

ANDREW XIE

www.andrewxie.com | axie@cs.toronto.edu | linkedin.com/in/andrew-ej-xie | github.com/StuffByAndrew

EDUCATION

Master's of Science, Computer Science

University of Toronto; Co-advised by David Lindell and Kiriakos Kutulakos

Expected Graduation: May 2026

Toronto, ON

Bachelor of Applied Science, Engineering Physics Major

University of British Columbia

Graduated: May 2024

Vancouver, BC

PUBLICATIONS

(Note: Authors marked with * denotes equal contribution)

A Malik*, B Attal*, **A Xie**, M O'Toole, and DB Lindell. *Neural Inverse Rendering from Propagating Light*. CVPR, 2025.

D Black*, J Gill*, **A Xie***, B Liquet, W Stummer, and E Suero Molina. *Deep Learning-Based Correction and Unmixing of Hyperspectral Images for Brain Tumor Surgery*. iScience, 2024.

E Suero Molina, D Black, **A Xie**, J Gill, A Di Ieva, W Stummer. *Machine and Deep Learning in Hyperspectral Fluorescence-Guided Brain Tumor Surgery*. Computational Neurosurgery, pp. 245-264, 2024.

WORK EXPERIENCE

Teaching Assistant

The University of Toronto

Sept 2024 – May 2025

Toronto, ON

- Taught tutorials, marked assignments, and exams for the course: CSC320: Introduction to Visual Computing

Research Assistant

UBC Robotics and Control Lab

May 2023 – Sept 2023

Vancouver, BC

- NSERC USRA position in Electrical and Computer Engineering at UBC
- Conducted experiments to research the application of vision transformers as echocardiogram models for measurements such as ejection fraction estimation and how they may be improved through architectural changes, self-supervised pretraining, out-of-distribution detection, and auxiliary losses.
- Successfully demonstrated that by integrating a multitask loss and a specialized training curriculum, an existing model could be adapted to proficiently perform two tasks: ejection fraction estimation and aortic stenosis severity classification

Machine Learning Software Developer Intern

Ericsson

May 2022 – Dec 2022

Ottawa, ON

- Researched, developed, and applied semi-supervised machine-learning algorithms to diagnose radio malfunctions using system logs.
- Implemented a transformer model able to detect over 62% of labeled anomalies in sequences of correlated time-series signals and event logs using natural language processing approaches with PyTorch.
- Increased by 94% the performance of converting unstructured text files into machine-readable formats by resolving bottlenecks and optimizing parsing algorithms.
- Integrated and managed an automated big data pipeline for preprocessing, storing, transforming, and streaming data using a Kubernetes cluster.

Software Engineering Intern

Promochrom Technologies

Jan. 2021 – May 2021

Vancouver, BC

- Created a computer vision-based rapid error detection system able to raise warning flags for over 87% of known failure modes in lab equipment using deep neural networks in Python.
- Tailored automation software for deployment on a GPU-enabled edge device (NVIDIA Jetson Nano platform).
- Designed a GUI and a remote monitoring service for the new warning system using AWS.

Teaching Assistant

The University of British Columbia

Sept 2020 – Jan 2021

Vancouver, BC

- Taught labs as well as marked assignments and exams for the course: Introduction to Computation in Engineering Design: Analysis and simulation, laboratory data acquisition and processing, measurement interfaces, engineering tools, computer systems organization, and programming languages.

EXPERIENCE

UBC Open Robotics Student Design Team Lead Software Developer	Sept 2020 – Sept 2024
<ul style="list-style-type: none">Led a team designing software for a home service robot for tasks such as taking out the garbage, cleaning the table of dishes, hosting house guests, and serving food, placing 2nd worldwide at Robocup@Home Education 2020.Implemented control algorithms and machine vision system for object manipulation with a robotic arm in Python with ROS.Developed and maintained computer vision models for a robotic system, overseeing data acquisition and preprocessing, and leveraging deep learning models for robust object detection, object tracking, grasp prediction, and scene understanding in dynamic environments.Developed and integrated autonomous navigation modules including SLAM, lidar and RGBD sensors, and autonomous mobile robot control algorithms; and assessed performance using physics simulations.Oversaw the integration of robot components from the drivetrain to the arm in software from multiple subteams totaling over 30 peopleLed an interest-based robotics reading group for undergraduate students.Co-developed and taught a 7-module team training course, which included lectures, practice exercises, and assessments on practical machine learning and robotics development	

Fluorescence Spectroscopy-Guided Neurosurgery Research PyTorch, MONAI, OpenCV, Matlab	Sept 2022 – Oct 2024
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- Machine learning research project, EECE Department, University of British Columbia
- Researched, implemented, and evaluated novel deep learning models to improve upon the current state-of-the-art spectral analysis methods which correct for optical properties when quantifying fluorescent compounds in brain tissue for the detection of malignant tumors.
- Developed an automated pipeline for analyzing medical device data using computer vision techniques to segment image regions containing a biopsy.

PROJECTS

Self-Driving Robot Competition (UBC) Tensorflow, OpenCV, ROS	Dec 2021 – May 2022
<ul style="list-style-type: none">Developed control system with ROS to autonomously steer a simulated vehicle to collect license plate information.Trained CNNs for optical character recognition and classification. Applied traditional machine vision algorithms using OpenCV for navigation while obeying traffic laws and avoiding other vehicles and pedestrians.	

Fairify: Brand Research Web App Flask, React.js	Feb 2022
<ul style="list-style-type: none">Placed 1st overall out of 300+ overall participants at the StormHacks Hackathon.Created a web app using React / Python Flask to scrape the web and rate companies by their fair trade practices.Utilized natural language processing algorithms to analyze the sentiment of articles and social media posts.	

Object Retrieval Robot Competition	Feb 2021
<ul style="list-style-type: none">Designed and constructed the mechanical, electrical, and firmware control system using C for a robot to navigate a course and use fine motion to lift and deposit loads .Implemented an infrared and ultrasonic sensor system with a PID controller to achieve precise line-following.Placed 1st in the competition evaluating the accuracy and speed of the robot out of 60+ participating students.	

AWARDS AND HONORS

Undergraduate Student Research Award	2023
<ul style="list-style-type: none">Award by the Natural Sciences and Engineering Research Council of Canada (NSERC) to conduct undergraduate research.	
Charles and Jane Banks Scholarship	2022, 2023
<ul style="list-style-type: none">Award by the University of British Columbia for academic excellence.	
Trek Excellence Scholarship for Continuing Students	2020, 2021
<ul style="list-style-type: none">Award by the University of British Columbia for academic excellence.	