

ZIACONO BADGE DESIGN & POSTMORTEM

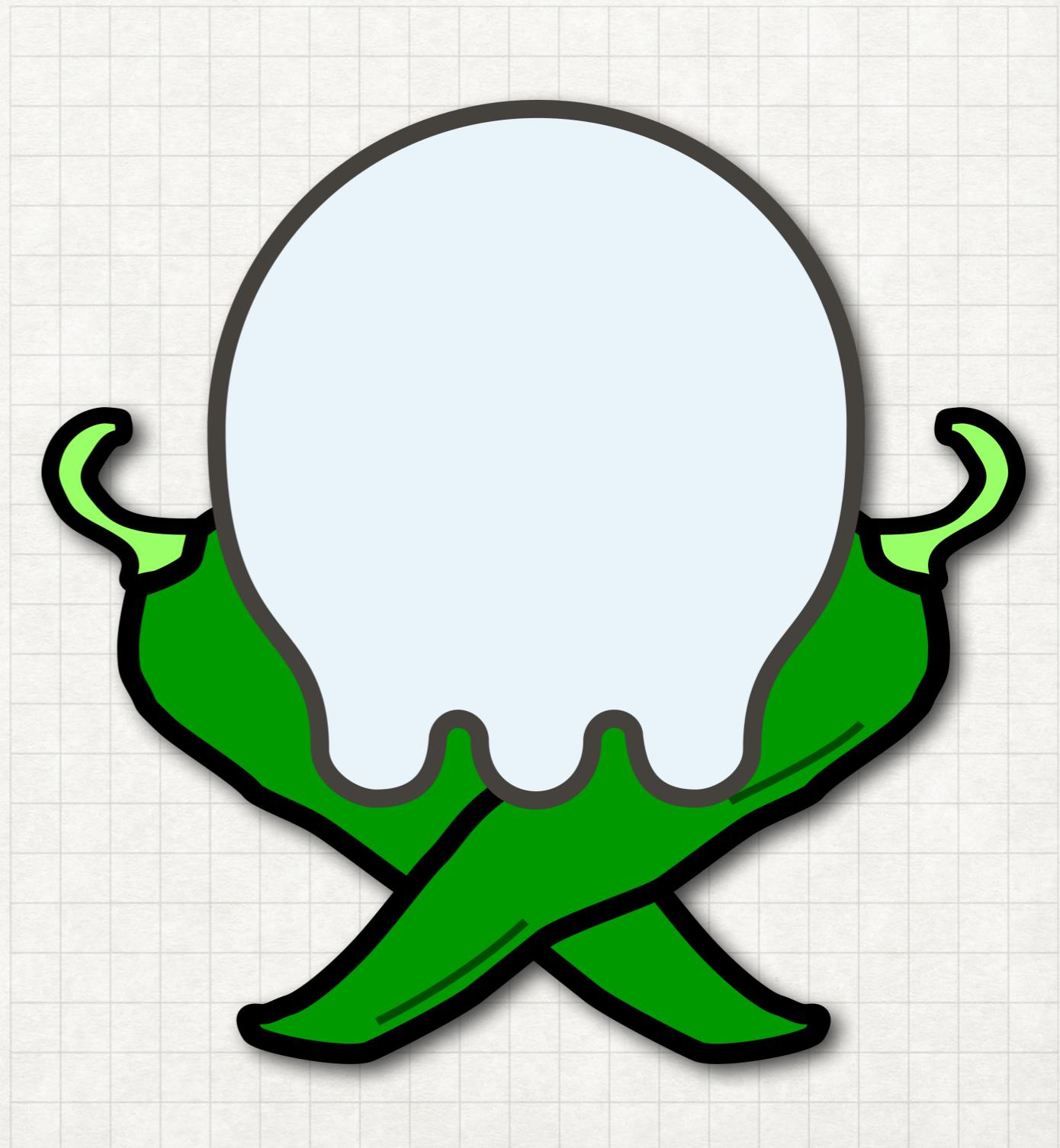


INITIAL IDEA
SIMPLE
BLINKY
TOUCH



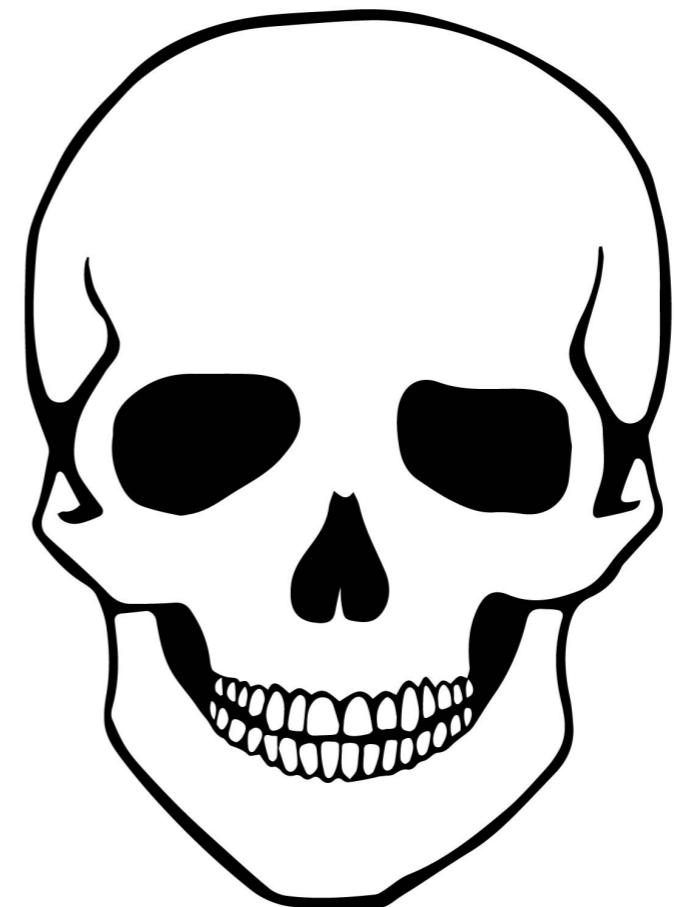
INITIAL REVISION

- First design didn't easily come together once I started pulling out image elements.
- Looks like a Metroid landed on some chilies
- Eyes and microcontroller didn't easily fit into design



REV 2

- Visually more interesting
- Fit better with the sharp edges of the components



PCB DESIGN DONE QUICK

- First gather artwork.
- In Illustrator, import a bitmap, trace it, add anchor points x2, simplify paths (remove curves)

<https://hackaday.io/project/18508-mr-robot-badge/log/53901-this-is-how-you-do-art-in-kicad>

Art Layers

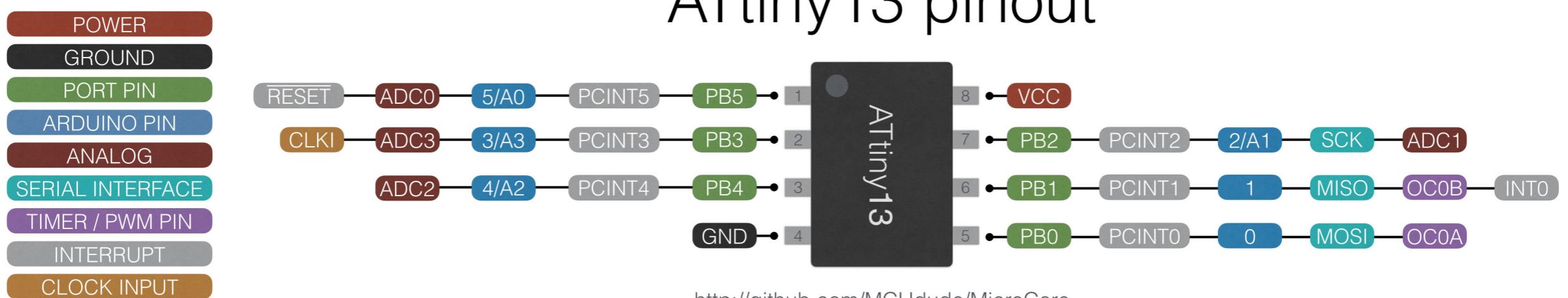
- Board Outline
- Silkscreen Image
- Text
- Copper Areas?

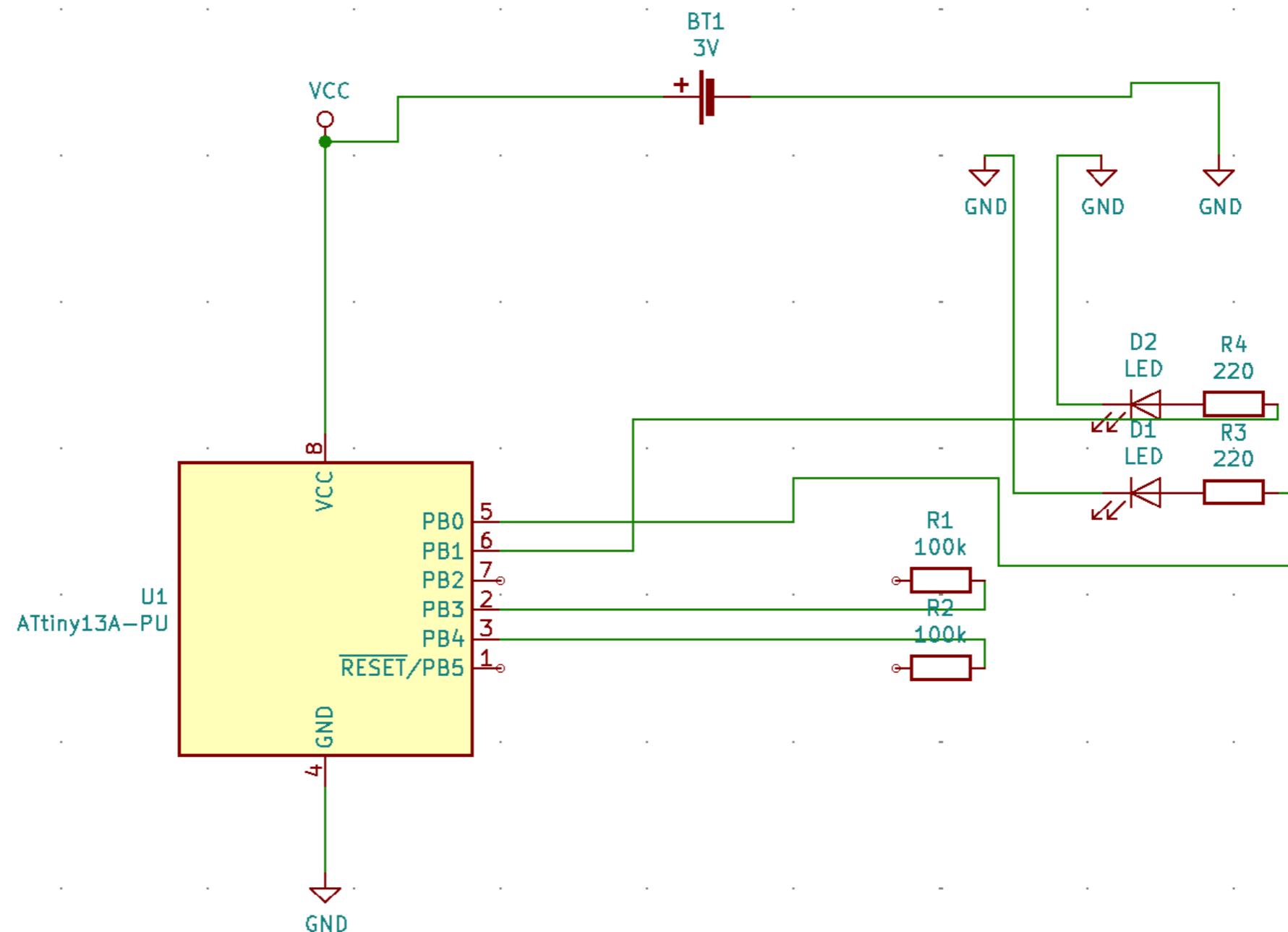


BUILD SCHEMATIC

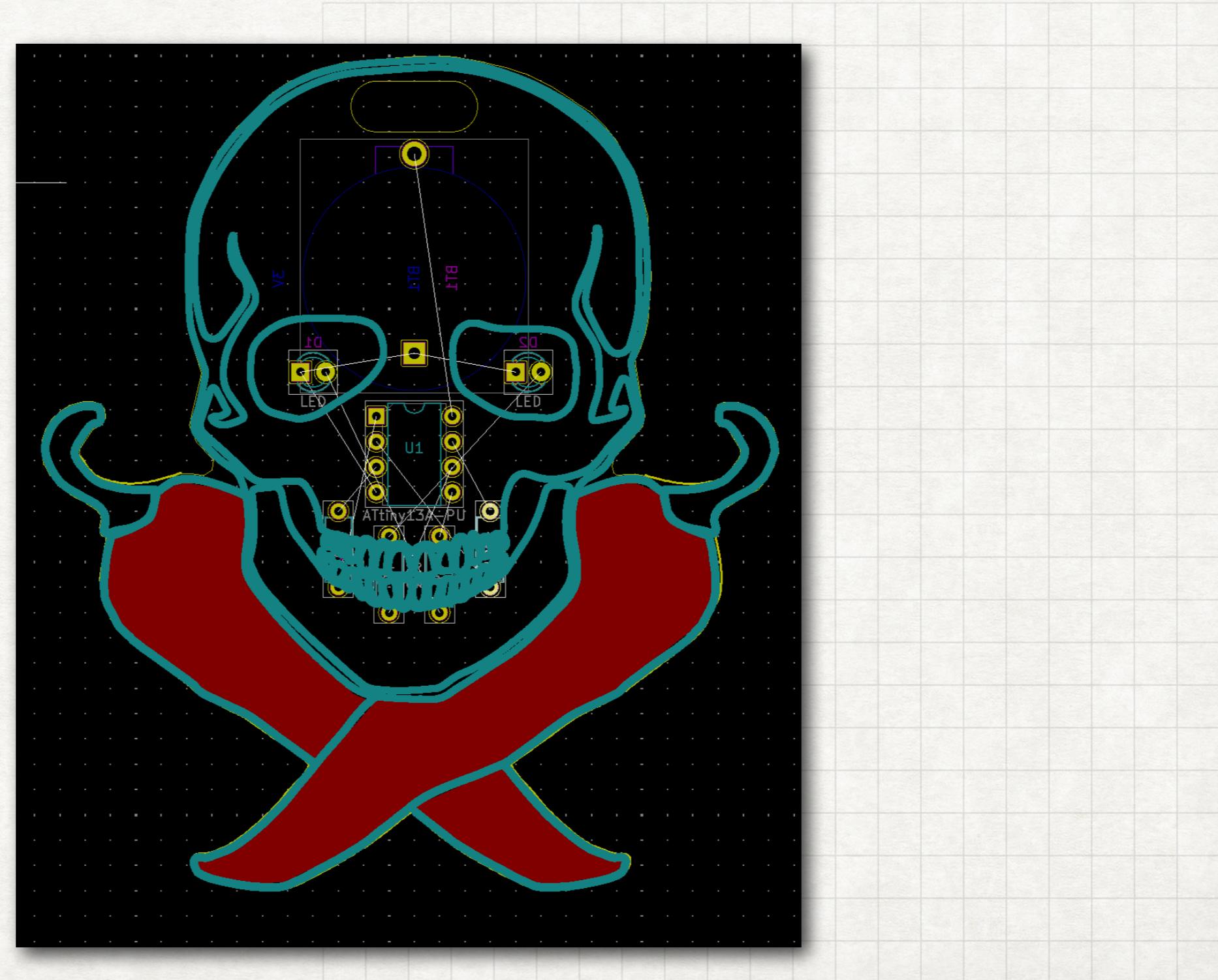
- ATTiny13A MCU - Cheap & Simple
- Two LED's
- Battery
- Resistors for LEDs and shock protection on capacitive pads

ATTiny13 pinout





PLACE PARTS, ROUTE CONNECTIONS



SHIP IT / COST BREAKDOWN

- JLCPCB Way
- \$39 with express shipping from china. From click to received ~ 1.5 weeks
- \$20 for 20 ATTiny13A's
- \$12 for Sockets
- \$9 for LEDs
- \$9 for Resistors
- \$6 for Battery Holders
- \$15 for 50 CR2032 Batteries
- TOTAL: \$115 — \$5.50 Each Badge

ISSUES

- Lack of time to rewrite TinyTouchLib
 - Only one input with default Library
 - Lack of IO pins to use another standard library
- Power Consumption
 - Could have written code to use CPU Sleep and interrupts to save battery, but TinyTouchLib needs constant checking of the Cap Touch Pad
- Better shielding of Cap Touch Pad
 - Touching just about anything connected to the MCU causes a touch sense event

FINAL NOTES

- Lack of time caused issues getting Capacitive Touch lib to work properly
- Capacitive touch sensing was too sensitive, caused issues with false input events
- However I did learn a lot about this and will be better prepared for next design if I choose to incorporate cap touch.
- Overall was happy with the output for a one week project