

Nefel Tellioglu

Modelling Research Fellow

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EDUCATION

- Ph.D., Computing and Information Systems**, The University of Melbourne Oct 2019 – Jul 2024
- Thesis title: “Computational modeling of the epidemiological dynamics of the skin pathogens Group A Streptococcus and Sarcoptes scabiei”
 - Supervisors: Dr Nic Geard, Dr Rebecca Chisholm, and Dr Mark Davies
 - Received Melbourne Research Scholarship
- M.Sc., Industrial Engineering**, Bogazici University, Istanbul, Turkey Sep 2016 – Aug 2019
- Academic Advisor: Prof Yaman Barlas & A/Prof Gonenc Yucel
 - Thesis topic: Estimating causal relations of dynamic models from real-life data
 - Received Graduate Research Fellowship from The Scientific and Technological Research Council of Turkey
- B.Sc., Industrial Engineering**, Bogazici University, Istanbul, Turkey Sep 2010 – Jan 2016
- Academic Advisors: Prof Yaman Barlas & A/Prof Hakan Yasarcan
 - Thesis topic: Modelling the long-term dynamics of obesity as a societal epidemic
 - Exchange student (Erasmus) at ENSTA ParisTech Sep 2013 – Jan 2014
 - Top 0.001% in Nationwide University Entrance Exam Jun 2010

EXPERIENCE

- Modelling Research Fellow**, Doherty Institute, The University of Melbourne Aug 2023 – Present
- Working on agent-based transmission models to estimate the efficacy of pneumonia vaccination strategies in Australia
- Researcher**, Computing and Information Systems, The University of Melbourne Feb 2020 – Mar 2022
- Worked on developing intervention strategies to reduce COVID-19 burden for Australian First Nation communities
 - Worked on the risk assessment of COVID-19 spread in Australia, prepared reports for DFAT
- Tutor**, The University of Melbourne
- POPH90271 – Infectious Disease Modelling Aug 2024 – Dec 2024
 - COMP10001 – Foundations of Computing Aug 2022 – Dec 2022
 - COMP90083 – Computational Modelling and Simulation Aug 2022 – Dec 2022
 - POPH90271 – Infectious Disease Modelling Aug 2022 – Dec 2022
 - COMP10001 – Foundations of Computing Mar 2022 – Aug 2022
 - COMP90083 – Computational Modelling and Simulation Aug 2021 – Dec 2021
 - POPH90271 – Infectious Disease Modelling Aug 2021 – Dec 2021
 - COMP10001 – Foundations of Computing Mar 2021 – Aug 2021
 - COMP90083 – Computational Modelling and Simulation Aug 2020 – Dec 2020
- Graduate Teaching Assistant**, Industrial Engineering, Bogazici University
- IE 550 – Dynamics of Socio-Economic Systems Feb 2019 – Jun 2019
 - IE 220 – Materials & Processes in Manufacturing Feb 2019 – Jun 2019
 - IE 305 – Operational Research II & IE 312 - Facilities Design & Planning Sept 2018 – Jan 2019
 - IE 533 – Systems Theory Feb 2018 – Jun 2018
 - IE 305 – Operational Research II & IE 312 - Facilities Design & Planning Sept 2017 – Jan 2018
 - IE 306 – Systems Simulation Feb 2017 – Jun 2017

Research Assistant , Socio-Economic System Dynamics Research Lab	Feb 2017 – Aug 2019
Undergraduate Teaching Assistant , Industrial Engineering, Bogazici University	
• IE 414 – Computer Integrated Manufacturing System	Sep 2015 – Jan 2016

SUPERVISION

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

PROFESSIONAL MEMBERSHIPS

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

AWARDS

Trish Campbell Good Citizen Award	Sep 2024
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)	
Award for Excellence in Interdisciplinary Research	Oct 2022
"Mathematical modelling to reduce the burden of skin pathogens in Indigenous communities"	
The University of Melbourne	
Dana Meadows Award	Jul 2022
International System Dynamics Conference, 2022, Frankfurt, Germany	
Conference Travel Grant	May 2022
SPECTRUM/SPARK	
Travel Grant for "Early- & Mid-Career Researchers Networking Retreat in Townsville, Australia"	May 2021
SPECTRUM/SPARK	
Conference Attendance Award	May 2021
SPECTRUM/SPARK	
Best Postgraduate Student Presentation	Dec 2021
SPECTRUM/SPARK Annual Meeting, Virtual	
Finalist, Engagement Australia Excellence Award	Aug 2021
Epidemiologic Modelling Team, Engagement Australia	
Award for Excellence in Engagement	Sep 2021
Epidemiologic Modelling Team, The University of Melbourne	
Award for Excellence in Engagement	Nov 2020
Epidemiologic Modelling Team, The Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne	
Best Student Paper Award	Feb 2020
3 rd Asia Pacific System Dynamics Conference, Brisbane, Australia	

RESEARCH GRANTS

Using disability-adjusted life-years (DALYs) as a summary statistic for estimating efficacy of interventions in modelling studies

Feb 2022

Co-investigator with Dr Angela Devine, Menzies School of Health Research

Funder: *SPECTRUM/SPARK* Seed Grant

Budget: AUD\$20,000

PUBLICATIONS

Xie, O., Chisholm, R.H., Featherstone, L., Nguyen, A., Hayes, A.J., Jespersen, M., Zachreson, C., **Tellioglu, N.**, Tonkin-Hill, G., Dotel, R. and Spring, S., et al., 2025, Temporal and Geographic Strain Dynamics of Invasive *Streptococcus Pyogenes* In Australia: A Multi-Centre Clinical and Genomic Epidemiology Study 2011-2023, *The Lancet Microbe*, <https://doi.org/10.1016/j.lanmic.2024.101053>.

Tellioglu, N., R.H., Chisholm, P.T., Campbell, S., Collinson, J., Timothy, K., Kollie, S., Zayzay, A., Devine, J., McVernon, M., Marks, N., Geard, 2023, Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia, *Epidemiology and Infection*, <https://doi.org/10.1017/S0950268823001310>.

Geard, N., Bradhurst, R., **Tellioglu, N.**, Oktaria, V., McVernon, J., Handley, A., Bines, J.E., 2022, Model-based estimation of the impact on rotavirus disease of RV3-BB vaccine administered in a neonatal or infant schedule, *Human Vaccines & Immunotherapeutics*, <https://doi.org/10.1080/21645515.2022.2139097>.

Tellioglu, N., N., Geard, R.H., Chisholm, 2022, Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen, *Journal of Theoretical Biology*, <https://doi.org/10.1016/j.jtbi.2022.111185>.

Tellioglu, N., R.H., Chisholm, J., McVernon, N., Geard, P.T., Campbell, 2022, The efficacy of sampling strategies for estimating scabies prevalence, *PLoS Neglected Tropical Diseases*, <https://doi.org/10.1371/journal.pntd.0010456>.

Shearer, F., Walker, J., **Tellioglu, N.**, McCaw, J.M., McVernon, J., Black, A., Geard, N., 2022, Rapid assessment of the risk of SARS-CoV-2 importation: case study and lessons learned, *Epidemics*, <https://doi.org/10.1016/j.epidem.2022.100549>.

PREPRINTS

Zarebski, A.E., **Tellioglu, N.**, Stockdale, J.E., Spencer, J.A., KhudaBukhsh, W.R., Miller, J.C., Zachreson, C., 2025, Including frameworks of public health ethics in computational modelling of infectious disease interventions, *ArXiv*, <https://doi.org/10.48550/arXiv.2502.00071>.

CONFERENCE PROCEEDINGS

Tellioglu, N., Y., Barlas, 2020, Automated Discovery of Polarity from Data in System Dynamics Context, In *Proceedings of in 38th International Conference of the System Dynamics Society*, Bergen, Norway.

Tellioglu, N., Y., Barlas, 2020, Automated Discovery of Causality and Polarity from Data, In *Proceedings of 3rd Asia Pacific System Dynamics Conference*, Brisbane, Australia.

Akoguz, E. C., **N., Tellioglu, Y.**, Barlas, 2018, 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.

Dursun, I, **N., Tellioglu, M.**, Elhuseyni, N., Celik, 2018, Estimating Gene Expression in Breast Cancer: A Hybrid Learning Framework, In *Proceedings of the Annual Industrial and Systems Engineering Research Conference*, Florida, USA.

Aktas, G., **N., Tellioglu, Y.**, Barlas, H., Yasarcan, 2016, Modeling the Long-Term Dynamics of Obesity as a Societal Epidemic, In *Proceedings of 34th International Conference of the System Dynamics Society*, Delft, the Netherlands.

CONFERENCE PRESENTATIONS

Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia Epidemics9, Bologna, Italy, Poster.	2023
Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia ANZIAM, Cairns, Australia.	2023
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
Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen Lancefield Symposium, Stockholm, Sweden, Poster.	2022
Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen 2022 International System Dynamics Conference, Frankfurt, Germany.	2022
Modelling scabies transmission in Monrovia, Liberia Epidemics8, Virtual.	2021
Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen Epidemics8, Virtual.	2021
The efficacy of scabies sampling strategies for estimating prevalence: A simulation study Epidemics8, Virtual, Poster.	2021
Automated Discovery of Polarity from Data in System Dynamics Context 38th International Conference of the System Dynamics Society, Bergen, Norway.	2020
Automated Discovery of Causality and Polarity from Data 3rd Asia Pacific System Dynamics Conference, Brisbane, Australia.	2020
The Dynamics of Food Waste in Relation to Consumption, Production, and Shopping Patterns 36th International Conference of the System Dynamics Society, Reykjavík, Iceland, Poster.	2018
Modeling the Long-Term Dynamics of Obesity as a Societal Epidemic 34th International Conference of the System Dynamics Society, Delft, the Netherlands.	2016

SEMINARS, MEETING PRESENTATIONS, WORKSHOPS

Workshop: SPECTRUM/SPARK Annual Meeting <i>Organiser</i> Title: “Agent-based modelling in Python: Introduction to Polars library” SPECTRUM/SPARK Annual Meeting, Byron Bay, Australia	2024
Seminar: Doherty Institute CSI Seminar Series <i>Invited Speaker</i> Title: “Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia” The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia	2024
Seminar: Centre for Health Economics Research and Modelling Infectious Diseases <i>Invited Speaker</i> Title: “Modelling mass drug administration strategies for reducing scabies burden in Monrovia, Liberia” University of Antwerp, Antwerp, Belgium	2023
Symposium: Fourth Melbourne Strep A Symposium <i>Invited Speaker</i>	2022

Title: “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

Webinar: The International Alliance for the Control of Scabies Annual Scientific Webinar, Virtual 2022
Invited Speaker

Title: “Evaluation of the effectiveness of mass drug administration strategies for reducing scabies burden in Monrovia, Liberia: An agent-based modelling approach”

Meeting: The Australian Centre for the Control and Elimination of Neglected Tropical Diseases (ACE-NTDs) 2022
Title: “Agent-Based Modelling of Neglected Tropical Diseases”

Meeting: SPECTRUM/SPARK Annual Meeting, Virtual 2021
Title: “Modelling the effect of within-host dynamics on the diversity of a multi-strain pathogen”

Seminar: Mathematical models: Important tools for the control and elimination of NTDs, Virtual 2021
Invited Speaker

Title: “Using cross-sectional survey data in modelling scabies transmission”

Australian Centre for Control & Elimination of Neglected Tropical Diseases

Workshop: Mechanistic models and observational data in biosecurity, ecology and epidemiology 2021
Invited Speaker

Title: “A simulation-based approach to explore sampling bias in estimates of scabies prevalence”

Melbourne Centre for Data Science, Melbourne, Australia

Workshop: 10th South East Asia and Western Pacific Bi-Regional TEPHINET Scientific Conference, Virtual 2021
Led an interactive learning session titled “Understanding Infectious Disease Modelling”

ADDITIONAL EXPERIENCES

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

SKILLS

- Languages: Turkish (Fluent), English (Fluent), French (Intermediate)
- Programming Languages: C, C#, C++, MATLAB, NetLogo, Python, R, STELLA, Vensim
- Interests: Painting, sculpture, bookbinding, woodworking