Deeksha Adil
Junior Fellow, ITS - ETH Zurich

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RESEARCH INTERESTS	**Fast Algorithms for Optimization** My work focuses on the design of fast algorithms for problems in optimization, machine learning and theoretical computer science, using tools from continuous optimization.

APPOINTMENTS

- **Institute for Theoretical Studies, ETH Zurich** — Zurich, Switzerland
  Junior Fellow — Jan 2023 - Current

- **Simons Institute for Theory of Computation** — Berkeley, CA, USA
  Visiting Scientist — Aug 2023 - Dec 2023

- **University of Michigan** — Ann Arbor, MI, USA
  Research Associate, Department of Computer Science — Sep 2022 - Dec 2022

EDUCATION

- **University of Toronto** — Toronto, ON, Canada
  Ph.D., Department of Computer Science — Sep 2017 - Aug 2022
  Advisor: Prof. Sushant Sachdeva
  MSc., Department of Computer Science — Sep 2017 - Jan 2019

- **Indian Institute of Science Education and Research Pune** — Pune, India
  BS-MS Dual Degree, Mathematics Department — Aug 2012 - May 2017
  Thesis: Matching Under Preferences
  Advisor: Prof. Saket Saurabh (IMSc Chennai)

HONORS AND AWARDS

- *Alfred B. Lehman Graduate Scholarship* ($5000) — Jan 2022

- *Monica Ryckman Bursary* ($5000) — Jan 2021
  Dept. of Computer Science, University of Toronto

- *NSERC - Post Graduate Scholarship* ($21,000 per year) — May 2020 - Apr 2023
  Natural Sciences and Engineering Research Council of Canada

- *Ontario Graduate Scholarship* ($15,000) — May 2018 - Apr 2019
  Ontario Govt. and University of Toronto

- *DST-INSPIRE Fellowship* — Aug 2012 - May 2017
  Govt. of India

- *S.N. Bhatt Memorial Excellence Fellowship* — Jun 2015 - Jul 2015
  International Centre for Theoretical Sciences, India

PUBLICATIONS

1. **Deeksha Adil**, Thatchaphol Sararunak. *Decremental $(1 + \epsilon)$-Approximate Maximum Eigenvector: Dynamic Power Method*. Under Review.

2. **Deeksha Adil**, Rasmus Kyng, Richard Peng, Sushant Sachdeva. *Fast Algorithms for ℓ_p-Regression.* Under Revision.

3. **Deeksha Adil**, Arun Jambulapati, Brian Bullins, Sushant Sachdeva. *Optimal Methods for Higher-Order Smooth Monotone Variational Inequalities*. Under Review.

4. **Deeksha Adil**, Brian Bullins, Sushant Sachdeva. *Unifying Width-Reduced Methods for Quasi-Self-Concordant Optimization*. In Proceedings of the Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS) 2021.

5. **Deeksha Adil**, Brian Bullins, Rasmus Kyng, Sushant Sachdeva. *Almost-Linear Time Weighted ℓ_p-norm Solvers in Slightly Dense Graphs via Sparsification*. In Proceedings of the 48th International Colloquium on Automata, Languages, and Programming (ICALP) 2021.

6. **Deeksha Adil** and Sushant Sachdeva. *Faster p-norm minimizing flows, via smoothed q-norm problems*. In Proceedings of the Thirty First Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2020.

7. **Deeksha Adil**, Richard Peng and Sushant Sachdeva. *Fast, Provably convergent IRLS Algorithm for p-norm Linear Regression*. In Proceedings of the Thirty-third Conference on Neural Information Processing Systems (NeurIPS) 2019.

8. **Deeksha Adil**, Rasmus Kyng, Richard Peng, and Sushant Sachdeva. *Iterative refinement for ℓ_p-norm regression*. In Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2019.

9. **Deeksha Adil**, Sushmita Gupta, Sanjukta Roy, Saket Saurabh, Meirav Zehavi. *Parameterized Algorithms for the Stable Matching Problem with Ties and Incomplete Lists*. Theoretical Computer Science. 723. 10.1016/j.tcs.2018.03.015. 2018

TALKS

- *Dynamically Computing Approximate Eigenvectors*
  Institut de Recherche en Informatique Fondamentale (IRIF), Paris   Dec 2023

- *Lectures on Higher Order Optimization*
  Simons Institute for the Theory of Computation
  Data Structures and Optimization for Fast Algorithms Bootcamp, Berkeley   Sep 2023
  Part 1, Part 2

- *Width-Reduced Methods for Acceleration*
  SIAM Conference on Optimization, Seattle   Jun 2023

- *Fast Algorithms for Regression Problems*
  Institute for Theoretical Studies, ETH Zurich   Mar 2023
  Institut de Recherche en Informatique Fondamentale (IRIF), Paris   Apr 2023
  DFG Workshop on Optimization and Machine Learning, Berlin   Jun 2023
  The Institute of Mathematical Sciences, Chennai   Jul 2023
  Tata Institute for Fundamental Research, Mumbai   Jul 2023
  Simons Institute for Theory of Computation, Berkeley   Nov 2023
  Sorbonne University   Dec 2023
  Ecole Normale Supérieure, Paris   Dec 2023

- *Fast Algorithms for ℓ_p-Regression and Other Problems*
  Toyota Technical Institute at Chicago   Dec 2021
  Theory Seminar, University of Michigan   Mar 2022

- *Width-Reduced Methods for Quasi-Self-Concordant Optimization*
  NeurIPS 2021, Virtual Conference   Dec 2021
  ETH Zurich Algorithms and Complexity seminar   Oct 2021

- *Almost-linear-time Weighted ℓ_p-norm Solvers in Graphs*
  ICALP 2021, Virtual Conference   Jul 2021

- *Fast Algorithms for ℓ_p-regression*
  Student Seminar, Dept. of Computer Science, Princeton University   Oct 2019

- *Iterative Refinement for ℓ_p-norms*
  Theory Group Talk, Dept. of Computer Science, University of Toronto   Oct 2018

- *Matching Under Preferences*
  Max Planck Institute for Informatics, Saarbrucken, Germany   Jun 2017
  Indian Institute of Science Education and Research, Pune, India   May 2017

- *Inertial Particles on a Random and Vibrating Potential Energy Landscape*
  Indian Institute of Science Education and Research, Pune, India   Sep 2015
  International Centre for Theoretical Sciences, Bangalore, India   Jul 2015

PROFFESIONAL
EXPERIENCE

- **Institute for Advanced Study**   Princeton, NJ, USA
  Visiting Student   Fall 2019

- **Department of Informatics, University of Bergen**   Bergen, Norway
  Research Intern, Supervisor: Prof. Saket Saurabh   Fall 2016

- **The Institute of Mathematical Sciences**   Chennai, India
  Research Intern, Supervisor: Prof. Saket Saurabh   Summer 2016, Winter 2017

- **International Centre for Theoretical Sciences**   Bengaluru, India
  Research Intern, Supervisor: Prof. Samriddhi Sankar Ray   Summer 2014, Summer 2015

TEACHING EXPERIENCE	• **Teaching Assistant, University of Toronto**
	CSC2421: Topics in Algorithms, Graduate Course Winter 2021
	CSC373: Algorithm Design and Analysis Summer 2018, 2021; Winter 2018,
	CSC304: Algorithmic game Theory and Mechanism Design Fall 2018
	CSC236: Theory of Computation Summer 2019; Fall 2021
	CSC336: Numerical Analysis Winter, Summer, Fall 2020

CODE CONTRIBUTION	• Julia and MATLAB implementations of our Algorithm pIRLS NeurIPS 2019

PROFESSIONAL SERVICE	• Reviewer:
	FOCS(2018,2019,2020,2023), STOC(2019,2022,2023,2024), SODA (2019,2023), NeurIPS(2019), SAGT(2020), JMLR, ACDA(2023), SOSA (2024)

REFERENCES	Available Upon Request