

APOORV VIKRAM SINGH

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EDUCATION	New York University, Tandon School of Engineering <i>Ph.D. Candidate in Computer Science</i> Advisor: Christopher Musco Sept 2020 – Present
	International Institute of Information Technology, Bangalore <i>Bachelor and Master of Technology</i> Specialization: Theoretical Computer Science Thesis: Clustering Perturbation Resilient Instances Advisor: G. Srinivasaraghavan Aug 2013 – July 2018
EXPERIENCE	Visiting Researcher, INRIA Lille MODAL Team, INRIA Lille, France Advisor(s): Hemant Tyagi (INRIA), Mihai Cucuringu (Univ. of Oxford) Oct 2019 – Jan 2020
	Project Associate, IISc Bangalore Department of CSA, Indian Institute of Science (IISc) Advisor(s): Anand Louis (IISc), Amit Deshpande (Microsoft Research) Aug 2018 – Aug 2019
	Narendra Summer Intern, IISc Bangalore Department of CSA, Indian Institute of Science Advisor: Anand Louis Summer 2017
PUBLICATIONS ($\alpha - \beta$)	<ol style="list-style-type: none">Sharper Bounds for Chebyshev Moment Matching, with Applications (with Cameron Musco, Christopher Musco, and Lucas Rosenblatt) <i>COLT 2025, and preliminary version abstract at TPDP 2024, (Link)</i>Faster Spectral Density Estimation and Sparsification in the Nuclear Norm (with Yujia Jin, Ishani Karmarkar, Christopher Musco, and Aaron Sidford) <i>COLT 2024, (Link)</i>Moments, Random Walks, and Limits for Spectrum Approximation (with Yujia Jin, Christopher Musco, and Aaron Sidford) <i>COLT 2023, (Link)</i>Regularized Spectral Methods for Clustering Signed Networks (with Mihai Cucuringu, Deborah Sulem, and Hemant Tyagi) <i>JMLR 2021, (Link)</i>On Euclidean k-Means Clustering with α-Center Proximity (with Amit Deshpande, and Anand Louis) <i>AISTATS 2019, (Link)</i>Approximation Algorithms for Cost-Balanced Clustering (with Amit Deshpande, Anand Louis, and Deval Patel) <i>Preprint 2019, (Link)</i>
TEACHING	<ul style="list-style-type: none">NYU CS-GY 3943: Graph Visualization Algorithms Grader and Teaching Assistant. Spring 2024NYU CS-GY 6763: Algorithmic Machine Learning and Data Science Head Teaching Assistant: Recitation, Office Hours, and Grading. Fall 2023

- **E0306: Deep Learning, Theory and Practice** Spring 2019
Grader for the course at IISc Bangalore
- **E0203: Spectral Algorithms** Spring 2018
Grader for the course at IISc Bangalore

SERVICE

- **Program Committee:** Algorithmic Learning Theory (ALT) 2024, 2025.
- **External Reviewer:** FOCS 2022, STOC 2023, ICALP 2024, ESA 2024, APPROX 2024.

PRESENTATIONS
(selected)

- Sharper Bounds for Chebyshev Moment Matching at Aaron Sidford's group meeting at Stanford 2024, Yale student theory day, and at NYC Graduate Student TCS Day 2024.
- Faster Spectral Density Estimation and Sparsification in the Nuclear Norm at COLT 2024.
- Moments, Random Walks, and Limits for Spectrum Approximation at DIMACS Rutgers, IISc Bangalore, COLT 2023, CS Theory Lunch Seminar at Stanford 2024, and at Brown CS Theory Seminar 2024.
- Reading Group Presentations on Discrepancy Theory, Kadison-Singer Problem, Second Moment Methods, and Sum of Squares Methods, and Counting Bases of Matroids.
- Euclidean k -Means with Center Proximity at ICTS-TIFR, INRIA Lille, IIIT Bangalore, and AISTATS 2019.

MISCELLANEOUS

- Received the COLT 2024 Travel Grant.
- Organizing a reading group on Extremal Graph Theory in Fall 2023.
- Lead a reading group on Probabilistic Combinatorics in Spring 2023.
- Selected for the 2022 summer school on **New tools for optimal mixing of Markov chains: Spectral independence and entropy decay**, organized at the University of California at Santa Barbara.
- Selected for the 2022 **Swedish Summer School on Theoretical Computer Science** organized by KTH.

RELEVANT
COURSES

- Probability Theory
- Intro to Analysis 2
- Probabilistic Combinatorics
- Concentration of Measure
- Algorithmic ML & DS
- Bayesian ML
- Info Thy Methods in Stats
- Mathematical Statistics
- Rand Numerical LA