

MAX GROSS

PERSONAL INFORMATION

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EDUCATION

University of Toronto 2026 – M.Sc. in Computer Science
Incoming Master's student in programming languages, type theory, and quantum computing.
Advisor: Prof. Ningning XIE

McGill University 2022–2026 B.A. in Mathematics and Computer Science
GPA: 3.75/4.0 · *First Class Honours*
Honours Project: *Structural Proto-Quipper*
Description: Mechanisation and enhancement of a linearly-typed quantum circuit description language within the BELUGA logical framework
Advisors: Prof. Brigitte PIENKA & Prof. Ryan KAVANAGH

University of Edinburgh 01–05 2025 Visiting Informatics Student
Grade: 71% (First) · *Academic Exchange*
Description: Coursework in quantum programming languages, algorithmic game theory, and artificial intelligence

ACADEMIC EXPERIENCE

McGill University 2024–2026 Course Assistant
Course Assistant (undergraduate TA) for two consecutive years for *COMP 302: Programming Languages and Paradigms*, a 300+ student course on functional programming taught in OCAML. Duties include holding regular office hours, teaching self-designed tutorials of 30+ students, marking, and advising.
Funding: School of Computer Science, McGill University

Dalhousie University 05–09 2025 Summer Research Student
Developed and mechanised categorical semantics for a novel quantum circuit description language as part of the Quantum Computing research group at Dalhousie. Presented at McGill CompLogic group seminar.
Funding: *NSERC Undergraduate Student Research Award*
Supervisors: Prof. Peter SELINGER & Prof. Julien ROSS

Université du Québec à Montréal 04–08 2024 Summer Research Student
Mechanised the meta-theory of a quantum circuit description language in BELUGA using a linearity predicate, as proof of concept for a technique adapted from work in concurrency on linear session types. Presented at ECLAPS.
Funding: *NSERC Undergraduate Student Research Award* & *FRQNT* supplement
Supervisor: Prof. Ryan KAVANAGH

PRESENTATIONS AND POSTERS

Presentations 09 2025 Categorical Semantics and Adjoint Proto-Quipper
Conference of McGill's Epic Programming Language Systems (COMEPLS)
Introduced PROTO-QUIPPER-ADJOINT, a foundational calculus that reconstructs

PROTO-QUIPPER-M using an explicit adjoint structure between classical and quantum computation, yielding clean circuit reasoning syntax and categorical semantics based on Benton's Linear/Non-Linear model

12 2024 **Structural Proto-Quipper: Mechanization of a Linear Quantum Programming Language in a Structural Setting**

Eastern Canada Logic and Programming Seminar (ECLAPS)

Developed a general technique for mechanizing linearly-typed quantum programming languages in non-linear frameworks by introducing linearity predicates in BELUGA, streamlining proofs through higher-order abstract syntax.

09 2024 **Structural Proto-Quipper**

Posters

Undergraduate Computer Science Research Symposium (UCORE) & Quantum Science, Information Technology and Engineering (Q-SITE)

INDUSTRY EXPERIENCE

05–08 2023 **Data Science Intern**

Propel Holdings

Built XGBoost models for real-time default prediction and used clustering methods to detect fraud rings during a data science internship in the Risk department of a consumer credit company.

OTHER PROJECTS

03 2023 *The Poet Who Couldn't Know It*

LLCU 255

Conducted computational analysis of 500+ poems comparing human and AI-generated poetry. Developed custom metrics for measuring semantic ambiguity and metaphorical density using NLP tools in R.

11 2022 *contwext*

McGill CodeJam
12

Developed Chrome extension combating misinformation by connecting Twitter/X posts to credible news sources. Implemented BERT-based keyword extraction system identifying relevant news articles and connecting them to the New York Times API to return to users.

MISCELLANEOUS

Awards

2026 · Programming Languages Mentoring Workshop Scholarship · \$2,000
2024 · 2025 · NSERC Undergraduate Student Research Award · \$9,000
2024 · FRQNT Supplement · \$1,500
2022 · CodeJam 12 "Best Promotion of Social/Community Wellness" · \$500
2022–2025 · J.W. McConnell Scholarship · \$3,000/year

Languages

ENGLISH · Native FRENCH · Intermediate

Technical Skills

OCAML · PYTHON · JAVA · C · GIT · LEAN · L^AT_EX · PANDAS · NUMPY

May 25, 2026