

---

## EE/CprE/SE 491 WEEKLY REPORT 03

**March**

**March 24**

**Group number: 07**

**Project title: Temperature sensors for veterans**

**Client &/Advisor: BAE / Dr. Gaffar**

**Team Members/Role:**

- 1- **Jared Cox / hardware**
- 2- **Caleb Arnold / hardware**
- 3- **Max Berthold / hardware**
- 4- **Michael McDonough / hardware**
- 5- **George Makhali / software**
- 6- **Bridget Schmitt / software**
- 7- **Jamie Anderson / software**

---

### ○ **Weekly Summary**

As a group this last week, the software has been working on the Bluetooth capabilities and planning the final steps of developing the software. The parts of the application that we have left all involve frontend and backend so we have had to work together and lay out a plan before finishing the final implementation efforts.

*On the hardware side, we did more research and testing on the battery that we will be using, as well as, the charging circuit for the battery. In addition, we completed some testing on the RF module connection range, but were not able to finish because one of the Arduino boards was shorted. As we have mostly finalized the prototype components, we can start looking at enclosures based on our hardware dimensions.*

- **Past week accomplishments** *(Please describe/summarize as to what was done, by whom, when and, collectively as a group. This should be about a paragraph or two in length. Bulleted points are acceptable as well. Please keep only your technical details related to your project. Figures, schematics, flow diagrams, pseudocode, and project related results are acceptable, but please ensure that they are legible (clear enough to read) and to provide an explanation. If researching a topic, please add a few details about what was learned and how it is relevant to the project. If two or more*

*people worked on a single task, be sure to distinguish how each member contributed to the task. Specific details relating to the assistance provided to other members may be included here. **Do not include classwork, such as individual reflection assignments, and group meetings as part of your duties.***

- 1: Michael: The last two weeks, I have been working on designing and developing circuits that will allow our team to both recharge the batteries and control their power output to the Arduino using a latching push button. So far, we have tested and finalized a design to control the power to the Arduino using the push button. It has a built-in, latching LED that provides indication to the users as to whether the Arduino is in the on or off state. With the battery charging circuit, I have been testing configurations consisting of a USB type-c charging port and a 1S and 3S 18650 battery management system module. So far, we have been able to hook up the type-c charging port to the battery management system and confirm voltage flowing through the battery management system; however, we have yet to successfully test voltage flowing through the battery management system to the batteries. This should hopefully be tested and finalized by the end of this weekend.
  - 2: Caleb: In the past two weeks I have continued working on and mostly finalized temperature testing, the only outlying issue is in testing the probe at controlled lower temperatures. Have also been working with estimates of project circuitry size to find an appropriate enclosure before PCB fabrication.
  - 3: Max: The last two weeks, I started the LoRa RF Module range testing, but unfortunately I shorted one of the Arduino Nanos that I was using so I am waiting for another Nano to continue testing. I was able to test the connection up to 60 meters before losing the 2<sup>nd</sup> Nano. Since I was unable to continue the range testing, I worked on finalizing the code for the User's device as well as the Instructor's device and merged that with our existing temperature code. In addition, I did some research on enclosures that we could use and I assisted Mike with testing the push button for power to the device.
  - 4: Jared:
  - 5: George: The Bluetooth connection on the software side is complete and waiting for the testing results and will make any necessary changes if needed, the bluetooth part is integrated into the sensor list page and added some components to test receiving and sending messages to the Bluetooth on the hardware side.
  - 6: Bridget: The last two weeks I have been mostly planning the future of the app by discussing how it will connect to the hardware and how I will finish up the software interfaces to keep them user friendly and to the users standards. We presenting the software so far to the client and they liked it. I have been continually working toward making it a complete application with all necessary functionality.
  - 7. Jamie: Finalizing all the backend resources that have been built and needed, as well as ensuring that they don't cost anything (AWS tries to sneak in costs). Moving into front-end slightly by connecting backend to front, as well as installing features such as QR code scanning and generation for connection students and instructors.
- **Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*
- 1: Michael: Still trying to successfully transfer voltage from the battery management system to the 18650 batteries in order to charge them. Just need to get a good

connection, using soldering and/or other materials, between the battery management system and the batteries.

- 2: Caleb: Still trying to find a way to test the thermosensing at lower temperatures. Without having an enclosure for the device circuitry it doesn't seem feasible to use a freezer, may need to test this after finishing the rest of the prototype.
- 3: Max: I accidentally shorted one of my Arduino Nanos when trying to connect my power source to the board. I should be receiving my new Arduino board today or tomorrow.
- 4. Jared:
- 5: George: Still waiting to test the Bluetooth connection to the bluetooth module on the Arduino side, hopefully it will work as everything should be set correctly.
- 6: Bridget:
- 7. Jamie: Volley (what sends out GET requests to backend), does not like filling in variable names, and thus we can't update stuff on screen. Needs to be moved into an async task to work in background or something else.

- **Individual contributions** (*Creating this section is optional, but it is **Required to include the “Hours Worked for the Week” and their “Total Cumulative Hours” for the project for each member somewhere relevant in your report. Your individual weekly hours should be at a minimum of 6-8 hours for this course. So please manage your time well. Also, ensure that individual contributions support your claim to the weekly hours. Be honest with the reports.***)

<u>NAME</u>	<u>Individual Contributions</u> ( <i>Quick list of contributions. This should be short.</i> )	<u>Hours this week</u>	<u>HOURS cumulative</u>
Max	RF module research	6	44
Caleb	Thermosensing. hardware size constraints	6	42
George	Bluetooth connection on the android side	6	40
Bridget	Application design and research	4	42
Jared	BLE connection, enclosure options	7	28
Jamie	Backend finalization, QR code stuff	8	40
Michael	Power optimization and control	12	48

- **Comments and extended discussion** (*Optional*)

*Feel free to discuss non-technical issues related to your project.*

*We have had a lot of miscommunication amongst the group. We have also had issues not getting hardware in a timely manner.*

- **Plans for the upcoming week** (*Please describe duties for the upcoming week for each member. What is(are) the task(s)?, Who will contribute to it? Be as concise as possible.*)

- 1: Michael: My main goal for next week is to successfully test and finalize the battery charging capabilities for the device. Once completed, I will work on adding the additional device interfaces to complete overall system testing.
- 2: Caleb: Finishing the temperature sensing testing if possible, otherwise delaying until the whole prototype is finished. Working on both finding the correct enclosure with Max and making sure that the PCB design is suitable for it.
- 3: Max: The next few weeks I plan on finishing the RF Module range testing and documenting all of my testing criteria. In addition, I plan to test all of the code together instead of in segments like we have done. Furthermore, I want to find an enclosure that will work for our prototype.
- 4. Jared:
- 5. George: the upcoming week will be mainly focused on testing the bluetooth and see if it has any interruptions.
- 6. Bridget: For the next few weeks, I plan to work to finish the frontend of the application, mostly the settings and profile pages to make sure the app has all of the necessary functionality.
- 7. Jamie: Continue developing QR code scanning/generation. Ensure all connections between front and back are working as intended. Filling in holes as I come across them (debugging, adding screens, etc).

- **Summary of weekly advisor meeting** *(If applicable/optional)*  
*(Provide a concise summary on the contents and progress made during the advisor meeting.)*

*Our advisor continues to advise that we make sure to document absolutely everything that we are doing, especially all the testing that we are doing on various parts of the device.*

### **Grading criteria**

Each weekly report is worth 10 points. Scores will be awarded as follows:

- **8 – 10:** Progress for your project seems to be suitable. Documentation and hours reported by team members are adequate.
- **6 – 8:** There is scope of improvement both in your report and your project progress. Can consult with instructor/TA after class for further inputs.
- **< 6:** Please talk to instructors/TA after class hours about any difficulties that you/your team is facing.

Each weekly report should be unique in that they have a unique set of supporting details for your contributions. So please do not just copy your reports from the previous week. In addition, please avoid any personal pronouns (he, she, I, you). Try to keep your reports as neat as possible.