Mail: apoorv.singh@nyu.edu Web: www.savs95.github.io

EDUCATION New York University, Tandon School of Engineering

Ph.D. Candidate in Computer Science

Advisor: Christopher Musco

Sept 2020 - Present

International Institute of Information Technology, Bangalore

Bachelor and Master of Technology

Aug 2013 - July 2018

Specialization: Theoretical Computer Science Thesis: Clustering Perturbation Resilient Instances

Advisor: G. Srinivasaraghavan

EXPERIENCE Visiting Researcher, INRIA Lille

Oct 2019 - Jan 2020

MODAL Team, INRIA Lille, France

Advisor(s): Hemant Tyagi (INRIA), Mihai Cucuringu (Univ. of Oxford)

Project Associate, IISc Bangalore

Aug 2018 - Aug 2019

Department of CSA, Indian Institute of Science (IISc)

Advisor(s): Anand Louis (IISc), Amit Deshpande (Microsoft Research)

Narendra Summer Intern, IISc Bangalore

Summer 2017

Department of CSA, Indian Institute of Science

Advisor: Anand Louis

Publications $(\alpha - \beta)$

- 1. **Faster Spectral Density Estimation and Sparsification in the Nuclear Norm** (with Yujia Jin, Ishani Karmarkar, Christopher Musco, and Aaron Sidford) *COLT* 2024, (Link)
- Moments, Random Walks, and Limits for Spectrum Approximation (with Yujia Jin, Christopher Musco, and Aaron Sidford) COLT 2023, (Link)
- 3. Regularized Spectral Methods for Clustering Signed Networks (with Mihai Cucuringu, Deborah Sulem, and Hemant Tyagi) *JMLR* 2021, (Link)
- 4. On Euclidean k-Means Clustering with α -Center Proximity (with Amit Deshpande, and Anand Louis) *AISTATS 2019*, (Link)
- Approximation Algorithms for Cost-Balanced Clustering (with Amit Deshpande, Anand Louis, and Deval Patel) Preprint 2019, (Link)

TEACHING

- NYU CS-GY 3943: Graph Visualization Algorithms Spring 2024 Grader and Teaching Assistant.
- NYU CS-GY 6763: Algorithmic Machine Learning and Data Science Fall 2023 Head Teaching Assistant: Recitation, Office Hours, and Grading.
- **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
- External Reviewer: FOCS 2022, STOC 2023, ICALP 2024, ESA 2024, APPROX 2024.

PRESENTATIONS (selected)

- Moments, Random Walks, and Limits for Spectrum Approximation at DIMACS Rutgers, IISc Bangalore, and COLT 2023.
- 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 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
- Concentration of Measure Info Thy Methods in Stats
- Intro to Analysis 2
- · Algorithmic ML & DS
- Mathematical Statistics
- Probabilistic Combinatorics Bayesian ML
- · Rand Numerical LA