

ANAMAY TENGSE

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RESEARCH INTERESTS

My work till now has focused *Algebraic Complexity Theory*, and I am interested in most areas within *Complexity Theory*. Apart from that, I enjoy exploring algebraic and combinatorial techniques, and look for opportunities to use them to solve problems across computer science.

PUBLICATIONS

1. **On the Existence of Algebraically Natural Proofs**

Authors: Prerona Chatterjee, Mrinal Kumar, C. Ramya, Ramprasad Saptharishi, Anamay Tengse
[Preprint on arXiv](#)
To appear in *Foundations of Computer Science (FOCS)*, 2020

2. **Near-optimal Bootstrapping of Hitting Sets for Algebraic Models**

Authors: Mrinal Kumar, Ramprasad Saptharishi, Anamay Tengse
[Preprint on arXiv](#)
[Premiliminary Version](#) appeared in *Symposium on Discrete Algorithms (SODA)*, 2019

3. **Quasipolynomial Hitting Sets for Circuits with Restricted Parse Trees**

Authors: Ramprasad Saptharishi, Anamay Tengse
[Preprint on arXiv](#)
[Conference Version](#) in *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, 2018

EDUCATION

Tata Institute of Fundamental Research

Ph.D. in Theoretical Computer Science

Advisor: Dr. Ramprasad Saptharishi

Proposed Thesis Title: *Hitting Sets for Algebraic Models - Constructions and Consequences*

[Aug 2015 - Present]

Mumbai, India

Indian Institute of Technology - Bombay

M.Tech. in Computer Science and Engineering

Advisors: Prof. Ganesh Ramakrishnan, Prof. Amitabha Sanyal

Thesis Title: *Effective Learning of Pre-ordering Rules for Machine Translation*

[Jul 2012 - Jun 2015]

Mumbai, India

Goa College of Engineering

B.E. in Computer Engineering

[Jul 2008 - Jul 2012]

Goa, India

CONFERENCE/WORKSHOP/SEMINAR TALKS

- On the Existence of Algebraically Natural Proofs
– *Algorithms & Complexity Seminar, University of Waterloo, Canada (Online Talk)*
- Near-optimal Bootstrapping of Hitting Sets for Algebraic Models
– *ICTS-Workshop on Algebraic Complexity Theory 2019, ICTS, Bengaluru, India*
– *Symposium on Discrete Algorithms (SODA) 2019, San Diego, USA*

–Theory Seminar, IIT Bombay, Mumbai, India

- Quasipolynomial Hitting Sets for Circuits with Restricted Parse Trees
 - Foundations of Software Technology & Theoretical Computer Science (FSTTCS) 2018, Ahmedabad, India
 - Workshop on Algebraic Complexity Theory 2018, Paris, France
 - STCS Annual Talks 2018, TIFR, Mumbai, India

STUDENT TALKS

Selected talks given as part of the STCS Student Seminar Series at TIFR, Mumbai

★ Running into Valiant's Hypothesis	June 19, 2020
★ Can Algebraic Circuit Lower Bounds have Easy Proofs?	June 5, 2020
★ When are Commuting Matrices Simultaneously Diagonalizable?	November 29, 2019
★ Small Hitting Sets for Tiny Circuits	March 8, 2019
★ Sparsity Bound for Matrix Identities	November 16, 2018
★ Bootstrapping Identity Tests for Algebraic Models	October 12, 2018
★ Power of Subtraction in Non-commutative Models	May 25, 2018
★ Quasipolynomial Hitting Sets for Circuits with Restricted Parse Trees	October 6, 2017
★ ABPs - Nisan's Characterization & Identity Tests	June 23, 2017
★ Subcubic Equivalences between Matrix, Path and Triangle Problems	July 15, 2016

POSITIONS OF RESPONSIBILITY

Research Assistantship at IIT Bombay [Jul 2012 - Jul 2015]
with Prof. Ganesh Ramakrishnan
Work: Development work (java, android studio) in projects focusing on rural sectors.

Department Placement Coordinator at IIT Bombay [Jul 2014 - Jul 2015]
For: M.Tech. Students of CSE Deptment of IIT Bombay
Duties: Link between M.Tech. Students and the Placement Team

Technical Secretary, Computer Students' Council [Aug 2010 - Aug 2011]
For: Computer Engineering Department, Goa College of Engineering
Duties: Technical aspects of organising the annual student festival and other activities.

OUTSIDE ACADEMICS

Outreach activities:

- ★ Gave a public talk in *National Science Day Celebrations, 2020*, about *Complexity Theory*
- ★ Gave a public talk to a general audience titled *Who Cares about Polynomials?*

Extra-curricular activities:

- ★ Participated in *ACM-ICPC-Regionals*, Amritapuri, 2012 (with Hemant Adil, Neeraj Pai)
- ★ Top 500 in *IEEE-Extreme Programming*, 2011 (with Stanley Simoes, Akash Valsangkar)
- ★ Runners up in *PG-Sports, IIT Bombay (2014)* - Part of the CSE PG Cricket Team
- ★ Runners up in *PG-Cult, IIT Bombay (2014)* - Part of a Music Band