

Research interests

General formal methods, game theory, automata theory, logic, discrete mathematics

Specific reactive synthesis, verification, probabilistic systems, Markov decision processes

Education

PhD in Theoretical Computer Science (ongoing, synopsis submitted)

Tata Institute of Fundamental Research, Mumbai, India

Advisor: Shibashis Guha

Thesis: *Window mean-payoff in turn-based stochastic games*

Relevant courses: Automata, verification, and infinite games; Descriptive complexity; Probability; Algebraic automata theory; Computational complexity; Algebra and computation; Online algorithms

Bachelor of Science (Research) with major in Mathematics (Aug 2016 – Jul 2020)

Indian Institute of Science, Bangalore, India

Relevant courses: Automata theory and computability; Introduction to scalable systems; Game theory; Graph theory; Combinatorics; Number theory; Measure theory

Publications

- **Expectation in Stochastic Games with Prefix-independent Objectives** (CONCUR 2025, arXiv) with Laurent Doyen and Shibashis Guha

Presented at

- Seminar talk at MPI-SWS Kaiserslautern
- CONCUR 2025
- Workshop on Automata and Games for Synthesis (co-located with FSTTCS 2024)

- **Optimising Expectation with Guarantees for Window Mean Payoff in Markov Decision Processes** (AAMAS 2025, arXiv)

with Shibashis Guha

Presented at

- Workshop on Automata and Games for Synthesis (co-located with FSTTCS 2025)
- Seminar talk at Masaryk University, Brno
- Seminar talk at IST Austria
- Highlights 2025
- Seminar talk at IIT Bombay
- Formal Methods Update meeting 2025

- **Recognizing numbers** (ICLA 2025 (best student paper award), arXiv) with Arnab Sur

Presented at

- ICLA 2025
- TCS Research Expo 2024
- STCS Student Symposium 2024

- **Stochastic Window Mean-payoff Games** (FoSSaCS 2024, LMCS)

with Laurent Doyen and Shibashis Guha

Presented at

- ACM ARCS 2025
- Seminar talk at ENS Paris-Saclay
- FoSSaCS 2024
- STCS Student Symposium 2023
- Formal Methods Update Meeting 2023

- **Sure-almost-sure and Sure-limit-sure Window Mean Payoff in Markov Decision Processes**

(under submission, [arXiv](#))

with Shibashis Guha

Other talks and presentations

Seminar talks at TIFR

- The Canadian traveller problem
- Sperner's lemma and the equidissection of regular polygons
- The connection between circuit complexity and first-order logic
- The complexity of solving simple stochastic games
- Courcelle's theorem
- Total-payoff games on graphs with windows
- Determinacy of two-player games with perfect information
- Vertex connectivity of Eulerian orientations

Outreach sessions

- Sperner's lemma and its application to rent division at Chai and Why 2025, Vigyan Vidushi 2024
- Voting mechanisms: Let's put it to a vote at Chai and Why 2024
- Beating Chinese Whispers and other communication problems at Chai and Why 2023
- Fun with graphs at Chai and Why 2022
- Impartial games at IISc Open Day 2020

Experience

Reviewing

FMCAD 2026, MathOR, ATVA 2025, EC 2025, CAV 2025, CSL 2025, STACS 2025, LICS 2024

Moderating

- Discussion on *Open problems and challenges in Reactive Synthesis* at IndiCS Seminar on Automated Synthesis 2025
- Panel Discussion on *Education and Careers in Logic (ECL)* at ICLA 2025

Teaching assistance

Automata and Computability at TIFR (January – May 2025)

Conferences attended

- 2025
 - FSTTCS 2025 in BITS Pilani, Goa, India
 - IndiCS Seminar on Automated Synthesis 2025, Mysore, India
 - ATVA 2025 in IIIT Bangalore, India
 - Highlights 2025 in Saarland University, Saarbrücken, Germany
 - CONCUR 2025 in University of Aarhus, Denmark
 - Formal Methods Update meeting 2025 in DAU, Gandhinagar, India
 - ACM ARCS 2025 in PSG College of Technology, Coimbatore, India
 - ICLA 2025 in ISI Kolkata, India
- 2024
 - FSTTCS 2024 in IIT Gandhinagar, India
 - Winter School on Verification 2024 in IIT Delhi, India
 - SAT 2024 in TCS Pune, India
 - ISLA 2024 in IIT Goa, India
 - ETAPS 2024 in Luxembourg (student volunteer)
- 2023
 - FSTTCS 2023 in IIIT Hyderabad, India
 - Formal Methods Update meeting 2023 in IIT Goa, India
- 2022
 - FSTTCS 2022 in IIT Madras, Chennai, India
 - FLoC 2022 in Technion, Haifa, Israel (student volunteer)

Referees

Shibashis Guha

Reader

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Up to date as of 25 May 2026

Most recent version available at pranshugaba.com/cv