

# Tristan Bishop

518-810-6517

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## Education

**State University of New York (SUNY) at New Paltz**

**Master of Science in Computer Science (August 2026-Expected May 2027)**

Coursework Includes: Analysis of Algorithms, (Expected) Formal Verification, Theory of Computation, (Expected) Networking

**State University of New York (SUNY) at New Paltz**

**Bachelor of Science in Math, minor in Computer Science (August 2024-May 2026)**

GPA: 3.92, Summa Cum Laude, Dean's List (all semesters)

Coursework Includes: Algebraic Geometry, Abstract Algebra, Probability and Statistics, Sheaf Theory

**Oxford College of Emory University**

**Associate of Arts (January 2021-May 2022)**

GPA: 3.49

## Awards

SUNY New Paltz Mathematics Department: awarded the 2026 Gerson B. Robison Award, to the top graduating undergraduates each semester.

SUNY New Paltz Fall 2025 Hackathon: won 3<sup>rd</sup> Place overall and 2<sup>nd</sup> Place in the in the Academic category in a competition of 29 students, awarded by several judges for having a high quality presentation and demonstration of work of a proof assistant on a TI-84 calculator.

## Publications

### Submitted

Bishop T., Eppolito C.\*, Green R., Jun J.\*, Norwood A., Thackrah D. "Prime Ideals and Projective Closure in the Boolean Polynomial Semiring" arXiv:2609.38657 (2026)

### Work in-progress

Bishop T., Glass C.\* "Blending Model for Homotopy-theoretic Least Squares Regression"

Bishop T., Suchy A.\* "Shape Analysis of an n-dimensional Array"

Bishop T., Suchy A.\* "Formal Verification of Learning Parity with Noise"

Bishop T., Suchy A.\* "Analysis of Chest Sorting Systems in *Minecraft* Through 3-valued Shape Analysis"

\* This person has a PhD.

† Not presenting research.

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## Conferences

Theory of Cryptography Conference (TCC)<sup>†</sup> in NYU (November 2026)

Symposium for Undergraduate Mathematics Research (SUMR) in SUNY New Paltz – Presented “Prime Ideals and Projective Closure Over the Boolean Semifield” (September 2026)

Hudson River Undergraduate Math Conference (HRUMC) in Vassar – Presented “Homotopy Theoretic Least Squares Regression” (April 2026)

## Academic Projects

**Prime Ideals Research – Funded by the NSF LEAPS-MPS grant (May 2026-August 2026)**

*Classifying prime ideals in the boolean semifield extended with  $x$  and  $y$ . Done under [Dr. Jaiung Jun](#) and Dr. Chris Eppolito.*

Presented “Prime Ideals and Projective Closure Over the Boolean Semifield” at the Symposium for Undergraduate Mathematics Research (SUMR) at SUNY New Paltz in September 2026.

Published “Prime Ideals and Projective Closure Over the Boolean Semifield” in arXiv with arXiv ID 2609.38657.

**Phoenix Proof Assistant (November 2025-Present)**

*Designing a proof assistant through Pugh-Signer Simplicial Type Theory to formalize free probability. Written in x86-64 assembly for speed and to better understand proof assistant complexity. Currently part of master’s thesis project.*

**Applied Sheaf Theory Research (December 2024-Present)**

*Improving the error in linear regression on intersecting data sets by using Koszul complexes under [Dr. Cheyne Glass](#) for a total of 9 expected credit hours.*

Tristan Bishop under Dr. Cheyne Glass “Homotopy Theoretic Least Squares Regression” presented at the Hudson River Undergraduate Math Conference (HRUMC) at Vassar College in April 2026

**Formal Verification and Cryptography Research (August 2024-Present)**

*Researching the connection between formal verification techniques and cryptographic protocols under [Dr. Ashley Suchy](#) for a total of 12 expected credit hours. Currently looking to formally verify leakage resilience methods such as symmetric key encryption against auxiliary inputs through both static code analysis and implementation. Currently part of master’s thesis project.*

## Relevant Work Experience

**Teacher of Record at SUNY New Paltz (Fall 2026)**

*Instructing 32 students in 2 3-hour classes on concepts relating to the theory of computation (Language Processing, CPS 425, 8 credit hours) and assessing their knowledge by grading labs and quizzes.*

**Student Instructor (SI) at Oxford College (Fall 2022)**

*Tutored students through additional instruction in Calculus I (MATH\_OX 111, 4*

\* This person has a PhD.

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credit hours) by hosting lectures.

## Personal Projects

### Dormouse Terminal (May 2026-Present)

*Building a terminal without using the emulation part to build terminal applications without the need for escape codes. Written in x86-64 assembly for speed.*

### Future Diary: the 13<sup>th</sup> Diary Owner Translation (August 2020-Present)

*Translating "Future Diary: the 13<sup>th</sup> Diary Owner" (a 30 hour text-based game) and it's sequel "Future Diary: the 13<sup>th</sup> Diary Owner RE:WRITE" (a 35 hour text-based game) from Japanese into English.*

## Leadership Projects

### The Witch's Guide to Theory of Computation (August 2026-Present)

*Spearheading a group of approximately 20 computer science students to create a gamified style of textbook detailing the methods of Theory of Computation through various games.*

### Math Club at SUNY New Paltz (March 2025-May 2026)

*Formalized the math club by making it student association recognized and have recruited approximately 70 members. Additionally, developed materials for 27 1-hour long math club seminars. Moreover, all materials made for the club can be accessed at the link above which was written in HTML, CSS, Javascript, and Python.*

## Programming Languages

Flat Assembler (FASM) x86-64, Git, C, Javascript, Java, Python, R

## Languages

English – Native Speaker

Japanese – Bilingual

Link to my Gitlab Page: <https://gitlab.com/sermeno14>

\* This person has a PhD.

† Not presenting research.