Bio-Sensor Wearable Development Board

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Date 9/21/2020

Outline

- Progress to date
- Shriner’s project
- Robotic arm
- Schedule
  - Gantt Chart update
- Path forward

PROGRESS TO DATE

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Progress from last week

- Firmware
  - DAQ Slave driver [IN PROGRESS]
- Hardware
  - Inductive charging [IN PROGRESS]
    - Trying to optimize coil size
    - Waiting for coils
  - RF wireless power harvesting
    - Waiting for ICs
- Pediatric wearable
  - Literature review [IN PROGRESS]
  - Block diagram [FINISHED]
- Robotic arm
  - Configured robotic arm to replicate movements

SHRINER'S PROJECT

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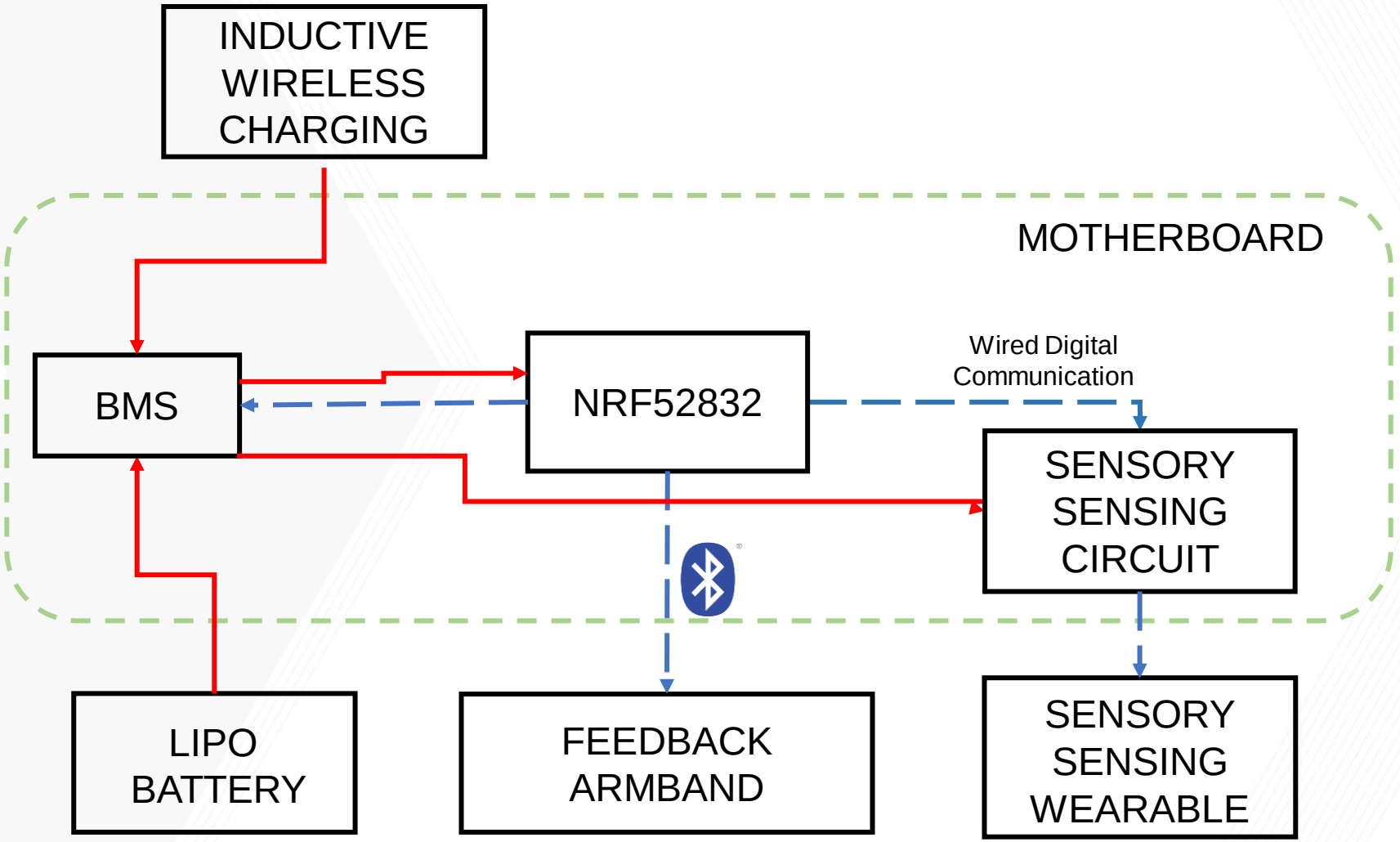
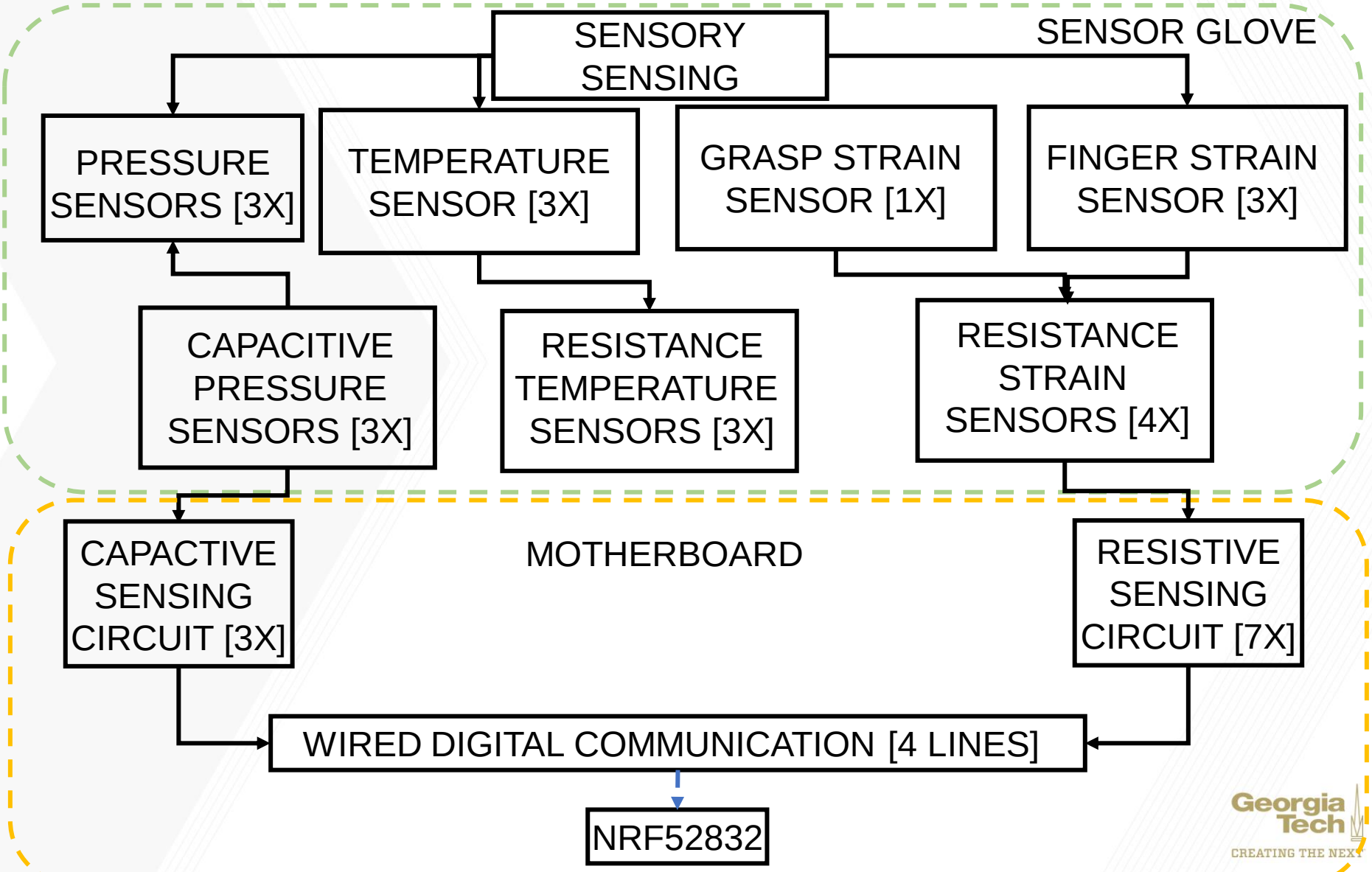
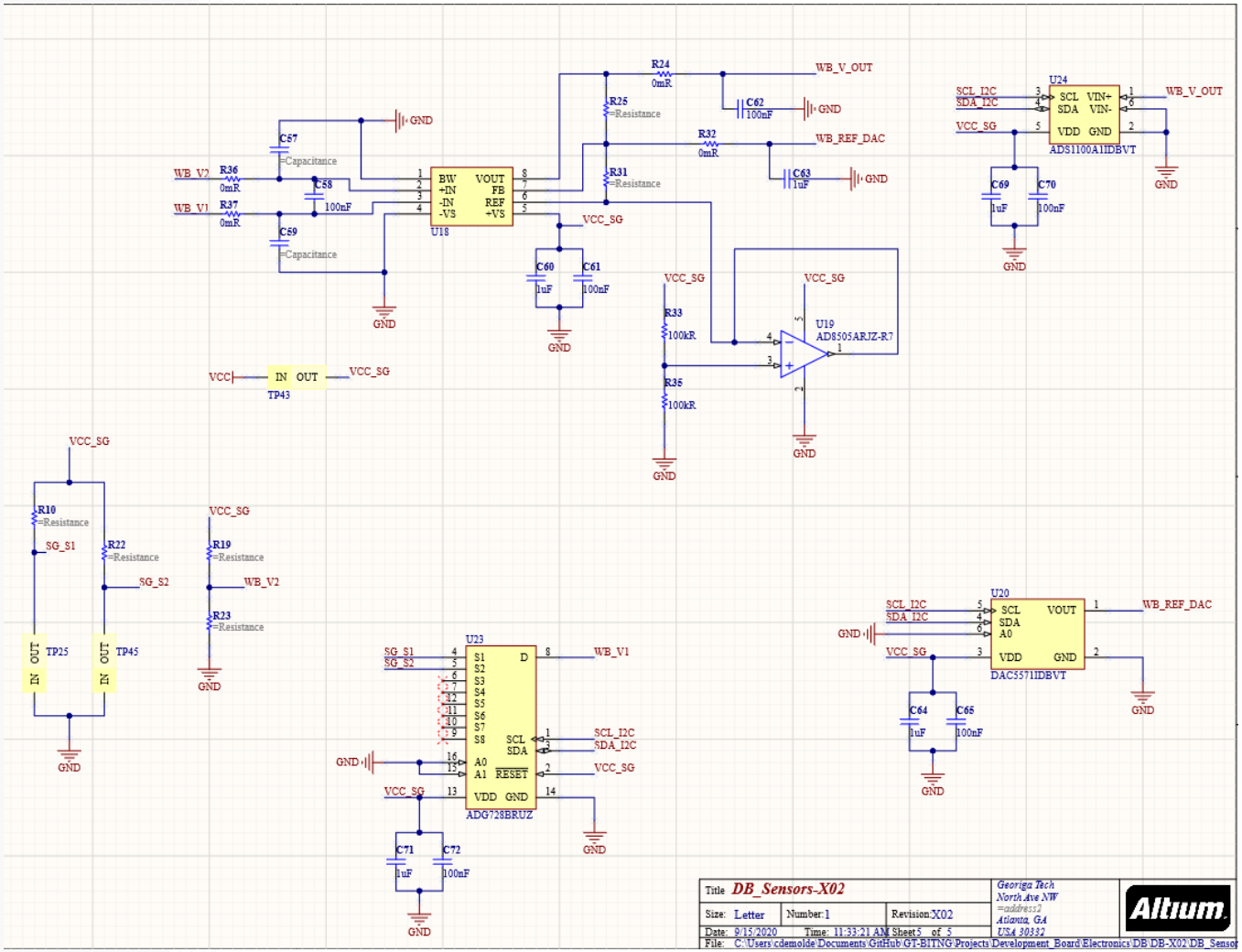
Block diagram-motherboard



Block diagram-sensory sensing



Resistive sensing circuit



Up to 8 resistance sensors

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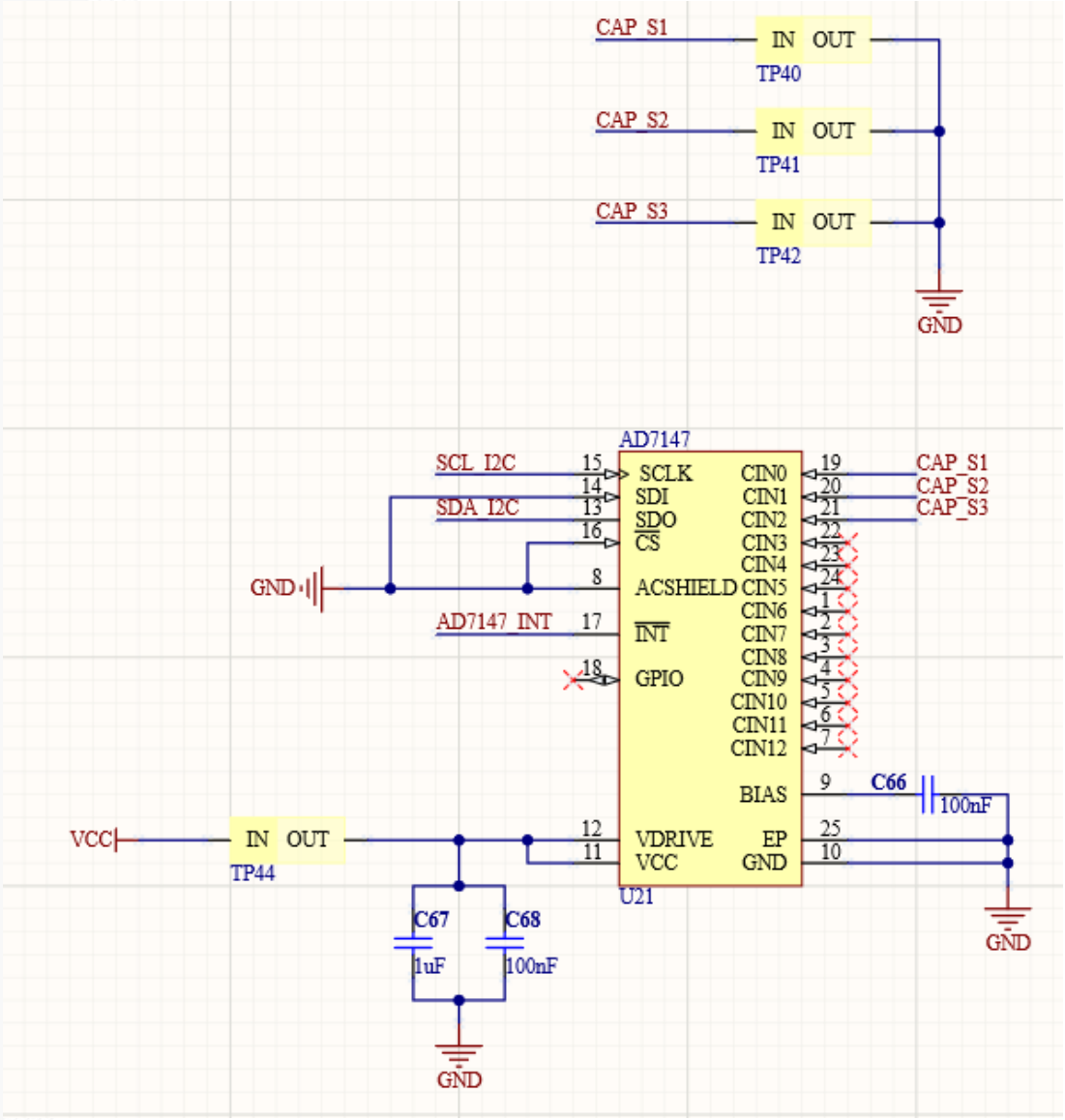
Capacitive sensing circuit



Up to 12 Capacitance sensors

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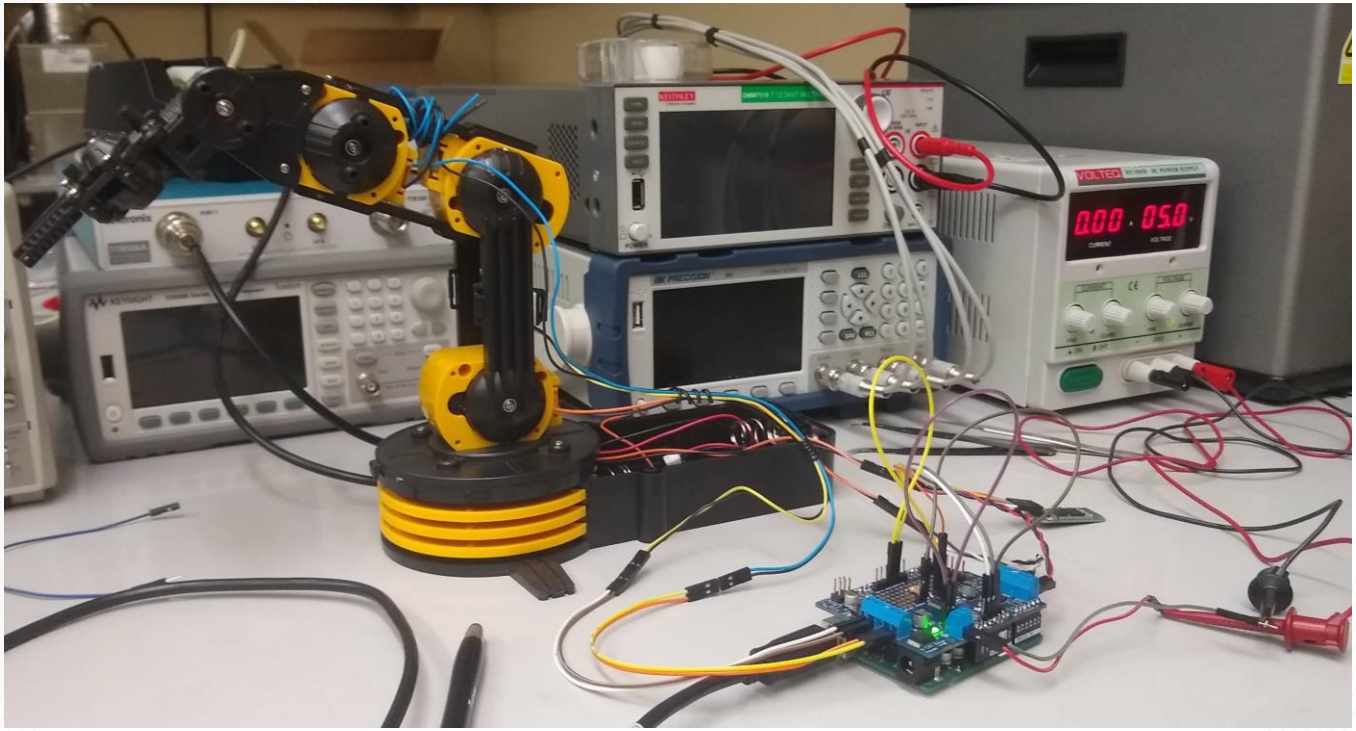
ROBOTIC ARM

Robotic arm

- Configured robotic arm to replicate movements
  - Turn, grab, shoulder joint, elbow joint
  - PC to Arduino communication
  - Bluetooth to Arduino communication



SCHEDULE

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Schedule Gantt chart

Task	9/13-9/20	9/20-9/27	9/27-10/4	10/4-10/11	10/11-10/18	10/18-10/25	10/25-11/01
DEVELOPMENT BOARD	✖						
-HARDWARE DEBUGGING	✖	●					
-FIRMWARE DEBUGGING	✖	●					
NEUROMOTOR PEDIATRIC WEARABLE							
-LITERATURE REVIEW	✖	●	●				
-DESIGN PROPOSAL	✖	●					
-BLOCK DIAGRAM	✖	●					
YEO GENERAL LAB							
-ROBOTIC ARM	✖	●					
-LOW POWER ECG	✖	●	●	●	●	●	●

LEGEND

✖ FINSHED

● TO-DO

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PATH FORWARD

Path forward (9/21/20 – 9/28/20)

- Hardware:
  - Wireless charging
    - Inductive charging: Need to test with smaller coils
    - RF: Need to test development kit
  - Sensor glove
    - Overall schematic design
    - Preliminary PCB layout
- Pediatrics Wearable:
  - Literature review
    - Existing landscape matrix
    - Paper draft
  - 9/22 Monthly meeting with clinicians
- EMG robotic arm:
  - Test bluetooth app
  - Map EMG movements to Bluetooth app

APPENDIX