PRATEEK DWIVEDI

प्रतीक द्विवेदी

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RESEARCH INTERESTS

My research focuses on the theoretical foundations of computer science, with particular emphasis on **Algebraic Complexity Theory** and **Computational Complexity**.

EMPLOYMENT

IT University of Copenhagen — *Copenhagen, Denmark*
Postdoctoral Researcher — *2024 -*
Theoretical Computer Science Section
Adviser: Prof Nutan Limaye

EDUCATION

Indian Institute of Technology Kanpur — *Kanpur, India*
Doctor of Philosophy — *2018 - 2025*
Computer Science and Engineering
Thesis: *Treading the Borders for Explicitness, Circuit Factoring, and Identity Testing* [pdf]
Adviser: Prof Nitin Saxena

KCC Institute of Technology and Management — *Gautam Buddha Nagar, India*
Bachelor of Technology — *2013 - 2017*
Computer Science and Engineering

PUBLICATIONS

A primer on the closure of algebraic complexity classes under factoring — *2025*
with C. S. Bhargav and Nitin Saxena
To appear in the proceedings of Recent Trends in Computer Algebra (RTCA), 2025

Monotone bounded-depth complexity of homomorphism polynomials — *2024*
with C. S. Bhargav, Shiteng Chen, Radu Curticapean
50th International Symposium on Mathematical Foundations of Computer Science (MFCS), 2025

Learning the coefficients: A presentable version of border complexity and applications to circuit factoring — *2024*
with C. S. Bhargav and Nitin Saxena
56th Annual ACM Symposium on Theory of Computing (STOC), 2024

Lower bounds for the sum of small-size algebraic branching programs — *2024*
with C. S. Bhargav and Nitin Saxena
19th Annual Conference of Theory and Applications of Models of Computation (TAMC), 2024
Invited in the special issue of Theoretical Computer Science (Theor. Comput. Sci.)

Demystifying the border of depth-3 algebraic circuits — *2021*
with Pranjal Dutta and Nitin Saxena
62nd Annual Symposium on Foundations of Computer Science (FOCS)
Invited in the special issue of SIAM Journal on Computing (SICOMP)

Deterministic identity testing paradigms for bounded top-fanin depth-4 circuits *2021*
with Pranjal Dutta and Nitin Saxena
36th Computational Complexity Conference (CCC)
The full version is currently under review in Theory of Computing (ToC)

ACADEMIC TALKS AND SEMINARS

Monotone Bounded-Depth Complexity of Homomorphism Polynomials *2024*
ARCO, Malmö University, Sweden

Presentable Version of Border Complexity and Applications to Circuit Factoring

- *Ulm University, Germany* *2024*
- *Welcome talk at the Theory Group, ITU, and BARC, KU* *2024*

Treading the Border Complexity and Identity Testing Paradigms *2022*
Thesis Defense, IIT Kanpur

Deterministic identity testing paradigms for bounded top-fanin depth 4 circuits *2021*
Invited Talk, CS Theory Seminar at Georgetown University

Deterministic identity testing paradigms for bounded top-fanin depth-4 circuits

- *Workshop on Algebra and Computation (WAC), Göteborg* *2023*
- *7th Workshop on Algebraic Complexity Theory (WACT), Warwick* *2023*
- *CS Theory Seminar at Georgetown University* *2021*
- *Conference Presentation, (CCC)* *2021*

Information-Theoretic And Algorithmic Thresholds For Group Testing *2020*
PhD Comprehensive Evaluation, IIT Kanpur

On Approximative Closure of Algebraic Complexity Classes *2019*
SIGTACS, IIT Kanpur

SHORT TERM VISITS

57th Annual ACM Symposium on Theory of Computing (STOC) *2025*
Prague, Czech Republic

Université Savoie Mont Blanc, France *2025*
Host: Prof. Sébastien Tavenas

Tata Institute of Fundamental Research (TIFR), Mumbai *2025*
Host: Prof Mrinal Kumar

Ulm University, Germany *2024*
Host: Prof Thomas Thierauf

Algorithmic Research-Cooperation around Oresund (ARCO) *2024*
Malmö University, Sweden

Summer of Counting and Algebraic Complexity *2023*
IT University of Copenhagen (ITU) in Copenhagen, Denmark

Workshop on Algebra and Computation (WAC) *2023*
Chalmers University of Technology, Göteborg

7th Workshop on Algebraic Complexity Theory (WACT) *2023*
The University of Warwick, UK

2nd Swiss Winter School on Theoretical Computer Science *2023*
Jointly organized by EPFL and ETH Zurich in Zinal

Chennai Mathematical Institute (CMI) *2022*
Host: Prof Partha Mukhopadhyay

62nd Annual Symposium on Foundations of Computer Science (FOCS) *2022*
Denver, Colorado - Attended Virtually

36th Computational Complexity Conference (CCC), 2021. *2021*
Toronto, Ontario, Canada - Attended Virtually

48th International Colloquium on Automata, Languages, and Programming (ICALP) *2021*
Glasgow, Scotland - Attended Virtually

52nd ACM Symposium on Theory of Computing (STOC) *2020*
Chicago, US - Attended Virtually

Workshop on Algebraic Complexity Theory *2019*
ICTS, Bengaluru

ACADEMIC ACHIEVEMENTS

Invited to participate in Summer of Counting and Algebraic Complexity at ITU Copenhagen *2023*
Full financial support

Selected to attend Swiss Winter School on Theoretical Computer Science *2023*
Partial financial support

Recipient of financial support from Microsoft Research India and IARCS-ACM India *2022*
To attend an academic conference

Ranked 23 in Joint Entrance Screening Test (JEST) *2018*

Ranked 1179 in Graduate Aptitude Test in Engineering (GATE) Computer Science *2017*
Among approximately 1,00,000 candidates

Presented undergraduate project at university-level Science and Technology Conference. *2017*

Academic Excellence Award *2014*
KCC ITM, India

TEACHING AND MENTORING EXPERIENCE

Undergraduate Project, ITU Copenhagen *2025*
Mentoring Thøger Bro and Emil Andreas Sondum Jointly with Prof Riko Jacob

Head Tutor at CSE, IIT Kanpur
Responsible for practical assignments, Lab Exam, and all the course-related logistical support

- Data Structures and Algorithms *2024*

Mathematics for Computer Science, IIT Kanpur
Adhyayan 2023, Summer School. Jointly with C. S. Bhargav

Tutor at CSE, IIT Kanpur

- Introduction to Computing *2022*

- Data Structures and Algorithms *2019*

Teaching Assistant at CSE, IIT Kanpur

- Computational Complexity *2021*
- Modern Cryptology *2021*
- Mathematics for Computer Science *2020*
- Data Structures and Algorithms *2018*
- Introduction to Computing *2018*

Teaching Assistant in Massive Online Courses

- Introduction to Cryptography | eMasters, IIT Kanpur *2022*
- Randomized methods in Computational Complexity | NPTEL *2021*
- Arithmetic Circuit Complexity | NPTEL *2020*
- Modern Algebra | NPTEL *2019*

PROFESSIONAL CONTRIBUTIONS

Reviewer for Conferences
FOCS 2025, ITCS 2025, STOC 2025, STOC 2024, FSTTCS 2024, FOCS 2023, ISSAC 2023
STOC 2023, CCC 2022, ITCS 2022, SODA 2021, FOCS 2021

Reviewer for journals
SIAM Journal on Computing

Seminar Organiser at CSE, IIT Kanpur
Regularly organise talks and seminars in a department special interest group (SIGTACS)

PERSONAL DETAILS

Name	Prateek Dwivedi (प्रतीक द्विवेदी)
Gender and Pronouns	Male and He/Him.
Permanent Address	A106, Bulland Heights, Crossings Republik Ghaziabad (U.P) - 201016, India
Date and place of birth	21st Feb 1996, Lucknow, India
Nationality	Indian (भारतीय)
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REFERENCES

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Nikhil Balaji
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