



BITNG LAB UPDATE

Carl Demolder

Date 3/18/2021

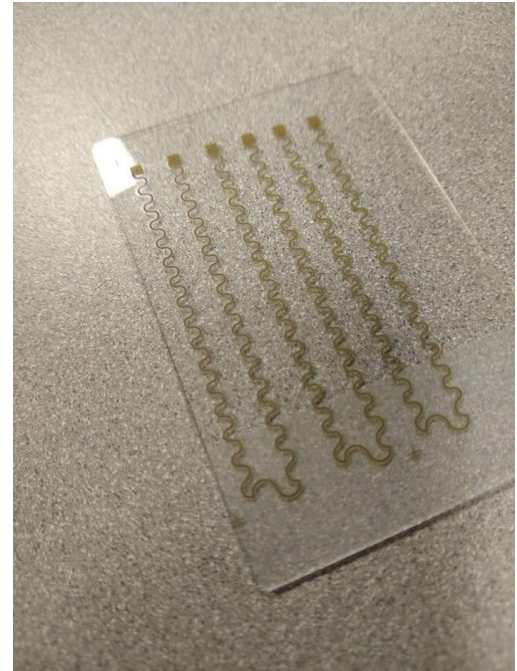
Progress from last week

- Shriner's project
 - Strain gauge
 - Firmware
 - Literature review
- Pressure Board UIUC
- Low Power ECG

SHRINER'S PROJECT

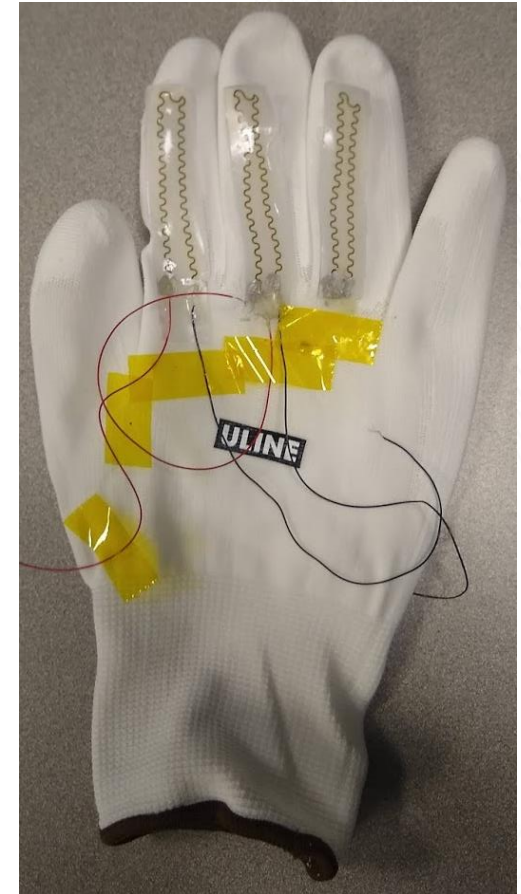
Strain Sensor: Round #8

- Sensor batch: 2/26
 - Manufacturing: Finished
 - Conductivity Test: ~600 ohms
 - ASSEMBLY: Finished
- Sensor batch: 3/12
 - Manufacturing: Finished
 - Assembly: To do
- Takeaways:
 - Changing 200 um nozzle to 300 um nozzle
 - Vibrating vial of AgNW to break up clumps
 - Change out vial frequently to ensure enough material is deposited



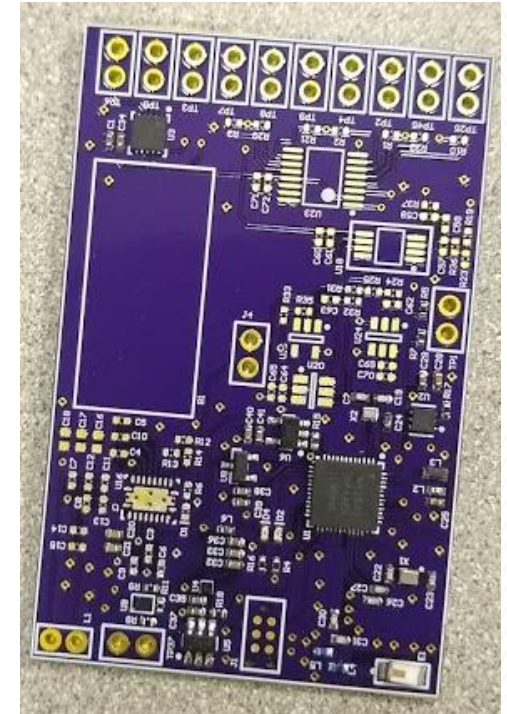
Strain Sensor Glove: #1

- Strain Sensor #1:
 - Broke during finger bending
- Strain Sensor #2:
 - Not responsive
- Strain Sensor #3:
 - Ag paint connection broke
- Takeaways:
 - Reduce strain sensor length
 - Increase the radius of the serpentine pattern
 - Increase the number of serpentines to increase the gauge factor



Firmware/Software Development

- Strain Sensor firmware (3/15 – 3/29)
 - ADG728: TO-DO
 - DAC5571: TO-DO
 - ADS1100: TO-DO
- Sensor Glove GUI (3/29 – 4/15)
 - Python
 - BLE dongle



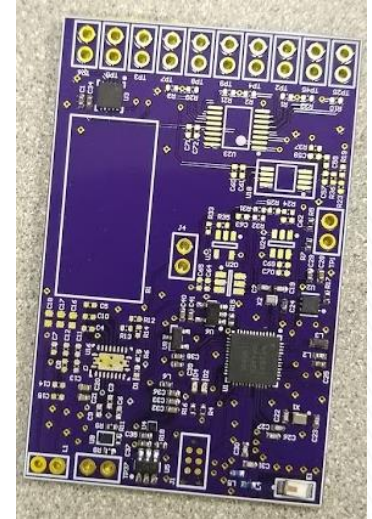
Literature review

- Initial draft complete
 - Emailed for review 3/15
- Figures complete
- Waiting for edits...

PRESSURE BOARD UIUC

Pressure Board

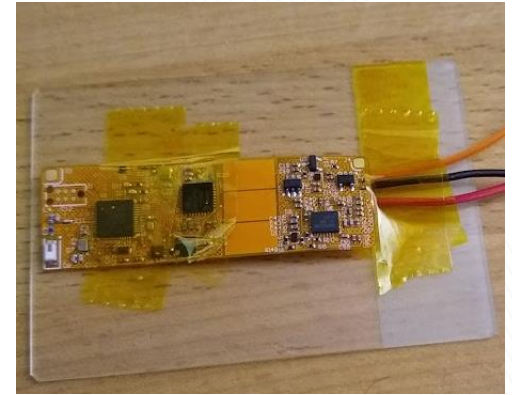
- Pressure sensor Flex PCB:
 - Arrived 3/12
 - Will assemble by 3/19
- Capabilities:
 - BLE
 - Magnetic Switch
 - Battery (remote battery charging)
- Board delivery
 - 1 flex board to Jihoon for delivery
 - 1 rigid board for Bu for App development



LOW POWER ECG

Power Consumption X02

- System off: 1.20 μA
- Advertising: 538 μA
- Long-term Data recording: 996 μA
 - long-term storage
 - ECG and Temperature
 - 7 Day Battery Capacity: $\sim 210 \text{ mAh}$
- BLE Data transmission: 903 μA
 - Instant data communication
 - ECG and Temperature
 - 7 Day Battery Capacity: $\sim 152 \text{ mAh}$

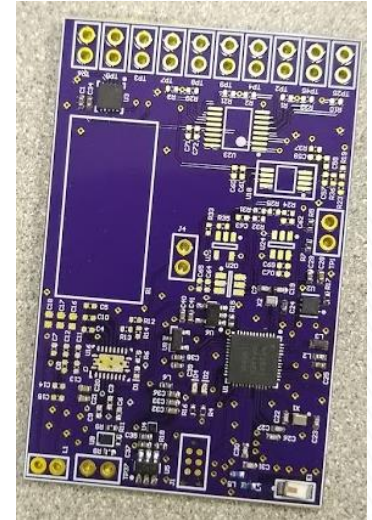


1908-1350-ND
170 mAh

(13.3 mm x 34.5 mm x 5.5 mm)

Low Power ECG

- Moving forward:
 - Continuous ECG/Temp data transfer
 - No Long-term data storage (inefficient)
- Board Bring Up
 - 1 flex board to Jihoon for assembly/packaging
 - Battery test to confirm battery life
 - 1 flex board for Bu for App development



PATH FORWARD

Path forward (3/15/21 – 3/22/21)

- Shriner's Project:
 - Strain gauge, round #9
 - Firmware development
 - Literature review update
- LP-ECG:
 - Support for Shinjae/Bu
- UIUC Pressure
 - Support for Jihoon/Bu
- Personal Schedule
 - Remote work: 3/20 – 3/28

APPENDIX