Justin The

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Education

University of British Columbia **Expected Graduation: August 2025**
Bachelor of Applied Science in Biomedical Engineering *Vancouver, British Columbia*

Laboratory Skills

Electrical: Altium Designer, LTSpice, Arduino, Soldering, Electrical Prototyping & Testing Tools
Mechanical: SolidWorks, 3D-Printing, Ultimaker Cura
Software: Python, MATLAB, R, C/C#, Arduino IDE, Linux (Ubuntu WSL2), Vim, GitHu

Experiences

MEDIC Foundation **August 2023 – Present**
Crohn's Disease Team Co-Lead *Vancouver, British Columbia*

- Led a team of 12 people in the development of a medical device that assesses Crohn's Disease patient biomarkers and predicts for flare-ups while adhering to medical device regulations.
- Facilitated stakeholder engagement sessions with medical professionals and research faculty to ascertain and address their requirements, culminating in the creation of the Product Design Specification (PDS) document aligning with client expectations.
- Developed project management skills by generating project proposal, timeline, budget/material list, weekly goals and deliverables to ensure sucessful delivery of project milestones.
- Conducted literature reviews about Crohn's Disease symptoms, risk factors, biomarkers and current research initiatives for relapse detection, consolidating comprehensive insights into the current state of knowledge in the field.

UBC Bionics **August 2023 – Present**
Power Delivery Systems *Vancouver, British Columbia*

- Spearheaded the battery management system and power delivery aspects of the bionic arm while collaborating with cross-functional teams to engineer a robust design for the bionic arm.
- Performed bench tests on battery management system utilizing the MAX17205 Fuel Gauge Board, ensuring safe and accurate monitoring of battery levels for seamless power delivery.
- Developed ± 5V split rail power delivery for the EMG system in Altium while balancing power distribution and optimal signal-to-noise ratio for enhanced signal processing, accurate, and low-noise signal for EMG data acquisition.

Technical Projects

TCGA Breast Cancer Analysis Pipeline | *R, Machine Learning* **December 2023**

- Developed bioinformatic coding pipeline in R to analyze mutations in TCGA Breast Cancer data.
- Applied hierarchical clustering techniques to group patients into distinct clusters based on genetic mutation data, analyzing each group's estimated survival with Kaplan-Meier Curves.
- Identified and characterized specific mutated pathways within the clusters, contributing to the interpretation of potential molecular mechanisms underlying breast cancer subtypes.

Power Supply Buck Converter | *Altium Designer* **August 2023**

- Designed and implemented a high-efficiency power supply utilizing a switching regulator buck converter topology to step down a wide input voltage range of 6-12 volts to a stable 5V output.
- Created a detailed schematic diagram and arranged all components within the PCB layout using Altium Designer, employing best practices to reduce as much output ripple noise as possible.

Infant Sepsis Monitor | *Altium Designer, 3D-Printing, SOLIDWORKS, Arduino* **Jan 2023 – Apr 2023**

- Worked collaboratively with a team of 6 people to design and develop a medical device that evaluates the risk of sepsis in infants under 3 months old to prevent sudden infant death syndrome (SIDS).
- Developed a base plate to house a PPG sensor using SOLIDWORKS and 3D printed the part using Ultimaker Cura.
- Conducted failure mode and effects analysis (FMEA) to identify and mitigate potential risks associated with the medical device according to ISO 14971.

Work Experience

ZUBU Ramen **May 2022 – August 2022**
Kitchen Staff *Vancouver, British Columbia*

- Prepared sushi rolls and appetizers in a timely manner while maintaining quality and food-safe protocol during high-volumes of service.
- Communicated regularly and assisted management on product stock to reduce traffic during service.