

Matthew Sutton

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RESEARCH INTERESTS

Bayesian computation, Markov chain Monte Carlo methods, statistical machine learning, biostatistics.

EMPLOYMENT

- 2023 – present **Lecturer** at Queensland University of Technology (QUT). Line manager: Professor Tony Roberts.
- 2020 – 2023 **Postdoctoral Fellow** at QUT Centre for Data Science (CDS). Line manager: Distinguished Professor Kerrie Mengersen.
- 2019 – 2020 **Senior Research Associate** in statistics at Lancaster University (UK) funded by the Engineering and Physical Sciences Research Council (EPSRC) on the “Bayes4Health” grant in connection with Oxford, Cambridge, Warwick and Bristol. Line managers: Distinguished Professor Paul Fearnhead and Professor Christopher Jewell.

EDUCATION

- 2016 – 2019 **PhD in Statistics at QUT**. Supervisors: Distinguished Professor Kerrie Mengersen, Professor Benoit Liqueet and Professor Christopher Drovandi. Thesis title: Variable Selection for Structured Large Datasets. Examiners: Professor Samuel Muller (Macquarie University) and Professor Peter Müller (University of Texas at Austin).
- 2015 **Honours in Statistics at University of Queensland (UQ)**. Supervisor: Professor Benoit Liqueet. Thesis title: Partial Least Squares Methods and Regularisations.
- 2011 – 2014 **Bachelor of Science / Arts at UQ**. Majors: Statistics (Science) / Mathematics (Arts).

TEACHING AND SUPERVISION

- 2023 – present **MXB241 Probability and Stochastic Modelling 2**, lecturer and unit coordinator.
- 2021 – present **MXN442 Modern Statistical Computing Techniques**, lecturer and unit coordinator (100% in 2021, 50% in 2022, 100% in 2023).
- 2021 – present **MXN601 Advanced Stochastic Modelling**, lecturer in 2021 (50%) and lecturer and unit coordinator (50% in 2022, 100% in 2023).
- 2021 – 2023 **PhD associate supervisor (40%)**, Laurence Davies, QUT.
- 2022 **Research assistant supervisor (100%)**, Thanh Long Vu (Oliver Vu), QUT.
- 2019 **Research assistant supervisor (100%)**, Manjushree Somashekar, QUT.
- 2019 **Masters supervisor (100%)**, Adam Gilmore, Lancaster University.
- 2017-2018 **Tutor** for LQB284 (2016) and MXB341 (2017, 2018), QUT.
- 2016 **Online mentor** for Massive Open Online Course (MOOC).
- 2012 – 2015 **Tutor** for MATH1050, MATH1051 and STAT2201, UQ.

1. **Sutton, M.** and Fearnhead, P. (2023). Concave-Convex PDMP-based sampling. *Journal of Computational and Graphical Statistics*, DOI: 10.1080/10618600.2023.2203735
2. Davies L., Ley-Cooper, AY., **Sutton, M.** & Drovandi, C. (2023). Bayesian detectability of induced polarisation in airborne electromagnetic data using reversible jump sequential Monte Carlo. *Geophysical Journal International (GJI)*. 235(3), 2499—2523, DOI: 10.1093/gji/ggad073
3. Davies, L., Salomone, R., **Sutton, M.**, & Drovandi, C. (2023). Transport reversible jump proposals. *Proceedings of The 26th International Conference on Artificial Intelligence and Statistics (AISTAT)*, PMLR 206:6839-6852. Available from <https://proceedings.mlr.press/v206/davies23a.html>.
4. **Sutton, M.**, Salomone, R., Chevallier, A., & Fearnhead, P. (2022). Continuously-tempered PDMP samplers. *Advances in Neural Information Processing Systems*, 35, 28293–28304.
5. Chevallier, A., Fearnhead, P. & **Sutton, M.** (2022). Reversible jump PDMP samplers for variable selection, *Journal of the American Statistical Association*, DOI: 10.1080/01621459.2022.2099402.
6. **Sutton, M.**, Sugier, P-E., Troung, T. & Liquet, B. (2022). Leveraging pleiotropic association using sparse group variable selection in genomics data. *BMC Medical Research*, 22(9), DOI: 10.1186/s12874-021-01491-8.
7. **Sutton, M.** (2020). Bayesian Variable Selection. In K. L. Mengersen, P. Pudlo, & C. P. Robert (Eds.), *Case studies in applied Bayesian data science: CIRM Jean-Morlet Chair, Fall 2018* (pp. 121–135). Springer International Publishing. DOI: 10.1007/978-3-030-42553-1_5.
8. Lafaye de Micheaux, P., Liquet, B. & **Sutton, M.** [alphabetical order] (2019). PLS for big data: A unified parallel algorithm for regularised group PLS. *Statistics Surveys*, 13(1), 119–149. DOI: 10.1214/19-SS125
9. **Sutton, M.**, Thébaut, R. & Liquet, B. (2018). Sparse partial least squares with group and subgroup structure. *Statistics in Medicine*, 37(23), 3338–3356. DOI: 10.1002/sim.7821
10. **Sutton, M.**, Mengersen, K. & Liquet, B. (2018). [HDDA] sparse subspace constrained partial least squares. *Journal of Statistical Computation and Simulation*, 89(6), 1005–1019.
11. Liquet, B., Mengersen, K., Pettitt, A. N., & **Sutton, M.** [alphabetical order] (2017). Bayesian variable selection regression of multivariate responses for group data. *Bayesian Analysis*, 12(4), 1039–1067.
12. **Sutton, M.** (2014). On the metamorphosis of a G -design into a $(G - e)$ -design. *Discrete Mathematics*, 318(1), 71-77.

PAPERS IN PREPARATION

13. Corenflos, A., **Sutton, M.**, & Chopin, N. (2023). Debiasing Piecewise Deterministic Markov Process samplers using couplings. *Arxiv:2306.15422*
14. Davies, L., Crucinio, F., & **Sutton, M.**. (2023). Weight-Stabilised Transdimensional SMC. *In preparation*.

EXTERNAL PRESENTATIONS

- Invited talk, departmental seminar, **Macquarie University**, 2023
- Contributed talk, **SMC Down Under**, Australia QUT, 2023
- Invited talk, **Statistics Across Campuses Seminar**, multiple online Australian Universities, 2023.
- Accepted short talk and paper, **NeurIPS**, online/New Orleans, USA 2022
- Invite-only workshop (talk), **Computational methods for unifying multiple statistical analyses**, CIRM, France 2022
- Contributed talk, **Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing**, Linz, Austria 2022
- Invite-only workshop (poster), **Non-reversible Markovian Monte Carlo**, Lorentz center, Leiden, Online/Netherlands 2021
- Invited talk, departmental seminar, **Johannes Kepler University**, Linz, Austria 2021
- Poster, **BayesComp2020**, Florida, USA 2020
- Invited talk, **Bayes4Health seminar series**, Lancaster, UK 2019
- Poster, **ISBA**, Edinburgh, UK 2018
- Poster, **LMS CRISM summer school**, Warwick, UK 2018
- Invited talk, **BAYesian Young Statisticians Meeting (BAYSM)**, Warwick, UK 2018
- Contributed talk, **68th Annual New Zealand Statistical Association Conference**, Auckland, New Zealand 2017
- Poster, **Bayes on the Beach**, Gold Coast, Australia 2017
- Invited talk, departmental seminar, **Big Data Institute**, Oxford, UK 2017
- Invited talk, departmental seminar, **INSERM**, Paris, France 2017
- Invited talk, departmental seminar, **Imperial College London**, London 2017

AWARDS, FUNDING AND SCHOLARSHIPS

2023	Lead investigator: QUT CDS First Byte funding \$10,000 for “New Methods for Bayesian Federated Learning”.
2021	Lead investigator: QUT CDS First Byte funding \$10,000 for “Zig-Zagging your way to scalable model choice”.
2021-2022	Collaborator: QUT CDS Second Byte funding \$25,000 for “Harnessing mutational diversity to improve cancer patient prognosis and treatment”.
2020	Travel scholarships: BayesComp2020, Florida (USD\$500).
2018	Lindley prize for best paper at the World Meeting of the International Society for Bayesian Analysis (ISBA) https://acems.org.au/news/isba-best-paper .
2016-2018	Australian Laureate Fellowship scholarship , \$26,288 annually.
2016-2018	Top-up scholarship , \$5,000 annually.
2018	Travel scholarships: LMS CRISM summer school, Warwick (£190); BAYSM 2018 conference, Warwick (USD\$400); ISBA 2018, Edinburgh (USD\$500).
2016	Certificate of outstanding achievement for teaching into the Massive Open Online Course (MOOC), teaching team award.

(SELECTED) SOFTWARE

A full list of software outputs may be found at <https://github.com/matt-sutton/>.

1. **MBSGS R package**, coauthor, CRAN. Downloaded over 24,000 times.
2. **rjpdmp R package**, sole author. Downloaded 5,800 times since October 2020.
3. **bigsgPLS** on Github.
4. **ctpdmp** on Github.

Main coding languages and tools: R, C++, parallel computing (CPU and GPU), and occasionally Python, Julia, Matlab and Gurobi.

EDITORIAL SERVICE

I have reviewed for

- Bayesian Analysis (ABDC: A, SCIMago D1)
- Electronic Journal of Statistics (ABDC: A, SCIMago Q1)
- Journal of the Royal Statistical Society: Series C (ABDC: A, SCIMago Q1)
- Statistics and Computing (ABDC: A, SCIMago Q1)
- Computational Statistics (SCIMago Q2)
- Journal of Statistical Computation and Simulation (SCIMago Q2)
- Advances in Data Analysis and Classification (SCIMago Q2)

COMMUNITY AND LEADERSHIP

2023	Organiser and chair of the QUT CDS and AI hub "Privacy in the Digital Age" panel event
2023	Co-organiser the International Women's day Wikithon.
2022	Team organiser for the United Nations Big Data Hackathon QUT team.
2021	Lead organiser of the CDS Growing the Data Science Network.
2021	Organiser of the "Remember Maryam Mirzakhani" exhibit for International Women in Mathematics Day.
2021 - present	QUT Ally .
2021	Presented at the CDS HDR academy .
2019-2020	Website manager for the multi-university Bayes4Health grant.
2017-2018	Co-chair of the Bayesian Research and Application Group (BRAG).