Satyajeet Nagargoje

Email: satyajeetn2012@gmail.com
Website: satyajeetn.github.io

Education

Georgetown University — Washington DC, USA
Ph.D. in Computer Science — Fall 2023 and Undergoing

- Advisor: Prof. Alexander Golovnev

Georgetown University — Washington DC, USA
Masters in Computer Science, CGPA: 3.79/4.00 — Fall 2021–Spring 2023

- Advisor: Prof. Alexander Golovnev
- Thesis: "Circuit Lower Bounds via Substitutions"
- Commitee: Alexander Golovnev, Bala Kalyanasundaram, Muthuramakrishnan Venkitasubramaniam

College of Engineering, Pune — Pune, India
B.Tech in Metallurgy and Materials Science Engineering, CGPA: 6.68/10 — 2017–2021

- Advisor: Prof. K. R. Kamble
- Thesis: "Piezoelectricity in AlN bulk ceramics"

Research Interests

Complexity Theory, Cryptography, Circuit Lower Bounds, Randomness Extraction.

Publications

Efficient strong 2-source non-malleable extractor for any linear min-entropy
Divesh Aggarwal, Pranjal Dutta, Saswata Mukherjee, **Satyajeet Nagargoje**, Maciej Obremski
The 45th Annual International Cryptology Conference **(CRYPTO 2025)** — Santa Barbara, USA

Hilbert Functions and Low-Degree Randomness Extractors — London, UK
Alexander Golovnev, Zeyu Guo, Pooya Hatami, **Satyajeet Nagargoje**, Chao Yan
The 28th International Conference on Randomization and Computation (**RANDOM 2024**)

Range Avoidance for Constant-Depth Circuits: Hardness and Algorithms — Atlanta, USA
Karthik Gajulapalli, Alexander Golovnev, **Satyajeet Nagargoje**, Sidhant Saraogi
The 27th International Conference on Randomization and Computation (**RANDOM 2023**)

Research Visits

National University of Singapore (NUS) — Singapore
Research Assistant — June 2024- November 2024

- Worked on showing that a random univariate degree O(n) polynomial over F_{2^n} is an exponentially small error 2-Source Extractor (as well as Non-Malleable 2-Source Extractor) for all linear entropy sources. This work is currently under submission.
- Host: Prof. Divesh Aggarwal.

Ohio State University Columbus, OH, USA
Research Assistant May 2023- August 2023

- Worked on showing that a random polynomial is an Extractor for distributions sampled by low-degree circuits using Hilbert Functions. This result appeared at RANDOM-2024 titled "Hilbert Functions and Low-Degree Randomness Extractors".
- Host: Prof. Pooya Hatami.

Georgetown University Washington, DC, USA
Research Assistantship Dec 2021- Jun 2023

- Proved circuit lower bounds in $\mathsf{AC}^0[p]$ model for the boolean function $\mathsf{MAJORITY}$ using a novel measure called substitution complexity of a function. This work appears in the thesis titled: "Circuit Lower Bounds via Substitutions".
- Worked on showing the hardness of local Range Avoidance Problem as well as finding algorithms in the various regimes of the problem. This work appeared at RANDOM-2023 titled "Range Avoidance for Constant-Depth Circuits: Hardness and Algorithms".
- Advisor: Prof. Alexander Golovnev.

Teaching Assistantship

COSC-030: Math Methods for Computer Science Fall 2023
Georgetown University

COSC-240: Introduction to Algorithms Fall 2022
Georgetown University

COSC-240: Introduction to Algorithms Spring 2022
Georgetown University

Selected Talks

Efficient randomized strong 2-source non-malleable extractor for any linear min-entropy November 2025
Georgetown University Austin, USA

Efficient randomized strong 2-source non-malleable extractor for any linear min-entropy October 2025
Short talk at DavidFest, held at the University of Texas at Austin Austin, USA

Hilbert Functions and Low-Degree Randomness Extractors December 2024
Tata Institute of Fundamental Research (TIFR) Mumbai, India

Hilbert Functions and Low-Degree Randomness Extractors October 2024
National University of Singapore (NUS) Theory Seminar Singapore

Hilbert Functions and Low-Degree Randomness Extractors September 2024
RANDOM 2024, London School of Economics London,UK

Range Avoidance for Constant Depth Circuits: Hardness and Algorithms April 2023
Georgetown University Washington DC,USA

References

Dr. Alexander Golovnev Washington, DC, USA
Assistant Professor
Department of Computer Science at Georgetown University
alex.golovnev@gmail.com

Dr. Pooya Hatami Columbus, OH, USA
Assistant Professor
Department of Computer Science at The Ohio State University (OSU)
pooyahat@gmail.com