

Nishanth Kumar

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Profile

PhD Candidate in Mathematics (Imperial College London), specialising in computational social science. Research focuses on multiplicative growth processes, non-linear dynamics, and applications to society. Extensive experience in research and teaching interdisciplinary cohorts across mathematics, engineering, life sciences, public policy, and business.

Education

PhD in Mathematics	2021–2026
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Imperial College London, Centre for Complexity Science

Thesis: *A Complexity and Networks Approach to Trade, Influence, and Inequality*

MSc in Applied Mathematical Sciences	2012–2013
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Heriot-Watt University, Edinburgh

Thesis: *Angular Momentum and Atiyah Conjecture*

BSc in Mathematics	2009–2012
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University of Madras

Employment

Research Assistant	2022–2024
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Alan Turing Institute

Developed agent-based models of global trade and production networks to study supply chain shocks and contagion.

Consultant	2022
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Accion – Centre for Financial Inclusion

Produced analytical work on fintech systems and privacy-by-design frameworks.

Head of Research Analytics	2014–2021
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Dvara Research

Led large-scale policy research projects, managed teams, and delivered analytical outputs to governments and regulators.

Teaching

Senior Graduate Teaching Assistant, Network Science	2025
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Department of Mathematics, Imperial College London

Graduate Teaching Assistant, Network Science	2023
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Department of Mathematics, Imperial College London

Graduate Teaching Assistant, Scientific Computation	2022
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Department of Mathematics, Imperial College London

Graduate Teaching Assistant, Modelling in Biology	2026
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Department of Bioengineering, Imperial College London

Teaching Fellow, Financial Econometrics in R/Python	2023–2024
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Imperial Business School

Master's Project Marker	2024–2025
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Imperial Business School

Supervision

UROP Research Co-supervisor

Summer 2025

Imperial College London

Muhamary Kiherille (Princeton University)

Publications

Peer-reviewed

Sahasranaman, A., **Kumar, N.**, Erbertseder, T., Wurm, M., Taubenböck, H., Bettencourt, L. (2026). *The effect of urbanisation, scale, and geography on air pollution in India's cities and districts*. *npj Clean Air*, 2, 20.

Kumar, N., Jensen, H. J., Viegas, E. (2026). *Tracing inequitable emissions in global trade using a networks approach*. *Royal Society Open Science*, 13(1): 251246.

Kumar, N., Jensen, H. J., Viegas, E. (2023). *Economic trading susceptibility*. *Entropy*, 25, 141.

Sahasranaman, A., **Kumar, N.** (2023). *Distribution dynamics of income*. *Economic and Political Weekly* 58: 37-46.

Sahasranaman, A., **Kumar, N.** (2022). *Income distribution and inequality in India*. *Economic and Political Weekly* 57: 23-30.

Ashraf, H., Ghosh, I., **Kumar, N.**, Nambiar, A., Prasad, S. (2022). *Pathways to Reimagining Commercial Health Insurance*. *Frontiers in Public Health* 10: 1006483.

Sudarsanam, N., **Kumar, N.**, Sharma, A., Ravindran, B. (2020). *Rate of change analyses*. *Knowledge and Information Systems* 62.1: 239-258.

Working Papers

Kumar, A., **Kumar, N.** (2021). *Incomes and coping strategies among informal sector workers*. Background Paper. State of Working India Report. Azim Premji University.

Kumar, N. (2019). *Capital regulation of credit intermediaries in India*. Dvara Research Working Paper Series.

Op-eds

Kumar, N. (2021). *Formalising social security for the informal sector*. The Hindu Business Line.

Ghosh, I., **Kumar, N.** (2020). *Unlocking new capital for the social sector*. India Development Review.

Kumar, N. (2019). *It's unfair to NBFCs*. The Hindu Business Line.

Conference Presentations

Conference on Complex Systems (CCS), Exeter, UK 2024
Lightning talk and contributed talk (UrbanSys satellite)

Networks and Complexity Seminar, Imperial College London 2024
Contributed talk

**14th International Conference on Complex Networks (Com-
pleNet), Aveiro, Portugal** 2023
Contributed talk

Economic Fitness and Complexity Summer School, Rome, Italy 2023
Contributed talk

Conference on Reviewing Payments Regulations, Delhi, India 2018
Invited talk

Grants and Partnerships

Bill & Melinda Gates Foundation Grant 2018–2021
Programme Head of a \$1-million grant from the Bill and Melinda Gates Foundation (BMGF) that worked on reducing last-mile exclusion in Government-to-citizen payments

Mission Billion Innovation Challenge (Winner), World Bank Group 2020
Partnered with Gram Vaani to develop solutions addressing exclusion from digital-ID based social protection systems.

Research Partnerships and Collaborations 2014–2021
Established research collaborations with the Indian Institute of Technology (IIT Madras), Indian School of Business (ISB), Indian Institute of Management (IIM Ahmedabad), and the Stanford Center on Global Poverty and Development.

Government and Regulator Engagement

UK Department of Business and Trade
Provided consultations, as part of a team from The Alan Turing Institute, on building a model for International Trade

Securities and Exchange Board of India (SEBI)
Member of the drafting team for the SEBI Working Group report that designed India's Social Stock Exchange (operational from 2023).

Ministry of Finance, Government of India
Conducted impact assessment of MUDRA Bank and contributed to policy recommendations to expand MSME credit through credit guarantees and refinance mechanisms.

Committee of Experts on Data Protection (Justice B. N. Srikrishna)
Contributed to the design of India's Data Protection Authority and the Data Protection Bill (2019).

Pension Fund Regulatory and Development Authority of India (PFRDA)
Conducted impact assessment of the National Pension Scheme – Swavalamban.

Outreach

Co-founder, Madras Complexity Collective 2024–present
Platform for science communication focused on academic research from the global south

Volunteer Demonstrator 2022
Mathematics of Planet Earth Exhibition, Imperial College London

Contributor, Cambridge University Press 2023
Authored solutions for the Book: Emergence: Introduction to Complexity Science by Prof. Henrik Jensen.

Additional Information

Languages: English, Tamil, Hindi
Interests: Chess, football, science communication