

Freeman Cheng

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WORK EXPERIENCE

Computer Vision Research Intern — Huawei Technologies Canada May 2023 - Present

Undergraduate Researcher — University of Toronto May 2022 - Aug 2022

- NSERC USRA project to develop a practical quantum chemistry-based benchmarking approach for near-term quantum computing algorithms under the supervision of Prof. Arno Jacobsen. Work presented at the 2022 Q-SITE conference. Paper in preparation.
- Implement and test state of the art Variational Quantum Eigensolver (VQE) methods and error correction techniques on HPC clusters (simulation) and real quantum hardware (IBM).
- Selected benchmark molecular systems and properties by running and analyzing quantum mechanical calculations.

Topics: quantum computing, quantum chemistry, VQE, error correction, Qiskit.

Software Engineer — BIMStudio May 2021 - Aug 2021

- Created [BIMhub](#), a web application that optimizes the architectural design process by integrating internal company workflows and specifications with Autodesk Forge.
- Developed main features including model viewing, component filtering, quantity takeoff, and building design options/colour packages.
- Sped up BIM 360 Docs file search time over 100% by caching results in Redis and improved quality assurance by automatically identifying faulty internal project files and model components.

Topics: React, Express, Redis, Microsoft Graph, Autodesk Forge, Apache Web Server.

Also did part-time work for BIMStudio from Oct 2020 to Apr 2021.

EDUCATION

2020 - 2025 (expected) BS Computer Science and Math at **University of Toronto** (GPA: 3.99/4.00)

OPEN SOURCE CONTRIBUTIONS

PythonTA Development Team [GitHub](#)

- Worked part-time (Jan 2022 - Aug 2022) on PythonTA, a code analysis tool used by thousands of students in introductory CS courses at U of T under the supervision of Prof. David Liu.
- Worked on key features and bug fixes.
- Started preliminary work on translating abstract syntax tree (AST) nodes parsed by Pylint into Z3 SMT solver expressions for superior inference capabilities.

Topics: Python, Pylint, astroid AST library, Z3 SMT solver.

AWARDS

NSERC Undergraduate Student Research Award	2022
Putnam Math Competition Top 350	2021
ACM ICPC North American Divisional Championship Qualification	2021
University of Waterloo Rene Descartes National Scholarship (18000 CAD, declined)	2020
Canadian Math Olympiad	2020
Canadian Senior Math Competition Top 0.3%	2019