

Rain Zimin Yang

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RESEARCH INTEREST

Computational complexity theory, quantum computation, analysis of Boolean functions, combinatorics, circuit complexity, query complexity, communication complexity.

EDUCATION

University of British Columbia (UBC)

Sept 2023 - May 2026

- Bachelor of Science in Combined Honours Computer Science and Mathematics.
- GPA: 94.6%
- Undergraduate courses: Theory of Computation (CPSC 421), Randomized Algorithms (CPSC 436R), Quantum Computation (CPSC 436Q), Group Theory (MATH 322), Number Theory (MATH 437/538), Measure Theory (MATH 420/507), Probability (MATH 418/544), Stochastic Processes (MATH 419/545).
- Graduate courses: Fields and Galois Theory (MATH 422/501), Commutative Algebra (MATH 423/502), Algebraic Topology (MATH 427/527), Algebraic Geometry (MATH 532).

RESEARCH EXPERIENCE

Rational Degree Conjecture

Apr 2025 - Jan 2026

UBC Computer Science | Supervisor: [Daochen Wang](#)

- We proved that a natural complexity measure, the rational degree, of total Boolean functions is polynomially related to its Fourier degree, resolving the Rational Degree Conjecture posed in 1994.
- Preprint: <https://arxiv.org/abs/2601.08727>.
- Research supported via NSERC WLIURA.

Boundary Regularity for Solutions to the Plateau Problem

May - Aug 2024

UBC Mathematics | Supervisor: Ailana Fraser

- Investigated the existence of stable minimal surfaces with finite total curvature and straight-line boundary, exploring their connection to the half-helicoid.
- Applied the Weierstrass-Enneper representation to construct minimal surfaces using complex analytic functions.
- Developed MATLAB visualizations to illustrate surfaces from Weierstrass data.
- Presented in [UBC USRA Seminar](#) on June 20, 2024.
- Research supported via NSERC WLIURA.

ACADEMIC COMPETITIONS

- **Honors in ICPC World Finals 2025** Sept 2025
1st place in Canada, 8th place in North America (Team *Forgetful Functors*)
- **ICPC Pacific Northwest Regional Contest 2025 - 2026** Nov 2025
Bronze Medalist, Canadian Site Champion (Team *Diamond Dust*)
- **ICPC Pacific Northwest Regional Contest 2024 - 2025** Nov 2024
Silver Medalist, Canadian Site Champion (Team *Forgetful Functors*)
- **Competitive Programming** 2021 - now
USACO Platinum Division; Master on [Codeforces](#); top 0.23% on [Leetcode](#).

AWARDS AND SCHOLARSHIPS

- **Stanley M Grant Scholarship in Mathematics** (\$4500), *UBC Mathematics* Oct 2025
- **Dean of Science Scholarship** (\$210), *UBC Faculty of Science* Jul 2025
- **NSERC Undergraduate Student Research Award**, *UBC Computer Science* Apr 2025
- **Reginald Palliser-Wilson Scholarship** (\$4400), *UBC Mathematics* Sept 2024
- **NSERC Undergraduate Student Research Award**, *UBC Mathematics* Apr 2024
- **Entrance Scholarship in Mathematics** (\$10,424.12), *UBC Mathematics* Oct 2023
- **Outstanding International Student Scholarship** (\$13,000), *UBC Faculty of Science* Apr 2023
- **COMC Entrance Scholarship** (\$1000), *UBC Mathematics* Mar 2023

TECHNICAL SKILLS

Programming Languages: C++, C, Java, Python

Mathematical Tools: MATLAB

Other: \LaTeX (Academic Writing), Git

TEACHING EXPERIENCE

Teaching Assistant, *UBC Computer Science* Jan 2026 - now
Course: CPSC 420 Advanced Algorithm Design and Analysis

Teaching Assistant, *UBC Computer Science* Sept - Dec 2025
Course: CPSC 421 Introduction to Theory of Computing

- Supported a class of 53 students by grading assignments, exams, and hosting weekly office hours.

Teaching Assistant, *UBC Computer Science* July - Aug 2025
Course: CPSC 320 Intermediate Algorithm Design and Analysis

- Supported a class of 154 students by grading assignments, exams, hosting weekly office hours and tutorials.

Teaching Assistant, *UBC Computer Science* Sept - Dec 2024
Course: CPSC 320 Intermediate Algorithm Design and Analysis

- Supported a class of 386 students by grading assignments, exams, and hosting office hours.
- Helped students understand algorithmic concepts, such as dynamic programming, graph algorithms, and NP-completeness.
- Provided feedback on assignments and exams.