Chelsea Huang

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EDUCATION

Biomedical Engineering (BASc), Computing & Life Sciences Options — *University of Waterloo* | 2019 - 2024

- GPA: **93.42%** | Dean's Honours List, NSERC USRA, President's Research Award, Lau Engineering Scholarship
- **Relevant Courses —** Computational Intelligence (2024), Deep Learning (2023), Image Processing (2023)

SKILLS

Programming Languages | Python · C++/C · Matlab · C# · VHDL · HTML

Tools | Linux · Arduino · SolidWorks (Certified) · PyTorch · Unreal Engine · 3ds Max · Eagle · LTspice · AutoCAD

EXPERIENCE

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

- Developed and improved two deep learning models with PyTorch to clean data and reduce feature error
- Conducted data processing for two teams with **pandas**, **NumPy**, condensed timeline from 2+ weeks to 3 days
- Extracted colour features from images in various colour spaces with **OpenCV**, with >75% label accuracy
- Refactored and integrated preliminary research code to features in flagship application workflow

Research & Development Co-op — *PhotoMedicine Labs* | *Waterloo, ON* | MAY - DEC 2023

- Designed and fine-tuned deep learning model parameters in **PyTorch** to improve registration accuracy by 50%
- Created and validated algorithm in **Matlab** to remove intensity artifacts, reduced error from 60% to 10%
- Conducted wet-lab experiments, in particular *in vivo* imaging with PARS technology and optical laser alignment

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

- Designed and wireframed 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
- Developed and iterated 5+ **CMake** files to allow for benchtop testing with new hardware using CAN protocol
- Created non-compliance dashboards using JQL, SQL, and Jira macros for issue tracking and management

SELECT PROJECTS

Automatic Pain Detection in Infants (Degree Capstone Project) | SEPTEMBER 2022 - APRIL 2024

- Designing and building independent system for pain detection using computer vision and electrical sensors, producing results with accuracy of 85% when testing with existing clinically-collected datasets
- Conducted feasibility analysis, addressing current pain points outlined by 5+ medical practitioners/researchers

Stanford Ribonanza RNA Folding Challenge | DECEMBER 2023

- Used Transformer architecture to predict RNA reactivity, performed competitively with top-ranked teams
- Conducted hyperparameter tuning using Optuna for 15 trials, reducing mean average loss by 45%

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

LEADERSHIP

Engineering Ambassador | SEPTEMBER 2022 - CURRENT

- Led 30+ families on guided tours of the University of Waterloo campus; supported various outreach events

University-Level Tutor | JANUARY - APRIL 2021, SEPTEMBER - DECEMBER 2023

ACTIVITIES & INTERESTS

Traveling · Animation & CAD · Video Games & Technology · Badminton · Snowboarding · Puzzles