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Neil G. Marchant

Research interests

- Data integration
- Sampling
- Approximate inference
- Human-in-the-loop systems
- Probabilistic graphical models
- Performance evaluation

Education

2016–2021 **PhD in Computer Science**, *University of Melbourne*.
Thesis: Statistical Approaches for Entity Resolution Under Uncertainty
Advisors: Ben Rubinstein and Rebecca Steorts (Duke)

2013–2014 **MSc in Physics**, *University of Melbourne*.
Thesis: Vortex Lattices in Quasi-Two-Dimensional Dipolar Bose-Einstein Condensates
Advisor: Andy Martin

2009–2011 **BSc in Physics**, *University of Melbourne*.

Publications

Conference papers and journal articles

2020 Marchant, Neil G. , Kaplan, Andee, Elazar, Daniel N., Rubinstein, Benjamin I. P., and Steorts, Rebecca C. 2020. "d-blink: Distributed End-to-End Bayesian Entity Resolution". In: *Journal of Computational and Graphical Statistics*, pp. 1–42. DOI: 10.1080/10618600.2020.1825451.

2017 Marchant, Neil G. and Rubinstein, Benjamin I. P. Aug. 2017. "In Search of an Entity Resolution OASIS: Optimal Asymptotic Sequential Importance Sampling". In: *Proceedings of the VLDB Endowment* 10.11, pp. 1322–1333. ISSN: 2150-8097. DOI: 10.14778/3137628.3137642.

Martin, A. M., Marchant, N. G. , O'Dell, D. H. J., and Parker, N. G. Feb. 2017. "Vortices and vortex lattices in quantum ferrofluids". In: *Journal of Physics: Condensed Matter* 29.10, p. 103004. DOI: 10.1088/1361-648x/aa53a6.

Preprints and manuscripts

2020 Marchant, Neil G. and Rubinstein, Benjamin I. P. 2020a. *A general framework for label-efficient online evaluation with asymptotic guarantees*.

Marchant, Neil G. , Rubinstein, Benjamin I. P., and Steorts, Rebecca C. 2020b. *Bayesian Graphical Entity Resolution using Exchangeable Random Partition Priors*.

Talks

2020 Marchant, Neil G. . July 2020. "Statistical Approaches for Entity Resolution Under Uncertainty". PhD Completion Seminar. University of Melbourne, Australia.

2019 Marchant, Neil G. . Sept. 2019. "Analysing Human Rights Abuses using Bayesian Entity Resolution". School of CIS Doctoral Colloquium (contributed). University of Melbourne, Australia.

Marchant, Neil G. . Apr. 2019. "Analysing Human Rights Abuses using Bayesian Entity Resolution". MLBytes Seminar (invited). Duke University, USA.

Marchant, Neil G. , Kalpan, Andee, Elazar, Daniel N., Rubinstein, Benjamin I. P., and Steorts, Rebecca C. Aug. 2019. "Distributed Markov Chain Monte Carlo for Scalable Bayesian Entity Resolution". Conference on Current Trends in Survey Statistics (invited). Singapore.

2017 Marchant, Neil G. . July 2017. "OASIS: An efficient evaluation method for entity resolution". School of CIS Doctoral Colloquium (contributed). University of Melbourne, Australia.

Marchant, Neil G. . Oct. 2017. "Statistically efficient linkage validation". ACEMS-ABS Workshop (invited). Canberra, Australia.

Marchant, Neil G. and Rubinstein, Benjamin I. P. July 2017. "In Search of an Entity Resolution OASIS: Optimal Asymptotic Sequential Importance Sampling". VLDB'17 (contributed). Munich, Germany.

Open-source software

2020– `comparator`, an R package for string similarity/distance comparisons.
GitHub: ngmarchant/comparator · CRAN: comparator

2020– `clevr`, an R package for evaluating link prediction/clustering results.
GitHub: cleanzr/clevr · CRAN: clevr

2019– `activeeval`, a Python package for pool-based active evaluation.
GitHub: ngmarchant/activeeval

2019– `exchanger`, an R package for Bayesian entity resolution with exchangeable priors.
GitHub: cleanzr/exchanger

2018– `dblink`, an Apache Spark package for distributed Bayesian entity resolution.
GitHub: cleanzr/dblink

Funding

2017–2018 **Australian Bureau of Statistics**, *Research Contract*, AUD $31k.
Project: *Scaling up Bayesian record linkage*
PI: Ben Rubinstein, co-investigator: Neil Marchant

2019 **University of Melbourne**, *MSE Conference Travel Scholarship*, AUD $1500.

2016–2019 **Australian Government**, *PhD Research Training Program Scholarship*.

2017 **Google Australia**, *PhD Travel Scholarship*, AUD $2500.

2011 **University of Melbourne**, *Melbourne Global Grant*, AUD $2500.

Experience

Aug 2017–Feb 2018 **Research Intern**, *Australian Bureau of Statistics*, Melbourne/Canberra.
Project: *Evaluating feasibility of Bayesian entity resolution*
Mentor: Daniel Elazar

Aug 2015–Nov 2015 **Research Intern**, *IBM Research Australia*, Melbourne.
Project: *Flood modelling for emergency decision making*
Mentor: Laura Rusu

Teaching

University of Melbourne

Sem 2, 2020 **Head Tutor & Guest Lecturer**, Statistical Machine Learning (graduate-level).
Subject coordinator: Ben Rubinstein

Sem 2, 2020 **Head Tutor**, Statistical Machine Learning (graduate-level).

Sem 1, 2020 **Tutor**, Elements of Data Processing (undergraduate-level).
Subject coordinator: Pauline Lin

Sem 1, 2019 **Tutor**, Elements of Data Processing (undergraduate-level).
Subject coordinator: James Bailey

Sem 2, 2018 **Head Tutor**, Statistical Machine Learning (graduate-level).
Subject coordinator: Ben Rubinstein

2015–2017 **Tutor**, Physics 1 & 2 (undergraduate-level).

2012–2015 **Laboratory Demonstrator**, Physics 1 & 2 (undergraduate-level).

Melbourne Business School

2019 **Tutor**, Statistical Learning 2, Advanced Business Analytics (graduate-level).

Academic Service

Peer Review

Reviewer ICML'19, NeurIPS'19, ICML'20, AISTATS'21

Sub-reviewer KDD'16, NIPS'16, ICML'17, ICML'18

Service to Department

2017 Organising Committee Member, CIS DC, Treasurer, Venue Management and Proceedings

2016–2017 Executive Committee Member, CIS Postgraduate Group