Joanne Jo

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Summary of Qualifications

- Languages/Frameworks: MATLAB, Arduino, C#, Python, TensorFlow/Keras, Numpy, Pandas, Matplotlib, SQL
- Experienced in 3D CAD design using Solidworks and AutoCAD
- Proactive and highly motivated mindset from 5 years of a competitive volleyball environment

Experience

Research and Development Engineer | *University of Waterloo* May 2023 – Aug 2022

- Design researcher in the fabrication and utilisation of **pneumatic artificial muscles (PAMs)** and **McKibben muscles**
- Developed a **MATLAB standalone application** using machine learning to generate optimal PAM dimensions and fabrication based on desired force output
- Simulated 2D flow of lymphatic fluid through a lymph node and 3D flow through various geometry using **COMSOL**
- Experienced in 3D printing using FDM and resin printers

Software Engineering Research Assistant | *Health & Rehab Research Inc* Sept 2022 – Present

- Developed **LSTM** and **ANN** time series multivariate machine learning model to forecast multiple health vitals
- Researched influencing factors and trends of health vitals to aid dataset investigation and analysis
- Implemented and analyzed **many-to-one** and **many-to-many** prediction methodologies to ensure maximum efficiency and accuracy of vital sign forecasting algorithm
- Led multiple team meetings and organized regular pair programming sessions for junior members

Undergraduate Research Assistant | *University of Waterloo*` May 2022 – Aug 2022

- Assisted with **prototyping** of a pocket-sized defibrillator by testing electrical performance of micro needles
- Drafted a **testing rig** designed to investigate the loosening of knee implants using cadaver knees
- Researched various build materials to ensure biocompatibility with knee specimens
- Utilized **DueLite EMG probes** and **electrodes** to observe impulses from the arm extensor and flexor muscles
- Reviewed **CAD drawings** and measurements for parts to be manufactured ensuring no issues with production

Projects

Stroke Rehabilitation Device | *BME 361 Biomedical Engineering Design*

- Prototyped hand and finger function rehabilitation device for stroke survivors using an iterative process
- Conducted various phases of verification to ensure design incorporated analysis results of user requirements

Education

University of Waterloo – B.A.Sc. Candidate, Biomedical Engineering Graduating 2025

- Cumulative GPA: 3.86

Relevant Coursework

BME 252 – Linear Systems and Signals

- Recreated hearing aid signal processing through **MATLAB** using filtering, pattern recognition, and Fourier transform

BME 355 – Physiological Systems Modeling

- Simulated the toe-off phase of the human gait cycle using **MATLAB**
- Developed unique functions to simulate the dynamics assuming steady-state

Other Courses: Biomaterials & Biomedical Design | Physiological Systems Modelling | Digital Systems
Interests: knitting, crocheting, discovering new music, hiking, volleyball, rewatching movies