Vishvajeet N

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Research Interests

I am broadly interested in Theoretical Computer Science. My current work is in Complexity Theory and specifically in Streaming Algorithms and Communication Complexity, and Pseudorandomness.

My work involves proving lower bounds in multi-pass streaming and communication models for graph optimization and Constraint Satisfaction Problems, and often uses Fourier-analytic and information-theoretic methods. I also work on pseudorandomness involves proving lower bounds on the seed-length for various randomness extractors, which necessitates the study of problems in extremal combinatorics.

Education

Rutgers University **2017 - 2022 (expected)**

- Ph. D candidate in Computer Science
- Advisor: Prof. Swastik Kopparty

Indian Institute of Technology Madras **2012 - 2017**

- Bachelor and Master of Technology
- Master's Thesis Advisor: Prof. Radhakrishna Ganti
- Master's Thesis: Optimization of Mechanical Systems via Lasserre Hierarchy of Semidefinite Programming Relaxations

Publications

Graph Streaming Lower Bounds for Parameter Estimation and Property Testing via a Streaming XOR Lemma
Sepehr Assadi and **Vishvajeet N**, 2021.
The 53rd Annual ACM Symposium on Theory of Computing (**STOC 2021**)

Internships

Microsoft Research, India **May - Aug 2016**

- Mentor: Dr. Satya Lokam
- Area: Analysis of Boolean Functions, Sensitivity Conjecture
- Worked towards extending the approach of relating higher moments of sensitivity and degree of a general function to bounding decision-tree depth in terms of higher moment of sensitivity

Tata Institute of Fundamental Research, Mumbai, India **May - Oct 2015**

- Mentor: Prof. Prahladh Harsha
- Area: Coding Theory
- Surveyed Arikan's capacity-achieving deterministic coding schemes and fresh results surrounding the capacity-achieving capabilities of Reed-Muller codes, as part of the *Visiting Students' Research Program*
- Wrote an article on the area: *Codes That Achieve Capacity on Symmetric Channels* (arXiv:1510.01439[cs.IT]).

Workshops Attended

Workshop on Algorithms for Large Data **Aug 2021**

- Online

Monthly Meeting of the Simons Collaboration on Algorithms and Geometry **2019/2020**

- Flatiron Institute, NYC

Interactive Complexity **Oct 2018**
- Simons Institute for the Theory of Computing, Berkeley

Workshop on Local Algorithms **June 2018**
- MIT, Cambridge

Sublinear Algorithms, Local Algorithms and Robust Statistics **June 2018**
- MIT, Cambridge

Avi Wigderson is 60 - A Celebration of Mathematics and Computer Science **Oct 2016**
- Institute for Advanced Study, Princeton

Teaching Experience

I have been a Teaching Assistant for the following courses at Rutgers University:

Introduction to Discrete Structures II (CS 206) **Spring 2021**
Introduction to Discrete Structures I (CS 205) **Spring 2020**
Design and Analysis of Computer Algorithms (CS 344) **Fall 2019**
Introduction to Calculus I (MATH 135) **Spring 2019**
Design and Analysis of Data Structures and Algorithms (CS 513) **Fall 2018**
Introduction to Discrete Structures II (CS 206) **Spring 2018**
Design and Analysis of Data Structures and Algorithms (CS 513) **Fall 2017**

References

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