

Shuyu van Kerkwijk

📍 Vancouver / Toronto ✉ svankerk@student.ubc.ca 📁 Portfolio in LinkedIn 📄 Github

Education

University of British Columbia (GPA: 92.9%)

Sept 2022 – May 2027

BASc Engineering Physics, BSc Honours Computer Science & Physics

- **Coursework:** Probability, Linear Algebra, ODEs, PDEs, Signals and Systems, Complex Analysis, Reinforcement learning, Imitation learning, Computer Structures & Algorithms, Digital Systems

Research Experience

Caltech DSA-2000 Radio Array

Pasadena, CA

Recipient of Caltech SURF Award under Dr. Vikram Ravi

May – Aug 2025

- [Here](#) is a description of the exciting DSA-2000 project and my proposal on characterizing the test array.

UBC-NASA CGEM Telescope

Vancouver, BC

Recipient of national NSERC USRA Award under Dr. Mark Halpern

Apr 2024 – May 2025

- Built and validated the azimuthal and elevation angle pointing data systems for the telescope.
- Optimized ADC signal chain, reducing quantization error, 60Hz radiated pickup, and aliasing.
- Programmed STM F4/H7 microcontrollers, RPis, and FPGA for fast data acquisition and networking.

UofT LT Research Institute

Toronto, ON

Recipient of UofT SUDS Award under Dr. Mei Zhen

May – Aug 2023

- Built a pipeline for 3D neuron-reconstruction from 2D image slices using image and graph algorithms.
- Trained a U-Net CNN to segment nuclei, as part of a global effort to generate full brain connectivity models.
- Presented 2x award-winning [research](#) on stress-induced neuron structural changes at conferences

Projects

Flatiron Institute CryoJax (2025)

[Github](#)

- Contributing to CryoJax, a cryo-EM simulation framework, by implementing its first physical solvent model.

Self-Driving Robot Competition (2025)

[Link](#)

- Trained an end-to-end imitation learning model in ROS/Gazebo for real-time autonomous navigation.
- Built a custom CNN in TensorFlow for real-time alphanumeric character recognition on road-signs

Burger-Cooking Robot Competition (2024)

[Link](#)

- Built an autonomous 22-DOF robot with vacuum-based crane arms to cook and assemble burgers.
- Developed FreeRTOS firmware coordinating 3 microcontrollers and 40+ calibrated sensors/actuators.
- Designed and soldered custom PCBs (motor drivers, bandpass filters, etc.) and fabricated chassis components.

National Physics Team (2021-2022)

[Finals](#)

- Selected for IYPT Team Canada based on national performance; researched and presented fluid flow problems.

Skills

Languages: Python, C++, C, Java, Assembly, VHDL & English, Dutch, Mandarin

Technologies: JAX, TensorFlow, PyTorch, ROS, Gazebo, ImageJ, OpenCV, PyQt, KiCad, STM32CubeIDE

Awards

Academic: UBC Charles & Jane Banks Scholarship, UBC Dean's Scholar, UTS W. Livingstone Physics Prize

Other: Scratch [Featured Project](#) (age 11), 2nd at Volleyball Nationals (2024), Harold Smith Essay Award