

आदित्य माहेश्वरी Aditya Maheshwari

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Associate Professor, IIM Indore

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RESEARCH PROFILE My research brings together two complementary strands: stochastic modelling of complex systems and the development and evaluation of generative AI for Indian languages and knowledge systems. Both are unified by a common foundation in probability, statistics, and computational modelling.

ACADEMIC APPOINTMENTS	Associate Professor , OM&QT Area, IIM Indore	Jul 2023 to present
	Assistant Professor , OM&QT Area, IIM Indore	Jun 2017 to Jul 2023
	Research Associate , Department of Mathematics, IIT Bombay	Jan 2017 to Jun 2017

RESEARCH AREAS *Mathematical foundations*: Stochastic processes, applied probability, statistics and quantitative finance.
Generative AI: Neural forecasting, LLM evaluation, Indic languages and Indian knowledge systems, including *nyāyadarśana*.

LEADERSHIP & SERVICE	<i>Current</i>	<i>Since</i>
	Consortium Member , BharatGen, IIT Bombay	Feb 2023
	Chair , Integrated Program in Management, IIM Indore	April 2025
	Executive Council Member , Devi Ahilya Vishwavidyalaya, Indore	Sep 2026
	Coordinator , Executive Programme in Generative and Agentic AI for Business Applications (Asynchronous)	March 2026
	Coordinator , Advanced Management Programme for Corporate Leaders	April 2025
	Advisor , Modern Group of Institutions, Indore	Aug 2021
	<i>Previous</i>	
	Member , Internal Quality and Assurance Committee, Maharshi Panini Sanskrit Evam Vedic Vishwavidyalaya, Ujjain	Feb 2022–Feb 2025
	Coordinator , Certificate Programme in Applied Financial Risk Management	May 2023 – April 2025
Area Chair , OMQT Area	Apr 2019–Mar 2021	

RESEARCH PROGRAMMES & GRANTS

Role: **co-PI**. Title: **BharatGen: A Suite of Generative AI Tech for India**
Funding Agency: Department of Science and Technology
Duration: 2024–26, 2 years.

Role: **PI**. Title: **Mathematics and Nyaaya Darshana**
Funding Agency: Indian Knowledge Systems (IKS) Division, Ministry of Education.
Duration: 2023–24, 2 years.

Role: **co-PI**. Title: **Digitization and Content Creation on Sankhya Darshan, Yoga Sutra, Prana and Swara with a case study on mental benefits of Mantra Dhyaan**
Funding Agency: IKS Division, Ministry of Education. Duration: 2023, 6 months.

PUBLICATIONS Published and Accepted Work

Generative AI, Machine Learning and Forecasting

1. Kumar, R. and **Maheshwari, A.** (2026). NEXUS: A compact neural architecture for high-resolution spatiotemporal air quality forecasting in Delhi National Capital Region. *Urban Climate* **69** (103120). DOI
2. Maheshwari, A., Sharma, K., Patel, V. & **Maheshwari, A.** (2026). IndicParam: Benchmark to evaluate LLMs on low-resource Indic languages. *Accepted as a Main Conference paper at EMNLP 2026*. arXiv.
3. Gupta, N. and **Maheshwari, A.** (2026). NeuroMem-FPP: A recurrent neural approach for memory-aware parameter estimation in fractional Poisson process. *Physica Scripta*. **101**, 215204. DOI

Stochastic Processes and Applied Probability

4. Babulal, M. S., Gauttam, S. K. & **Maheshwari, A.** (2027). Parameter estimation of incomplete gamma subordinators. *Statistics and Probability Letters* **241** (110953). DOI.

5. Garg, S., Pathak, A. K. & **Maheshwari, A.** (2026). Shock models governed by the mixed Poisson process with Pareto mixing variable. *Accepted in Stochastic Analysis and Applications*. DOI
6. Gupta, N. and **Maheshwari, A.** (2026). Fractional generalizations of the compound Poisson process. *Methodology and Computing in Applied Probability* **28**(3), Article 77, 1–19. DOI.
7. Gupta, N., **Maheshwari, A.**, and Goyal, D. (2026). Geometrical time-changed Poisson processes and their extensions. *Journal of Applied Probability, First View*, 1–30. DOI
8. Gupta, N. and **Maheshwari, A.** (2026). Hawkes process with tempered Mittag-Leffler kernel. *Statistics and Probability Letters* **234** (110661). DOI.
9. Gupta, N. and **Maheshwari, A.** (2026). Tempered fractional Hawkes process and its generalizations. *Journal of Mathematical Analysis and Applications* **554** (2), 129996. DOI
10. Garg, S., Pathak, A. K. & **Maheshwari, A.** (2025). Fractional counting process at Lévy times and its applications. *Journal of Statistical Physics* **192**, 130. DOI.
11. Babulal, M. S., Gauttam, S. K. and **Maheshwari, A.** (2025). Parameter estimation and long-range dependence of the fractional binomial process. arXiv. *Accepted in Theory of Probability and its Applications*.
12. Garg, S., Pathak, A. K. & **Maheshwari, A.** (2025). Tempered space-time fractional negative binomial process. *Methodology and Computing in Applied Probability* **27**(2), Article 51, 1–16. DOI
13. Babulal, M. S., Gauttam, S. K. and **Maheshwari, A.** (2025). Lévy processes with jumps governed by lower incomplete gamma subordinator and its variations. *Theory of Probability and its Applications* **70** (1), 88–110. DOI
14. **Maheshwari, A.** (2023). Tempered space fractional negative binomial process. *Statistics and Probability Letters* **196** (109799). DOI
15. Beghin, L., Gajda, J. and **Maheshwari, A.** (2024). Integro-differential equations linked to compound birth processes with infinitely divisible addends. *Mathematical Methods in the Applied Sciences* **47** (13), 10742–10758. DOI.
16. Sengar, A., **Maheshwari, A.** and Upadhye, N. (2020). Time-changed Poisson processes of order k . *Stochastic Analysis and Applications* **38** (1), 124–148. DOI.
17. Kumar A., **Maheshwari, A.** and Wylomańska, A. (2019). Linnik Levy Process and Some Extensions. *Physica A: Statistical Mechanics and its Applications* **529**, 121539. DOI
18. **Maheshwari, A.** and Vellaisamy, P. (2019). Fractional Poisson process time-changed by Lévy subordinator and its inverse. *Journal of Theoretical Probability* **32** (3), 1278–1305. DOI.
19. **Maheshwari, A.** and Vellaisamy, P. (2018). Non-homogeneous space-time fractional Poisson processes. *Stochastic Analysis and Applications* **37** (2), 137–152. DOI.
20. Vellaisamy, P. and **Maheshwari, A.** (2018). Fractional negative binomial and Polya processes. *Probability and Mathematical Statistics* **38** (1), 77–101. link
21. **Maheshwari, A.** and Vellaisamy, P. (2016). On the long-range dependence of fractional Poisson and negative binomial processes. *Journal of Applied Probability* **53** (4), 989–1000. URL: DOI.

Manuscripts and Preprints

22. **Maheshwari, A.**, Gajkeshwar, A., Sharma, K. and Patel, V. (2026). SectEval: Evaluating the Latent Sectarian Preferences of Large Language Models. DOI
23. Kumavat, M., and **Maheshwari, A.** (2025). TwinFormer: A Dual-Level Transformer for Long-Sequence Time-Series Forecasting. arXiv
24. Singh, R., and **Maheshwari, A.** (2026). Generalized Space-Fractional Poisson Process via Variable-Order Stable Subordinator. arXiv
25. Sharma, K., Patel, V., Maheshwari, A., & **Maheshwari, A.** (2025). ParamBench: A graduate-level benchmark for evaluating LLM understanding on Indic subjects. arXiv
26. Bapat, S. and **Maheshwari, A.** (2024). Modelling and prediction of the wildfire data using fractional Poisson process. arXiv *Submitted*.

Book Chapters

	27. Maheshwari, A. and Singh, R. (2021). Recent Developments on Fractional Point Processes. In: Beghin, L., Mainardi, F., Garrappa, R. (eds) Nonlocal and Fractional Operators. SEMA SIMAI Springer Series, vol 26. Springer, Cham. 28. Maheshwari, A. and Vellaisamy, P. (2013). Some recent results on fractional diffusions. Fractional Calculus: Theory and Applications. Edited by Varsha Daftardar-Gejji, Narosa Publishing House, New Delhi, 169-190. URL: http://www.narosa.com/books_display.asp?catgcode=978-81-8487-333-7
DOCTORAL SUPERVISION	(1). Meena Sanjay Babulal, LNMIIT, Jaipur. (2). Shilpa, Central University of Punjab, Bathinda. (3). Ananthakrishnan Rajamani, IIM Indore. (4). Mahima Kumawat, IIM Indore (5). Rupali, LNMIIT Jaipur. (6). Ankit Pandey, IIM Indore
TEACHING	Undergraduate courses: <i>Core:</i> Stochastic Processes (2026), Introduction to R (2026), Linear Algebra (2024–26), R programming (2024, 2026), Foundations of Mathematics and Statistics (2024), Numerical Analysis (2017 – 2019, 2021 – 2024), Probability-1 (2017–2023), Statistical Methods - 1 (2018), Differential Calculus (2020), Introduction to Business History (2022). <i>Elective:</i> Introduction to GenAI and NLP (2025), Stochastic Process - 1 (2019–20, 2022–24), Introduction to Stochastic Calculus (2018–2020, 2022–24), Stochastic Calculus - II (2019), Statistical Learning with Python (2019), Elections and Voting: A Mathematical Treatment (2020), People and Power: Understanding Elections, Power and Apportionment Through Mathematics (2024). Postgraduate: <i>Core:</i> Introduction to Probability and Statistics (2026), Introduction to Business Statistics (2020–2022, 2024-25), Introduction to Social Science Research and Probability & Statistics (2021). <i>Elective:</i> Introduction to GenAI and NLP (2025), People and Power: Understanding Elections, Power and Apportionment Through Mathematics (2023). PhD courses: <i>Core:</i> Applied Probability and Statistics (2019), Introduction to Business Statistics (2020). <i>Elective:</i> Topics in Generative AI (2025–26), Topics in Stochastic Processes (2019–20), Introduction to High Performance Computing (2026).
SELECTED INVITED (IN-PERSON) TALKS & PANELS	• “The Global State of Play on AI”, Australian Strategic Policy Institute’s Sydney Dialogue AI Masterclass, Canberra, Australia, Sep 14, 2026. • “Can AI Fix India’s Learning Gap–or Widen It?”, Economic Times’ Future of Knowledge Work Summit 2026, Bengaluru, June 17, 2026. • “Sovereign AI”, Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, March 19, 2026. • “Mathematical Logic Meets Bhartiya Thought: A Neuro-Symbolic Synthesis”, CDAC Bangalore, Bengaluru, June 16, 2025. • “रामकथा के भागीरथ वाल्मीकि” at Government Holkar (Model Autonomous) Science College, Indore, Nov 28, 2022. • ‘Non-homogeneous space-time fractional Poisson processes’, University of Turin, Turin, Italy, May 23, 2019. • “Fractional Poisson process”, IIT Ropar, Ropar, May 25, 2018. • “Some Fractional Stochastic Processes” at IIM Indore, Indore, June 13, 2017.
HONOURS & AWARDS	• Best Teacher Award 2018 at IIM Indore Sep 2018 • UGC Junior Research Fellowship Dec 2009 • Eligibility for Lectureship (NET) award Jun 2009
VISITING APPOINTMENTS	• University of Turin, May 13, 2019 – June 6, 2019. • University of Rome, June 7, 2019 – July 7, 2019.
EDUCATION	Ph.D. Mathematics, Department of Mathematics, IIT Bombay Dec 2016 M.Sc. Mathematics, University of Kota, Kota, Rajasthan Jul 2009 ‘A’ level Advanced Diploma, NIELIT, erstwhile DOEACC Society May 2008 B.Sc. (PCM), University of Kota, Kota, Rajasthan Jul 2007