Aditi Laddha

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Education

Georgia Institute of Technology **Atlanta, GA**
Ph.D. in Algorithms, Combinatorics, and Optimization, **GPA: 4.0/4.0** 2018- present
Anticipated Graduation: May 2023
Advisor: Professor Santosh Vempala
Key Courses: Combinatorial Optimization, Convex Optimization, Linear Programming, Machine Learning Theory

Indian Institute of Technology Bombay **Mumbai, India**
Bachelor of Technology (*with Honors*), Computer Science and Engineering 2013 - 2017
Key Courses: Reinforcement Learning, Artificial Intelligence, Machine Learning, Game Theory

Research Interests

- Convex and Combinatorial Optimization
- High dimensional sampling and MCMC algorithms
- Approximation algorithms and hardness of approximation

Publications

- Adam Brown, **Aditi Laddha**, Madhusudhan Pittu, Mohit Singh, and Prasad Tetali *Determinant Maximization via Matroid Intersection Algorithms*, The 63rd IEEE Foundations of Computer Science, FOCS 2022
- **Aditi Laddha**, Mohit Singh, Santosh Vempala. *Socially fair network design via iterative rounding*, Operations Research Letters Volume 50, Issue 5, September 2022, Pages 536-540
- Nikhil Bansal, **Aditi Laddha**, and Santosh Vempala. *A Unified Approach to Discrepancy Minimization*, RANDOM 2022
- He Jia, **Aditi Laddha**, Yin Tat Lee, Santosh S. Vempala. *Reducing Isotropy and Volume to KLS: An $O(n^3\psi^2)$ Volume Algorithm*, The 53rd Annual ACM SIGACT Symposium on Theory of Computing, STOC 2021
- He Jia, **Aditi Laddha**, Yin Tat Lee, and Santosh S. Vempala. *Reducing Isotropy and Volume to KLS: An $O(n^3\psi^2)$ Volume Algorithm*, The 53rd Annual ACM SIGACT Symposium on Theory of Computing, STOC 2021
- **Aditi Laddha** and Santosh S. Vempala. *Convergence of Gibbs Sampling: Coordinate Hit-and-Run Mixes Fast*, The 37th International Symposium on Computational Geometry, SoCG 2021.
  Invited to a **special issue** of Discrete & Computational Geometry
- **Aditi Laddha**, Yin Tat Lee, and Santosh Vempala. *Strong Self-Concordance and Sampling*, The 52nd Annual ACM SIGACT Symposium on Theory of Computing, STOC 2020.

Workshops

- The 2021 Junior Theorists Workshop, Northwestern University 2021
- Sampling Algorithms and Geometries on Probability Distributions, Simons Institute 2021

Awards and Fellowships

- Awarded the 2020 Microsoft Research Ada Lovelace Fellowship
- Awarded the ARC-TRIAD Student Fellowship by Georgia Tech Algorithms and Randomness Center Spring 2020
- Awarded the Aditya Birla Scholarship for academic excellence by the Aditya Birla Foundation 2013-2017

Work Experience

Adobe Inc. **May-Aug 2022**
Research Intern
- Worked on a robust machine learning model to deal with target leakage in datasets
- Formulated the loss as an adversarial training problem and devised an algorithm to approximately minimize the loss
- Used the algorithm to train an ML model with better test performance than the status quo

Uber **June-Nov 2017**
Software Engineer I

- Worked as a software development engineer in the Rider Access team at Uber Bangalore
- Designed the backend for a Call to Ride flow that targets the non tech-savvy demographic and provides equal access to all users

Microsoft **May-Jul 2016**
Software Development Intern

- Used Microsoft's internal BigData analysis platform for large scale data collection and classification
- Designed an interface to populate a non-relational database for easy data access and manipulation

Technische Universität Braunschweig **May-Aug 2015**
Research Intern, Professor Sándor Fekete

- Worked on an online algorithm for triangulating the interior of a polygon by robots having a limited communication range
- Developed an algorithm for finding the lower envelope of a set of curves

Teaching Experience

- **Machine Learning Theory at Georgia Tech**
  Graduate Teaching assistant for Machine Learning theory Fall 2021
- **Automata and Complexity at Georgia Tech**
  Head Graduate Teaching Assistant for Automata and Complexity Fall 2019
- **Linear Algebra at IIT Bombay**
  Undergraduate Teaching Assistant for Automata Theory Spring 2017
- **Discrete Structure at IIT Bombay**
  Undergraduate Teaching Assistant for Discrete Structures Fall 2016
- **Automata Theory at IIT Bombay**
  Undergraduate Teaching Assistant for Linear Algebra Spring 2015
- **Introduction to Calculus at IIT Bombay**
  Undergraduate Teaching Assistant for Introduction to Calculus Fall 2014

Technical Skills

- **Programming Languages:** Python, C/C++, Java, SQL
- **Data Analysis:** NumPy, MATLAB, PyTorch, TensorFlow