

# 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](https://arxiv.org/abs/2601.08727)

- 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

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

## TECHNICAL SKILLS

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

**Mathematical Tools:** MATLAB

**Other:** L<sup>A</sup>T<sub>E</sub>X (Academic Writing), Git

## TEACHING EXPERIENCE

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<b>Teaching Assistant</b> , <i>UBC Computer Science</i>	Jan 2026 - now
Course: CPSC 420 Advanced Algorithm Design and Analysis	
<b>Teaching Assistant</b> , <i>UBC Computer Science</i>	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.	
<b>Teaching Assistant</b> , <i>UBC Computer Science</i>	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.	
<b>Teaching Assistant</b> , <i>UBC Computer Science</i>	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.	