



Dr. Indrajit Ghosh

Curriculum Vitae

Research Experience

- 4.2025– Present **Assistant Professor**, BAGCHI SCHOOL OF PUBLIC HEALTH, AHMED-
ABAD UNIVERSITY, Ahmedabad, Gujarat, India.
- 3.2024– **Senior Project Research Scientist**, NATIONAL DISEASE MODELLING
3.2025 CONSORTIUM, IIT BOMBAY, Powai, Bombay, India.
'Diseases and Interventions Modelling to Action Group'
- 6.2023– **Project Manager (Research)**, NATIONAL DISEASE MODELLING CON-
2.2024 SORTIUM, IIT BOMBAY, Powai, Bombay, India.
'Diseases and Interventions Modelling to Action Group'
- 4.2022– **Postdoctoral research associate**, DEPARTMENT OF EPIDEMIOLOGY
3.2023 AND BIostatISTICS, UNIVERSITY OF GEORGIA, Athens, GA, USA.
Working on 'Surveillance-based metrics of progress in measles control'
- 8.2020– **NBHM Postdoctoral Fellow**, DEPARTMENT OF COMPUTATIONAL AND
3.2022 DATA SCIENCES, INDIAN INSTITUTE OF SCIENCE, Bangalore.
Working on 'Modeling, mitigation strategies and forecasting of some respiratory diseases'
- 7.2015– **UGC Research Fellow**, INDIAN STATISTICAL INSTITUTE, Kolkata.
7.2020 Thesis title: Mathematical Modeling of Some Emerging and Re-emerging Epidemics:
Transmission Routes and Controls.

Education

- 2015–2021 **Doctor of Philosophy (Applied Mathematics)**, *Agricultural and Ecological Research Unit, Indian Statistical Institute, Kolkata (University of Calcutta)*, Kolkata- 700108, West Bengal.
- 2012–2014 **Master's degree in Mathematics**, *Visva Bharati*, Shantiniketan, Birbhum, West Bengal, CGPA - 8.36.
- 2009–2012 **Bachelor's degree in Mathematics**, *Burdwan Raj College*, Burdwan, West Bengal, Percentage - 52.

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2008–2009 **Higher Secondary - Science**, *Purandarpur High School*, Birbhum, West Bengal, Percentage - 85.

Scholarships and fellowships

- 2009-2014 **Inspire scholarship**, DST, Govt. of India.
Based on the previous academic results, I was granted the Inspire scholarship for Bachelors and Masters degree courses.
- 2014, **NET JRF (Mathematical sciences)**, UGC, Govt. of India.
December Qualified UGC-CSIR National Eligibility Test with all India **rank '8'**. Availed the fellowship for my PhD programme in Applied Mathematics.
- 2015, **GATE**, IIT, Govt. of India.
February Qualified Graduate Aptitude Test in Engineering (Mathematical Sciences) with all India **rank '38'**.
- 2020, **International Travel Support (ITS)**, SERB, Govt. of India.
December Selected for attending 11th DSABNS conference held at University of Trento, Italy
- 2020, **NBHM Postdoctoral Fellowship**, DAE, Govt. of India.
February Selected for NBHM postdoctoral fellowship based on my research profile in Applied Mathematics.
- 2023, **International travel support**, UGA, University of Georgia.
November Provided travel allowance to attend 9th EPIDEMICS conference in Bologna, Italy.

Computer skills

Advanced MATLAB, R, $\text{\LaTeX}$
Intermediate PYTHON
GitHub <https://github.com/indrajitg-r>

Languages

Bengali **Mother tongue**
English **Upper Intermediate, Conversationally fluent**
Hindi **Basic Level**

Research Articles

* **corresponding author**, ** **equal first author**

1. An age-stratified mathematical model to inform optimal measles vaccination strategies; **medRxiv**, 2025, S. Ghosh, **I. Ghosh**, S. Mukhopadhyay*.
2. COMET-LF: A Compartmental Model of Dynamics of Infection, Disease, and Elimination Strategies for Lymphatic Filariasis; **medRxiv**, 2024, **I. Ghosh**, S. Nath-Sain, S. Sen Gupta, C. P. Joshi, T. Jain, S. Subramanian, S. Banerjee, M. K. Mitra*.
3. Anticipating dengue outbreaks using a novel hybrid ARIMA-ARNN model with exogenous variables; **arXiv**, 2024, **I. Ghosh**, S. Gupta, S. Rana*.

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4. Dynamics of a single-strain and two-strain respiratory infection driven by travel on a metapopulation network; **Nonlinear Dynamics**, 2023, **I. Ghosh***, S.S. Nadim, S. Raha, D. Pal.
5. Model-Based Estimation of Expected Time to Cholera Extinction in Lusaka, Zambia; **Bulletin of Mathematical Biology**, 2023, 85 B. Maity*, B. Saha, **I. Ghosh**, J. Chattopadhyay.
6. Dynamics of a coupled socio-environmental model: An application to global CO₂ emissions; **Ecological Modelling**, 2023, 478, 110279 S. Pal, **I. Ghosh***.
7. An ensemble neural network approach to forecast Dengue outbreak based on climatic condition; **Chaos, Solitons & Fractals**, 2023, 167 113124 M. Panja, T. Chakraborty*, S.S. Nadim, **I. Ghosh**, U. Kumar, N. Liu.
8. Investigation and control strategy for canine distemper disease on endangered wild dog species: a model-based approach; **SN Applied Analysis**, 2022, 4(6) S. Reja, S. Ghosh, **I. Ghosh**, A. Paul, S. Bhattacharya*.
9. A mechanistic model for airborne and direct human-to-human transmission of COVID-19: Effect of mitigation strategies and immigration of infectious persons; **EPJ - Special Topics**, 2022, 231, S. Pal, **I. Ghosh***.
10. Within Host Dynamics of SARS-CoV-2 in Humans: Modeling Immune Responses and Antiviral Treatments; **SN Computer Science**, 2021, 2 482 **I. Ghosh***.
11. Modeling the effects of prosocial awareness on COVID-19 dynamics: Case studies on Colombia and India; **Nonlinear Dynamics**, 2021, 104 4681-4700 **I. Ghosh***, M. Martcheva.
12. Short-term predictions and prevention strategies for COVID-19: A model-based study; **Applied Mathematics and Computation**, 2021, 404 126251 Sk. S. Nadim, **I. Ghosh***, J. Chattopadhyay.
13. Zoonotic MERS-CoV transmission: modeling, backward bifurcation and optimal control analysis; **Nonlinear Dynamics**, 2021, 103 2973-2992 **I. Ghosh**, Sk. S. Nadim, J. Chattopadhyay.
14. An integrated deterministic-stochastic approach for predicting the long-term trajectories of COVID-19; **International Journal of Modeling, Simulation, and Scientific Computing**, 2021, 12(3) 2141001 **I. Ghosh ***, T. Chakraborty.
15. Impact of venereal transmission on the dynamics of vertically transmitted viral diseases among mosquitoes; **Mathematical Biosciences**, 2020, 325 108336 Sk. S. Nadim, **I.**

Ghosh *, M. Martcheva, J. Chattopadhyay.

16. Real-time forecasts and risk assessment of novel coronavirus (COVID-19) cases: A data-driven analysis; **Chaos, Solitons & Fractals**, 2020, 135 109850 T. Chakraborty, **I. Ghosh ***.
17. A realistic two-strain model for MERS-CoV infection uncovers the high risk for epidemic propagation; **PLoS Neglected Tropical Diseases**, 2020, 14(2): e0008065 T. Sardar **, **I. Ghosh ****, X. Rodo, J. Chattopadhyay.
18. Global dynamics of a vector-borne disease model with two transmission routes; **International Journal of Bifurcation and Chaos**, 2020, 30(6): 2050083 Sk. S. Nadim, **I. Ghosh ***, J. Chattopadhyay.
19. Forecasting dengue epidemics using a hybrid methodology; **Physica A**, 2019, 527 12166 T. Chakraborty, S. Chattopadhyay, **I. Ghosh**.
20. Effect of active case finding on dengue control: Implications from a mathematical model; **Journal of Theoretical Biology**, 2019, 464 50-62 **I. Ghosh ***, P.K. Tiwari, J. Chattopadhyay.
21. A mathematical study to control Guinea Worm Disease: A case study on Chad; **Journal of Biological Dynamics**, 2018, 12(1) 846:871 **I. Ghosh**, P.K. Tiwari, S. Mandal, M. Martcheva, J. Chattopadhyay.
22. Modeling the Spread of Zika Virus in a Stage Structured Population: Effect of Sexual Transmission; **Bulletin of Mathematical Biology**, 2018, 80 (11) 3038:3067 S.K. Sasmal **, **I. Ghosh ****, A. Huppert, J. Chattopadhyay.
23. A simple SI-type model for HIV/AIDS with media and self-imposed psychological fear; **Mathematical Biosciences**, 2018, 306 160:169 **I. Ghosh**, P.K. Tiwari, S. Samanta, I.M. Elmojtaba, N. Al-Salti, J. Chattopadhyay.
24. A Mathematical Study to Control Visceral Leishmaniasis: An Application to South Sudan; **Bulletin of Mathematical Biology**, 2017, 79 (5) 1100:1134 **I. Ghosh**, T. Sardar, J. Chattopadhyay.

Book chapters

* corresponding author, ** equal first author

1. Nowcasting of COVID-19 confirmed cases: Foundations, trends, and challenges; **Modeling, Control and Drug Development for COVID-19 Outbreak Prevention**, 2022 (1023-1064) T. Chakraborty, **I. Ghosh ***, T. Mahajan, T. Arora.

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Awards and Paper presentations

- Presented a paper in 9th EPIDEMICS conference November 28 - December 1, 2023, Bologna Congress Center, Italy
- Best paper award in medical statistics: Mathematical modelling - Presented the awarded best paper on the 48th Foundation day of **ICMR-NIMS**, Sep. 26, 2023, New Delhi, India.
- Presented a paper in 6th China-Indian-Japan-Korea Mathematical Biology Colloquium August 23 - 26, 2017, IIT Kanpur
- Presented a paper in 7th India Biodiversity Meet November 19 - 21, 2019, ISI Kolkata
- Presented a paper in 11th DSABNS February 4 - 7, 2020, University of Trento, Italy

Professional service: Refereeing

- Journal of the Royal Statistical Society: Series C (Applied Statistics)
- Journal of the Royal Society Interface
- Applied Mathematics and Computation
- Epidemiology and Infection
- Letters in Biomathematics
- Mathematical Medicine and Biology
- PLoS Neglected Tropical Diseases
- Journal of Biological Dynamics
- Nonlinear Dynamics
- PLoS One
- Risk Analysis
- Scientific Reports

Research interests

- Mathematical epidemiology
- Epidemic data analysis
- Modelling and simulation

Declaration

I hereby declare that the information furnished above is true to the best of my knowledge.

References

- Dr. Joydev Chattopadhyay, Professor
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Indian Statistical Institute, Kolkata
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