

Week 14

Keel Bone Chicken Project

12/01/2025

This Week

This week's progress

- Web App Development
 - Data logger works without need of constrained app
- Case Study on Resistive vs. Capacitive Sensors
- Rev. 2 PCB Started
 - Component placement on board

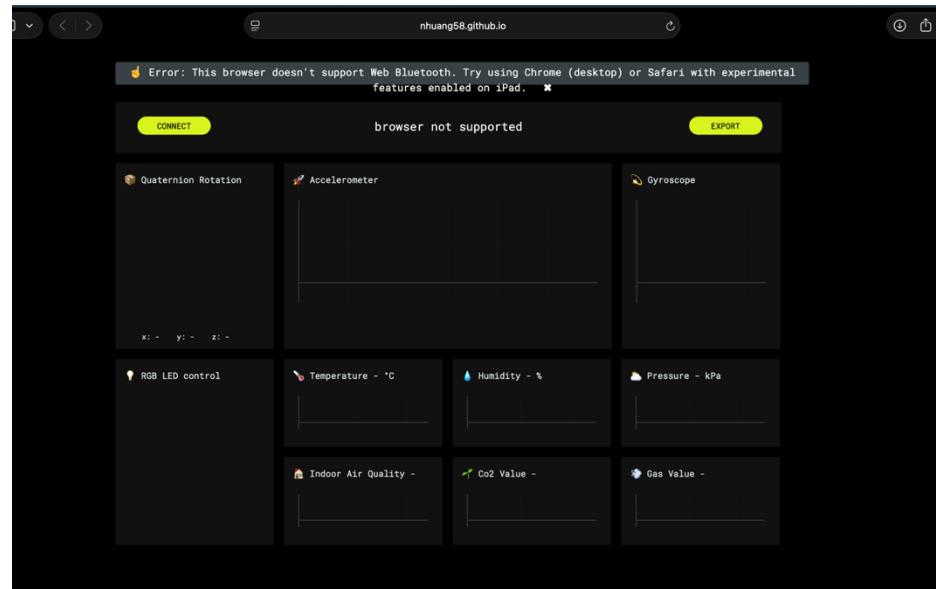
Web App Development

Data logger locally hosted

- Website now live at:

https://nhuang58.github.io/Biomedical_Device_PCB/

- Can be locally hosted, no need for a server
- Data needs to be pulled when collection complete
- Unsure if bandwidth will be an issue
- Working on compatibility with hardware (iPads)
- Determine if iPads are realistic to run with BLE, or another approach is needed



Live website: https://nhuang58.github.io/Biomedical_Device_PCB/

Case Study on Resistive vs. Capacitive Sensors

3 Main Sources for Research

- Digi-Key Electronics
- Mouser Electronics
- Interlink Electronics (Contacted)

Case Study on Resistive vs. Capacitive Sensors

Digi-Key Electronics: 1-800-344-4539

- Resistive vs. Capacitive Sensors
- Strain Gauge – Resistive:
 - CEA-05-250-A350 (\$18.00)
 - (.45 x .18 inches) Area
- Force Gauge – Only Resistive Options:
 - Load Cell Device: Based on Pressure
 - Used in scales, weight, etc.
 - 3917-GHB-10-ND (\$5.86)
 - 12 mm diameter (round area)
 - K-011-0400-80-NE2-K1-G1 (\$130.87)
 - 12 mm diameter (round area)

Case Study on Resistive vs. Capacitive Sensors

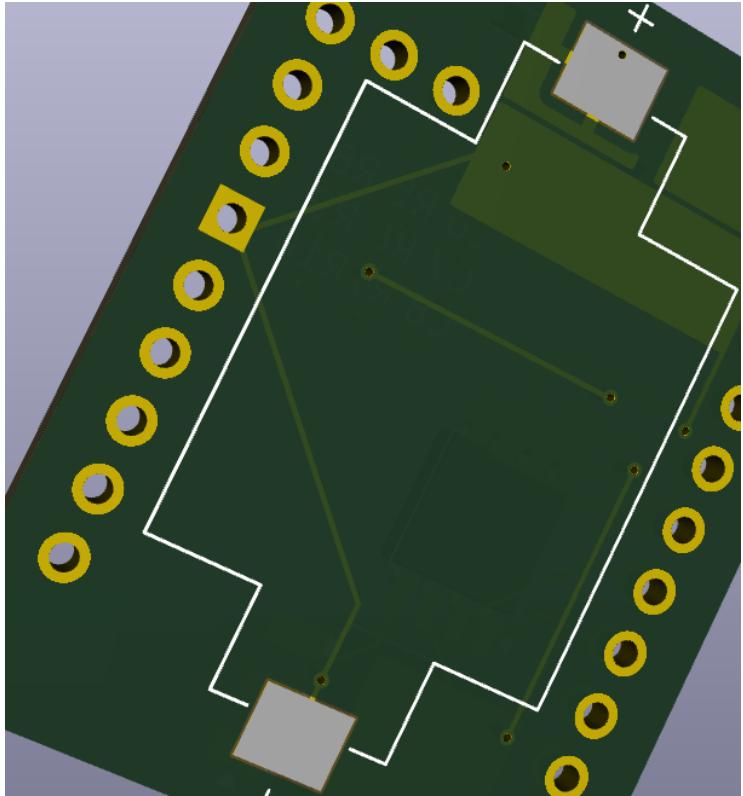
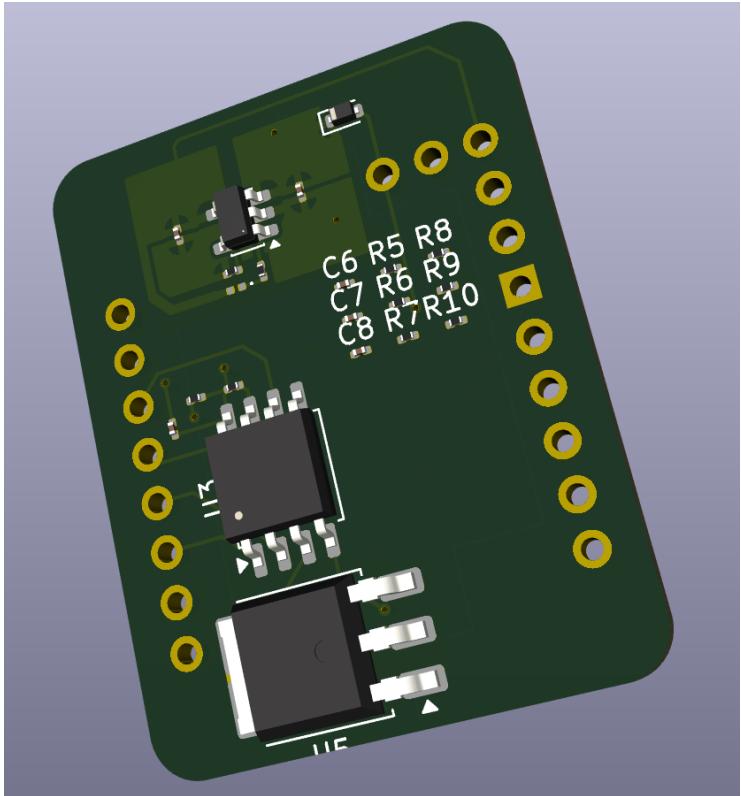
Mouser Electronics: 1-817-804-3888

- Resistive vs. Capacitive Sensors
 - Unable to assist with applications due to viability concerns
- Resistive Force Gauge:
 - <https://www.mouser.com/c/sensors/force-sensors-load-cells/?operating%20force=20%20N&output%20type=Analog>
 - Higher end product (~\$90-110)
 - Load Cells are commonly used, almost entirely resistive
 - Not many options for capacitive sensors in Mouser's arsenal
- Resistive Strain Gauge:
 - Mouser PN: 485-4542 (\$3.95 per unit)
 - Very cheap unit cost for resistive vs. capacitive units
 - However, only capacitive sensors are reliably capable at running at 3.3 V supply
 - <https://www.mouser.com/c/sensors/force-sensors-load-cells/?operating%20supply%20voltage=3.3%20V&sensor%20type=Force%20Sensor>
 - Middle end cost (~\$30-50)

Rev. 3 PCB Started

Component Placement on Board

- Need to resize the battery
- Consider size constraints for PCB again



Next Week

Blockers & Next Week's Work

- Analyze what can be done with Hardware issues
- Refine Rev. 2 of PCB
- Send Sensors + Quotes of Sensors to Charles

Blockers:

- Hardware restrictions given by Agriculture departments
 - Could a computer be used instead? It would simplify a lot
 - What other hardware can be purchased and used at the farm?

Thank You

Purdue Polytechnic Institute