Ziyang Jin
Ph.D. student in Theoretical Computer Science

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Education

2024 – Now **University of Toronto**

Ph.D., Computer Science
Supervisor: Akshayaram Srinivasan
Research Area: Cryptography

2022 – 2024 **University of Toronto**

M.Sc., Computer Science
Supervisor: Michael Molloy
Thesis: *Frugal Colouring of Graphs with Girth At Least Five*
GPA: 4.00 / 4.00

2014 – 2019 **The University of British Columbia**

B.Sc., Computer Science, with Distinction
Overall GPA: 90.6%
3rd & 4th Year GPA: 4.33 / 4.33

2012 – 2014 **Nanjing University**

B.Sc., Atmospheric Sciences (transferred to UBC)
GPA: 4.49 / 5.00

Research Experience

2024 Feb – Now *Optimal MPC against malicious adversaries*
Abstract: We try to obtain a multi-party computation protocol that is secure against malicious adversaries. In addition, we want the protocol to be round-optimal and also has constant-rate communication complexity.
Supervisor: Akshayaram Srinivasan

2023 Aug – Dec *Frugal Colouring of Graphs with Girth At Least Five*
Abstract: We proved that for any graph with girth at least five and maximum degree Δ, there exists a $(1 + o(1))\frac{\Delta}{\ln \Delta}$-colouring such that for every vertex v, no colour appears more than $\text{poly}(\log \Delta)$ times in the neighbourhood of v.
Supervisor: Michael Molloy

2023 Mar – Jul *Colouring Graph Squares*
Abstract: We made an attempt to prove that for any graph G with girth at least seven and maximum degree Δ, the chromatic number of G^2 is at most $(\frac{1}{2} + o(1))\frac{\Delta^2}{\ln \Delta}$. G^2 is the graph obtained by connecting every distance-two vertices in G.
Supervisor: Michael Molloy

2018 Sep – Dec *Graph Theory and Graph Drawing*
Abstract: I learned the left-right planarity test, Tutte's algorithm for drawing graphs, force-directed methods in graph drawing, and introduction to spectral graph theory, Chan's convex hull algorithm, Voronoi Diagrams and Delaunay Triangulation.
Supervisor: William Evans

Academic Talks

2024 Jan *Frugal Colouring of Graphs with Girth At Least Five*
Theory Student Seminar, University of Toronto

2023 Oct	*Graph Colouring and the Rödl Niblle* Theory Student Seminar, University of Toronto
2023 Jun	*Sunflowers: from soil to oil* Theory Reading Group, University of Toronto
2023 Apr	*The Probabilistic Method and Entropy Compression* Theory Student Seminar, University of Toronto

Academic Services

Reviewer: ICALP 2024

Awards and Honor

2022	**Ontario Graduate Scholarship** at the University of Toronto
2018	**Faculty of Science International Student Scholarship** at UBC
2018	**Department of Computer Science Scholarship** at UBC
2017	**Microsoft Tuition Scholarship** for computer science undergraduate students
2013	**National Scholarship** (top-tier) at Nanjing University
2013	**Ranked No.1 GPA** in class in first-year at Nanjing University
2012	**Ranked top 0.4%** in National College Entrance Exam in China

Teaching Experience

Course Instructor, University of Toronto

Fall 2023	*CSC 236 Introduction to the Theory of Computation* (LEC 5101: 111 students)
Winter 2023	*CSC 373 Algorithm Design, Analysis, and Complexity* (LEC 0301: 95 students)

Graduate Teaching Assistant, University of Toronto

Winter 2024	*CSC 310 Information Theory*
Winter 2024	*CSC 373 Algorithm Design, Analysis, and Complexity* (LEAD TA)
Summer 2023	*CSC 240 Enriched Introduction to the Theory of Computation* (PREP TA)
Summer 2023	*CSC C63 Computability and Computational Complexity*

Undergraduate Teaching Assistant, The University of British Columbia

Winter 2019	*CPSC 320 Intermediate Algorithm Design and Analysis*
Fall 2018	*CPSC 311 Definition of Programming Languages*
Winter 2018	*CPSC 313 Computer Hardware and Operating Systems*
Fall 2016	*CPSC 221 Basic Algorithms and Data Structures*
2015 – 2016	*CPSC 121 Models of Computation* (Summer 2015, Fall 2015, Winter 2016)

Work Experience

Amazon, Inc. (Amazon Development Centre Canada)

2022 – 2022	Machine Learning Engineer II at Amazon Ads Sponsored Products
2021 – 2022	Software Development Engineer II at AWS S3 Index Control Plane
2019 – 2021	Software Development Engineer I at AWS S3 Index Control Plane
Summer 2018	Software Development Engineer Intern at AWS S3 Index Control Plane
Summer 2017	Software Development Engineer Intern at Amazon Prime