Mackenzie Snyder

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University of Waterloo | 3rd Year Bachelor of Applied Science in Biomedical Engineering (2021-2026)

Skills

Languages: Python (Numpy, Matplotlib, tkinter, ElementTree, Pytesseract), C#, C++, HTML, CSS, Javascript (React, Redux, Bootstrap), XML, XSLT, MatLab, Typescript, SQL
Tools: Solidworks, FEA, Onshape, SolveSpace, Android Studio, Figma, Git, AWS, MySQL, PostgreSQL

Experience

Software Engineering Intern — *St. Michael's Hospital*

January 2023 - April 2023, September 2023 - Present| Toronto, ON

- Updated and refactored code in Typescript and Javascript codebase to meet new industry standards for an Electronic Asthma Management System. Conducted comprehensive testing, including edge cases, to validate the functionality of the updated product.
- Troubleshooted and debugged code written in Python in a timely manner to meet production deadlines for a Smoking Cessation Infographic project, which personalizes a visual representation of a patient's quality of life due to smoking.
- Created interactive wireframes in Figma for a healthcare provider portal to link patient responses from an asthmatic symptoms questionnaire to a proper asthma treatment plan, to increase accuracy in correct asthma medication prescriptions.

Mechanical and Electrical Team Member— *Watolink Student Design Team*

January 2023 - Present| Waterloo, ON

- Participated in collaborative research and design initiatives within a multidisciplinary team, harnessing Solidworks expertise to meticulously craft 3D models of wheelchair components, facilitating the transformation of conventional wheelchairs into BCI-controlled mechanical systems.
- Conducted extensive research into batteries, motors, and integrated systems to seamlessly merge Brain-Computer Interface (BCI) technology with wheelchair infrastructure. Evaluated various power sources, motor types, and control systems to optimize the interface, ensuring a robust and efficient integration that enhances mobility and accessibility for users.

Software Quality Analysis Intern — *Infrastructures for Information Inc. (i4i)*

May 2022 - August 2022 | Toronto, ON

- Tested i4i FDA approved pharmaceutical labeling templates, completed assigned test cases and professionally documented errors/faults in the software.
- Worked in collaboration with a team to develop a conversion tool that extracts data from an Excel spreadsheet and translates it to an i4i FDA approved labeling template.
- Processed and debugged code written in Python, XML, and XSLT, implementing changes to the GUI using Figma to draft the design, and developed the display using tkinter library.

Infrastructure Prototyping Lead — *Waterloop Student Design Team*

January 2022 - August 2023| Waterloo, ON

- Assisted with on-site physical construction of the Hyperloop test track, performing quality checks on track materials, delivering the materials to the track site, and communicating with those who manage the site where the test track is built.
- Utilized SolidWorks CAD software to meticulously conceptualize and model design ideas for an airlock system. Developed individual components with precision, employing advanced SolidWorks mates to seamlessly assemble them.
- Designed and executed the modeling of a first-iteration physical tube track for a Hyperloop system, incorporating complex geometries and specifications. Conducted comprehensive Finite Element Analysis (FEA) to evaluate structural integrity, resulting in valuable insights that informed subsequent design refinements and enhanced system efficiency.

Projects

Prosthetic Hand Phone Grip: Designed and engineered an interdisciplinary mechanical and electrical prosthetic hand phone grip system, integrating EMG (Electromyography) signal control technology to provide seamless and intuitive functionality, enhancing the user's quality of life and independence. Used technologies such are Arduino IDE, Solidworks design and FEA, and servo motors.

KARMM'S Wheelchair Arm: Collaborated within a cross-functional team to engineer a specialized vacuum attachment for a wheelchair, meticulously adhering to stringent design constraints. Led the development process, creating user personas, generating innovative conceptual designs, and producing high-quality sketches. Presented the final concept to a professional audience, effectively showcasing our solution's ingenuity and functionality.