

# Shuyu van Kerkwijk

✉ shuyuvankerkwijk@gmail.com    Portfolio    LinkedIn    Github

## EDUCATION

### University of British Columbia (GPA: 93%)

Sept 2022 – May 2027

BASc Engineering Physics, BSc Honours Computer Science & Physics

Vancouver, BC

- **Coursework:** Probability, Linear Algebra, Applied PDEs, Optics, Statistical Mechanics, Signals & Systems, Machine Learning, Controls, Data Structures & Algorithms, Circuits, Microcomputers

## EXPERIENCE

### Neuralink

Sep - Dec 2025

Embedded Software Engineer Intern

San Francisco, CA

- Built the firmware suite for next-generation stimulation implants from scratch to unblock the 'Blindsight' project, integrating calibration, stimulation, and neural recording under strict safety constraints.
- Developed new test routines to verify ASIC and channel yield, now used daily on the manufacturing line.
- Awarded employee of the month!

### California Institute of Technology (Caltech)

May - Aug 2025

Research Intern

Pasadena, CA


- Wrote the software pipeline for the DSA-2000 "Radio Camera" interferometer, including source tracking, data collection, phase and artifact correction, and analysis, now used by 40+ researchers.
- Brought up the pilot array to full functionality, took first-light measurements and characterized the system.

### University of Toronto

May – Aug 2023

Research Intern

Toronto, ON

- Built a pipeline to reconstruct 3D neuron meshes from 10K+ images, reducing processing time by >90%.
- Trained a U-Net CNN in PyTorch for nuclei segmentation, including data cleaning and augmentation.
- Conducted [research](#)  on stress-induced neuron morphology, winning 2x "Best Poster" at UofT conferences.

## SKILLS

Python, Rust, C/C++, Java, PyTorch, JAX, ROS, Gazebo Simulator, ImageJ, Linux, Git

## PROJECTS

### Amazon Robotics Super-Resolution Barcode Scanning (2026), CAPSTONE

[Github](#) 

- Building a super-resolution imaging system using controlled sub-pixel dithering and classical & learned reconstruction methods.

### pFog @ UC Berkeley AI Hackathon (2025), 1ST PLACE | PyTorch

[DevPost](#) 

- Trained a CNN+LSTM model to detect freezing-of-gait in Parkinson's patients, achieving >96% accuracy.
- Built assemblies to record gait with an IMU and mechanically stimulate muscles during freezing.

### Flatiron Institute "CryoJax" (2025) | Python, JAX

[Github](#) 

- Implemented the first physical solvent model in CryoJax (an open-source simulation framework), integrating it into a 17 K-line codebase with pytest-based unit & integration tests.

### Self-Driving Robot Competition (2025), 1ST PLACE | Python, TensorFlow

[Website](#) 

- Trained an end-to-end imitation learning model in ROS/Gazebo for real-time autonomous navigation.
- Tuned a CNN using TensorFlow for real-time character recognition on road-signs, achieving 100% accuracy.

## LEADERSHIP

### National Physics Team (2021-2022), 1ST PLACE

[Finals](#) 

- Selected to Team Canada for the International Young Physicists' Tournament (IYPT); led 5-person school team to 1st place (2021) and 2nd place (2022) at nationals. Received individual "Best Experiment" award.