Shivam Nadimpalli

CONTACT

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INTERESTS

Classical & quantum complexity theory, convex geometry, discrete Fourier analysis, property testing

POSITIONS

Massachusetts Institute of Technology
Instructor in Applied Mathematics, September 2024 to Present

Simons Institute for the Theory of Computing
Simons–Berkeley Research Fellow, May 2024 to August 2024

EDUCATION

Columbia University
PhD in Computer Science, August 2019 to May 2024
Advisors: Rocco A. Servedio and Mihalis Yannakakis

Brown University
ScB in Mathematics–Computer Science with Honors, September 2015 to May 2019
Advisor: Sorin Istrail

RESEARCH

Journal Publications

1. Anindya De, Shivam Nadimpalli, and Rocco A Servedio. "Quantitative correlation inequalities via extremal power series". In: *Probability Theory and Related Fields* 183.1-2 (2022), pp. 649–675. DOI: 10.1007/s00440-022-01120-5.

Conference Publications

1. Anindya De, Huan Li, Shivam Nadimpalli, and Rocco A Servedio. "Detecting Low-Degree Truncation". In: *Proceedings of the 56th ACM Symposium on Theory of Computing (STOC)*. 2024. arXiv: 2402.08133.

2. Shivam Nadimpalli and Shyamal Patel. "Optimal Non-Adaptive Tolerant Junta Testing via Local Estimators". In: *Proceedings of the 56th ACM Symposium on Theory of Computing (STOC)*. 2024. arXiv: 2404.13502.

3. Shivam Nadimpalli, Natalie Parham, Francisca Vasconcelos, and Henry Yuen. "On the Pauli Spectrum of QAC^0". In: *Proceedings of the 56th ACM Symposium on Theory of Computing (STOC)*. 2024. arXiv: 2311.09631.

4. Xi Chen, Anindya De, Yuhao Li, Shivam Nadimpalli, and Rocco A. Servedio. "Testing Intersecting and Union-Closed Families". In: *15th Innovations in Theoretical Computer Science Conference (ITCS)*. vol. 287. LIPIcs. 2024, 33:1–33:23. DOI: 10.4230/LIPIcs.ITCS.2024.33.

5. Xi Chen, Anindya De, Yuhao Li, Shivam Nadimpalli, and Rocco A Servedio. "Mildly exponential lower bounds on tolerant testers for monotonicity, unateness, and juntas". In: *Proceedings of the 2024 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. 2024, pp. 4321–4337. DOI: 10.1137/1.9781611977912.151.

6. Anindya De, Shivam Nadimpalli, and Rocco A Servedio. "Testing Convex Truncation". In: *Proceedings of the 2023 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. 2023, pp. 4050–4082. DOI: 10.1137/1.9781611977554.ch155.

7. Thomas Chen, Shivam Nadimpalli, and Henry Yuen. "Testing and Learning Quantum Juntas Nearly Optimally". In: *Proceedings of the 2023 ACM-SIAM Symposium*

on Discrete Algorithms, (SODA). SIAM, 2023, pp. 1163–1185. DOI: 10.1137/1.9781611977554.ch43. Presented at *Quantum Information Processing (QIP), 2023*.

8. Anindya De, Shivam Nadimpalli, and Rocco A. Servedio. "Convex Influences". In: *13th Innovations in Theoretical Computer Science Conference (ITCS)*. vol. 215. LIPIcs. 2022, 53:1–53:21. DOI: 10.4230/LIPIcs.ITCS.2022.53.

9. Anindya De, Shivam Nadimpalli, and Rocco A Servedio. "Approximating sumset size". In: *Proceedings of the 2022 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. 2022, pp. 2339–2357. DOI: 10.1137/1.9781611977073.94.

10. Anindya De, Shivam Nadimpalli, and Rocco A. Servedio. "Quantitative Correlation Inequalities via Semigroup Interpolation". In: *12th Innovations in Theoretical Computer Science Conference (ITCS)*. vol. 185. LIPIcs. 2021, 69:1–69:20. DOI: 10.4230/LIPIcs.ITCS.2021.69. Invited to *GAFA Seminar Notes* (declined).

Manuscripts & Preprints

11. Xi Chen, Shivam Nadimpalli, Tim Randolph, Rocco A Servedio, and Or Zamir. *Testing Sumsets is Hard*. 2024. arXiv: 2401.07242.

12. Anindya De, Shivam Nadimpalli, and Rocco A Servedio. *Gaussian Approximation of Convex Sets by Intersections of Halfspaces*. 2023. arXiv: 2311.08575.

13. William He and Shivam Nadimpalli. *Testing Junta Truncation*. 2023. arXiv: 2308.13992.

14. Quentin Dubroff, Shivam Nadimpalli, and Bhargav Narayanan. *A Counterexample to a Directed KKL Inequality*. 2022. arXiv: 2210.02035.

Invited Talks

University of Michigan CS Theory Seminar	December 2023
Stanford University CS Theory Seminar	November 2023
Northwestern University Theory Seminar	November 2023
Probability and Analysis Online Webinar	October 2023
University of Pennsylvania Theory Seminar	September 2023
Rutgers Discrete Mathematics Seminar	April 2023
UC Berkeley Theory Lunch	April 2023
DIMACS Theory of Computing Seminar	February 2023
New York Colloquium on Algorithms and Complexity	December 2022
Stanford University CS Theory Seminar	March 2022

Honors

Departmental Service Award, Columbia University	2022
Sigma Xi, Brown University	2019
Senior Prize, Department of Computer Science, Brown University	2019
High Honors, Budapest Semesters in Mathematics	2018
Kishore Vigyan Protsahan Yojana Fellowship, Government of India	2014
National Talent Search Scholar, Government of India	2011

Teaching

Graduate Teaching Assistant

- COMS 4236 Introduction to Computational Complexity — Spring 2022
- COMS 4252 Introduction to Computational Learning Theory — Spring 2021

High-School Mathematics Outreach

- Fun with Mathematical Inequalities (Columbia Science Honors Program) — Fall 2021
- Introduction to the Theory of Computing (Alec Sun's Mathcamp) — Summer 2020

Service	Co-Organizer for Stochastic Calculus Reading Group, Simons Institute	Summer 2023
	Co-Organizer for Columbia Theory Lunch	2021–2023
	Co-Organizer for Columbia Theory Student Seminar	2020–2022
	Mentor for Columbia Undergraduate Theory Seminar	2020–2022
	Webmaster for Columbia Theory Website	2019–2024
PC Member	COLT (2024)	
Reviewing	FOCS (2021, 2024), STOC (2022, 2023), ITCS (2021–2024), COLT (2022), TQC (2023), RANDOM (2023), QIP (2024), STOC (2024), ICALP (2024)	
	Quantum (2023), SIAM Journal on Computing (2024)	