

IAN MERTZ

Contact

www.cs.toronto.edu/~mertz
mertz@cs.toronto.edu

Research

Theory Group
Department of Computer Science
University of Toronto

EDUCATION

University of Toronto, Toronto, ON *Winter 2018-*
Ph.D. in Computer Science
Advisor: Toniann Pitassi

University of Toronto, Toronto, ON *Fall 2016-Winter 2018*
Masters in Science, Computer Science
Advisor: Toniann Pitassi, Stephen Cook

Rutgers University, Piscataway, NJ *Fall 2012-Spring 2016*
B.S. in Computer Science, B.A. in Mathematics, B.A. in East Asian Language Studies (concentration in Japanese)
Summa cum laude, honors program, Dean's List

PUBLICATIONS

Lifting is as easy as 1,2,3

Ian Mertz, Toniann Pitassi

In submission, STOC '21.

Automating Cutting Planes is NP-hard

Mika Göös, Sajin Korothe, Ian Mertz, Toniann Pitassi

In Proc. 52nd ACM Symposium on Theory of Computing (STOC '20), Association for Computing Machinery (ACM), 84 (132) pp. 68-77, 2020.

Catalytic Approaches to the Tree Evaluation Problem

James Cook, Ian Mertz

In Proc. 52nd ACM Symposium on Theory of Computing (STOC '20), Association for Computing Machinery (ACM), 84 (132) pp. 752-760, 2020.

Short Proofs Are Hard to Find

Ian Mertz, Toniann Pitassi, Yuanhao Wei

In Proc. 46th International Colloquium on Automata, Languages and Programming (ICALP '19), Leibniz International Proceedings in Informatics (LIPIcs), 84 (132) pp. 1-16, 2019.

Dual VP Classes

Eric Allender, Anna Gál, Ian Mertz

computational complexity, 25 pp. 1-43, 2016. An earlier version appeared in Proc. 40th International Symposium on Mathematical Foundations of Computer Science (MFCS '15), Lecture Notes in Computer Science, 9235 pp. 14-25, 2015.

Complexity of Regular Functions

Eric Allender, Ian Mertz

In Proc. 9th International Conference on Language and Automata Theory and Applications (LATA '15), Lecture Notes in Computer Science, 8977 pp. 449-460, 2015.

INVITED TALKS

STOC 2020 (Zoom) *June 22, 2020*
Automating Cutting Planes is NP-hard
Conference talk

ICALP 2019 (Patras, Greece) *July 9, 2019*
Short Proofs Are Hard to Find
Conference talk

Institute for Advanced Study (Princeton, NJ) December 5, 2017
Short Proofs Are Hard to Find
Invited talk, internal theory seminar

LATA 2015 (Nice, France) March 2, 2015
Complexity of Regular Functions
Conference talk

RESEARCH EXPERIENCE

Simons Institute Fall 2018
Visiting graduate student researcher, Special Semester on Lower Bounds in Complexity Theory
Topics: proof complexity, arithmetic circuit complexity, tree evaluation problem

Rutgers University-New Brunswick Fall 2012-Spring 2016
Eric Allender (Rutgers University-New Brunswick)
Topics: logspace complexity, automata, arithmetic circuit complexity, the minimum circuit size problem

Kyoto University Summer 2015
Kazuo Iwama (Kyoto University)
Topics: tree evaluation problem

Princeton University, Rutgers University-Camden Summer 2012
Rajiv Gandhi (Rutgers University-Camden), Amit Chavan (University of Maryland), Amey Bhangale (Rutgers University-New Brunswick), Sudha Rao (University of Maryland), David Jacobowitz (Princeton University)
Topics: NP-Hard approximation algorithms, linear programming

OTHER TEACHING POSITIONS

Rutgers Young Scholars Program in Discrete Mathematics Summer 2014
Rutgers University-New Brunswick
Oversaw students for a summer course on discrete mathematics aimed at high school students, led by Professor Joseph Rosenstein (Department of Mathematics, Rutgers University-New Brunswick). Assisted with homework and led group discussions about the homework and material covered, gave a lecture on connections between graph theory and theoretical computer science. Evaluated student performance and engagement and communicated with administration about required changes in the course plan.

Program in Algorithmic and Combinatorial Thinking (PACT) Summer 2013, 2014, 2016
Princeton University
In 2016 gave a weekly lecture series on complexity theory. In previous years graded and assisted with creating assignments for a summer course on discrete mathematics and theoretical computer science, taught by Professor Rajiv Gandhi (Department of Computer Science, Rutgers University-Camden). Led discussions on homework and topics covered. Was available for help and information on topics covered in lecture, and on general topics in theoretical computer science. Was involved with research with other TA's and professor along side (see Research section). Came back to give a guest talk on Rutgers and personal experiences with research in computer science.

SELECTED GRANTS, HONORS & AWARDS

Scarlet Scholarship Fall 2012 - Spring 2016
Dean's List Fall 2012 - Spring 2016
School of Arts and Sciences Excellence Award 2013

Heidelberg Laureate Forum Fall 2016, Fall 2019
NSF Research Experience for Undergraduates Summer 2014
Aresty Summer Science Program Summer 2013