Wasiur Rahman
Khuda Bukhsh

School of Mathematical Sciences
The University of Nottingham
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Professional Experience

Oct 2021 – **Assistant Professor**, *School of Mathematical Sciences*, The University of Nottingham, University Park, Nottingham, NG7 2RD, UK

Jan 2020 – Sep 2021 **President's Postdoctoral Scholar**, *Mathematical Biosciences Institute and the College of Public Health, The Ohio State University*, Columbus, Ohio, USA

Oct 2018 – Dec 2019 **Postdoctoral Researcher**, *Mathematical Biosciences Institute and the College of Public Health, The Ohio State University*, Columbus, Ohio, USA

Jan 2014 – Sep 2018 **Research Associate**, *Technische Universität Darmstadt*, Darmstadt, Germany
Department of Electrical Engineering and Information Technology

Jun 2011 – Dec 2013 **Manager**, *ICICI Bank*, Mumbai, India
Advanced Analytics, Business Intelligence Unit (BIU)

Education

2023 – **Fellow (FHEA)**, *Advance HE (formerly Higher Education Academy)*, UK

2023 – 2024 **Postgraduate Certificate in Higher Education (PGCHE)**, *University of Nottingham*, UK

2014 – 2018 **Ph.D. (Dr. rer. nat.), summa cum laude**, *Department of Electrical Engineering and Information Technology, Technische Universität Darmstadt*, Germany

2009 – 2011 **Master of Statistics (M.Stat.)**, *Indian Statistical Institute*, Kolkata, India

2006 – 2009 **Bachelor of Science (B. Sc.) with Honours in Statistics**, *University of Calcutta*, Kolkata, India

Publications

Preprints/Submitted

[1] Arnab Ganguly and **Wasiur R. KhudaBukhsh**. Asymptotic analysis of the total quasi-steady state approximation for the Michaelis–Menten enzyme kinetic reactions. 2025. Submitted. ArXiv: `https://arxiv.org/abs/2503.20145`.

[2] Yordan P. Raykov, Hengrui Luo, Justin D. Strait, and **Wasiur R. KhudaBukhsh**. Kernel-based estimators for functional causal effects. 2025. Submitted. ArXiv: `https://arxiv.org/abs/2503.05024`.

[3] Alexander E. Zarebski, Nefel Tellioglu, Jessica E. Stockdale, Julie A. Spencer, **Wasiur R. KhudaBukhsh**, Joel C. Miller, and Cameron Zachreson. Including frameworks of public health ethics in computational modelling of infectious disease interventions. 2025. Under revision. ArXiv: `https://arxiv.org/abs/2502.00071`.

[4] **Wasiur R. KhudaBukhsh** and Yangrui Xiang. Mixing time for a noisy SIS model on graphs. 2025. Submitted. ArXiv: `https://arxiv.org/abs/2501.07738`.

[5] Karim S. Elsayed, Olga Izyumtseva, **Wasiur R. KhudaBukhsh**, and Amr Rizk. Stochastic analysis of entanglement-assisted quantum communication channels. 2024. Submitted. ArXiv: `https://arxiv.org/abs/2412.16157`.

[6] Riccardo Corradin, Luca Danese, **Wasiur R. KhudaBukhsh**, and Andrea Ongaro. Model-based clustering of time-dependent observations with common structural changes. 2024. ArXiv: `https://arxiv.org/abs/2410.09552`.

[7] Olga Izyumtseva and **Wasiur R. KhudaBukhsh**. Local times of self-intersection and sample path properties of Volterra Gaussian processes. 2024. Submitted. ArXiv: `https://arxiv.org/abs/2409.04377`.

[8] Arnab Ganguly and **Wasiur R. KhudaBukhsh**. Enzyme kinetic reactions as interacting particle systems: Stochastic averaging and parameter inference. 2024. ArXiv: `https://arxiv.org/abs/2409.06565`.

Book chapters

[9] Olga Izyumtseva, **Wasiur R. KhudaBukhsh**, and Grzegorz A. Rempała. Functional law of large numbers for an epidemic model with random effects. Handbook of Statistics. Elsevier, 2024.

[10] Grzegorz A. Rempała and **Wasiur R. KhudaBukhsh**. Dynamical survival analysis for epidemic modeling. In *Handbook of Visual, Experimental and Computational Mathematics*, pages 1–17. Springer International Publishing, 2023.

Peer-reviewed journal publications

[11] Yushuf Sharker, Zaynab Diallo, **Wasiur R. KhudaBukhsh**, and Eben Kenah. Pairwise accelerated failure time regression models for infectious disease transmission in close contact groups with external sources of infection. *Statistics in Medicine*, 2024.

[12] **Wasiur R. KhudaBukhsh** and Grzegorz A. Rempała. How to *correctly* fit an SIR model to data from an SEIR model? *Mathematical Biosciences*, 2024.

[13] Matthew Wascher, Patrick Schnell, **Wasiur R. KhudaBukhsh**, Mikkel B.M. Quam, Joseph Tien, and Grzegorz Rempała. Estimating disease transmission in a closed population under repeated testing. *Journal of the Royal Statistical Society: Series C (JRSSC)*, 2024.

[14] István Z. Kiss, Luc Berthouze, and **Wasiur R. KhudaBukhsh**. Towards inferring network properties from epidemic data. *Bulletin of Mathematical Biology*, 2024.

[15] **Wasiur R. KhudaBukhsh**, Sat Kartar Khalsa, Eben Kenah, Grzegorz Rempała, and Joseph Tien. COVID-19 dynamics in an Ohio prison. *Frontiers in Public Health*, 2023.

[16] **Wasiur R. KhudaBukhsh**, Caleb Deen Bastian, Matthew Wascher, Colin Klaus, Saumya Yashmohini Sahai, Mark H. Weir, Eben Kenah, Elisabeth Root, Joseph H. Tien, and Grzegorz A. Rempała. Projecting COVID-19 cases and hospital burden in ohio. *Journal of Theoretical Biology*, 561:111404, 2023.

[17] Colin Klaus, Matthew Wascher, **Wasiur R. KhudaBukhsh**, and Grzegorz Rempała. Likelihood-Free Dynamical Survival Analysis applied to the COVID-19 epidemic in Ohio. *Mathematical Biosciences and Engineering*, 20, 2023.

[18] Kai Cui, **Wasiur R. KhudaBukhsh**, and Heinz Koeppl. Hypergraphon mean-field games. *Chaos*, 2022.

[19] **Wasiur R. KhudaBukhsh**, Casper Woroszylo, Grzegorz Rempała, and Heinz Koeppl. A functional central limit theorem for SI processes on configuration model graphs. *Advances in Applied Probability*, 2022.

[20] Colin Klaus, Matthew Wascher, **Wasiur R. KhudaBukhsh**, Joseph H. Tien, Grzegorz A. Rempała, and Eben Kenah. Assortative mixing among vaccination groups and biased estimation of reproduction numbers. *The Lancet Infectious Diseases*, 22:P579–581, 5 2022.

[21] Francesco Di Lauro*, **Wasiur R. KhudaBukhsh***, István Z. Kiss, Eben Kenah, Max Jensen, and Grzegorz Rempała. Dynamic survival analysis for non-markovian epidemic models. *Journal of the Royal Society Interface*, 2022. *Both authors contributed equally and are joint first authors.

[22] Kai Cui, **Wasiur R. KhudaBukhsh**, and Heinz Koeppl. Motif-based mean-field approximation of interacting particles on clustered networks. *Physical Review E*, 105, 4 2022.

[23] Harley Vossler, Pierre Akilimali, Yuhan Pan, **Wasiur R. KhudaBukhsh**, Eben Kenah, and Grzegorz A. Rempała. Analysis of individual-level epidemic data: Study of 2018-2020 ebola outbreak in democratic republic of the congo. *Scientific Reports*, 12, 2022.

[24] Ido Somekh*, **Wasiur R. KhudaBukhsh***, Elisabeth Dowling Root*, Greg Rempala, Eric Simoes, and Eli Somekh. Quantifying the Population-level Effect of COVID-19 Mass Vaccination Campaign in Israel: A Modeling Study. *Open Forum Infectious Diseases*, 2022. *Equal contribution.

[25] **Wasiur R. KhudaBukhsh***, Hye-Won Kang, Eben Kenah, and Grzegorz Rempała. Incorporating age and delay into models for biophysical systems. *Physical Biology*, 18(1), 2021. (*Invited paper).

[26] **Wasiur R. KhudaBukhsh**, Boseung Choi, Eben Kenah, and Grzegorz Rempała. Survival dynamical systems: individual-level survival analysis from population-level epidemic models. *Journal of the Royal Society Interface Focus*, 10(1), 2020.

[27] **Wasiur R. KhudaBukhsh**, Arnab Auddy, Yann Disser, and Heinz Koeppl. Approximate lumpability for Markovian agent-based models using local symmetries. *Journal of Applied Probability*, 56, 9 2019.

[28] Hye-Won Kang*, **Wasiur R. KhudaBukhsh***, Heinz Koeppl, and Grzegorz Rempała. Quasi-steady-state approximations derived from a stochastic enzyme kinetics. *Bulletin of Mathematical Biology*, 81(5):1303–1336, 2019. *joint first authors.

[29] Saumya Yashmohini Sahai, Saket Gurukar, **Wasiur R. KhudaBukhsh**, Srinivasan Parthasarathy, and Grzegorz A. Rempała. A Machine Learning Model for Nowcasting Epidemic Incidence. *Mathematical Biosciences*, 2021.

[30] **Wasiur R. KhudaBukhsh**, Sounak Kar, Bastian Alt, Amr Rizk, and Heinz Koeppl. Generalized cost-based job scheduling in very large cluster systems. *IEEE Transactions on Parallel and Distributed Systems*, 31(11):2594–2604, 2020.

[31] Boseung Choi, Sydney Busch, Dieudonné Kazadi, Benoit Ilunga, Emile Okitolonda, Yi Dai, Robert Lumpkin, Omar Saucedo, **Wasiur R. KhudaBukhsh**, Joseph Tien, Marcel Yotebieng, Eben Kenah, and Grzegorz A. Rempała. Modeling Outbreak Data: Analysis of a 2012 Ebola Virus Disease Epidemic in DRC. *BIOMATH*, 8(2), 2019.

[32] **Wasiur R. KhudaBukhsh**, Amr Rizk, Sounak Kar, and Heinz Koeppl. Provisioning and performance evaluation of parallel systems with output synchronization. *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS)*, 4(1), 3 2019.

[33] Bastian Alt, Markus Weckesser, Christian Becker, Matthias Hollick, Sounak Kar, Anja Klein, Robin Klose, Roland Kluge, Heinz Koeppl, Boris Koldehofe, **Wasiur R. KhudaBukhsh**, Mahdi Mousavi, Martin Pfannemueller, Amr Rizk, Andy Schuerr, and Ralf Steinmetz. Transitions: A protocol-independent view of the future internet. *Proceedings of the IEEE*, 107(4):835–846, 4 2019.

Peer-reviewed conference proceedings

[34] Karim Elsayed, **Wasiur R. KhudaBukhsh**, and Amr Rizk. On the Trade-off between Fidelity and Latency for the Quantum Link Layer with few Memories and Entanglement Purification. In *Proceedings of the International Conference on Quantum Communications, Networking, and Computing (QCNC 2024)*, 2024. Best paper award.

[35] Karim Elsayed, **Wasiur R. KhudaBukhsh**, and Amr Rizk. On the Fidelity Distribution of Link-level Entanglements under Purification. In *Proceedings of the IEEE International Conference on Communication (ICC) 2024*, 2024.

[36] Riccardo Corradin, Luca Danese, **Wasiur KhudaBukhsh**, and Andrea Ongaro. Model-based clustering of non-stationary time series with common historical change times. In *Statistical Learning, Sustainability and Impact*, 2023.

[37] **Wasiur R. KhudaBukhsh**, Bastian Alt, Sounak Kar, Amr Rizk, and Heinz Koeppl. Collaborative uploading in heterogeneous networks: Optimal and adaptive strategies. In *IEEE International Conference on Computer Communications (INFOCOM)*, 4 2018. $< 20\%$ acceptance rate. Best-in-Session Presentation Award.

[38] **Wasiur R. KhudaBukhsh**, Amr Rizk, Alexander Frömmgen, and Heinz Koeppl. Optimizing Stochastic Scheduling in Fork-Join Queueing Models: Bounds and Applications. In *IEEE International Conference on Computer Communications (INFOCOM)*, 5 2017. $\sim 20\%$ acceptance rate.

[39] Adrian Šošić, **Wasiur R. KhudaBukhsh**, A. M. Zourbir, and Heinz Koeppl. Inverse reinforcement learning in swarm systems. In *AAMAS Workshop on Transfer in Reinforcement Learning*, May 2017. Available: `http://www.tirl.info/proceedings/2017/SosicEtal-Inverse.pdf`.

[40] Adrian Šošić, **Wasiur R. KhudaBukhsh**, A. M. Zourbir, and Heinz Koeppl. Inverse reinforcement learning in swarm systems. In *International Conference on Autonomous Agents & Multiagent Systems (AAMAS)*, 5 2017. $\sim 26\%$ acceptance rate, Best Paper Award Finalist.

[41] **Wasiur R. KhudaBukhsh**, Julius Rückert, Julian Wulfheide, David Hausheer, and Heinz Koeppl. Analysing and Leveraging Client Heterogeneity in Swarming-based Live Streaming. In *IFIP Networking Conference (IFIP Networking) and Workshops*, 5 2016. $\sim 26\%$ acceptance rate.

[42] Mahdi Mousavi, Hussein Al Shatri, **Wasiur R. KhudaBukhsh**, Heinz Koeppl, and Anja Klein. Cross-Layer QoE-based Incentive Mechanism for Video Streaming in Multi-Hop Wireless Networks. In *IEEE 86th Vehicular Technology Conference (VTC)*, 9 2017.

Thesis and technical notes

[43] **Wasiur R. KhudaBukhsh**. *Model reductions for queueing and agent-based systems with applications in communication networks*. PhD thesis, Technische Universität, Darmstadt, 2018. Available at: `http://tuprints.ulb.tu-darmstadt.de/7588/`.

[44] Mark Sinzger-D'Angelo, Heinz Koeppl, and **Wasiur R. KhudaBukhsh**. Bounds on the spectral radius of real-valued non-negative kernels on measurable spaces. 2023. Preprint: `https://arxiv.org/abs/1808.00258`.

Awards and Funding

Awards

1. Best Paper Award at the International Conference on Quantum Communications, Networking, and Computing (QCNC 2024)
2. 2019 President's Postdoctoral Scholars Program (PPSP) of the Ohio State University

3. Best-in-Session Presentation Award at the IEEE International Conference on Computer Communications (IEEE INFOCOM), Honolulu, Hawaii, USA, 2018.

Funding

1. Engineering and Physical Sciences Research Council (EPSRC): EP/Y027795/1 ($79,987.58$ GBP, 01/03/2024 - 28/02/2025)
2. National Science Foundation (NSF) - Collaborative Research: SCH: Making Smarter Health Wearables through Functional Data Learning (under review)

Other smaller grants and travel awards

1. Isaac Newton Institute (INI) Retreats, July 29 - August 4, 2024.
2. LMS Research in Pairs grant 2024 (1200 GBP)
3. MATRIX-Simons Travel Grant ($2,500$ AUD, 02/2024)
4. UoN Faculty of Science International Research Collaboration Fund ($3,150$ GBP)
5. Heilbronn Institute for Mathematical Research (HIMR) Small Grants Scheme ($1,000$ GBP)
6. Royal Society International Exchange grant 2022 ($11,702.09$ GBP)
7. UoN Faculty of Science International Collaboration Fund ($4,375$ GBP)
8. LMS Undergraduate Research Bursary 2022 (900 GBP $+$ matching 900 GBP from the University of Nottingham)
9. LMS Research in pairs grant 2022 (1200 GBP)
10. Institute of Mathematical Statistics New Researchers Conference 2022 (1860 USD)
11. American Institute of Mathematics (AIM) SQuaREs (Structured Quartet Research Ensembles) (along with Hye-Won Kang, Lea Popovic, Greg Rempała, Ruth Williams and Felipe Campos)
12. The German Academic Exchange Service (DAAD) travel grant (Kongressreise) to participate in the Annual Meeting of the SMB in Sydney, Australia, 2018 (~ 2000 EUR)

Presentations

Summary: 46 invited and 27 contributed/local talks. 7 poster presentations.

Invited talks

1. Statistics and Probability Seminar, University of Essex, UK, May 15, 2025
2. Innovations in Machine Learning, Artificial Intelligence, Data Science & Modelling (IMLAIDSM'24), India, December 2024
3. Probability Seminar, Louisiana State University, 25 November, 2024
4. Mathematics of Reaction Networks (MoRN) seminar, November 7, 2024
5. CMMB Seminar, University of Nottingham, October 22, 2024
6. Mini-symposium talk at the Annual Meeting of the Society for Mathematical Biology, Seoul, South Korea, June 30- July 5, 2024
7. Epidemiology workshop, Konkuk University, Seoul, South Korea, June 29, 2024.
8. Mathematical Biology Seminar, University of Leeds, December 7, 2023.
9. Mathematical Life Sciences talk, University of Bonn, Germany, December 1, 2023.
10. Probability Seminar, Louisiana State University, USA, November 7, 2023.
11. Mini-symposium speaker, ICIAM, Tokyo, Japan, August 20-25, 2023.
12. SMB Diversity in Math Bio seminar series, July 25, 2023.
13. Mini-symposium speaker, SIAM Conference on Optimization 2023, Seattle, Washington, USA, June 2, 2023.
14. BBSRC DTP event, University of Nottingham, UK, April 19, 2023.
15. Probability Seminar, Louisiana State University, USA, April 3, 2023.
16. Stochastics Seminar, Georgia Tech, USA, March 2, 2023. (online)
17. NANT Lecture, Networking in Applied Network Theory, Bedlewo, Poland, February 23, 2023. (online)
18. Theoretical Statistics and Mathematics Seminar, Indian Statistical Institute, New Delhi, December 14,

2022.

19. Invited speaker, Workshop on Non-equilibrium Phenomena in Physics and Biology, Asia Pacific Center for Theoretical Physics, South Korea, December 5-8, 2022.
20. Invited speaker, Self-Organizing Systems Workshop, Technische Universität Darmstadt, Germany, December 2, 2022.
21. Mini-symposium speaker at SIAM Conference on Uncertainty Quantification, April 15, 2022.
22. Statistics and Probability Seminar, University of Nottingham. February 3, 2022.
23. Mathematics of Reaction Networks (MoRN) seminar, January 27, 2022.
24. Math Bio seminar, The Ohio State University, virtual, November 4, 2021
25. Stochastic Systems seminar talk, Department of Mathematics, University of California San Diego, virtual, October 21, 2021
26. Guest lecture on infectious disease epidemiology, The Ohio State University, virtual, September 16, 2021
27. American Institute of Mathematics (AIM) Workshop on "Limits and control of stochastic reaction networks", July 28, 2021
28. Colloquium at the Department of Mathematics, Simon Fraser University, virtual, April 23, 2021
29. Special session at the Joint Mathematics Meetings (JMM), virtual, January 6-9, 2021
30. IDI Virtual COVID-19 Symposium, December 3, 2020
31. Seminar, Institute of Applied Mathematics and Mechanics, University of Warsaw, November 30, 2020
32. Seminar, Institute of Applied Mathematics and Mechanics, University of Warsaw, November 23, 2020
33. Biostatistics seminar, the Ohio State University, Columbus, OH, USA, October 30, 2020
34. Math-Bio seminar, Virginia Tech, virtual, September 23, 2020
35. International Webinar Series on Artificial Intelligence and Machine Learning, virtual, September 18, 2020
36. Workshop on "Life on Planet Earth: Above and Below", MBI, OSU, August 11, 2020
37. International Webinar, Departments of Mathematics and Physics, Bidhan Chandra College, virtual, July 18, 2020
38. Special session of Data Science, Business Intelligence Unit, ICICI Bank, Mumbai, India, July 24, 2020
39. Special session at the Erdős Institute Python Bootcamp, May 2020 (jointly with Marissa Renardy)
40. Biostatistics Seminar, the Ohio State University, Columbus, OH, USA, February 28, 2020
41. Mathematical Modeling and Statistical Analysis of Infectious Disease Outbreaks, CIRM, Marseille, France, February 21, 2020
42. Mini-symposium speaker at the Annual Meeting of the SMB, Montreal, Canada, 2019
43. Mini-symposium speaker at the International Conference on Mathematical Methods and Models in Biosciences (BioMath), June 2019, Poland
44. BIRS-CMO workshop on "Scaling Limits of Dynamical Processes on Random Graphs", May 2019, Oaxaca, Mexico
45. Mini-symposium speaker at the Annual Meeting of the SMB and the JSMB, Sydney, Australia, 2018
46. Cloud Computing, Machine Learning And Networking Research (CLAN) Lab, Purdue University (May, 2017), Host : Vaneet Aggarwal

Contributed talks

1. Melbourne Mathematical Biology Seminar, University of Melbourne, Melbourne, Australia, June 20, 2024
2. IEEE International Conference on Communications (IEEE ICC), Denver, Colorado, USA, June 9 - June 14, 2024
3. Mini-symposium talk at the Annual Meeting of the Society for Mathematical Biology, Columbus, OH, USA, July 16-21, 2023
4. Dynamical Systems in Life Sciences, The Ohio State University, July 13-15, 2023
5. BIRS Workshop on "Preparing for the next pandemic", June 12-17, 2022
6. Annual Meeting of the Society for Mathematical Biology, June 13-17, 2021
7. Workshop on Mathematical and Computational Biology, June 10-11, 2021
8. The SIAM Conference on Applications of Dynamical Systems (DS21), May 23-27, 2021

9. ENAR Spring Meeting, March 14-17, 2021
10. Mathematical Biosciences Institute (MBI) Seminar, Columbus, Ohio, USA, March 04, 2021
11. Joint Mathematical Epidemiology and Math Education SMB Subgroup Meeting, Feb 7-8, 2021
12. Applied Mathematics Seminar, Department of Mathematics, The Ohio State University, November 19, 2020
13. Bernoulli–IMS One World Symposium 2020, virtual, August 25, 2020
14. Mini-symposium speaker at the Annual Meeting of the SMB, virtual, August 19, 2020
15. Joint Statistical Meetings 2020, virtual, August 2-6, 2020
16. Mini-symposium speaker at SIAM Conference on Mathematics of Data Science 2020 (virtual), June 2020
17. MBI Workshop on Mathematical and Computational Methods in Biology, May 6, 2020
18. International Indian Statistical Association Conference (IISA 2019), Mumbai, India, December 28, 2019
19. Latin American Congress of Probability and Mathematical Statistics (CLAPEM) XV, Merida-Yucatán, México, December, 2019
20. Mathematical Biosciences Institute (MBI) Seminar, Columbus, Ohio, USA, October, 2019
21. Joint Statistical Meetings (JSM) - American Statistical Association, Colorado, USA, 2019
22. Stochastic Processes and their Applications, Bernoulli Society, Northwestern University, July 2019, USA
23. International Conference on Mathematical Methods and Models in Biosciences (BioMath), June 2019, Poland
24. Mathematical Biosciences Institute (MBI) Seminar, Columbus, Ohio, USA, 2019
25. IEEE International Conference on Computer Communications (IEEE INFOCOM), Honolulu, Hawaii, USA, 2018
26. IEEE International Conference on Computer Communications (IEEE INFOCOM), Atlanta, GA, USA, 2017
27. IFIP Networking Conference and Workshops, Vienna, Austria, 2016

Poster presentations

1. Annual Meeting of the Society for Mathematical Biology, Heidelberg, September 19-23, 2022
2. 22nd Meeting of New Researchers in Statistics and Probability, George Mason University, USA, August 4, 2022
3. Mathematical Models in Evolutionary Biology conference, CIRM, Marseilles, France, February 10-14 2020
4. Annual Meeting of the Infectious Disease Institute, The Ohio State University, September 2019, Columbus, OH, USA
5. Joint Statistical Meetings (JSM) - American Statistical Association, Colorado, USA, 2019
6. CMCF Algorithms and Methods for Single Cell Genomics, University of California, Irvine, June 2019, USA
7. BIRS-CMO workshop on "Scaling Limits of Dynamical Processes on Random Graphs", May 2019, Oaxaca, Mexico

Teaching Experience

University of Nottingham, UK

1. MATH2109: Probability 3
   School of Mathematical Sciences, The University of Nottingham
   Role: Instructor
   Terms: Spring 2025 ($\sim$250 students)
2. MATH2010: Probability Methods and Models
   School of Mathematical Sciences, The University of Nottingham
   Role: Instructor
   Terms: Spring 2022 ($\sim$270 students), Spring 2023 ($\sim$260 students), Spring 2024 ($\sim$282 students)
3. MATH4045 Mathematical Finance stream,
   School of Mathematical Sciences, The University of Nottingham
   Role: Instructor
   Terms: Academic year 2022-23 (jointly with Fabrizio Leisen), Academic year 2023-24 (jointly with Fabrizio

Leisen in autumn & John Billingham in spring), Academic year 2024-25 (jointly with Marco Iglesias)

The Ohio State University, USA

1. STAT 4201: Introduction to Mathematical Statistics
   Department of Statistics, The Ohio State University, USA
   Role: Instructor
   Terms: Fall semester 2019 (> 120 students)
2. PUBHBIO7193: Individual studies in Biostatistics (Advanced stochastic epidemiology)
   Division of Biostatistics, The Ohio State University, USA
   Role: Instructor (jointly with Eben Kenah)
   Terms: Summer semester 2019

Technische Universität Darmstadt, Germany

1. Computational Methods for Systems and Synthetic Biology (CMSSB)
   Department of Electrical Engineering and Information Technology, Technische Universität Darmstadt, Germany
   Role: Teaching Assistant
   Terms: Summer semester 2016, Summer semester 2017

Supervision and Mentoring

Summary: Supervised/Co-supervised a total of 15 undergrad (B.Sc., not including REU students) and 13 M.Sc. students.

Postdoctoral Researchers/Fellowships

1. Dr. Olga Iziumtseva (British Academy Fellowship), 09/2023 - 08/2025, School of Mathematical Sciences, University of Nottingham, UK
2. Dr. Yangrui Xiang, 09/2024 - 08/2026, School of Mathematical Sciences, University of Nottingham, UK

PhD Students

1. Kushankur Dutta, 10/2023 - 04/2027 (expected), School of Mathematical Sciences, University of Nottingham, UK (Secondary supervisor: Mikhail Tretyakov and Karthik Bharath)
2. Wesam El Buaishi, 06/2023 - 12/2026 (expected), School of Mathematical Sciences, University of Nottingham, UK (Primary supervisor: Yordan Raykov)
3. James Harborne, 10/2022 - 04/2026 (expected), School of Mathematical Sciences, University of Nottingham, UK (Primary supervisor: John King)

M.Sc. Students

1. Siyu Xu, 2024, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK
2. Qi Zhang, 2024, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK
3. Kaustav Chakraborty, 2024, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK
4. Nazreen Asok, 2023, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK
5. Changqing Du, 2023, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK
6. Yajie Guo, 2022, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK
7. Jianing Ye, 2022, Master degree dissertation, School of Mathematical Sciences, University of Nottingham, UK

8. Robert Lumpkin, 2019, Master degree project (jointly with Prof. Greg Rempala), Department of Mathematics, The Ohio State University, USA (*resulted in the publication [31]*)
9. Arnab Auddy, 2017, Summer internship, Technische Universität Darmstadt, Germany (*resulted in the publication [27]*)
10. Markus Schanz, 2017, Master thesis (jointly with Christian Koch), Technische Universität Darmstadt, Germany
11. Hameer Abbasi, 2017, Master thesis (jointly with Bastian Alt), Technische Universität Darmstadt, Germany
12. Ranjani Krishnan, 2018, Master thesis (jointly with Denny Stohr), Technische Universität Darmstadt, Germany
13. Sayantan Kumar, 2018, Summer internship, Technische Universität Darmstadt, Germany

B.Sc. Students

1. Maoduan Ran, 2023, Summer internship, School of Mathematical Sciences, The University of Nottingham, UK
2. Sarina Rivlin-Sanders, 2022, Summer internship, School of Mathematical Sciences, The University of Nottingham, UK
3. Junzhe Zhu, 2022, Summer internship, School of Mathematical Sciences, The University of Nottingham, UK
4. Jasen Lai, 2019, Summer project, The Ohio State University, USA
5. Ran An, 2019, Summer project, The Ohio State University, USA
6. Stanley L. Cao, 2019, Summer project, The Ohio State University, USA
7. Hongyi Wang, 2019, Summer project, The Ohio State University, USA
8. Joey Zeng, 2019, Summer project, The Ohio State University, USA
9. Kai Li, 2019, Summer project, The Ohio State University, USA
10. Yi Dai, 2019, Summer project (jointly with Prof. Greg Rempala and Prof. Eben Kenah), The Ohio State University, USA
11. Jordan Kirsch, 2019, Summer project (jointly with Prof. Greg Rempala and Prof. Eben Kenah), The Ohio State University, USA
12. Vikash Vikash, 2016, Summer internship, Technische Universität Darmstadt, Germany
13. Simon Schwanz, 2016, Proseminar, Technische Universität Darmstadt, Germany
14. Simon Schwanz, 2017, Project seminar (jointly with Christian Koch), Technische Universität Darmstadt, Germany
15. Siddhaarth Sarkar, 2018, Summer internship, Technische Universität Darmstadt, Germany

Outreach and Service

External Examiner of PhD Theses

1. Hiu Ching Yip, Politecnico di Torino, Italy, 2024.

Editorial Service

1. Guest associate Editor (On behalf of the Applied Probability Section of the RSS), Discussion paper for the Journal of the Royal Statistical Society Series B, 2023.
2. Guest editor, special issue of Mathematical Biosciences and Engineering (MBE).

Grant Application Review

1. Engineering and Physical Sciences Research Council (EPSRC), UK Research and Innovation (UKRI), 2024.
2. The Netherlands Organisation of Health, Research and Development (ZonMw), 2024.

Professional committees

1. Committee of the Applied Probability Section of the Royal Statistical Society (RSS).

COVID-19 Modelling Response

1. Provided service to the Ohio Department of Health and Ohio Hospital Association as part of the OSU/IDI COVID-19 response modelling team. Provided daily predictions of COVID-19 cases and resultant hospital burden in the state of Ohio, USA.

Service to the Department/University

1. Course Director, B.Sc./M.Math. with a year in industry, University of Nottingham, 2022- .
2. Organizer of the Statistics and Probability Seminars, 2022 - 2023.
3. Reviewer for the President's Research Excellence, The Ohio State University, 2021.
4. Judge for the OSU Mathematical Contest for Modeling, The Ohio State University, 2018, 2019.
5. Judge for OPA travel awards, the Ohio State University, 2019.

Organizing conferences

1. BIRS Workshop on "Mathematical and statistical challenges in post-pandemic epidemiology and public health", June 15-20, 2025 (jointly with Jessica Stockdale, Sara Del Valle, Joel C. Miller and Grzegorz Rempała)
2. Satellite Workshop on Chemical Reaction Networks, Gyeong Ju, South Korea, July 6-9, 2024 (jointly with Hye-Won Kang, and Jinsu Kim)
3. Mini-symposium at the Annual Meeting of the Society for Mathematical Biology, Seoul, South Korea, June 30- July 5, 2024 (jointly with Hye-Won Kang and Jinsu Kim)
4. Workshop on Epidemic Modelling on behalf of the Applied Probability Section of the Royal Statistical Society (RSS), October 11, 2023 (jointly with Alex Cox, Fraser Daly, and Lucy Teese)
5. Mini-sympoisum at the Annual Meeting of the SMB, Columbus, Ohio, July 2023. (Jointly with Hye-Won Kang.)
6. Mini-symposium at SIAM Optimization, Seattle, Washington, USA, May 2023.
7. Workshop on "Recent challenges in mathematical epidemiology" at University of Nottingham, UK, September 27, 2022. (jointly with Kirsty Bolton and Yordan Raykov)
8. Invited session at the IMS Asia Pacific Rim Meeting, Melbourne, Australia, 2022 (pending acceptance. Jointly with Gursharn Kaur)
9. Mini-symposium at the ECMTB 2022, September 19-23, 2022 (jointly with Hye-Won Kang)
10. BIRS Workshop on "Preparing for the next pandemic", June 12-17, 2022 (jointly with Sara Del Valle, Joel C. Miller and Rick Durrett)
11. Mini-symposium at the SIAM Conference on Applications of Dynamical Systems, 2021
12. Mini-symposium at the Annual Meeting of the Society for Mathematical Biology, 2021 (Jointly with Hye-Won Kang)
13. Invited session at the Annual Meeting of the ENAR, 2021 (jointly with Marissa Renardy)
14. Mini-symposium at the Annual Meeting of the Society for Mathematical Biology, 2020 (jointly with Hye-Won Kang)
15. Mini-symposium at the SIAM Conference on Mathematics of Data Science (MDS20), Cincinnati, OH, USA, June 11, 2020 (jointly with Veronica Ciaconel)
16. Contributed Session at the Latin American Congress of Probability and Mathematical Statistics (CLAPEM) XV, Merida-Yucatán, México, December, 2019 (jointly with Hye-Won Kang)
17. Session at the 2019 International Indian Statistical Association Conference (IISA 2019), Mumbai, India, December 2019 (jointly with Arindam Fadikar)

Tutorials

1. "How to write scientific papers" for MBI REU students, 2019
2. "Introduction to epidemic modelling" for SAMMS REU students, 2019
3. "Modeling the COVID-19 pandemic" for the Erdös Institute bootcamp, May 2020

Mentoring REUs

1. MBI REUs, Summer 2019

2. Ohio 5 SURE students at the College of Public Health, OSU, 2019

Referee Service

1. Journal of Applied Probability/Advances in Applied Probability (Applied Probability Trust)
2. Stochastic Processes and their Applications
3. Stochastics (Taylor & Francis)
4. SIAM Journal on Applied Dynamical Systems
5. SIAM Multiscale Modeling & Simulation
6. Biometrika
7. Mathematical Biosciences
8. Bulletin of Mathematical Biology
9. Journal of Chemical Physics
10. Journal of Mathematical Biology
11. Journal of Theoretical Biology
12. PLOS One
13. PLOS Computational Biology
14. Theoretical Population Biology
15. Journal of Mathematical Physics
16. Mathematical Biosciences and Engineering
17. European Journal of Control
18. Afrika Mathematika
19. Mathematics (MDPI)
20. IEEE Transactions on Automatic Control
21. Journal of Mathematics in Industry
22. Journal of Mathematical Analysis and Applications
23. Journal of Scientific Research
24. Methodology and Computing in Applied Probability
25. IEEE Control System Letters
26. IEEE Transactions on Networking
27. IEEE Transactions on Control of Network Systems
28. IEEE Multi-Conference on Systems and Control, Sydney, Australia, 2015
29. American Control Conference (ACC)

Review Services

1. AMS Mathematical Reviews (MathSciNet)
2. zbMATH Open

Other Services

1. Judge for abstract submissions at the Annual Meeting of the MIDAS Network, 2021
2. Judge for poster sessions at the Annual Meeting of the SMB 2021, 2023.

Professional Memberships

1. Royal Statistical Society (RSS) (Applied Probability Section Committee member)
2. The Society for Mathematical Biology (SMB) (Life member)

Computer Skills

Programming Languages	C, R, Python, SQL, Julia
Software	Matlab, SAS, Microsoft Office, LaTeX

Languages

English	Professional Proficiency
Bengali	Mother Tongue
Hindi	Working Knowledge
German	Intermediate (B1 level)

Media highlights

1. The Dynamical Systems Web (DSWeb): Student Feature in the Jan 2021 edition of the journal. (URL: `https://tinyurl.com/dsweb`)
2. OSC Research Report: COVID-19 projection models equip Ohioans. (URL: `https://tinyurl.com/resrchrprt`)
3. OSC News: Pandemic Modeling: COVID-19 Projection Models Equip Ohioans (URL: `https://tinyurl.com/oscwasiur`)
4. HPC Wire: Pandemic Modeling: COVID-19 Projection Models Equip Ohioans (ULR: `https://tinyurl.com/hpcnews`)
5. IDI News: Far from trivial: A postdoctoral researcher's path to a key position in the OSU/IDI COVID-19 modeling team (URL: `https://tinyurl.com/IDInews`)
6. STEAM Member Spotlight - Dr. Wasiur Rahman KhudaBukhsh (URL: `https://www.youtube.com/watch?v=j_DEgauzw7w`)

References

Available upon request.