# Richard Shi

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## EDUCATION

**University of Toronto**                                                                                   Toronto, ON
*MSc in Applied Computing, AI Concentration*                          *Sep 2025–Dec 2026 (expected)*
- Relevant Coursework: Deep Learning: Theory & Data Science, Causal Machine Learning, Visual and Mobile Computing Systems

**University of Toronto**                                                                                   Toronto, ON
*HBSc with High Distinction, Computer Science Specialist and Mathematics Minor*      *Sep 2021–Apr 2025*
- cGPA: 3.98/4.0
- Recognized as a President's Scholar of Excellence which is awarded to approximately 150 highly qualified students
- Relevant Coursework: Intro to Computer Vision, Natural Language Processing, Neural Networks & Deep Learning

## EXPERIENCE

**Undergraduate Machine Learning Research Assistant**                               Toronto, ON
*SysNet Research Group, University of Toronto*                                      *May 2024–Sep 2024*
- Researched methods to improve performance and privacy in federated learning with a focus on reducing privacy leakage, mitigating straggler clients, and accelerating both per-epoch and end-to-end training times
- Implemented client-side invariant neuron pruning and network-aware pruning with secure aggregation to speed up training for compute- and network-bottlenecked stragglers while preserving client data privacy
- Achieved up to 30% speedup in per-epoch and end-to-end training time while maintaining model accuracy
- Conducted preliminary experiments to assess the effects of stragglers on training times and qualitatively evaluated our pruning technique, enabling further scalability tests
- Presented to an audience of 50+ professors and researchers and earned 2nd place among 20+ research posters at the University of Toronto's Department of Computer Science Summer Research Poster Showcase 2024

**Software Developer**                                                                               Toronto, ON
*Students Developing Software Team, University of Toronto*                          *Jan 2023–Sep 2023*
- Contributed to PythonTA, an open-source static code analysis tool used by 2000+ students at the University of Toronto in first-year computer science courses
- Created new linters and custom renderers to highlight coding violations and improve clarity of errors, enhancing usability for students
- Designed an API for students to generate control flow graphs, supporting deeper exploration and visualization of code execution
- Maintained codebase through updating documentation, bug fixes, and improving readability for error messages
- Delivered weekly presentations to share task progress and technical insights with peers across different projects

## OTHER EXPERIENCE

**Mathematics Teaching Assistant**                                                        Toronto, ON
*Department of Mathematics, University of Toronto*                                  *Sep 2023–Present*
- Supported overall 200+ students through office hours and monitoring online discussion forums across both single and multivariable theoretical calculus courses
- Led weekly tutorial sessions for a combined 100 students by facilitating group work and discussions
- Efficiently graded 1000+ submissions per assessment and gave detailed feedback to improve student performance

**Computer Science Teaching Assistant**                                               Toronto, ON
*Department of Computer Science, University of Toronto*                             *Sep 2025–Present*
- Assisted instructors in assessment preparation by giving feedback to improve the student learning experience
- Led weekly labs for a total of 50 students by monitoring the completion of weekly quizzes
- Supported students during office hours by helping with coding in Python or explaining coding concepts

## AWARDS

**University of Toronto Excellence Award**                                                         2024