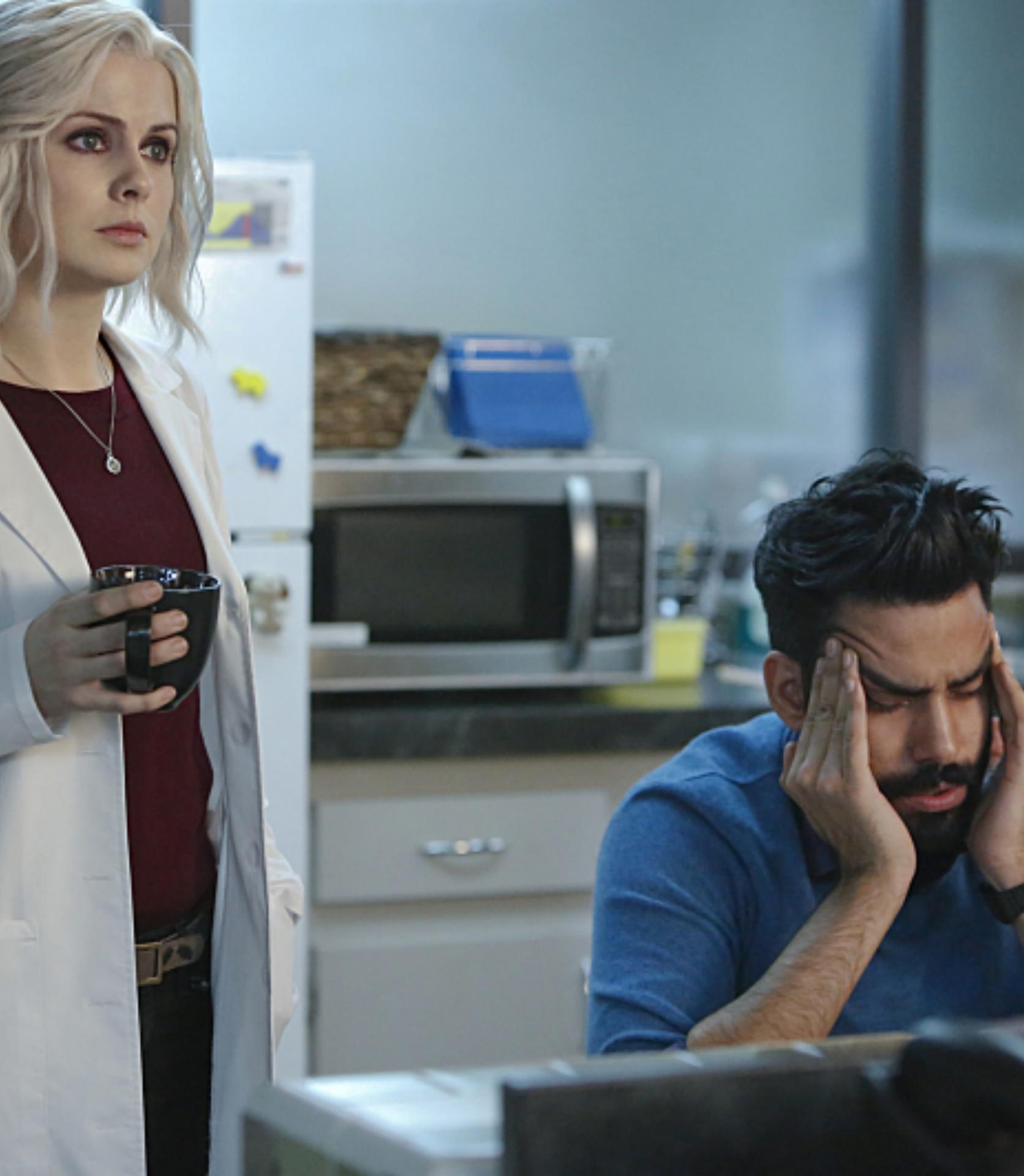
HARDWARE

- > \$\$\$ 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?

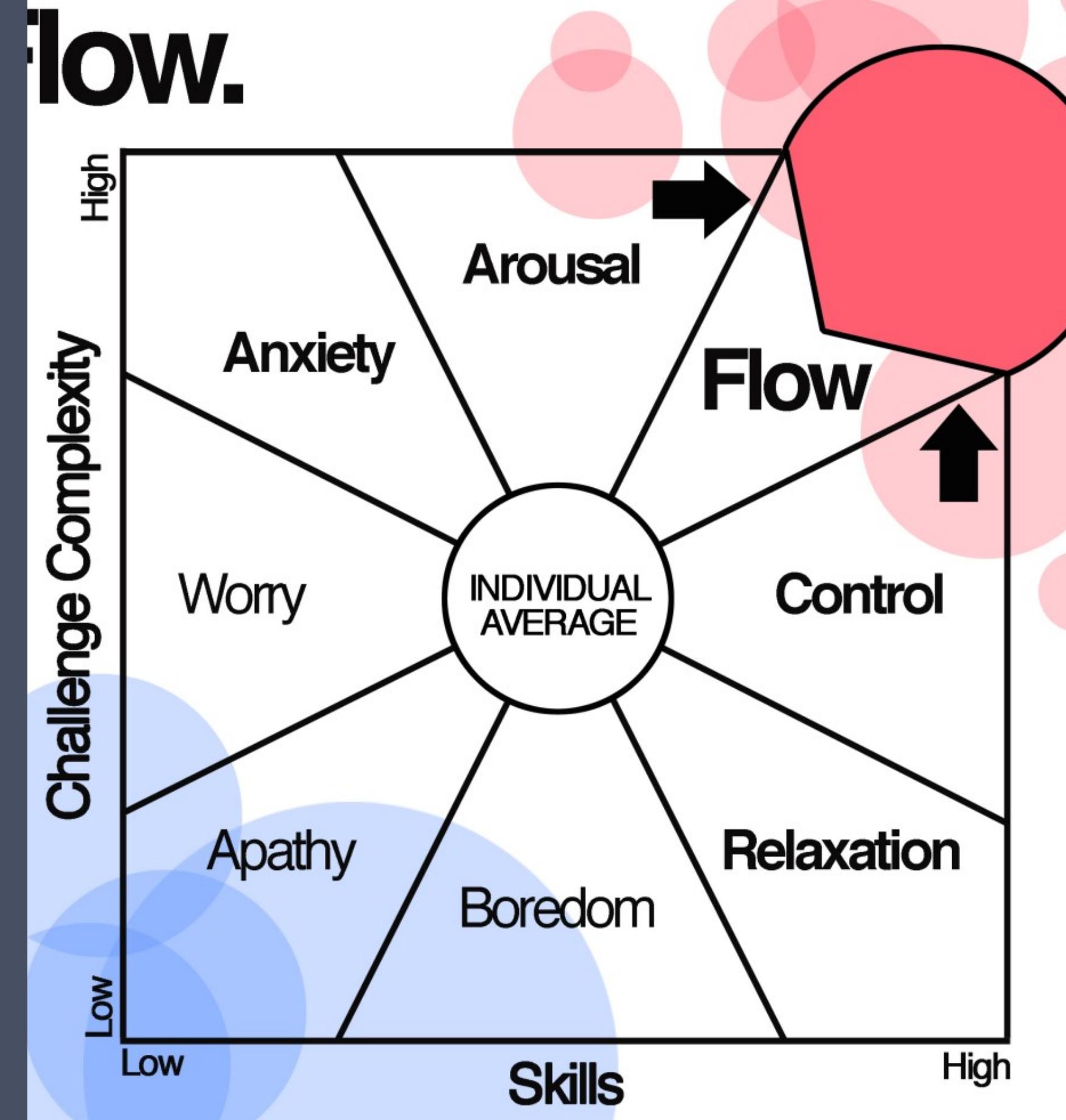
A waterfall cascades down a dark, rocky cliff face, surrounded by lush green tropical vegetation. The water falls from the top right, creating a white spray at the base. The background is filled with dense foliage and trees.

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 CSÍKSZENTMIHÁGYI

RECALL:

- > HARDWARE: HIGH CHALLENGE
- > HULA HOOPING: HIGH CHALLENGE

A scene from the video game Overwatch. On the left, McCree stands in a desert landscape, wearing his signature cowboy hat and holding his shotgun. On the right, Mei is kneeling on the ground, wearing her winter-themed suit with a large fur-trimmed hood. The background shows industrial structures and a clear sky.

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!

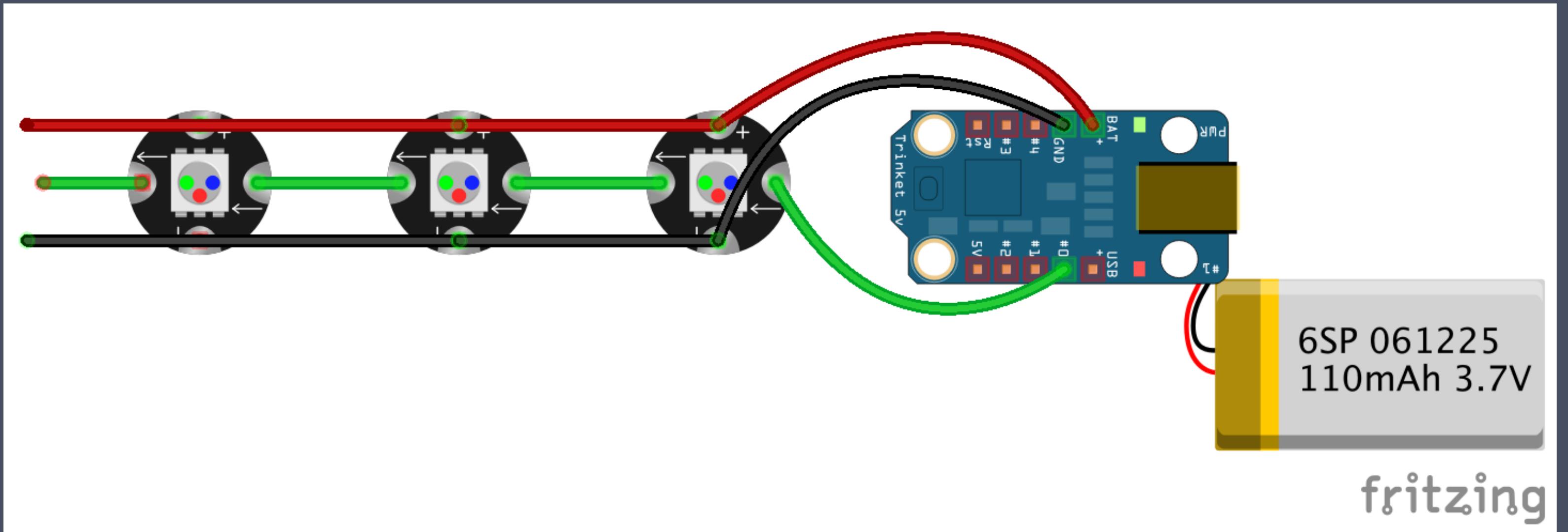
HARD THINGS
ARE IMPORTANT
TO FLOW

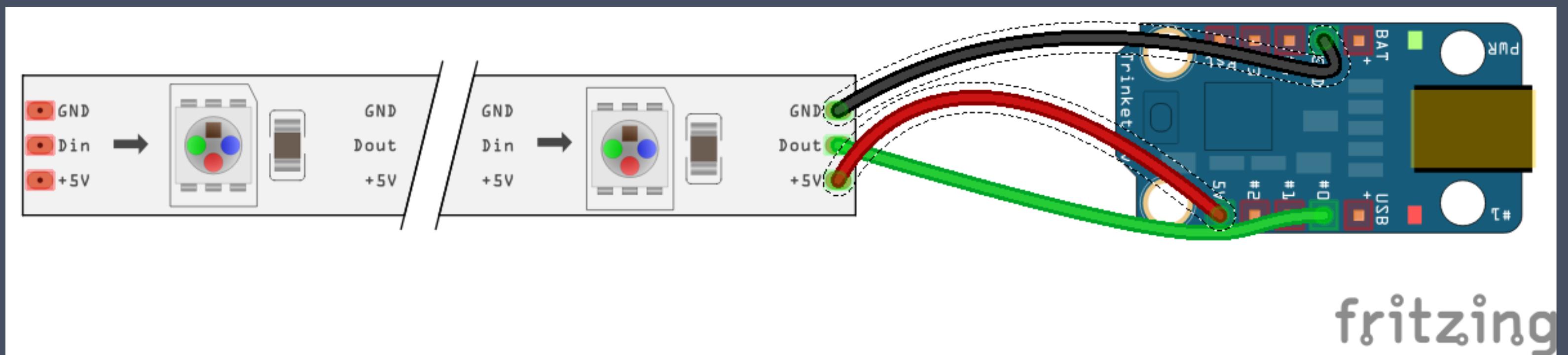


FLOW IS GOOD
FOR YOUR
BRAIN

THE THEREFORE.
HARD THINGS
ARE GOOD FOR
YOUR BRAIN

FAILURE IS JUST A STEP
ON THE WAY TO A HAPPY
BRAIN! ❤





```
#include <Adafruit_NeoPixel.h>
#ifndef __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**

A character portrait of Pharah from the video game Overwatch. She is a female soldier with short brown hair, wearing a blue and gold futuristic armor suit. She is standing in a desert environment, with sand dunes and a clear blue sky in the background. Her arms are crossed over her chest, and she has a serious expression. The name "PHARAH" is printed in large, bold, black letters across the upper right portion of the image.

PHARAH

THANK YOU

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