

My ZOLL Experience

Nicholas Pho

**4th Rotation Human Factors
Engineering Co-op**

About Me

- **3rd Year Bioengineering Major at Pitt**
 - Biomechanics
- **Research and medical device development**
 - Machine Learning in Urogynecology
 - MRI Analysis
- **Career Goals**
 - Medical Device Industry

(PSR)

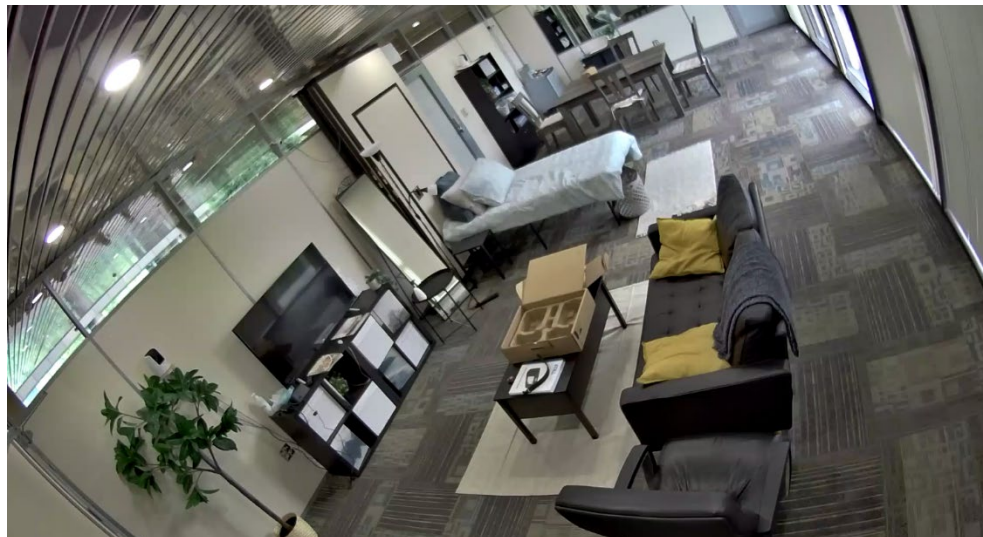
Simulated Summative

- **Date:** August 22nd – September 1st, 2022
- **Goals:** Evaluate the usability of the LV5100 system performed by PSR
- **My Role:** Camera support, Analyst
- **New skills/experiences:** Collaboration with 3rd party company (Priority Design), Learned more of workflow process for patients
- **Takeaways:** The Wi-Fi in the building is not reliable, keep calm and act like nothing is wrong



Summative

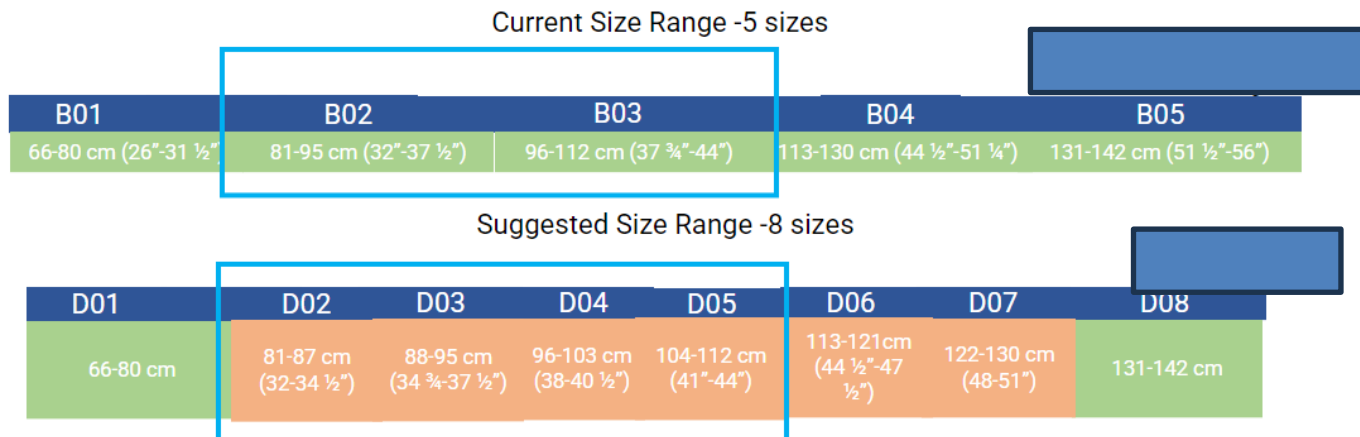
- **Date:** August 24th – September 9th, 2022
- **Goals:** Assess the safety and effectiveness of Next Gen for validation
- **My Role:** Tech support, Analyst
- **New skills/experiences:** It takes a team effort to execute
- **Takeaways:** Be ready for the train to derail, but stay calm



Wear Test (Part

1 & Part 2)

- **Date:** August 15th – August 26th, September 26th – October 7th, 2022
- **Goals:** [Redacted]
 - Test the new system with different versions of the garment
- **My Role:** Led this study, moderator, analyst, data analysis
- **New skills/experiences:** Study design/organization, mentoring
- **Takeaways:** Studies require a vast amount of energy and attention



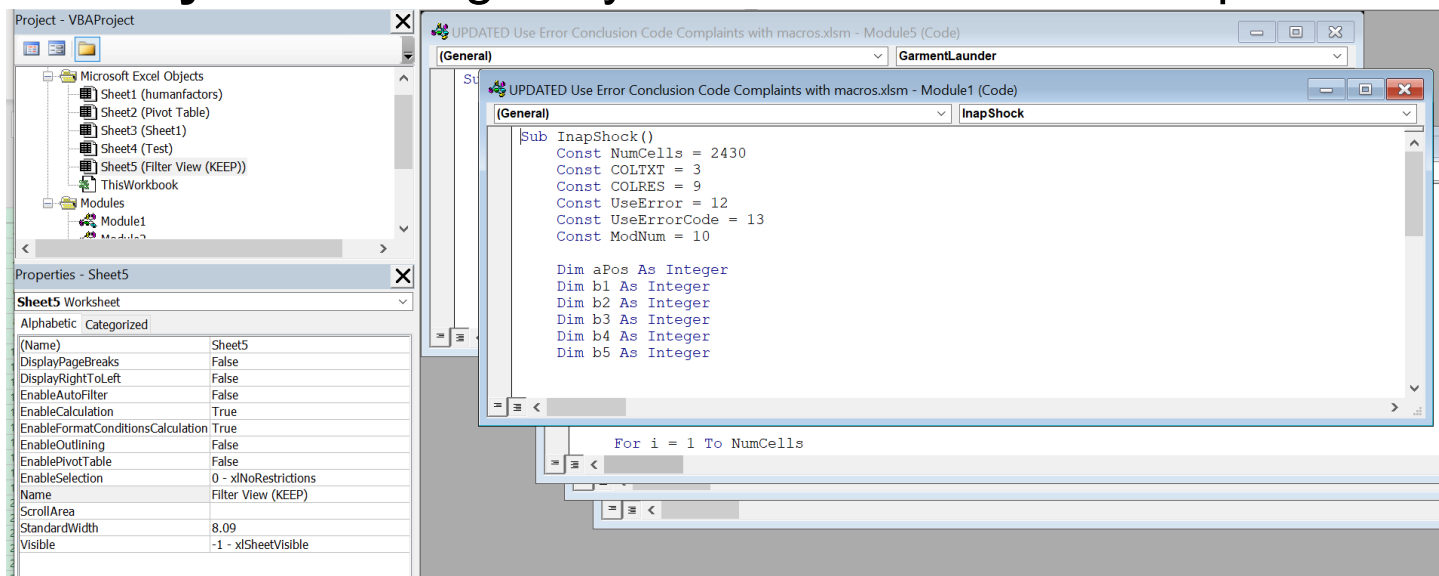
Body Scanner

- **Date:** October 2nd, 2022 - October 7st, 2022
- **Goals:** Implementing the Body Scanner into more studies (specifically in garment), update the body scanner PowerPoint
- **My Role:** Support
- **New skills/experiences:** Worked with the Squad, body scanner
- **Takeaways:** There are many opportunities to expand and develop studies



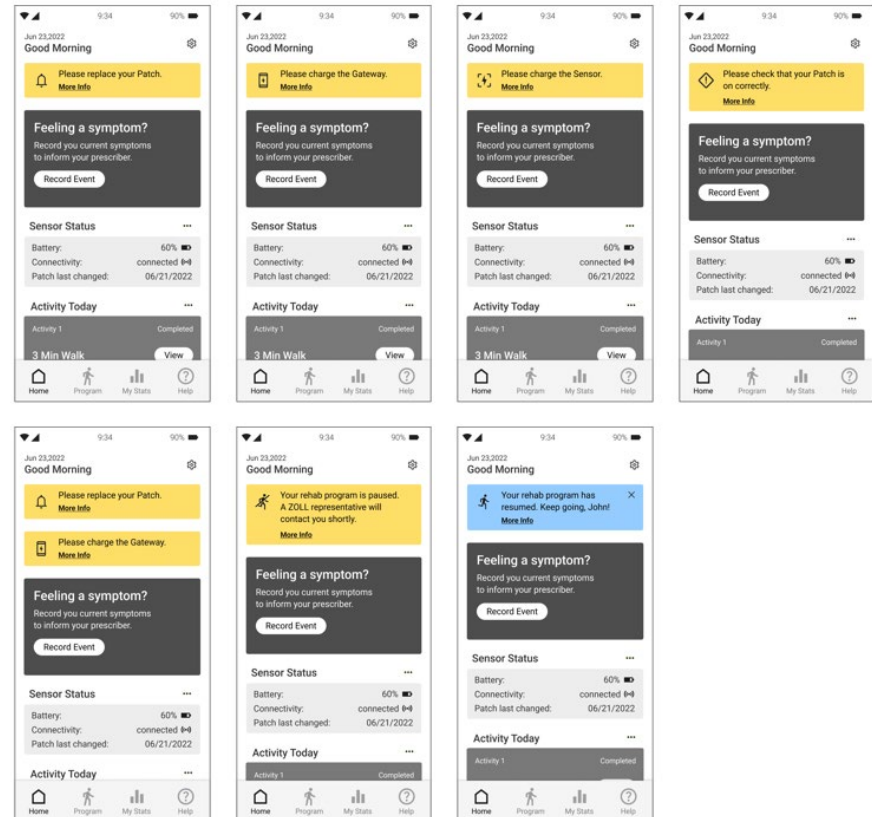
User Error Conclusion Codes Data Analysis

- **Date:** November 2nd, 2022 – November 9th, 2022
- **Goals:** Categorize User Error Conclusion of the past 5 years
- **My Role:** Data Analyst
- **New skills/experiences:** VBA Coding/Macros
- **Takeaways:** Be willing to try new methods to solve a problem



GUI Mock-Up Formative

- **Date:** November 9th - November 17th, 2022
- **Goals:** Evaluate the graphical user interface (GUI) mock-ups proposed for the [redacted]
- **My Role:** Analyst, Data Analyst
- **New skills/experiences:** Cricut, Pure Qualitative Data, Presenting
- **Takeaways:** Be ready to adapt, I enjoy working on different projects



Clinical 2nd, and 3rd Round of Validation Wear Test

- **Date:** September 29th, 2022 – November 17th, 2022; March 13th, 2023 – July 21st, 2023
- **Goals:** Valid the [REDACTED] System
- **My Role:** Tech/Equipment Support
- **New skills/experiences:** Collaboration with Clinical
- **Takeaways:** Improved technical and communication skills



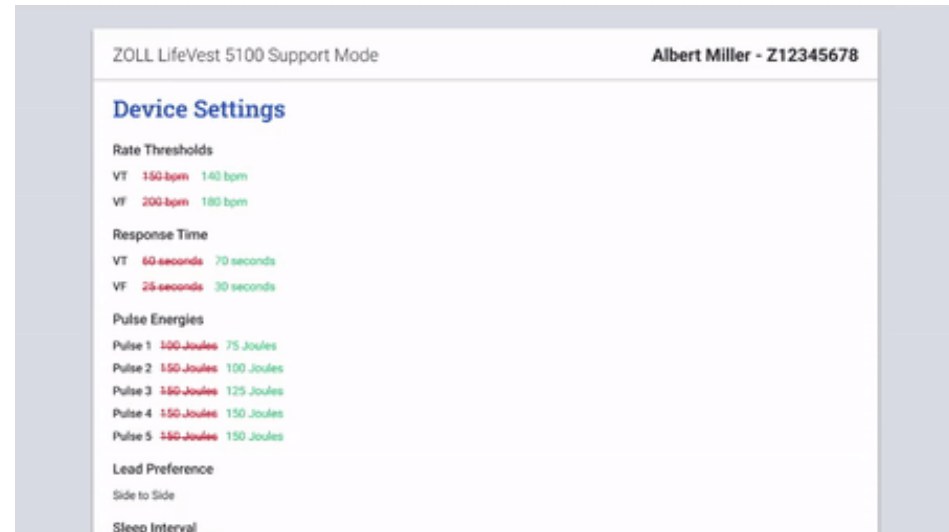
Usability Formative

- **Date:** February 20th – February 24th, 2023
- **Goals:** Evaluate the usability of the [redacted] Garment equipped with a flat knit therapy mesh
- **My Role:** Moderator, analyst, support, data analysis
- **New skills/experiences:** First time operating cameras in HF lab!
- **Takeaways:** Take care to feed full-time staff or lose 20 points!



Support Mode V2 Formatives (Cognitive Walkthrough)

- **Date:** April 4th, 2023 – April 6th, 2023, TBD
- **Goals:** Assess the usability of the V2 Support Mode workflow using low-fidelity digital wireframes of the Support Mode webpage
- **My Role:** Moderator, Analyst, Data Analyst, Project Manager, Organized and Led this study
- **New skills/experiences:** Study design/organization, Task & Hazard, Cognitive Walkthrough, Figma, Collaboration with Technical Support Services
- **Takeaways:** A lot of planning is required for a study



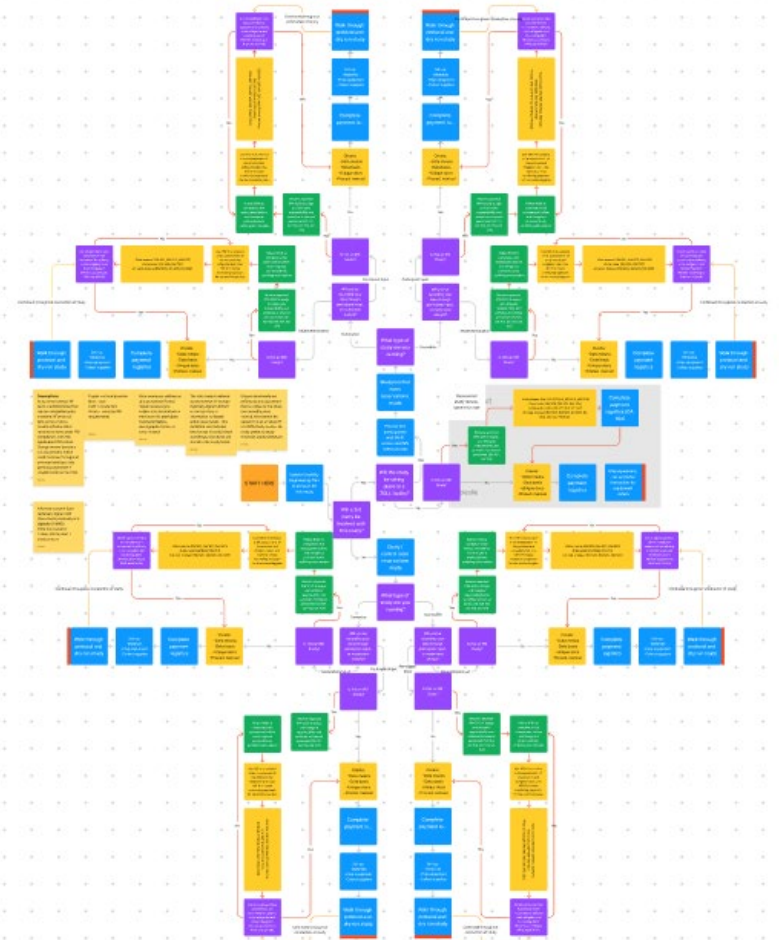
Summative

- **Date:** February 27th – March 7th, 2023
- **Goals:** Assess the safety and usability of the LifeVest Garment with LifeVest System,
- **My Role:** Support, data analysis
- **New skills/experiences:** Writing a component of a summative report
- **Takeaways:** Rely on your team, they are there for you, make sure unbiased and do not lead participants, keep an eye out for possible trends during study
- **Shoutout**
A.J. and
Abby!



IRB Process Mapping

- **Date:** June 23rd , 2023– Ongoing
- **Goals:** Develop a flow to incorporate IRB documentation/SOPs into the HF study startup and closure processes
- **My Role:** Develop and create the flow
- **New skills/experiences:** Process flows, study process design
- **Takeaways:** Don't reinvent the wheel



Equipment Tracker

- **Goals:** Locate and index all HF's [redacted] equipment
- **New skills/experiences:** Database management, hardware/software specification for [redacted], historical context to equipment, Marcos
- **Takeaways:** Our cabinets were quite messy, the [redacted] went through a lot more iterations than I thought

4000 Equipment

	Version	Last Update
Latest Monitor Version	7.93	3/6/2023
Latest Belt Version	6.274 or 274.6	3/6/2023

Hardware for Belt

Version B: The bottom of the vibration box is elongated
Version A: The bottom of the vibration box is thinner and not elongated

Check Software for Belt and Monitor

1. Checking Monitor Software for monitor
Double check that the monitor has THIS warning screen for testing ->
The monitor version is the text under the "Treatment disabled". (Ex. V07-6M1)
Disclaimer: If you want to check the belt software of multiple belt. You will need to restart the monitor each time
2. Click the option button
Bottom left button

Warning
Not for patient use.
Treatment disabled
V07-6M1-USA
840-5

ZOLL

Goals Before End of Rotation

- **Complete IRB Process Mapping**
- **Complete data analysis and report for TE Backing Formative**

My Growth

➤ **Passion projects**

- Scale research
- Temp sensor

➤ **Technical writing**

- Concise language
- Make conclusions

➤ **Leadership**

- Mentoring/teaching other co-ops

➤ **People facing skills**

- Communicating with participants
- Moderating

Overarching Takeaways

➤ **Humble**

- This work is complex and multifaceted, ask for help
- It's okay to not know something
- Believe in the cause

➤ **Hungry**

- Always be learning
- Be self-sustaining
- What's next?

➤ **Smart**

- Cross-functional communication is hard
- Less is more (usually)

Thank you ZOLL!