Dr. Gorav Jindal

Date of Birth: 05.01.1986

Curriculum Vitae
7th December 2023

Room 531,
Max Planck Institute for Software Systems
Campus E1 5, 66123 Saarbrücken
+49 15780883476
gorav.jindal@gmail.com
https://goravjindal.github.io/

Research

My broad research interests lie within theoretical computer science and complexity theory. More specifically, my research interests revolve around algebraic complexity theory and computer algebra, where I explore various algebraic models of computation. Recently, I have also begun investigating the theoretical foundations and practical applications of linear dynamical systems.

Education

2013 - 2019	**Ph.D, Mathematics and Computer Science**, Saarland University, Magna cum laude.
2011 - 2013	**Master of Science, Computer Science**, Saarland University, GPA: 1.0/1.0.
2004 - 2008	**Bachelor of Technology, Computer Science and Engineering**, IIT Delhi, GPA: 7.044/10.

Employment history

10/2022 - Present	**Postdoctoral Researcher**	Max Planck Institute for Software Systems
10/2020 - 09/2022	**Postdoctoral Researcher**	Institut für Mathematik, Technische Universität Berlin
11/2019 - 09/2020	**Postdoctoral Researcher**	Department of Computer Science, Aalto University
09/2018 - 11/2019	**Visiting Doctoral Candidate**	Department of Computer Science, Aalto University
12/2013 - 09/2018	**Doctoral Candidate**	Max Planck Institut für Informatik
10/2012 - 02/2013	**Teaching Assistant**	Saarland University
01/2012 - 06/2012	**Hilfswissenschaftler**	Saarland University
06/2008 - 10/2011	**Senior Software Developer**	Mentor Graphics, India (Now Siemens)

Teaching history (Teaching assistant)

01/2020-04/2020	**CS-E4530 - Computational Complexity Theory**	Aalto University
01/2019-04/2019	**CS-E4530 - Computational Complexity Theory**	Aalto University
WS 2017-2018	**Geometric Complexity Theory 2**	Saarland University
SS 2017	**Introduction to Geometric Complexity Theory**	Saarland University
SS 2016	**Complexity Theory of Polynomial-Time Problems**	Saarland University
WS 2012-2013	**Algorithms and Data Structures**	Saarland University

Honours and awards

August 2014	**Günter-Hotz-Medaille, only given to top 1-3 graduates**	Saarland University .
June 2004	**All India rank 159 out of 175000 students across India**	IITJEE 2004.

Selected publications

1. Peter Bürgisser and Gorav Jindal. *On the Hardness of PosSLP (To appear in SODA2024)*. 2023. arXiv: 2307.08008 [cs.CC].
2. Louis Gaillard and Gorav Jindal. On the Order of Power Series and the Sum of Square Roots Problem. In: *Proceedings of the 48th International Symposium on Symbolic and Algebraic Computation*. 2023.
3. Pranjal Dutta, Gorav Jindal, Anurag Pandey, and Amit Sinhababu. Arithmetic Circuit Complexity of Division and Truncation. In: *36th Computational Complexity Conference (CCC 2021)*. 2021.
4. Gorav Jindal, Anurag Pandey, Himanshu Shukla, and Charilaos Zisopoulos. How Many Zeros of a Random Sparse Polynomial Are Real? In: *Proceedings of the 45th International Symposium on Symbolic and Algebraic Computation*. 2020.
5. Vishwas Bhargava, Markus Bläser, Gorav Jindal, and Anurag Pandey. A Deterministic PTAS for the Algebraic Rank of Bounded Degree Polynomials. In: *Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms*. 2019.
6. Markus Bläser and Gorav Jindal. On the Complexity of Symmetric Polynomials. In: *10th Innovations in Theoretical Computer Science Conference (ITCS)*. 2019.

7. Markus Bläser, Christian Ikenmeyer, Gorav Jindal, and Vladimir Lysikov. Generalized Matrix Completion and Algebraic Natural Proofs. In: *Proceedings of the 50th Annual ACM SIGACT Symposium on Theory of Computing*. 2018.
8. Markus Bläser, Gorav Jindal, and Anurag Pandey. A Deterministic PTAS for the Commutative Rank of Matrix Spaces. In: *Theory of Computing*. 2018.

Service to the community

- **Conferences:** Reviewed several papers for conferences FOCS, STOC, SODA, ICALP, and ESA.
- **Journal:** Reviewed some papers for computational complexity journal.

Selected invited talks

- **AGATES 2022:** *On the Complexity of Symmetric Polynomials* at the Institute of Mathematics of the Polish Academy of Sciences
- **CCC 2021:** *Arithmetic Circuit Complexity of Division and Truncation* at CCC 2021.
- **SODA 2019:** *A Deterministic PTAS for the Algebraic Rank of Bounded Degree Polynomials* in SODA 2019 in San Diego.
- **WACT 2019:** *Computing Real Roots of Sparse Polynomials* in Workshop on Arithmetic Complexity 2019 at the International Centre for Theoretical Sciences (ICTS), Bengaluru.
- **WACT 2017:** *A deterministic PTAS for commutative rank of matrix space* in Workshop on Arithmetic Complexity 2017 at the Institute of Mathematical Sciences, Chennai.

Selected research and conference visits

- **12/2019**: *The Mathematics of Quantum Computation: The 4th Winter School* at Israel Institute for Advanced Studies (IIAS).
- **06/2019:** *Highlights of Algorithms 2019* at University of Copenhagen.
- **03/2019**: *Workshop on Algebraic Complexity Theory, WACT'19* at International Centre for Theoretical Sciences (ICTS), Bangalore.
- **06/2018:** *Workshop on Optimization, Complexity and Invariant* at Institute for Advanced Study (IAS), Princeton.
- **03/2018:** *Workshop on Algebraic Complexity Theory, WACT'18* at Université Paris Diderot, Paris.
- **02/2018:** *Research Visit, Prof. Parinya Chalermsook* at Aalto University.
- **09/2017:** *Heidelberg Laureate Forum 2017* at Heidelberg University.
- **03/2017:** *Workshop on Arithmetic Complexity* at IMSC Chennai.
- **10/2016:** *Workshop celebrating Avi Wigderson's 60th birthday* at Institute for Advanced Study (IAS), Princeton.
- **02/2016:** *Workshop on Algebraic complexity theory, WACT 2016* at Tel Aviv University, Israel.
- **07/2014:** *ISSAC 2014* at Kobe University.
- **09/2013:** *Heidelberg Laureate Forum 2013* at Heidelberg University.

Miscellaneous information

- **Programming:** Python, Bash, C++, LaTeX.
- **Applications:** Gvim, Git, Microsoft Office.
- **Operating Systems:** Unix, Linux, Windows.
- **Languages:** Hindi (Mother tongue), Punjabi (Mother tongue), English (Proficient), German (B1 level).

References

Prof. Markus Bläser
Saarland University
+49 681 302-5501
mblaeser@cs.uni-saarland.de

Prof. Joël Ouaknine
MPI-SWS
+49 (0)681 9303 9701
joel@mpi-sws.org

Prof. Peter Bürgisser
Technische Universität Berlin
+49 (0)30 314 - 75902
pbuerg@math.tu-berlin.de

Prof. Parinya Chalermsook
Aalto University
+358 504738018
parinya.chalermsook@aalto.fi

Prof. Christian Ikenmeyer
University of Warwick
christian.ikenmeyer@warwick.ac.uk