Chelsea Huang

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Biomedical Engineering | Waterloo, ON

SKILLS

Languages | C++/C · Python · MATLAB · C# · VHDL · Java · Kotlin · HTML · CSS
Tools & Platforms | Git · Linux · Pandas/NumPy · Android · Arduino · Raspberry Pi · Jira · Visual Studio IDEs
Applications | 3ds Max · SolidWorks (Certified Associate) · Eagle · LTspice · Unreal Engine · Abaqus · AutoCAD

EXPERIENCE

Data Science Developer Intern — *NuraLogix Corporation* | *Toronto, ON* | MAY - AUG 2022 & JAN - APR 2023

- Utilized **PyTorch** to improve video signal feature-labeling and analysis with various methods (SVM, KNN)
- Extracted skin tone features from images in various colour spaces with **OpenCV**, using KMeans algorithm
- Provided prompt results to data cleaning and organizing tasks with automated scripts using **pandas**, **NumPy**
- Detected outliers with statistical methods to improve peak-finding behaviour within flagship application

Software Development Co-op — *Ford Motor Company* | *Ottawa, ON* | MAY - AUG 2020 & JAN - APR 2021

- Designed and demonstrated a native API using Franca IDL for list paging implemented in **C/C++**
- Explored and developed a Python service using API generators for signal simulation in **Unreal Engine**
- Assisted with unit test validation during project porting to AOSP by executing board bring-up and debug tasks
- Created non-compliance dashboards using JQL, SQL, and Jira macros for issue tracking and management

Soft Robotics R&D Engineering — *Waterloo Microfluidics Lab* | *Waterloo, ON* | SEPTEMBER - DECEMBER 2021

- Designed innovative soft robotics solutions to lymphedema using **SolidWorks**, **Eagle**, and **AutoCAD**
- Developed PCB designs and soldered components to allow for electrical testing of sensors and prototypes
- Carried out iterative, comprehensive testing with hand-manufactured, high-fidelity prototypes in-lab

SELECT PROJECTS

Modelling Functional Electrical Stimulation (FES) for Treating Foot Drop | APRIL 2022

- Created and implemented state-space equations in **Matlab** to represent shank-foot (tibialis anterior) system
- Conducted sensitivity analysis with varying inputs to validate/verify behaviour in response to FES signals

Ultrasound Sensing of Hand Gestures | NOVEMBER 2022

- Designed a system using **Arduino** and ultrasonic sensors to detect 1 of 3 hand gestures with minimal guidance
- Used piezoelectric ceramics to generate ultrasound waves for distance detection with ultrasonic sensors

Cochlear Implant Signal Processing | AUGUST 2021

- Processed input audio data in **Matlab** using IIR/FIR filters to produce signals outputted by cochlear implant
- Experimented with filter type, number of channels, and filter frequency to determine the optimal combination

EDUCATION

Candidate for Honours Biomedical Engineering (BASc), Life Sciences Option — *University of Waterloo*
| SEPTEMBER 2019 - PRESENT

- GPA: **94.02%** | Faculty of Engineering Dean's Honours List for 5/6 past terms
- Recipient of NSERC USRA (2022), President's Research Award (2022), Lau Engineering Scholarship (2021)

Relevant Coursework —

- Introduction to Pattern Recognition (2022) — *ML concepts and algorithms, with applications to pattern recognition.*
- Data Structures & Algorithms in C/C++ (2020) — *Data structures, testing practices, and design patterns.*
- Digital Systems (2022) — *Digital design using combinatorial logic, microcontrollers, and circuit components in-lab.*

ACTIVITIES & INTERESTS

- Playing badminton, traveling, skating, making CAD models, skiing & snowboarding, doing puzzles