

Dr Nefel Tellioglu
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Melbourne Medical School
University of Melbourne, Australia

Education

- Oct 2019 - Jul 2024 **Ph.D., Computing and Information Systems**, The University of Melbourne
– Thesis title: “Computational modeling of the epidemiological dynamics of the skin pathogens Group A *Streptococcus* and *Sarcoptes scabiei*”
– Received Melbourne Research Scholarship
- Sep 2016 - Aug 2019 **M.Sc., Industrial Engineering**, Bogazici University
– Thesis title: “Estimating causal relations of dynamic models from real-life data”
– Received Graduate Research Fellowship from The Scientific and Technological Research Council of Turkey
- Sep 2010 – Jan 2016 **B.Sc., Industrial Engineering**, Bogazici University
– Thesis title: “Modelling the long-term dynamics of obesity as a societal epidemic”

Appointments

- Aug 2023 - Present **Modelling Research Fellow, Melbourne Medical School**, The University of Melbourne
– Working on computational models to estimate the effectiveness of pneumococcal vaccination strategies in Australia
- Feb 2020 – Mar 2022 **Research Assistant, Computing and Information Systems**, The University of Melbourne
– Worked on developing intervention strategies to reduce COVID-19 burden in the Australian First Nation communities
– Worked on the risk assessment of COVID-19 spread in Australia, prepared reports for the Australian Department of Foreign Affairs and Trade
- Feb 2017 – Aug 2019 **Research Assistant, Socio-Economic System Dynamics Research Laboratory**, Bogazici University

Teaching

- Aug 2020 – Present **Tutor**, The University of Melbourne
- Aug 2024 – Present
– POPH90271 – Infectious Disease Modelling
- Aug 2022 – Dec 2022
– COMP10001 – Foundations of Computing
- Aug 2022 – Dec 2022
– COMP90083 – Computational Modelling and Simulation
- Aug 2022 – Dec 2022
– POPH90271 – Infectious Disease Modelling
- Mar 2022 – Aug 2022
– COMP10001 – Foundations of Computing
- Aug 2021 – Dec 2021
– COMP90083 – Computational Modelling and Simulation
- Aug 2021 – Dec 2021
– POPH90271 – Infectious Disease Modelling
- Mar 2021 – Aug 2021
– COMP10001 – Foundations of Computing
- Aug 2020 – Dec 2020
– COMP90083 – Computational Modelling and Simulation
- Feb 2017 – Jun 2019 **Graduate Teaching Assistant**, Industrial Engineering, Bogazici University

Feb 2019 – Jun 2019	– IE 550 – Dynamics of Socio-Economic Systems
Feb 2019 – Jun 2019	– IE 220 – Materials & Processes in Manufacturing
Sep 2018 – Jan 2019	– IE 305 – Operational Research II
Sep 2018 – Jan 2019	– IE 312 – Facilities Design & Planning
Feb 2018 – Jun 2018	– IE 533 – Systems Theory
Sep 2017 – Jan 2018	– IE 305 – Operational Research II
Sep 2017 – Jan 2018	– IE 312 – Facilities Design & Planning
Feb 2017 – Jun 2017	– IE 306 – Systems Simulation
Sep 2015 – Jan 2016	Undergraduate Teaching Assistant, Flexible Automation and Intelligent Manufacturing Systems (BUFAIM) Laboratory
	– IE 414 – Computer Integrated Manufacturing System

Supervision

2024	Co-supervisor for Vishnupriya Vishnupriya’s Master of Public Health Thesis
	– Melbourne Medical School, The University of Melbourne
	– Title: “Understanding the Dynamics of Waning Antibody Levels Post-Pneumococcal Vaccination in the Elderly”
	– Primary supervisor: Dr Patricia Campbell
2021	Co-supervisor for Jyoti Munjal’s Master of Science Thesis
	– Computing and Information Systems, University of Melbourne
	– Title: “Network Modelling of Surveillance Strategies for Infectious Disease Outbreaks”
	– Primary supervisor: A/Prof Nic Geard

Professional memberships

2022 – 2023	Australian Mathematical Society
2021 – 2022	The Lancefield Society
2018 – 2019 & 2021 – 2022	System Dynamics Society

Awards

Sep 2024	Trish Campbell Good Citizen Award
	– Supporting Participatory Evidence generation to Control Transmissible diseases in our Region Using Modelling (SPECTRUM) CRE & Strengthening Preparedness in the Asia-Pacific Region through Knowledge (SPARK)
Oct 2022	Award for Excellence in Interdisciplinary Research
	– “Mathematical modelling to reduce the burden of skin pathogens in Indigenous communities”
	– The University of Melbourne
Jul 2022	Dana Meadows Award
	– International System Dynamics Conference, 2022, Frankfurt, Germany
May 2022	Conference Travel Grant
	– SPECTRUM/SPARK
May 2021	Travel Grant for “Early- & Mid-Career Researchers Networking Retreat in Townsville, Australia”

May 2021	– SPECTRUM/SPARK Conference Travel Grant
Dec 2021	– SPECTRUM/SPARK Best Postgraduate Student Presentation
Aug 2021	– SPECTRUM/SPARK Annual Meeting, Virtual Finalist, Engagement Australia Excellence Award
Sep 2021	– Epidemiologic Modelling Team, Engagement Australia Award for Excellence in Engagement
Nov 2020	– Epidemiologic Modelling Team, The University of Melbourne Award for Excellence in Engagement
Feb 2020	– Epidemiologic Modelling Team, The Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne Best Student Paper Award
	– 3rd Asia Pacific System Dynamics Conference, Brisbane, Australia

Research Fundings

Jun 2025	Assessment of comparative health benefits of moxidectin and ivermectin-based mass drug administrations against scabies infestation. – Contract: Medicines Development for Global Health (MDGH) – Led by: Jodie McVernon Budget: AUD\$77,443.
Sep 2024	Pneumococcal disease modelling work. – Contract: Australian Government Department of Health, Disability and Ageing – Led by: Jodie McVernon Budget: AUD\$414,885.
Apr 2023	Modelling assessment of comparative health benefits of vaccination options against pneumococcal disease using Pneumococcal Conjugate Vaccines. – Contract: Australian Government Department of Health, Disability and Ageing – Led by: Jodie McVernon Budget: AUD\$451,237.
Feb 2022	Using disability-adjusted life-years (DALYs) as a summary statistic for estimating efficacy of interventions in modelling studies. – Seed Funding: SPECTRUM/SPARK Seed Grant – Co-Investigator with Angela Devine Budget: AUD\$20,000.
Aug 2021	Modelling Workplan to Support Vaccine Coverage and Impact Considerations (COVID-19). – Contract: Commonwealth Government of Australia – Led by: Jodie McVernon & James McCaw Budget: AUD\$1,944,645.
Mar 2020	Provision of technical support and preparedness modelling of COVID-19. – Contract: Australian Government Department of Health, Disability and Ageing – Led by: Jodie McVernon Budget: AUD\$1,634,055.

Publications [Google Scholar](#)

†: Equal contribution

Journal Articles

- J1. Xie, O., Chisholm, R. H., Featherstone, L., Nguyen, A., Hayes, A. J., Jespersen, M., Zachreson, C., **Tellioglu, N.**, Tonkin-Hill, G., Dotel, R., *et al.* [Temporal and Geographic Strain Dynamics](#)

of Invasive *Streptococcus Pyogenes* in Australia: A Multi-Centre Clinical and Genomic Epidemiology Study 2011-2023. *The Lancet Microbe* **6**, 101053 (June 2025).

- J2. **Tellioglu, N.**, Chisholm, R. H., Campbell, P. T., Collinson, S., Timothy, J., Kollie, K., Zayzay, S., Devine, A., McVernon, J., Marks, M., *et al.* **Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia.** *Epidemiology & Infection* **151**, e153. ISSN: 0950-2688 (2023).
- J3. Geard, N., Bradhurst, R., **Tellioglu, N.**, Oktaria, V., McVernon, J., Handley, A. & Bines, J. E. **Model-based estimation of the impact on rotavirus disease of RV3-BB vaccine administered in a neonatal or infant schedule.** *Human Vaccines & Immunotherapeutics* **18**, 2139097 (2022).
- J4. Shearer, F. M., Walker, J., **Tellioglu, N.**, McCaw, J. M., McVernon, J., Black, A. & Geard, N. **Rapid assessment of the risk of SARS-CoV-2 importation: case study and lessons learned.** *Epidemics* **38**, 100549 (2022).
- J5. **Tellioglu, N.**, Chisholm, R. H., McVernon, J., Geard, N. & Campbell, P. T. **The efficacy of sampling strategies for estimating scabies prevalence.** *PLOS Neglected Tropical Diseases* **16**, e0010456 (2022).
- J6. **Tellioglu, N.**, Geard, N. & Chisholm, R. H. **Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen.** *Journal of Theoretical Biology* **548**, 111185 (2022).

Preprints

- Pp1. **Tellioglu, N.**, Price, D. J., Chen, X., Spirkoska, V., Wang, Y., Moss, R., Carvalho, N., Carville, K., Campbell, P. T. & McVernon, J. **A flexible agent-based modelling framework of multi-serotype pneumococcal carriage to evaluate vaccine strategies in large populations.** *medRxiv*, 2025–05 (2025).
- Pp2. Zarebski[†], A. E., **Tellioglu[†], N.**, Stockdale, J. E., Spencer, J. A., KhudaBukhsh, W. R., Miller, J. C. & Zachreson, C. **Including frameworks of public health ethics in computational modelling of infectious disease interventions.** *arXiv preprint arXiv:2502.00071* (2025).

Peer-reviewed Conference Proceedings

- C1. **Tellioglu, N.** & Barlas, Y. *Automated Discovery of Causality and Polarity from Data* in *Proceedings of 3rd Asia Pacific System Dynamics Conference* (2020).
– Won the Best Student Paper Award.
- C2. **Tellioglu, N.** & Barlas, Y. *Automated Discovery of Polarity from Data in System Dynamics Context* in *Proceedings of in 38th International Conference of the System Dynamics Society, Bergen, Norway* (2020).
- C3. Akoguz, E. C., **Tellioglu, N.** & Barlas, Y. *The Dynamics of Food Waste in Relation to Consumption, Production, and Shopping Patterns* in *Proceedings of in 36th International Conference of the System Dynamics Society, Reykjavík, Iceland* (2018).
- C4. Dursun[†], I., **Tellioglu[†], N.**, Elhuseyni, M. & Celik, N. *Estimating Gene Expression in Breast Cancer: A Hybrid Learning Framework* in *IISE Annual Conference Proceedings* (2018), 2068–2073.
- C5. Aktaş[†], G., **Tellioglu[†], N.**, Barlas, Y. & Yaşarcan, H. *Modeling the long term dynamics of obesity as a societal epidemic* in *The 34th International System Dynamics Conference, July 2016, Delft, Netherlands* (2016).

Theses

- Th1. **Tellioglu, N.** *Computational modeling of the epidemiological dynamics of the skin pathogens Group A Streptococcus and Sarcoptes scabiei* (School of Computing and Information Systems, University of Melbourne, 2024).
- Th2. **Tellioglu, N., Barlas, Y. & Yucel, G.** *Estimating causal relations of dynamic models from real-life data* (Institute for Graduate Studies in Science, Bogazici University, 2019).

Presentations

Invited Talks

- IT1. **Tellioglu, N.** *Seminar: A flexible agent-based modelling framework of multi-serotype pneumococcal carriage to evaluate vaccine strategies in large populations* National Institute for Public Health and the Environment (RIVM) (Bilthoven, Netherlands). 2025.
- IT2. **Tellioglu, N.** *Seminar: Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia* The Peter Doherty Institute for Infection and Immunity (Melbourne, Australia). 2024.
- IT3. **Tellioglu, N.** *Seminar: Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia* University of Antwerp (Antwerp, Belgium). 2023.
- IT4. **Tellioglu, N.** *Seminar: Evaluation of the effectiveness of mass drug administration strategies for reducing scabies burden in Monrovia, Liberia: An agent-based modelling approach* Murdoch Children's Research Institute (Melbourne, Australia). 2022.
- IT5. **Tellioglu, N.** *Webinar: Evaluation of the effectiveness of mass drug administration strategies for reducing scabies burden in Monrovia, Liberia: An agent-based modelling approach* The International Alliance for the Control of Scabies Annual Scientific Webinar (Virtual). 2022.
- IT6. **Tellioglu, N.** *Webinar: Using cross-sectional survey data in modelling scabies transmission* Australian Centre for Control & Elimination of Neglected Tropical Diseases (Virtual). 2021.
- IT7. **Tellioglu, N.** *Workshop: A simulation-based approach to explore sampling bias in estimates of scabies prevalence* "Mechanistic models and observational data in biosecurity, ecology and epidemiology" Melbourne Centre for Data Science (Melbourne, Australia). 2021.

Conference Presentations

- T1. **Tellioglu, N.** *Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia* ANZIAM (Cairns, Australia). 2023.
- T2. **Tellioglu, N.** *Evaluation of the effectiveness of mass drug administration strategies for reducing scabies burden in Monrovia, Liberia: An agent-based modelling approach* Doctoral colloquium, School of Computing and Information Systems, University of Melbourne. 2022.
- T3. **Tellioglu, N.** *Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen* 2022 International System Dynamics Conference (Frankfurt, Germany). 2022.
– Won Dana Meadows Award given to best student paper.
- T4. **Tellioglu, N.** *Modelling scabies transmission in Monrovia, Liberia* Epidemics8 (Virtual). 2021.
- T5. **Tellioglu, N.** *Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen* Epidemics8 (Virtual). 2021.

- T6. **Tellioglu, N.** *Automated Discovery of Causality and Polarity from Data* 3rd Asia Pacific System Dynamics Conference (Brisbane, Australia). 2020.
– Won Best Student Paper Award.
- T7. **Tellioglu, N.** *Automated Discovery of Polarity from Data in System Dynamics Context* 38th International Conference of the System Dynamics Society (Bergen, Norway). 2020.
- T8. **Tellioglu, N.** *Modeling the Long-Term Dynamics of Obesity as a Societal Epidemic* 34th International Conference of the System Dynamics Society (Delft, Netherlands). 2016.

Posters

- P1. **Tellioglu, N.** *A flexible agent-based modelling framework of multi-serotype pneumococcal carriage to evaluate vaccine strategies in large populations* 43rd Annual Meeting of the European Society for Paediatric Infectious Diseases (ESPID) (Bucharest, Romania). 2025.
- P2. **Tellioglu, N.** *Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia* Epidemics9 (Bologna, Italy). 2023.
- P3. **Tellioglu, N.** *Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen* Lancefield Symposium (Stockholm, Sweden). 2022.
- P4. **Tellioglu, N.** *The efficacy of scabies sampling strategies for estimating prevalence: A simulation study* Epidemics8 (Virtual). 2021.
- P5. **Tellioglu, N.** *The Dynamics of Food Waste in Relation to Consumption, Production, and Shopping Patterns* 36th International Conference of the System Dynamics Society (Reykjavík, Iceland). 2018.

Seminars, Meetings, and Workshops

- S1. **Tellioglu, N.** *Workshop: Agent-based modelling in Python: Introduction to Polars library SPECTRUM/SPARK Annual Meeting* (Byron Bay, Australia). 2024.
– Designed and organised the workshop.
- S2. **Tellioglu, N.** *Agent-Based Modelling of Neglected Tropical Diseases* The Australian Centre for the Control and Elimination of Neglected Tropical Diseases (ACE-NTDs) (Virtual). 2022.
- S3. **Tellioglu, N.** *Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen* SPECTRUM/SPARK Annual Meeting (Virtual). 2021.
– Won Best Postgraduate Student Presentation.
- S4. **Tellioglu, N.** *Workshop: Understanding Infectious Disease Modelling* 10th South East Asia and Western Pacific Bi-Regional TEPHINET Scientific Conference (Virtual). 2021.

Academic Services

2021 - Present	Reviewer – Bulletin of Mathematical Biology, Epidemiology & Infection, Archives of Public Health, Epidemics
2024 - Present	Chair , Doherty Computational Sciences Initiative Seminar Series
2024	Member of Planning Committee , SPECTRUM/SPARK Annual Meeting
2022	Chair of Planning Committee , SPECTRUM/SPARK Annual Meeting
2021	Session Chair , SPECTRUM/SPARK Annual Meeting – Session Title: “AI & Machine Learning/Methodology”

2021 **Member of Planning Committee**, SPECTRUM/SPARK Annual Meeting
2018 **Volunteer**, 36th International Conference of the System Dynamics Society

Last updated: August 13, 2025