OSCAR OLIVA

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EDUCATION

University of Pittsburgh – Swanson School of Engineering Expected Graduation April 2025

- Bachelor of Science in Mechanical Engineering
- Minor in Bioengineering

SKILLS

● SolidWorks ● Fusion360 ● MATLAB ● Python ● R ● Microsoft Office ●Instron Testing
● Rapid Prototyping – Soldering, Sewing, Injection molding ● Technical Writing/Presenting ● Spanish (Fluent)

ENGINEERING EXPERIENCE

Human Movement and Balance Laboratory, Department of Bioengineering **Pittsburgh, PA**

Research Assistant (only while enrolled in classes) *November 2021 – Present*

- Improved portable scanner which used frustrated total internal reflection (FTIR) technology to assess shoe tread wear by incorporating a Raspberry Pi and a camera to take a picture and save it to when the user steps on device
- Wrote image processing software in MATLAB to detect worn regions of a shoe in contact with FTIR device
- Repurposed tribology testing equipment to measure friction on an assortment of ladder rungs in dry and contaminated scenarios, built supports for testing equipment and each ladder rung, and created a testing protocol
- Analyzed tribology data using MATLAB to correlate the surface pattern, material, and rung geometry to the measured coefficient of friction
- Utilized Vicon motion capture system to analyze participants' gait during ladder ascent, descent, and an unexpected slip scenario

ZOLL LifeVest **Pittsburgh, PA**

Human Factors Engineering CO-OP (three 4-month rotations) *September 2022 – April 2024*

- Performed post-market surveillance analysis on an existing product which contributed to the HFE/UE validation report submitted to the FDA for the succeeding product version
- Wrote protocols for wear test evaluations, and then moderated the studies by interviewing participants to assess the comfort, usability, and effectiveness of error prevention features of the LifeVest system
- Utilized R and PowerBI to analyze data collected from studies, drafted reports documenting study details, presented findings, and collaborated with a multidisciplinary team of engineers to address critical use errors

Advanced Research and Development *May 2024 – July 2024*

- Designed a prototype LifeVest garment to increase patient comfort without compromising ECG quality by implementing fabric electrodes and attaching the corresponding circuitry to the outside of the garment
- Utilized 3-D scanning to get patient body measurements for garment sizing and to correlate ECG wave amplitude to electrodes placed at various locations on the body

Desapro Inc., Rockledge, FL

Mechanical Engineering Intern May 2022 – August 2022

- Drafted models of aluminum transit cases using SolidWorks, and prepared drawings to be used during production
- Analyzed and worked to improve the manufacturability of each case which was fabricated using sheet metal
- Coordinated with customers to deliver unique cases with size, weight, and load-bearing requirements, taking the lead in both the design and manufacturing processes
- Designed a temperature-controlled case that would attach to a drone to carry blood bags to soldiers in combat
- Designed and oversaw manufacturing of a case that reduced harmful vibrations and impact shock

PROJECTS

Hydraulic Sliding Wall Squat Machine – Senior Capstone

- Designed and built a prototype squat machine for lower body injury rehabilitation that holds the patient using a harness and implements a hydraulic system to reduce the force a patient must apply while completing a squat

Pill Lamp – Personal

- Calculated the angles needed to make a dome out of small triangles and connectors, modeled a SolidWorks assembly of over 100 parts, laser cut 2-D shapes, and brought them together to make a pill shaped lamp for an art exhibition