

Alexander Hwang

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Skills

- Java | Python | Machine Learning (Tensorflow, PyTorch, Pandas, JAX, Objax) | SQL | C | Cloud Computing | CI/CD | Unit Testing | OOP
- Low Latency Computing | Git | HTML | CSS | REST API | Raspberry Pi | AutoCAD | MATLAB | Agile | AWS |

Experience

Software Engineer

Nasdaq

09/2022 - 09/2023

- Using Java in an agile environment with the Multi Matching Engine Trading Connectivity Team to maintain and build new features in FIX, OUCH, ITCH and HURL protocols central to Nasdaq's technology that powers more than 250 of the world's infrastructure organizations, regulators and market participants in over 50 countries.
- Setting the architecture and code quality for the products both on distributed storage and cloud through secure, ultra low latency programming.
- Ensuring service operability by implementing proper security, monitoring, and alerting based on the Nasdaq Operating Environment.
- Building automated tests to ensure robustness of the product.

Research Assistant

Sunnybrook Research Institute

05/2022 - 09/2022

- Deep learning approaches to classification of breast QUS spectral parametric maps (AAC, ASD, SS, SI, and MBF) on a dataset of 50 benign and 195 malignant patients, with 1337 total slices, with 5 parametric maps per slice, using transfer learning with Python (Tensorflow: Xception, Inception-V3, and VGG-19).
- Increased efficiency by over 300% in optimal hyperparameter searching, by implementing Bayesian Optimization and Hyperband to narrow down the best performing models for each parametric map, resulting in an average of 10% increase of balanced accuracy.
- Segmentation of breast ultrasound Images by implementing the UNet architecture as well as the VGG16-UNet architecture, achieving over 85% accuracy on real patient data.

Research Assistant

Sunnybrook Research Institute

05/2021 - 09/2021

- Radiomic analysis of CT and MRI using machine learning to predict treatment response and clinical outcomes in cervical cancer patients.
- Automating data analysis of patient data and acquiring patient history, medical imaging, and the corresponding image Segmentations of patients with Python.
- Automating the organization and conversion of DICOM folders to NIfTI files for the cervical cancer dataset using MATLAB.
- Feature extraction from NIfTI files with Python.

Education

Bachelor of Applied Science

University of Toronto

09/2019 - Present

- Major in [Engineering Science](#) - Machine Intelligence
- Minor in [Engineering Business](#)

Projects

- **Malarial Microscopy:** Using a Convolutional Neural Network to detect the presence of malaria parasites in patient blood sample slides. Designing hardware casing using AutoCAD, and integrating sensors using Raspberry Pi and Python. **(2021)**
- **Image Style Transfer / Generation:** Developing a machine learning model that generates art using a Conditional Generative Adversarial Network trained on portrait images in 3 styles, generated using the Neural Style Transfer Model. **(2022)**
- **Blissful Browsing (TOHacks - MLH Hackathon):** Responsible for the front-end development (using JavaScript, HTML, and CSS), and logo design of Blissful Browsing (Chrome extension that removes toxic and hateful messages online). **(2020)**