Garth Tarr

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garthtarr

Professional experience

since 2022 **Director of Research Division (Statistics)**, *University of Sydney*
School of Mathematics and Statistics, Faculty of Science

since 2024 **Associate Professor**, *University of Sydney*
School of Mathematics and Statistics, Faculty of Science

2020-2021 **Associate Head of School (Education)**, *University of Sydney*
School of Mathematics and Statistics, Faculty of Science

2020-2023 **Senior Lecturer**, *University of Sydney*
School of Mathematics and Statistics, Faculty of Science

2017-2019 **Lecturer**, *University of Sydney*
School of Mathematics and Statistics, Faculty of Science

2015-2017 **Lecturer**, *University of Newcastle*
School of Mathematical and Physical Sciences, Faculty of Science

2014–2015 **Postdoctoral Fellow**, *Australian National University*
Mathematical Sciences Institute, College of Physical & Mathematical Sciences

Education

2014 **Doctor of Philosophy in Science (Mathematical Statistics)**, *University of Sydney*

2009 **Bachelor of Commerce and Bachelor of Science (Adv) Honours I**, *University of Sydney*

Grants and funding ($6.7 million)

- Meat and Livestock Australia Donor Company, Research agreement. Livestock offal inspection and sortation with multi-sensor platforms in abattoirs. With Gonzalez L, Wang X, Horadagoda N, Coombs C and Davoudabadi M **2022**. $230,000
- Meat and Livestock Australia, Research agreement. Statistical data science for industry: technologies, training, and capability building, **2022-2026**. $237,000
- Meat and Livestock Australia, Research and Development Grant. Advanced livestock measurement technologies, **2022**. $30,000
- The University of Sydney, Large Unit Transformation Grant. **2022**. $7,700
- Australian Research Council, Discovery Project DP210100521, Fast flexible feature selection for high dimensional challenging data. With Ormerod J and Muller S, **2021-2024**. $390,000
- Meat and Livestock Australia, Consulting Agreement L.EQT.2108, MSA and industry statistical analysis support and training. **2021**. $79,000
- Meat and Livestock Australia National Livestock Genetics Consortium. Development of genomic multi-breed eating quality trait estimates using shared global data. With Polkinghorne R, McGilchrist P, Thompson J, Philpott J, Hayes B, Banks R, Cromie A, Shackelford S and Miller M. **2021-2023**. $3,046,000
- AIR@InnoHK, Laboratory of Data Discovery for Health (D24H), AI-assisted scalable data analytics for global health protection. With Ho J, Yang J, Yang P, Patrick E, Kim J and Stephen S **2020-2025**. $1,500,000

- Meat and Livestock Australia, Research Agreement B.FLT.4009, Evaluation of shade and shelter solutions in a southern Australian feedlot. With Lees A, Cowley F, McGilchrist P, Wilkes J, **2020-2022**. $807,748
- Rapiscan, Research Agreement, Using a multi-sensor prototype system for internal inspection of carcasses and offal meats. With Gonzalez L, Gimeno M, Horadagoda N, **2020**. $120,441
- Meat and Livestock Australia, Research and Development Grant. Advanced measurement technologies for globally competitive Australian meat value chains, **2020**. $30,000
- Meat and Livestock Australia, Consulting Agreement L.EQT.2001, MSA and Industry Statistical Analysis support and training. **2020**. $59,800
- The University of Sydney, Strategic Education Grant. With Muir M, Liu D, Miller B, Lilje O, Ollerenshaw S and Warren D, **2020**. $9,000
- The University of Sydney, Course Development Grant. Online learning environment: Linear modelling (OLET5608 and OLEO5607). **2019**. $10,000
- The University of Sydney, Faculty of Science Research Equipment and Infrastructure Scheme. Sydney bioinformatics and biometrics big data research server. With Kitty Lo, Samuel Mueller, John Ormerod, Ellis Patrick, Michael Stewart, Emi Tanaka, Jean Yang, Pengyi Yang and Rachel Wang. **2018**. $36,040
- The University of Sydney Institute of Agriculture. Land surface models of carbon and water do not work in agricultural landscapes where it actually matters they work. With Bishop T, Evans B, Fajardo M, Filippi P, Gonzalez L, Ingram L, Jones E, Minasny B, Tanaka E, Van Ogtrop F, Vervoort W, Whelan B. **2018**. $90,000
- Institute for Mathematics and its Applications, University of Minnesota. Invited speaker at the workshop "Forecasting from Complexity", **2018**. $3,000
- Meat and Livestock Australia, Research and Development Grant. Advanced measurement technologies for globally competitive Australian meat value chains, **2017**. $30,000
- Meat and Livestock Australia, travel grant to attend UNECE Workshop on Sustainable Meat Markets, Cross-border Trade and Eating Quality, **2017**. $3,500
- NSW Department of Industry, Conference Sponsorship Program, **2017**. $3,300
- University of Newcastle, Early Career Researcher Higher Degree by Research Scholarship, 2016. $80,000
- International Biometric Society Australasian Region Travel Grant, **2016**. $3,000
- Meat and Livestock Australia, travel grant for MLA project L.EQT.1605, International collaboration on beef and lamb carcase grading to underpin consumer satisfaction, **2015**. $3,000
- Statistical Society of Australia Golden Jubilee Travel Grant, **2013**. $1,000
- University of Sydney, Widening Participation Grant. Student diversity: What do we know about our students and how does it affect our teaching? With Muir M, Drury H, Morison K and White F, **2012**. $25,000
- University of Sydney, Small TIES Grant. Knowing your students: A faculty wide initiative to provide student demographic data to support curriculum change. With Morrison K, Riemer K, Clarkeburn H and Seltsikas P, **2010**. $7,856

Awards

- Vice-Chancellor's Award for Teaching and Learning Excellence, University of Sydney, **2023**.
- Vice-Chancellor's Award for Outstanding Teaching, University of Sydney. DATA1001 leadership team: Di Warren, Jean Yang, Michael Stewart, Ellis Patrick and Garth Tarr, **2021**.
- Vice-Chancellor's Award for Teaching Excellence and Contribution to Student Learning, University of Newcastle. With Ian Renner, **2016**.

- Vice-Chancellor's Award for Systems that Achieve Collective Excellence in Teaching and Learning, University of Sydney. With Kellie Morison and Jessica Morr, **2011**.
- Outstanding Educational Engagement and Innovation award, Faculty of Science, University of Sydney. With Di Warren and Ellis Patrick, **2021**.
- EJG Pitman Prize for the most outstanding talk presented by a young statistician at the Australian Statistical Conference, **2012**.
- First prize for the best oral presentation by a student at the Australian Young Statisticians Conference, **2013**.
- Excellence in Tutoring Award, University of Sydney Business School, **2010**.

Publications

Refereed journal articles

1. Pannier L, **Tarr G**, Pleasants T, Ball A, McGilchrist P, Gardner GE and Pethick DW (**2025**). The construction of a sheepmeat eating quality prediction model for Australian lamb. *Meat Science*, 220, 109711. DOI: 10.1016/j.meatsci.2024.109711
2. Abolghasemi M, **Tarr G** and Bergmeir C (**2024**). Machine learning applications in time series hierarchical forecasting: Investigating the promotion impact. *International Journal of Forecasting*, 40(2) 597-615. DOI: 10.1016/j.ijforecast.2022.07.004
3. Su P, **Tarr G**, Muller S and Wang S (**2024**). CR-Lasso: Robust cellwise regularized sparse regression. *Computational Statistics & Data Analysis*, 197, 107971. DOI: 10.1016/j.csda.2024.107971
4. Su P, **Tarr G** and Muller S (**2024**). Robust variable selection under cellwise contamination. *Journal of Statistical Computation and Simulation*, 94(6) 1371-1387. DOI: 10.1080/00949655.2023.2286316
5. Stewart SM, Gardner GE and **Tarr G** (**2024**). Using chemical intramuscular fat percentage to predict visual marbling scores in Australian beef carcasses. *Meat Science*, 213, 109573. DOI: 10.1016/j.meatsci.2024.109573
6. Stewart SM, Toft H, O'Reilly RA, Lauridsen T, Esberg J, Jørgensen TB, **Tarr G** and Christensen M (**2024**). Objective grading of rib eye traits using the Q-FOM™ camera in Australian beef carcasses. *Meat Science*, 213, 109500. DOI: 10.1016/j.meatsci.2024.109500
7. Kinley RD, Roque BM, Mackenzie SL, Fortes MRS, Palmieri C, **Tarr G**, Cuthbertson H, Polkinghorne R, Cowley FC (**2024**). Productivity of Commercial Feedlot Beef Production Significantly Improved by Asparagopsis Bioactives Stabilized in Canola Oil. *American Journal of Plant Sciences*, 15(10), 899-929. DOI: 10.4236/ajps.2024.1510058
8. Lees JC, Hardcastle NC, Johnston J, Wong R, Cuthbertson H, Tarr G, Garmyn AJ, Miller MF, Polkinghorne RJ, McGilchrist P (**2024**). Australian and United States consumer acceptance of beef brisket cooked using the low and slow barbeque method. *Foods*, 13(19), 3049. DOI: 10.3390/foods13193049
9. Coombs CEO, Allman BE, Morton EJ, Gimeno M, Horadagoda N, **Tarr G** and Gonzalez L (**2023**). A preliminary investigation into the automatic detection of diseased sheep organs using hyperspectral imaging sensors. *Smart Agricultural Technology*, 3, 100122. DOI: 10.1016/j.atech.2022.100122
10. **Tarr G** and Wilms I (**2022**). Regularized predictive models for beef eating quality of individual meals. *Data Science in Science*, 1(1) 20-23. DOI: 10.1080/26941899.2022.2151948
11. Wang KYX, Pupo GM, Tembe V, Patrick E, Strbenac D, Schramm S-J, Thompson JF, Scolyer RA, Muller S, **Tarr G**, Mann GJ and Yang J (**2022**). Cross-Platform Omics Prediction procedure: a statistical machine learning framework for wider implementation of precision medicine. *npj Digital Medicine*, 5, 85. DOI: 10.1038/s41746-022-00618-5
12. Coombs CEO, Allman BE, Morton EJ, Gimeno M, Horadagoda N, **Tarr G** and Gonzalez L (**2022**). Differentiation of livestock internal organs using visible and short-wave infrared hyperspectral imaging sensors. *Sensors*, 22(9), 3347. DOI: 10.3390/s22093347

13. Steel C, Lees AM, **Tarr G**, Dunshea F, Bowler D, Cowley F, Warner R and McGilchrist P (**2022**). Feedlot factors influencing the incidence of dark cutting in Australian grain-fed beef. *Animals*, 12(15) 1989 1–14. DOI: 10.3390/ani12151989
14. Steel C, Lees AM, **Tarr G**, Warner R, Dunshea F, Cowley F and McGilchrist P (**2022**). The impact of weather on the incidence of dark cutting in Australian feedlot cattle. *International Journal of Biometeorology*, 66, 263–274. DOI: 10.1007/s00484-021-02180-3
15. Stewart S, Gardner G, McGilchrist P, Pethick D, Polkinghorne R, Thompson J and **Tarr G** (**2021**). Prediction of consumer palatability in beef using visual marbling scores and chemical intramuscular fat percentage. *Meat Science*, 181, 108322. DOI: 10.1016/j.meatsci.2020.108322
16. Loudon KMW, **Tarr G**, Lean IJ, McLerie L, Leahy N, Pethick DW, Gardner GE and McGilchrist P (**2021**). Short term magnesium supplementation to reduce dark cutting in pasture finished beef cattle. *Meat Science*, 180, 108560. DOI: 10.1016/j.meatsci.2021.108560
17. Steel CC, Lees AM, Bowler D, Gonzalez-Rivas PA, **Tarr G**, Warner RD, Dunshea FR, Cowley F and McGilchrist P (**2021**). Abattoir factors influencing the incidence of dark cutting in Australian grain-fed beef. *Animals*, 11(2) 474 1–15. DOI: 10.3390/ani11020474
18. Pogorzelski G, Polkinghorne R, Tarr G, Poltorak and Wierzbicka A (**2021**). Effect of "dry aging" or "wet aging" of beef on eating quality. *Animal Science Papers and Reports*, 39(3) 237–249.
19. Abolghasemi M, Gerlach R, **Tarr G** and Beh E (**2020**). Demand forecasting in supply chain: The impact of demand volatility in the presence of promotion. *Computers & Industrial Engineering*, 142 106380. DOI: 10.1016/j.cie.2020.106380
20. Cuthbertson H, **Tarr G**, McGreevy P, White P, Lomax S, Loudon KMW, Polkinghorne R and Gonzalez L (**2020**). Using infrared thermography on farm of origin to predict meat quality and physiological response in cattle (Bos Taurus) exposed to transport and marketing. *Meat Science*, 169, 108173. DOI: 10.1016/j.meatsci.2020.108173
21. Wang KYX, Menzies A, Silva I, Wilmott J, Yan Y, Wongchenko M, Kefford R, Scolyer R, Long G, **Tarr G**, Muller S and Yang J (**2019**). bcGST - an interactive bias-correction method to identify over-represented gene-sets in boutique arrays. *Bioinformatics*, 35(8) 1350-1357. DOI: 10.1093/bioinformatics/bty783
22. Wang KYX, **Tarr G**, Yang J and Muller S (**2019**). Fast and approximate exhaustive variable selection for generalised linear models with APES. *Australian and New Zealand Journal of Statistics*. 61(4) 445-465. DOI: 10.1111/anzs.12276
23. Cuthbertson H, **Tarr G** and Gonzalez L (**2019**). Methodology for data processing and analysis techniques of infrared video thermography used to measure cattle temperature in real time. *Computers and Electronics in Agriculture*. 167 105019 1-10. DOI: 10.1016/j.compag.2019.105019
24. Loudon KMW, **Tarr G**, Pethick DW, Lean IJ, Polkinghorne R, Mason M, Dunshea FR, Gardner GE and McGilchrist P (**2019**). The use of biochemical measurements to identify pre-slaughter stress in pasture finished beef cattle. *Animals*, 9(8) 503 1–27. DOI: 10.3390/ani9080503
25. Loudon KMW, **Tarr G**, Lean IJ, Polkinghorne R, McGilchrist P, Dunshea FR, Gardner GE and Pethick DW (**2019**). The impact of pre-slaughter stress on beef eating quality. *Animals*, 9(9) 612 1–14. DOI: 10.3390/ani9090612
26. Lees AM, Konarska M, **Tarr G**, Polkinghorne RJ, McGilchrist P (**2019**). Influence of kiwifruit extract infusion on consumer sensory outcomes of striploin (*M. longmissimus lumborum*) and outside flat (*M. biceps femoris*) from beef carcasses. *Foods*, 8(8) 332. DOI: 10.3390/foods8080332
27. **Tarr G**, Muller S and Welsh AH (**2018**). mplot: An R package for graphical model stability and variable selection procedures. *Journal of Statistical Software*, 83(9) 1–28. DOI: 10.18637/jss.v083.i09
28. Polkinghorne RJ, Philpott J, Perovic J, Lau J, Davies L, Mudannayake W, Watson R, **Tarr G** and Thompson JM (**2018**). The effect of packaging on consumer eating quality of beef. *Meat Science*, 142, 59–64. DOI: 10.1016/j.meatsci.2018.04.002

29. Konarska M, Kuchida K, **Tarr G** and Polkinghorne RJ (**2017**). Relationships between marbling across principal muscles. *Meat Science*, 123 67–78. DOI: 10.1016/j.meatsci.2016.09.005

30. **Tarr G**, Muller S and Weber NC (**2016**). Robust estimation of precision matrices under cellwise contamination. *Computational Statistics & Data Analysis*, 93 404–420. DOI: 10.1016/j.csda.2015.02.005

31. **Tarr G**, Weber NC and Muller S (**2015**). The difference of symmetric quantiles under long range dependence. *Statistics & Probability Letters*, 98 144–150. DOI: 10.1016/j.spl.2014.12.022

32. Dancer D, Morrison K and **Tarr G** (**2015**). Measuring the effects of peer learning on students' academic achievement in first year business statistics. *Studies in Higher Education*, 40(10) 1808–1828. DOI: 10.1080/03075079.2014.916671

33. **Tarr G**, Muller S and Weber NC (**2012**). A robust scale estimator based on pairwise means. *Journal of Nonparametric Statistics*, 24(1) 187–199. DOI: 10.1080/10485252.2011.621424

34. **Tarr G** (**2012**). Small sample performance of quantile regression confidence intervals. *Journal of Statistical Computation and Simulation*, 82(1) 81–94. DOI: 10.1080/00949655.2010.527844

Book chapters

35. Muir M, Drury H, **Tarr G** and White F (**2019**). A strategy for changing academics' cultural lens: the Knowing Your Students report. In: Hoffman J, Blessinger P and Makhanya M (eds), *Strategies for Facilitating Inclusive Campuses in Higher Education: International Perspectives on Equity and Inclusion*, volume 17, pp. 145–162. Bingley, UK: Emerald Publishing. DOI: 10.1108/s2055-364120190000017011

Software

36. **Tarr G**, Muller S and Welsh AH (**2021**). mplot: Graphical model stability and model selection procedures. R package. github.com/garthtarr/mplot

37. **Tarr G** (**2018**). StatStar: An interactive statistics education portal. statstar.io

38. **Tarr G** (**2015**). pairsD3: D3 scatterplot matrices. R package. github.com/garthtarr/pairsD3

39. **Tarr G** and Patrick E (**2015**). edgebundleR: Circle plots with bundled edges. R package. github.com/garthtarr/edgebundleR

Industry reports

40. Cowley F, de Almeida A, Kinley R, Roque B, Fortes M, Polkinghorne R, Cuthbertson H and **Tarr G** (**2023**). Efficacy and safety of Asparagopsis extract in a canola oil carrier for feedlot cattle. *Meat and Livestock Australia*. Project code P.PSH.1351.

41. Stewart S, O'Reilly R, Corlett M and **Tarr G** (**2023**). Report on Frontmatec Q-FOM Beef camera chemical IMF% for AUS-MEAT accreditation. *ALMTech Technical Report*.

42. Stewart S, O'Reilly R, Corlett M and **Tarr G** (**2022**). Report on the precision and accuracy of the Frontmatec grading camera against AUS-MEAT camera accreditation requirements. *ALMTech Technical Report*.

43. Cuthbertson H, Polkinghorne R, **Tarr G** and Watson R (**2020**). Prediction of consumer palatability in beef using visual marbling scores and chemical intramuscular fat percentage. *Meat and Livestock Australia*. Project code V.RMH.0111.

44. Lees AM, Alvarenga F, Loudon K, **Tarr G**, Lean IJ and McGilchrist P (**2020**). Supplementation to reduce the impact of mycotoxins and insufficient magnesium. *Meat and Livestock Australia*. Project code B.GBP.0012.

45. Cuthbertson H, Polkinghorne R, **Tarr G** and Watson R (**2020**). Baseline consumer sensory testing of alternate protein burgers. *Meat and Livestock Australia*. Project code V.RMH.0111.

46. Polkinghorne R, Philpott J, Watson R and **Tarr G** (**2019**). Meat Standards Australia: mixing and stress trial. *Meat and Livestock Australia*. Project codes L.EQT.1601 and L.EQT.1618.

47. Steel C, Lees A, McGilchrist P, **Tarr G**, Gonzalez-Rivas P and Warner R (**2019**). Evaluation of factors contributing to the incidence dark cutting in grain-fed cattle. *Meat and Livestock Australia*. Project code B.FLT.0399.
48. Polkinghorne RJ, Campbell M and **Tarr G** (**2018**). Quantifying the impact of Modified Atmospheric Packaging (MAP) and alternative packaging solutions on eating quality. *Meat and Livestock Australia*. Project code L.EQT.1813.
49. Polkinghorne RJ, Philpott J, **Tarr G**, Watson R and Farmer L (**2018**). Investigation of the interaction of selected value added processes on selected cuts of varied quality. *Meat and Livestock Australia*. Project code P.PIP.0503.
50. McGilchrist P, Steel C, Gonzalez Rivas P, Warner R and **Tarr G** (**2018**). Effect of weather conditions ante-mortem on the incidence of dark cutting in feedlot finished cattle – a retrospective analysis. *Meat and Livestock Australia*. Project code B.FLT.0399.
51. Polkinghorne RJ, Philpott J, Watson R and **Tarr G** (**2017**). Impacts on consumer acceptance of beef from interactions between pH, meat colour and packaging. *Meat and Livestock Australia*. Project code P.PIP.0488.
52. Polkinghorne RJ, Philpott J, Watson R, **Tarr G** and Mathiasen C (**2017**). Primal block and extended ageing sensory analysis. *Meat and Livestock Australia*. Project code L.EQT.1629.

Other articles

53. Warren D, **Tarr G** and Patrick E (**2024**). Promoting excellence and growth in data science education: Developing a mentoring ecosystem. In: *Proceedings of the 15th International Congress on Mathematical Education*, Topic Study Group 3.18: Data science teaching and learning.
54. **Tarr G** (**2023**). Quarto: A New Tool for Reproducible Reporting. *Biometric Bulletin*, 40(4). International Biometric Society.
55. **Tarr G** (**2023**). Are the Robots Coming for Us? *Biometric Bulletin*, 40(1). International Biometric Society.
56. **Tarr G** and Romanes S (**2019**). Predictive modelling and performance assessment with the caret package. *Biometric Bulletin*, 36(1). International Biometric Society.
57. Pethick, McGilchrist, Polkinghorne, Warner, **Tarr**, Garmyn, Thompson and Hocquette (**2018**). Travaux de recherche internationaux sur la qualité sensorielle de la viande ovine et bovine (International research on beef and lamb eating quality). *Viandes et produits Carnés (Meat and meat products)*, January 2018.
58. **Tarr G** (**2018**). emmeans: estimated marginal means in R. *International Biometric Society Australasian Region Newsletter*, 22. International Biometric Society.
59. Murad H and **Tarr G** (**2017**). Visualising and interpreting interactions in binary logistic regression models. *Biometric Bulletin*, 34(3). International Biometric Society.
60. **Tarr G** (**2017**). Interactive data analysis in R through the Shiny package. *Biometric Bulletin*, 34(2). International Biometric Society.
61. **Tarr G** (**2017**). Model selection in R. *Biometric Bulletin*, 34(1). International Biometric Society.
62. **Tarr G** (**2017**). Interactive data analysis in R. *International Biometric Society Australasian Region Newsletter*, 19. International Biometric Society.
63. **Tarr G** (**2016**). Getting data into R. *Biometric Bulletin*, 33(3). International Biometric Society.
64. **Tarr G** (**2016**). Parallel computation in R. *Biometric Bulletin*, 33(2). International Biometric Society.
65. **Tarr G** (**2015**). Quantile based estimation of scale and dependence. *Bulletin of the Australian Mathematical Society*, 92(1), 173-175. DOI: 10.1017/S0004972715000283

66. Pethick, Thompson, Polkinghorne, Bonny, **Tarr**, Treford, Sinclair, Frette, Wierzbicki, Crowley, Gardner, Allen, Nishimura, McGilchrist, Farmer, Meng, Scollan, Duhem and Hocquette (**2015**). Prédiction de la qualité de la viande de ruminants (Prediction of the meat quality of ruminants). *Viandes et produits Carnés (Meat and meat products)*, November 2015.
67. Hendry GD, **Tarr G** and Morrison K (**2015**). The benefits of peer review versus peer observation: Facilitators' experiences in a peer assisted study program. Paper presented at *2015 International Business & Education Conferences*, June 7-11 London, UK. cluteinstitute.com/proceedings

Workshops

1. Fast algorithms and modern visualisations for feature selection.
   - *International Biometrics Conference*, Seoul, Korea, 5-10 July **2020**.
   - *Statistical Society of Australia*, Sydney, Australia, 16 May **2019**.
   - *International Society for Clinical Biostatistics and Australian Statistical Conference*, Melbourne, Australia, 26 August **2018**.
2. Model selection with R.
   - *Australian National University,* Canberra, Australia, 10-11 April **2017**.
   - *University of Western Australia,* Perth, Australia, 23-24 November **2015**.
3. Analytics for industry.
   - *Texas Tech University,* Lubbock, USA, 5-9 February **2024**.
   - *Meat and Livestock Australia,* Armidale, Australia, 11-13 and 21-22 May **2022**.
   - *Murdoch University,* Perth, Australia, 14-16 June **2022**.
   - *Meat and Livestock Australia,* Brisbane, Australia, 8-10 and 23-24 May **2019**.
   - *Meat and Livestock Australia,* Brisbane, Australia, 4-6 and 19-20 April **2018**.
   - *Teys Australia,* Brisbane, Australia, 24-26 July and 22-23 August **2017**.
   - *Meat and Livestock Australia,* Brisbane, Australia, 15-19 May **2017**
   - *Australian Country Choice,* Brisbane, Australia, 7-11 November **2016**.
4. Enter the tidyverse with R and RStudio. *BioInfoSummer*, Sydney, Australia, December **2019**.
5. Data visualisation, interactive data analysis and statistical programming. *BioInfoSummer,* Sydney, Australia, 11 December **2015**.

Teaching

University of Sydney

- ODAT5022 Applied time series analysis, online masters unit design and development (2024)
- OSTA5003 Computational Statistical Methods, online masters unit design and development (2022)
- DATA2002 Data Analytics: Learning from Data, second year data science (2018-2024)
- DATA2902 Data Analytics: Learning from Data (Adv), second year data science (2019-2024)
- OLET5608 Linear Modelling (2021 and 2022)
- MATH1905 Statistics (Advanced), first year statistics at an advanced level (2013)
- PHAR1811 Foundations of Pharmacy, statistics for first year pharmacy students (2011-13)
- PHAR2821 Drug Discovery and Design B, regression for second year pharmacy students (2012-13)

University of Newcastle

- STAT1070 Statistics for the Sciences, first year service course (2016 S1 and S2, 2017 Summer)
- STAT3010 Statistical Inference, third year statistics course (2017)
- STAT3170 Surveys and Experiments, third year statistics course (2017)

Research student supervision

PhD (5 completed, 2 ongoing)

since 2024 Martin Huang, *Sparse modelling and regularisation: Feature selection in high-dimensional data*. PhD thesis, University of Sydney (primary supervisor).

since 2023 Rajan Shankar, *Modern regularised approaches for prediction in complex data*. PhD thesis, University of Sydney (primary supervisor).

2023 Peng Su, *Regression and variable selection in the presence of cellwise outliers*. PhD thesis, University of Sydney (primary supervisor). Current position: Postdoctoral researcher at Beijing Normal University-Hong Kong Baptist University United International College, China.

2022 Cassius Coombs, *Developing real-time tomography for applications in the livestock industries*. PhD thesis, University of Sydney (joint supervision with Luciano Gonzalez). Current position: Chemometric Engineer at Certif-ID Technologies Pty Ltd.

2020 Yu Xiang (Kevin) Wang, *A statistical framework for incorporating multi-omics technologies for precision medicine*. PhD thesis, University of Sydney (joint supervision with Jean Yang and Samuel Mueller). Current position: Senior data scientist at Illumina.

2020 Holly Cuthbertson, *Infra-red thermography and radio frequency identification for detection of stress in lairage*. PhD thesis, University of Sydney (joint supervision with Luciano Gonzalez). Current position: General Manager of Elite Dairy Beef

2020 Mahdi Abolghasemi, *Supply chain forecasting: Predicting demand variation in the presence of promotion*. PhD thesis, University of Newcastle (joint supervision with Richard Gerlach and Eric Beh). Current position: Senior Lecturer at Queensland University of Technology.

Honours and Masters (8)

2024 Xueru Wang, *Sensitivity analysis in regression modelling*

2023 Martin Huang, *Data-adaptive threshold determination for stability selection*

2023 Lewis Hastie, *Inference and random effect structure selection in linear mixed models*

2022 Leo Guo, *A deep dive into the pliable lasso – with focus on MSA data*

2022 Richard Alessi, *Exploration of covariate-adjusted response-adaptive allocation strategies for multiple treatment options in binary response trials*

2022 Abhay Mahajan, *Automating spreadsheet based repeated data analysis*

2020 Priscilla Chen, *Regularisation in regression models with marginality constraints*

2018 Qingyang (Eva) Liu, *Ultra-high dimension variable screening*

Undergraduate research project supervision (16)

2024 Flynn Entwistle, *Methods for determining relative feature importance in correlated and corrupt data*, SCDL3991: Science Dalyell Individual Research Project.

2023 Rachel Kwok, *Inter-rater reliability and agreement R package*, Denison Research Scholar.

2023 Isabella Greenhalgh, *Inter-rater reliability and agreement web app*, Denison Research Scholar.

2022 Johan Annon, *Developing a lamb eating quality model*, Denison Research Scholar.

2022 Matthew Francis, *Financial impact of bovine disease*, Denison Research Scholar.

2021 Rajan Shankar, *Shade Treatment Effects on Cattle Heat Stress*, SCDL3991: Science Dalyell Individual Research Project.

2021 Rohen Wong, *Australian and United States consumer acceptance of beef brisket cooked using the low and slow barbeque method*, Denison Research Scholar.

2020 Johnson Phosavanh, *Evaluation of heat load models*, Denison Research Scholar.

2020 Shuang Zhang, *Objective marbling measurements and eating quality of beef*, Denison Research Scholar.

2020 Jackson Zhou, *Animal health relationships and outcomes*, Denison Research Scholar.

2018 Cade Brennan, *Modelling consumer willingness to pay – an international comparison*, Denison Research Scholar.

2018 Danielle Zhang, *Functional data analysis*, Denison Research Scholar.

2016 Lachlan O'Neil, *Observing and predicting trends in one day cricket*, Summer Scholar. University of Newcastle.

2016 Matthew Clapham and Charlotte Gooding, *Comparison of the standard and alternative odds ratios*. Summer Scholars, University of Newcastle.

2015 Yu Xiang (Kevin) Wang, *Frequentist model selection and model averaging techniques*. Summer Scholar, Australian National University.

2015 Timothy Bilton, *Model selection in linear mixed models using the lasso*. Summer Scholar, Australian National University.

Presentations

Keynote

1. Statistics for the sciences. *Science Teachers Association of NSW Annual Conference*, Sydney, Australia, February **2017**.

Invited conference talks

2. Visualising model selection stability. *International Conference on Computational Statistics (COMPSTAT)*, Giessen, Germany, August 27–30, **2024**.
3. The cutting edge: interactive dashboards for Australian beef industry insights. *32nd International Biometric Conference (IBC 2024)*, Atlanta, USA, December 8–13, **2024**.
4. Prediction of consumer palatability in beef using visual marbling scores and chemical intramuscular fat percentage. *75th European Federation of Animal Science (EAAP) Annual Meeting*, Florence, Italy, September 1–5, **2024**.
5. Aggregating noisy data for improved prediction in multi-class models. *16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023)*, Berlin, Germany, December 16–18, **2023**.
6. Bootstrap model selection for linear mixed models. *International Conference on Econometrics and Statistics (EcoSta)*, Taiwan, June 25–27, **2019**.
7. Multi-class modelling for muscle level prediction of beef eating quality. *Forecasting from Complexity*, Institute for Mathematics and its Applications, University of Minnesota, USA, April 23–27, **2018**.
8. Multi-class modelling for muscle level prediction of beef eating quality. *International Conference on Econometrics and Statistics (EcoSta)*, Hong Kong, June 19–21, **2018**.
9. Assessing selection stability in regularised regression models. *10th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2017)*, London, UK, December **2017**.
10. Are consumers willing to pay for eating quality? *UNECE Workshop on Sustainable Meat Markets, Cross-border Trade and Eating Quality*, Dublin, Ireland, August **2017**.
11. Robust regularised precision matrix estimation. *International Conference on Computational Statistics (COMPSTAT)*, Oviedo, Spain, August **2016**.
12. Estimating dependence structures under cellwise contamination. *Institute of Mathematical Statistics Asia Pacific Rim Meeting*, Hong Kong, June **2016**.
13. Visualising variable selection with mplot. *International Conference on Robust Statistics*, Kolkata, India, January **2015**.
14. Modelling, prediction and statistics with reference to MSA. *International meeting on beef and lamb carcase grading to underpin consumer satisfaction*, Paris, France, August **2015**.

15. Long range dependent. *Much more than U-statistics: A symposium to celebrate Neville C. Weber,* Sydney, Australia, January **2015**.

Other invited talks

16. Working with data. *Sydney University Mathematics Society*, Sydney, Australia, May **2023**.
17. Stable feature selection. *Sydney University Mathematics Society*, Sydney, Australia, May **2019**.
18. Australia's next top meat model. *Sydney Data Stories*, Sydney, Australia, May **2019**.
19. Keeping up with R – modern data processing tools and visualisation. *Statistical Society of Australia Seminar*, Canberra, Australia, April **2017**.

Academic seminars

20. Working with data. *One School Seminar, University of Sydney, Sydney Mathematical Research Institute*, Sydney, Australia, October **2022**.
21. Model selection stability with mplot. *University of Sydney, School of Mathematics and Statistics*, Sydney, Australia, December **2016**.
22. Data visualisation, interactive data analysis and statistical programming. *University of Newcastle Statistics Seminar Series*, Newcastle, Australia, May **2016**.
23. Quantile based estimation of scale and dependence. *Australian National University, Mathematical Sciences Institute*, Canberra, Australia, February **2016**.
24. Visualising model selection stability. *Macquarie University Statistics Seminar*, Sydney, Australia, September **2015**.
25. Interactive and data adaptive model selection with mplot. *University of Newcastle Statistics Seminar Series*, Newcastle, Australia, October **2015**.
26. Robust methods and model selection. *CARMA Retreat – Priority Research Centre for Computer-Assisted Research Mathematics and its Applications*, Newcastle, Australia, September **2015**.
27. Shiny packages in R: the mplot experience. *The University of Sydney School of Mathematics and Statistics, Statistical Bioinformatics Meeting*, Sydney, Australia, January **2015**.
28. A stability based approach to model selection. *The University of Sydney Business School, Discipline of Business Analytics*, Sydney, Australia, January **2015**.
29. Visualising variable selection: the mplot package. *University of Wollongong, NIASRA Fellows Research Meeting*, Goulburn, Australia, November **2014**.
30. Robust estimation of scale and covariance with P_n and its application to precision matrix estimation. *University of Sydney, School of Mathematics and Statistics Seminar*, Sydney, Australia, September **2013**.
31. Robust estimation of scale and covariance with P_n and its application to PCA. *University of NSW, School of Mathematics and Statistics Seminar*, Sydney, Australia, April **2013**.

Governance, leadership and engagement

Editorial appointments

since 2019 Associate Editor, Australian and New Zealand Journal of Statistics (ANZJS)

since 2019 Associate Editor, Biometric Bulletin (International Biometrics Society)

Conference organisation

- Chair of the scientific program committee, Australian Data Science Network Conference, **2025**, Sydney, Australia.
- Member of the scientific program committee, Australian Statistical Conference, **2025**, Perth, Australia.
- Member of the scientific program committee, 16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023), December 16-18 **2023**, Berlin, Germany.

- Member of the scientific program committee, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PDKK; research track), Turin, Italy, September 18-22 **2023**.
- Member of the scientific program committee, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PDKK; Research and Applied Data Science Tracks), Grenoble, France, September 19-23 **2022**.
- Member of the scientific program committee, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PDKK; Applied Data Science), September 13-17 **2021**.
- Co-organiser of the International Conference on Robust Statistics (ICORS), July 3-7 **2017**, Wollongong, Australia.
- Member of the scientific program committee, International Biometrics Society Australasian Region Conference "Biometrics by the Border", November 26-30 **2017**, Kingscliff, Australia.
- Organiser of 'Much more than U-statistics: A symposium to celebrate Neville C. Weber', January 30 **2015**, Sydney, Australia (jointly with Samuel Mueller).
- Member of the scientific program committee, SSAI Young Statisticians Conference, February 7-8 **2013**, Melbourne, Australia.
- Chair of the scientific program committee, SSAI Young Statisticians Conference, July 14-15 **2011**, Brisbane, Australia.

Invited session organisation

- Organiser of the invited paper session, 'Modelling challenges: missing values and robustness', International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), December 16-18 **2023**, Berlin, Germany.
- Organiser of the invited paper session, 'Recent Advances in Mixed Models', International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), December 14-16 **2019**, London, UK.
- Organiser of the invited paper session, 'Recent Advances in Model Selection', International Conference on Econometrics and Statistics (EcoSta), June 25-27 **2019**, Taiwan.
- Organiser of the invited paper session, 'Estimating and selecting models for complex data', International Conference on Econometrics and Statistics (EcoSta), June 19-21 **2018**, Hong Kong.
- Organiser of the invited paper session, 'Modelling complex data', International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics), December 16-18 **2017**, London, UK.
- Organiser of the invited paper session, 'Advanced Graphical and Computational Methods', International Conference on Econometrics and Statistics (EcoSta), June 15-17 **2017**, Hong Kong.
- Organiser of the invited paper session, 'Health analytics and informatics', International Congress on Modelling and Simulation (MODSIM), December 3-8 **2017**, Hobart, Australia.

Leadership roles and professional service

since 2024 Industry Calibration Working Group, Meat and Livestock Australia

since 2023 Chair, Partnership and Industry Engagement Committee, Sydney Precision Data Science Centre, University of Sydney

since 2021 Faculty of Science representative, Non-Award Subcommittee of the University Executive Strategic Course Portfolio Committee, University of Sydney

since 2022 Council member, Australasian Region of the International Biometrics Society

since 2018 Statistical and methodological advisor, Meat Standards Australia Lamb Pathways Committee

since 2015 Statistical and methodological advisor, Meat Standards Australia Beef Pathways Committee

2020 COVID-19 taskforce, School of Mathematics and Statistics, University of Sydney

2019-2020 Deputy first year director, School of Mathematics and Statistics, University of Sydney

2019 Second year coordinator, School of Mathematics and Statistics, University of Sydney

2019 Workforce Planning Review Project Teaching Working Group, Faculty of Science, University of Sydney

2018-2019 Undergraduate studies committee, Faculty of Science, University of Sydney

2018-2019 Academic program committee, School of Mathematics and Statistics, University of Sydney

2018 Statistics seminar organiser, School of Mathematics and Statistics, University of Sydney

2017 ERA and EI cluster advisory group for cluster 6 – Mathematical, Information and Computing Sciences, University of Newcastle

2017 Vice-Chancellor's awards committee, University of Newcastle

2016-2017 Program convenor, Master of Data Science and Analytics, School of Mathematical and Physical Sciences, University of Newcastle

Refereeing

Advances in Data Analysis and Classification; Briefings in Bioinformatics; Chemometrics and Intelligent Laboratory Systems; Computational Statistics; Computational Statistics and Data Analysis; Environmental Health Perspectives; European Journal of Operational Research; Econometrics and Statistics; Festschrift in Honour of Hannu Oja; International Higher Education Teaching and Learning Association; International Congress on Modelling and Simulation; International Journal of Forecasting; Journal of Computational and Graphical Statistics; Journal of Data Science, Statistics and Visualisation; Journal of the American Statistical Association; Meat Science; PLOS ONE; Sri Lankan Journal of Applied Statistics; Statistica Neerlandica; Statistical Papers; Statistics & Probability Letters; Studies in Higher Education;Technometrics; TEST; The R Journal; Australian Conference on Teaching Statistics (OZCOTS)

PhD theses: 3 (La Trobe University; University of Melbourne; University of Western Australia)

Professional affiliations and societies

since 2022 Sydney Precision Data Science Center, University of Sydney

since 2018 Sydney Institute of Agriculture, University of Sydney

since 2015 International Biometrics Society

since 2014 American Statistical Association

since 2009 Statistical Society of Australia