

# Ryan Thompson

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## Positions

Research Fellow, School of Mathematical and Physical Sciences University of Technology Sydney	Jul 2024–pres.
Visiting Scientist, Analytics and Decision Sciences CSIRO's Data61	Jun 2022–pres.
Research Associate, School of Mathematics and Statistics University of New South Wales	Jun 2022–Jun 2024
Senior Consultant, Actuarial and Financial Risk KPMG Australia	Oct 2018–Feb 2019
Consultant, Actuarial and Financial Risk KPMG Australia	Feb 2017–Sep 2018

## Education

Doctor of Philosophy, Mathematics and Statistics Monash University	Feb 2019–Sep 2022
Bachelor of Commerce (Honours), Business Analytics University of Sydney	Mar 2016–Nov 2016
Bachelor of Commerce, Econometrics and Finance University of Sydney	Mar 2013–Nov 2015

## Publications

Thompson, R., Bonilla, E. V., and Kohn, R. (2025). ‘ProDAG: Projected variational inference for directed acyclic graphs’. *Advances in Neural Information Processing Systems*, In press.

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 Wang, J. J. J. (2025). ‘Scalable subset selection in linear mixed models’. arXiv: [2506.20425](#).

## Presentations

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| ‘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 Advances in Neural Information Processing Systems, Econometric Reviews, Electronic Journal of Statistics, International Conference on Artificial Intelligence and Statistics, International Conference on Learning Representations, Omega

Thesis examiner for University of Sydney