

# Sacha Goldman

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## Education

**MSc in Mathematics** [University of Toronto](#)

September 2023 - August 2024

Fully funded program encompassing both course work and research. Thesis focused on understanding algebraic aspects of simple homotopy theory, supervised by Alexander Kupers.

**BSc in Mathematics and Computer Science** [University of Toronto](#)

September 2019 - June 2023

Focused on math and applications to computer science. Studying differential and algebraic topology, algebra, differential geometry, machine learning, and quantum computing.

## Research

**NSERC Undergraduate Summer Research Award** [The Torelli Lie Algebra](#)

May 2023 - September 2023

Working with Alexander Kupers and Daniel Litt on researching the Torelli Lie algebra.

**Independent Research** [Quantum Convolutional Neural Networks](#)

January 2022 - November 2022

Worked with Nathan Wiebe creating a quantum analogue of convolutional neural networks.

## Scholarships

**Raptors Foundation In-Course Scholarship** [New College](#)

2023

**In-Course Scholarship** [New College](#)

2022

**In-Course Scholarship** [New College](#)

2021

**William and Shirley Reed Scholarship** [VSB](#)

2019

## Teaching

**MAT186 Teaching Assistant** [University of Toronto](#)

September 2023 - December 2023

Running tutorials and grading for a differential and integral calculus course.

**CSC236 Teaching Assistant** [University of Toronto](#)

September 2021 - December 2021

Running tutorials and grading for a course introducing mathematics for computer science.

## Employment

**Software Engineer Intern** [Apple](#)

May 2022 - August 2022

Worked on the team architecting Apple Media Apps solving unique technical challenges.

**Software Developer Intern** [SSENSE](#)

May 2021 - August 2021

Worked on the iOS team facilitating a transition to the composable architecture and SwiftUI.

## Other Activities

**Attendee** Spaces of Manifolds: Algebraic and Geometric Approaches

2023

Attended the Banff International Research Station workshop online.

**Speaker** Canadian Undergraduate Mathematics Conference

2023

Spoke about using the Hopf fibration to calculate  $\pi_3(S^2)$  using the long exact sequence of homotopy groups.

**Academic Committee** Math Graduate Student Association

September 2023 - August 2024

Helping to organize the Bird's Eye conference and the graduate student seminar.

## Technical Proficiencies

SageMath, Lean, Python, C,  $\text{\LaTeX}$ , Git, Shell