

Spencer Wilson

4A Computer Science / Pure Mathematics, University of Waterloo

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Education

University of Waterloo

September 2018–present

- Candidate for Honours Bachelor of Mathematics, **Computer Science & Pure Mathematics**
- **94%** average and **Dean's Honours List** while taking **120%** of regular courseload with enriched math and CS courses
- Selected for William and Nona Heaslip Award in October 2019, valued at \$22,500
- Expected to graduate in April 2022

Skills

Technical Skills

- Development experience in **C**, **C++**, **Go**, **JavaScript**, **TypeScript**, **Python**, **Scala**, and **Scheme**
- Comfortable working with **Linux**, **Git**, **Docker**, **Node.js**, **GDB**, **Valgrind**, **Make**, and **GitLab CI/CD**

Soft Skills

- Strong **self-directed researcher** and **learner** who takes personal responsibility for projects
- Excellent **collaborator** and **communicator**; experienced in working with teams from diverse disciplines

Mathematical Skills

- In-depth knowledge of **applied** and **theoretical cryptography** gained through industry experience and advanced coursework
- Research experience in **algebra**; strong knowledge of **analysis** and **number theory**

Experience

Security Engineering Intern, 1Password

January–April 2021

- **Devised** a **challenge-response protocol** to address private key verification issues found in pentests
- **Researched** and **developed** a new account management feature using **public-key cryptography** and **secret sharing**
- Authored **cryptography** and **security** training materials for 1Password development teams

Junior Developer Intern, 1Password

May–August 2020

- **Designed** and **built** a **command line tool**, OPTA (1Password Test Account), that **boosted testing efficiency by 500%**
- **Engineered** an interoperability **testing framework** for 1Password's **Go** and **TypeScript cryptography libraries**
- **Added new functionality** to the 1Password CLI, including auto-downloading of updates

Undergraduate Research Intern, University of Waterloo

September–December 2019

- Selected for and received **NSERC Undergraduate Student Research Award** and **President's Research Award**
- Presented **new mathematical research** on commutative algebra in weekly meetings
- **Drafted** and **revised research paper** summarizing and detailing discoveries made during the term

Projects

Supersingular Isogeny Oblivious Transfer (final project)

UWaterloo CO 485, December 2020

- Implemented **post-quantum cryptography** protocol, Supersingular Isogeny Oblivious Transfer, in **C** using the **SIKE library**
- Coded functions to efficiently compute random **supersingular elliptic curve** point linear combinations
- Received final grades of **98** for the course and **100** for the project

BoardTex

Hack the North, September 2019

- Built a **Python** program that converts whiteboard photographs to **LaTeX** code
- Used **Google Cloud OCR** to process regular text and **MathPix API** to process math formulas
- **Wrote parser** to convert **JSON** data containing text location and description to **LaTeX**

Chess (final group project)

UWaterloo CS 246, July 2019

- Recognized as **best project** in class of 319 students
- Wrote **C++** chess engine with four levels of AI player, using **Cairo library** to implement sophisticated custom graphics
- Followed modern **object-oriented design patterns** and strategies to support modular code