# ROBERT DAMIEN SALOMONE


CONTACT

Centre for Data Science
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CITIZENSHIP

Australian

RESEARCH INTERESTS

My primary research interests lie in the development of computational methodology at the intersection of statistics and machine learning, with a focus on improved inference techniques (e.g., Markov chain Monte Carlo, sequential Monte Carlo, and variational approximations). More broadly, I am interested in all aspects of methodology in Bayesian statistics and in particular probabalistic machine learning.

PROFESSIONAL APPOINTMENTS

**Queensland University of Technology** Nov 2020–Present
*Postdoctoral Fellow*
Centre for Data Science
Supervisor: Professor Christopher Drovandi

**UNSW Sydney** Jan 2019–Oct 2020
*Postdoctoral Research Fellow*
Australian Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS)
Supervisors: Professors Robert Kohn & Scott Sisson

**The University of Queensland** Aug 2018–Jan 2019
*Postdoctoral Research Fellow*
Australian Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS)
Supervisor: Professor Dirk Kroese

EDUCATION

**Ph.D. in Statistics** 2015–2018
The University of Queensland, Australia.
Dissertation: *Advances in Monte Carlo Methodology*
Advisor: Professor Dirk Kroese

**B.Sc. (Hons.) in Mathematics** 2010–2015
The University of Queensland, Australia.
First Class Honours.
Thesis: *Splitting Methods for Rare-Event Estimation and Counting Problems*
Advisor: Professor Dirk Kroese

REFEREED PUBLICATIONS

1. **Salomone, R.**, Quiroz, M., Kohn, R., Villani, M., and Tran, M.N. (2020), *Spectral Subsampling MCMC for Stationary Time Series*. Proceedings of the International Conference of Machine Learning (ICML) 2020.
2. Hodgkinson, L., **Salomone, R.**, and Roosta, F. (2020), *Implicit Langevin Algorithms for Sampling from Log-concave Densities*, Journal of Machine Learning Research. Accepted, with minor revision (revision now submitted).
3. Botev, Z.I., **Salomone, R.**, Mackinlay, D. (2019), *Fast and accurate computation of the distribution of sums of dependent log-normals*, Annals of Operations Research, 280:19-46.
4. Laub, P.J., **Salomone, R.**, Botev, Z.I. (2019), *Monte Carlo estimation of the density of the sum of dependent random variables*, Mathematics and Computers in Simulation 161, 23-31.

5. **Salomone, R.**, Vaisman, R., and Kroese, D.P. (2016). *Estimating the Number of Vertices in Convex Polytopes*, Proceedings of the Annual International Conference on Operations Research and Statistics, ORS 2016, 1-10.

## Completed Manuscripts

6. **Salomone, R.**, South, L.F., Johansen, A.M., Drovandi, C.C., and Kroese, D.P.. *Unbiased and Consistent Nested Sampling via Sequential Monte Carlo.* arXiv:1805.03924
(Revision Pending)

7. Hodgkinson, L., **Salomone, R.**, and Roosta, F., *The reproducing Stein kernel approach for post-hoc corrected sampling.* arXiv:2001.09266.
(Submission Pending)

## Other Authorship

D.P. Kroese, Z.I. Botev, T. Taimre, R. Vaisman, and **Salomone, R.**, Solutions Manual for *Data Science and Machine Learning: Mathematical and Statistical Methods.*

## Teaching (Lecturing)

**Lecturer**, Analysis of Scientific Data (STAT1201) 2017
The University of Queensland

- Overall Teaching Evaluation Score: 4.81/5
(Approx. 100 Enrolments, 26 Student Evaluations)

**Guest Lecturer**, Advanced Analysis of Scientific Data (STAT1301) 2015
The University of Queensland

## Teaching (Tutor)

**Tutor (Teaching Assistant)** 2012–2018
The University of Queensland

## Workshops

- *Automatic Differentiation: Theory and Practice* (half day). Australian Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS) Retreat, Adelaide, October 2019.

## Invited Talks

- *Monte Carlo Secrets Revealed*, Statistical Society of Australia: NSW Branch Meeting (Seminar), Brisbane, October 2020.
- *Personal Career Talk*, Statistical Society of Australia: Careers and Networking Event, Sydney, October 2019.
- *Implicit Langevin Algorithms for Sampling from Log-concave Densities*, 12th International Conference on Monte Carlo Methods and Applications (MCM2019), Sydney, July 2019.
- *An Introduction to Stein Kernels*, ACEMS Workshop: Advances and Challenges in Monte Carlo Methods, Brisbane, November, 2018.

## Contributed Talks

- *Spectral Subsampling MCMC for Stationary Time Series*, International Conference on Machine Learning (ICML) 2020.
- *Estimating the Number of Vertices in Convex Polytopes*, Annual International Conference on Operations Research and Statistics, Singapore, January 2016.

## Professional Service

**Referee**

- Annals of Statistics
- Journal of Computational and Graphical Statistics
- Statistics and Computing
- Australian & New Zealand Journal of Statistics

**Program Committee Member & Referee**

- 29th International Joint Conference on Artificial Intelligence and the 17th Pacific Rim International Conference on Artificial Intelligence (IJCAI-PRICAI-2020)
- 28th International Joint Conference on Artificial Intelligence (IJCAI-19)

**Seminar Organization**

- Founder and Organizer: UNSW Sydney Computational Statistics and Machine Learning Reading Group (2019–2020).
- Founder and Organizer: University of Queensland Machine Learning Reading Group (2017–2018).

**Outreach**

- Facilitator: UNSW Data Science Work Experience (2019) for high school students (2 days).

## Programming Skills

Python (Advanced), `R`, Matlab

## Machine Learning Frameworks

PyTorch, Pyro (Contributor), Stan

## Awards & Funding

- University of Queensland Award for Tutoring Excellence 2017
- ACEMS Three Minute Thesis and Poster Comptetition (Winner)
  Prize: $2000 research funding 2016
- ACEMS PhD Scholarship Top-Up ($2500 p.a.) 2016–2018