Rain Zimin Yang

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Research Interest

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

Education

University of British Columbia (UBC) Sept 2023 - May 2027

- Bachelor of Science in Combined Honours Computer Science and Mathematics.
- GPA: 94.9%
- 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

Research Assistant, *UBC Computer Science* Nov 2024 - Now
Computational Complexity | Supervisor: Daochen Wang

- Researching on the Rational Degree Conjecture in Boolean function analysis.
- Proved the first non-trivial lower bound on the rational degree of Boolean functions. (Paper in preparation)
- Supported by Work Learn International Undergraduate Award from NSERC.
- Presented in the Year of Quantum Across Canada at the Institute for Quantum Computing (IQC).

Research Assistant, *UBC Mathematics* May - Aug 2024
Minimal Surface Theory | 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.
- Supported by Work Learn International Undergraduate Award from NSERC.

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*)
- **ICPC Pacific Northwest Regional Contest 2023 - 2024** Feb 2024
  6th place, Canadian Site Silver Medalist (Team *RSK*)
- **Competitive Programming** 2021 - now
  USACO Platinum Division; Master on Codeforces; top 0.21% 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, Typescript

Mathematical Tools: MATLAB

Other: LaTeX (Academic Writing), Git (Version Control)

Employment Experience

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

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.