Ryan Thompson

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Positions

Research Fellow, School of Mathematical and Physical Sciences — Jul 2024–pres.
University of Technology Sydney

Visiting Scientist, Analytics and Decision Sciences — Jun 2022–pres.
CSIRO

Research Associate, School of Mathematics and Statistics — Jun 2022–Jun 2024
University of New South Wales

Senior Consultant, Actuarial and Financial Risk — Oct 2018–Feb 2019
KPMG Australia

Consultant, Actuarial and Financial Risk — Feb 2017–Sep 2018
KPMG Australia

Education

Doctor of Philosophy, Mathematics and Statistics — Feb 2019–Sep 2022
Monash University

Bachelor of Commerce (Honours), Business Analytics — Mar 2016–Nov 2016
University of Sydney

Bachelor of Commerce, Econometrics and Finance — Mar 2013–Nov 2015
University of Sydney

Publications

Thompson, R., Wand, M. P., and Wang, J. J. J. (2026+). 'Scalable subset selection in linear mixed models'. Journal of Computational and Graphical Statistics. Accepted.

Thompson, R., Bonilla, E. V., and Kohn, R. (2025). 'ProDAG: Projected variational inference for directed acyclic graphs'. Advances in Neural Information Processing Systems. Vol. 38, pp. 162714–162739.

Lyu, Z., Ahfock, D., Thompson, R., and McLachlan, G. J. (2024). 'Semi-supervised Gaussian mixture modelling with a missing data mechanism in R'. Australian and New Zealand Journal of Statistics 66.2, pp. 142–162.

Thompson, R., Bonilla, E. V., and Kohn, R. (2024). 'Contextual directed acyclic graphs'. Proceedings of the 27th International Conference on Artificial Intelligence and Statistics. Vol. 238, pp. 2872–2880.

Thompson, R., Forbes, C. S., MacEachern, S. N., and Peruggia, M. (2024). 'Familial inference: Tests for hypotheses on a family of centres'. Biometrika 111.3, pp. 1029–1045.

Thompson, R., Qian, Y., and Vasnev, A. L. (2024). 'Flexible global forecast combinations'. Omega 126, p. 103073.

Thompson, R. and Vahid, F. (2024). 'Group selection and shrinkage: Structured sparsity for semiparametric additive models'. Journal of Computational and Graphical Statistics 33.4, pp. 1286–1297.

Thompson, R., Dezfouli, A., and Kohn, R. (2023). 'The contextual lasso: Sparse linear models via deep neural networks'. Advances in Neural Information Processing Systems. Vol. 36, pp. 19940–19961.

Thompson, R. (2022). 'Robust subset selection'. Computational Statistics and Data Analysis 169, p. 107415.

Matsypura, D., Thompson, R., and Vasnev, A. L. (2018). 'Optimal selection of expert forecasts with integer programming'. Omega 78, pp. 165–175.

Preprints

Thompson, R., Wand, M. P., and Baladandayuthapani, V. (2026). 'Structure learning on clustered data'. arXiv: 2607.08238.

Thompson, R., Zhao, H., Steinberg, D. M., and Bonilla, E. V. (2026). 'Arrow: A foundation model for causal discovery'. arXiv: 2605.07204.

Presentations

'Arrow: A foundation model for causal discovery'. Seminar talk, School of Mathematics and Statistics, University of New South Wales	Jun 2026
'Contextual machine learning: Models as functions of context'. Seminar talk, Department of Econometrics and Business Statistics, Monash University	Aug 2025
'ProDAG: Projection-induced variational inference for directed acyclic graphs'. Seminar talk, Department of Statistics, Ohio State University	Mar 2025
'ProDAG: Projection-induced variational inference for directed acyclic graphs'. Invited talk, 2025 Workshop in Honour of Professors Heather Anderson and Farshid Vahid	Mar 2025
'Familial inference for regression models'. Invited talk, 2024 International Society for Bayesian Analysis World Meeting	Jul 2024
'Contextual directed acyclic graphs'. Contributed poster, 27th International Conference on Artificial Intelligence and Statistics	May 2024
'The contextual lasso: Sparse linear models via deep neural networks'. Contributed poster, 37th Conference on Neural Information Processing Systems	Dec 2023
'Contextual directed acyclic graphs'. Seminar talk, School of Mathematics and Statistics, University of New South Wales	Nov 2023
'Global combinations of expert forecasts'. Invited talk, 6th International Conference on Econometrics and Statistics	Aug 2023
'Reimagining time-honoured statistical models via deep learning'. Invited talk, CSIRO's Machine Learning and Artificial Intelligence Reimagining Science Conference 2023	Jun 2023

'Sparse statistical learning with structure: Advances in computation and theory'. Invited talk, 36th PhD Conference in Economics and Business — Nov 2022

'Beyond the black box: Expressive and interpretable modelling'. Invited talk, CSIRO's Collaborative Intelligence Meet and Mingle 2022 — Oct 2022

'Familial inference'. Contributed talk, 24th International Conference on Computational Statistics — Aug 2022

'Robust subset selection'. Invited talk, 15th International Conference on Computational and Financial Econometrics — Dec 2021

'Group selection and shrinkage with application to sparse semiparametric modeling'. Contributed talk, Joint Statistical Meetings 2021 — Aug 2021

'Robust subset selection'. Contributed talk, Australian and New Zealand Statistical Conference 2021 — Jul 2021

Honours

Monash University Vice-Chancellor's Commendation for Thesis Excellence — 2023

Monash Business School Student Excellence Award — 2019

Australian Government Research Training Program Scholarship — 2019

Monash Business School Dean's Excellence Award — 2019

University of Sydney Academic Merit Prize — 2016

Service

Reviewer for Computational Statistics and Data Analysis, Conference on Neural Information Processing Systems, Econometric Reviews, Electronic Journal of Statistics, European Journal of Operational Research, International Conference on Artificial Intelligence and Statistics, International Conference on Learning Representations, Omega

Thesis examiner for University of Sydney