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Education

- **Massachusetts Institute of Technology** 2020–Present
Ph.D. Student, EECS Department
 - Advisors: Ryan Williams and Virginia Vassilevska Williams
 - Research Area: Theoretical Computer Science
- **Massachusetts Institute of Technology** Sept 2022
M.S., EECS Department
- **Tsinghua University, Beijing, China** 2016–2020
B.Eng., Yao Class, Institute for Interdisciplinary Information Sciences

Selected Awards and Scholarships

- **Siebel Scholarship** 2023
- **Finalist of Jane Street Graduate Research Fellowship** 2023
- **MIT Akamai Presidential Graduate Fellowship** 2020–2021
- **Yao Award (Yao Class, Tsinghua University)** Sept 2019
Gold medal (one awardee per year)
- **ETH Zurich Student Summer Research Fellowship** July 2019
- **ACM International Collegiate Programming Contest World Finals** May 2017
Silver medal, 6th place (with teammates Lijie Chen and Yuhao Du)
- **International Olympiad in Informatics** Aug 2016
Gold medal, 1st place

Visiting and Internship

- **Simons Institute** Fall 2023
Visiting student (“Logic and Algorithms in Database Theory and AI” program)
- **Microsoft Algorithm Group** Summer 2023
Research intern (host: Janardhan Kulkarni, co-host: Sepideh Mahabadi)
- **Google Mountain View** Summer 2022
Student researcher program (host: Joshua Wang)
- **Ethereum Foundation** Summer 2021
Summer research internship (remote)
- **ETH Zurich** Summer 2019
Visiting student advised by Mohsen Ghaffari

- **Massachusetts Institute of Technology**
Visiting student advised by Ryan Williams
- **Harvard University**
Visiting student advised by Jelani Nelson

Spring 2019

Summer 2018

Publications

Authors are in alphabetical order. Exceptions are marked with †.

- [1] Ce Jin and Yinzhan Xu. Shaving Logs via Large Sieve Inequality: Faster Algorithms for Sparse Convolution and More. In *Proceedings of the 56th ACM Symposium on Theory of Computing (STOC)*, to appear, 2024
- [2] Ce Jin. 0-1 Knapsack in Nearly Quadratic Time. In *Proceedings of the 56th ACM Symposium on Theory of Computing (STOC)*, to appear, 2024
- [3] Ce Jin, Ryan Williams, and Nathaniel Young. A VLSI Circuit Model Accounting for Wire Delay. In *Proceedings of the 15th Innovations in Theoretical Computer Science Conference (ITCS)*, 2024
- [4] Daniel Gibney, Ce Jin, Tomasz Kociumaka, and Sharma V. Thankachan. Near-Optimal Quantum Algorithms for Bounded Edit Distance and Lempel–Ziv Factorization. In *Proceedings of the 35th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2024
- [5] Alina Harbuzova, Ce Jin, Virginia Vassilevska Williams, and Zixuan Xu. Improved Roundtrip Spanners, Emulators, and Directed Girth Approximation. In *Proceedings of the 35th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2024
- [6] Ce Jin, Virginia Vassilevska Williams, and Renfei Zhou. Listing 6-Cycles. In *Proceedings of the 7th SIAM Symposium on Simplicity in Algorithms (SOSA)*, 2024
- [7] Timothy M. Chan, Ce Jin, Virginia Vassilevska Williams, and Yinzhan Xu. Faster Algorithms for Text-to-Pattern Hamming Distances. In *Proceedings of the 64th IEEE Symposium on Foundations of Computer Science (FOCS)*, 2023
- [8] Shyan Akmal and Ce Jin. An Efficient Algorithm for All-Pairs Bounded Edge Connectivity. In *Proceedings of the 50th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2023
- [9] Ce Jin and Yinzhan Xu. Removing Additive Structure in 3SUM-Based Reductions. In *Proceedings of the 55th ACM Symposium on Theory of Computing (STOC)*, 2023. **Invited to SICOMP special issue**
- [10] Ce Jin and Jakob Nogler. Quantum Speed-ups for String Synchronizing Sets, Longest Common Substring, and k-mismatch Matching. In *Proceedings of the 34th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2023
- [11] Mingyang Deng, Ce Jin, and Xiao Mao. Approximating Knapsack and Partition via Dense Subset Sums. In *Proceedings of the 34th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2023
- [12] Mina Dalirrooyfard, Ce Jin, Virginia Vassilevska Williams, and Nicole Wein. Approximation Algorithms and Hardness for n-Pairs Shortest Paths and All-Nodes Shortest Cycles. In *Proceedings of the 63rd IEEE Symposium on Foundations of Computer Science (FOCS)*, 2022
- [13] Ce Jin and Yinzhan Xu. Tight Dynamic Problem Lower Bounds from Generalized BMM and OMv. In *Proceedings of the 54th ACM Symposium on Theory of Computing (STOC)*, 2022

- [14] Shyan Akmal, Lijie Chen, Ce Jin, Malvika Raj, and Ryan Williams. Improved Merlin-Arthur Protocols for Central Problems in Fine-Grained Complexity. In *Proceedings of the 13th Innovations in Theoretical Computer Science Conference (ITCS)*, 2022
- [15] Shyan Akmal and Ce Jin. Near-Optimal Quantum Algorithms for String Problems. In *Proceedings of the 33rd ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2022. Also accepted as a regular talk at Quantum Information Processing (QIP) 2022
- [16] Lijie Chen, Ce Jin, Ryan Williams, and Hongxun Wu. Truly Low-Space Element Distinctness and Subset Sum via Pseudorandom Hash Functions. In *Proceedings of the 33rd ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2022
- [17] Lijie Chen, Ce Jin, Rahul Santhanam, and Ryan Williams. Constructive Separations and Their Consequences. In *Proceedings of the 62nd IEEE Symposium on Foundations of Computer Science (FOCS)*, 2021
- [18] Shyan Akmal and Ce Jin. Faster Algorithms for Bounded Tree Edit Distance. In *Proceedings of the 48th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2021
- [19] Ce Jin, Jelani Nelson, and Kewen Wu. An Improved Sketching Bound for Edit Distance. In *Proceedings of the 38th International Symposium on Theoretical Aspects of Computer Science (STACS)*, 2021
- [20] Ce Jin, Nikhil Vyas, and Ryan Williams. Fast Low-Space Algorithms for Subset Sum. In *Proceedings of the 32nd ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2021
- [21] Kyriakos Axiotis, Arturs Backurs, Karl Bringmann, Ce Jin, Vasileios Nakos, Christos Tzamos, and Hongxun Wu. Fast and Simple Modular Subset Sum. In *Proceedings of the 4th SIAM Symposium on Simplicity in Algorithms (SOSA)*, 2021
- [22] Mohsen Ghaffari, Christoph Grunau, and Ce Jin. Improved MPC Algorithms for MIS, Matching, and Coloring on Trees and Beyond. In *Proceedings of the 34th International Symposium on Distributed Computing (DISC)*, 2020
- [23] Mohsen Ghaffari, Ce Jin, and Daan Nilis. A Massively Parallel Algorithm for Minimum Weight Vertex Cover. In *Proceedings of the 32nd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, 2020
- [24] Lijie Chen, Ce Jin, and Ryan Williams. Sharp Threshold Results for Computational Complexity. In *Proceedings of the 52nd ACM Symposium on Theory of Computing (STOC)*, 2020
- [25] Lijie Chen, Ce Jin, and Ryan Williams. Hardness Magnification for all Sparse NP Languages. In *Proceedings of the 60th IEEE Symposium on Foundations of Computer Science (FOCS)*, 2019
- [26] Ce Jin. An Improved FPTAS for 0-1 Knapsack. In *Proceedings of the 46th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2019
- [27] Ran Duan, Ce Jin, and Hongxun Wu. Faster Algorithms for All Pairs Non-decreasing Paths Problem. In *Proceedings of the 46th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2019
- [28] Kai Jin, Ce Jin, and Zhaoquan Gu. Cooperation via Codes in Restricted Hat Guessing Games[†]. In *Proceedings of the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2019
- [29] Ce Jin. Simulating Random Walks on Graphs in the Streaming Model. In *Proceedings of the 10th Innovations in Theoretical Computer Science Conference (ITCS)*, 2019

- [30] Kyriakos Axiotis, Arturs Backurs, Ce Jin, Christos Tzamos, and Hongxun Wu. Fast Modular Subset Sum using Linear Sketching. In *Proceedings of the 30th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2019
- [31] Ce Jin and Hongxun Wu. A Simple Near-Linear Pseudopolynomial Time Randomized Algorithm for Subset Sum. In *Proceedings of the 2nd Symposium on Simplicity in Algorithms (SOSA)*, 2019

Talks

- **Conditional Hardness and Fine-grained Complexity**
 - Data Structures and Optimization for Fast Algorithms Boot Camp @ Simons Institute *Sept 2023*
- **Removing Additive Structure in 3SUM-Based Reductions**
 - STOC 2023 *June 2023*
 - Seminar at Chinese Academy of Sciences *Apr 2023*
 - Algorithms seminar at University of Warsaw *Jan 2023*
 - MIT SPAMS seminar *Dec 2022*
- **Quantum Speed-ups for String Synchronizing Sets, Longest Common Substring, and k-mismatch Matching Approximation**
 - TCS Youth Forum (Chinese Academy of Sciences) *Dec 2023*
 - Algorithms and Complexity seminar at IRIF (CNRS, Université Paris-Cité) *Nov 2022*
- **Approximation Algorithms and Hardness for n-Pairs Shortest Paths and All-Nodes Shortest Cycles**
 - FOCS 2022 *Nov 2022*
- **Tight Dynamic Problem Lower Bounds from Generalized BMM and OMv**
 - STOC 2022 *June 2022*
 - Google Research Discrete Algorithms Summer Reading Group *July 2022*
- **Near-Optimal Quantum Algorithms for String Problems**
 - Quantum Computing Seminar (George Mason University) *May 2022*
 - QIP 2022 *Mar 2022*
 - SODA 2022 *Jan 2022*
- **Improved Merlin-Arthur Protocols for Central Problems in Fine-Grained Complexity**
 - ITCS 2022 *Jan 2022*
- **Fast Low-Space Algorithms for Subset Sum**
 - Theory Seminar (University of Michigan) *Feb 2022*
 - Algorithms Seminar (Google Research Mountain View) *Apr 2021*
 - SODA 2021 *Jan 2021*
 - CS Peer Talk (Peking University) *July 2020*
- **Faster Algorithms for Bounded Tree Edit Distance**
 - ICALP 2021 *July 2021*

- **Improved MPC Algorithms for MIS, Matching, and Coloring on Trees and Beyond**
– DISC 2020 Oct 2020
- **A Massively Parallel Algorithm for Minimum Weight Vertex Cover**
– SPAA 2020 July 2020
- **Sharp Threshold Results for Computational Complexity**
– STOC 2020 June 2020
– IJTCS (Peking University) Aug 2020
- **Hardness Magnification for all Sparse NP Languages**
– FOCS 2019 Nov 2019
– TCS Youth Forum (Chinese Academy of Sciences) Oct 2019
– Yao Class student seminar Sept 2019
- **Cooperation via Codes in Restricted Hat Guessing Games**
– AAMAS 2019 May 2019
- **Simulating Random Walks on Graphs in the Streaming Model**
– ITCS 2019 Jan 2019
– Harvard sketching reading group Aug 2018
- **A Simple Near-Linear Pseudopolynomial Time Randomized Algorithm for Subset Sum**
– SOSA@SODA 2019 Jan 2019
- **An Improved FPTAS for 0-1 Knapsack**
– ICALP 2019 July 2019
– Yao Class student seminar Dec 2018

Service

- Conference Reviewing: STOC, FOCS, SODA, CCC, ICALP, ITCS, ESA, RANDOM, SOSA, STACS, WG, SPIRE, FUN, ISAAC, CALDAM
- Journal Reviewing: *SIAM Journal on Computing*, *ACM Transactions on Algorithms*, *Information Processing Letters*, *Discrete Applied Mathematics*
- Co-coach (with Yinzhan Xu) of MIT ICPC (International Collegiate Programming Contest) teams since 2021
- At MIT, I have (unofficially) mentored several undergraduate visiting/UROP students for TCS research: Hongxun Wu (2021), Rui Yao (2021), Jakob Nogler (2021), Freddie Zhao (2022), Renfei Zhou (2023)

Teaching Experience

- **Advanced Complexity Theory (MIT)** Spring 2024
Teaching Assistant (Instructor: Ryan Williams)
- **Distributed Algorithms (MIT)** Fall 2022
Teaching Assistant (Instructors: Mohsen Ghaffari and Nancy Lynch)
- **Mathematics for Computer Science (Tsinghua University)** Spring 2020
Teaching Assistant (Instructor: Andrew C. Yao)