Daniel Fryer

STATISTICS PHD | LECTURER | INDEPENDENT CONSULTANT

School of Mathematics and Physics, The University of Queensland

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Complicated data analyses are used in every industry and scientific field, but increasingly with opaque results that are hard to explain and interpret. I work to increase the transparency, honesty, and clarity of complex data analyses, through research, teaching, software tooling and public communication. I enjoy coding in R, Python, Julia and SQL, and I always aim to apply theoretical methods to overcome real world challenges. Aside from research, I practice software engineering techniques and data integration, and I teach various courses in both statistics and computer science, including meta-analysis and database design. I currently serve as a council member and Communications Officer at the Statistical Society of Australia, as well as technical sub-editor at the Australian & New Zealand Journal of Statistics.

Education

The University of Queensland   *Saint Lucia, QLD, AU*
PHD | STATISTICS AND MATHEMATICS   *2019–Current*
- Explaining, exploring and clustering with non-linear and complex data

La Trobe University   *Melbourne, VIC, AU*
BACHELOR OF SCIENCE | MATHEMATICS AND STATISTICS WITH FIRST CLASS HONOURS (WEIGHTED AVERAGE MARK: 97)   *2014–2018*
- Random fields: Long memory, and R for cosmology

Experience

Monash University   *Melbourne, Victoria, AU*
RESEARCH ASSISTANT   *2020–Current*
- Politics & International Relations

The University of Queensland   *Saint Lucia, QLD, AU*
CASUAL INSTRUCTOR | DEPARTMENT OF MATHEMATICS AND PHYSICS   *2020–Current*
- Master's of Data Science project support

University of Auckland   *Auckland, Auckland Region, NZ*
COURSE INSTRUCTOR | NEW ZEALAND SOCIAL STATISTICS NETWORK   *2018–Current*
- Introduction to SQL for academics and professionals

La Trobe University   *Melbourne, VIC, AU*
SESSIONAL LECTURER | DEPARTMENT OF MATHEMATICS AND STATISTICS   *2018–Current*
- Master's level meta-analysis | Master's level database fundamentals

The University of Queensland   *Saint Lucia, QLD, AU*
RESEARCH ASSISTANT | DEPARTMENT OF MATHEMATICS AND PHYSICS   *2019–2019*
- Digital phenotyping for transdiagnostic clustering and psychiatric prognosis

La Trobe University   *Melbourne, VIC, AU*
RESEARCH SOFTWARE DEVELOPER | DEPARTMENT OF MATHEMATICS AND PHYSICS   *2018–2019*
- Spherical data analysis in R on the HEALPix grid

Service

Statistical Society of Australia   *Melbourne, VIC, AU*
COUNCIL MEMBER | COMMUNICATIONS OFFICER   *2020–Current*

Dimension Reduction and Meta Analysis Research Group   *Melbourne, VIC, AU*
MEMBER | WEBSITE MAINTAINER   *2017–Current*

Australian & New Zealand Journal of Statistics   *Melbourne, Victoria, AU*
PEER REVIEWER (1 ARTICLE)   *2020–2020*

Campus Consultancy   *Melbourne, VIC, AU*
SENIOR MENTOR AND FOUNDING MEMBER   *2017–2019*

Research School on Statistics and Data Science	*Melbourne, VIC, AU*
PEER REVIEWER (3 ARTICLES)	*2019–2019*
Journal of Open Source Software	*Melbourne, VIC, AU*
PEER REVIEWER (1 ARTICLE)	*2019–2019*
Victorian State Emergency Services	*Melbourne, VIC, AU*
EMERGENCY FIRST RESPONDER	*2017–2018*
La Trobe University Mathematics and Statistics Society	*Melbourne, VIC, AU*
VICE PRESIDENT	NEWSLETTER EDITOR	*2016–2016*
In2Science	*Melbourne, VIC, AU*
MENTOR	MATHEMATICS SCHOOL OUTREACH	*2015–2015*

Awards

Future Superstars Award	*Saint Lucia, QLD, AU*
THE UNIVERSITY OF QUEENSLAND, FACULTY OF SCIENCE	*2021*
Vice Chancellor's Sessional Teaching Award	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, NA	*2020*
**Three Minute Thesis	People's Choice**	*Saint Lucia, QLD, AU*
THE UNIVERSITY OF QUEENSLAND, SCHOOL OF MATHEMATICS AND PHYSICS	*2020*
**Pitching Research Competition	Best Written and Oral Pitch University-Wide**	*Saint Lucia, QLD, AU*
THE UNIVERSITY OF QUEENSLAND, BUSINESS SCHOOL	*2019*
Pro Vice Chancellor's Commendation (awarded four times)	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, UNIVERSITY-WIDE	*2018*
**Department Prize in Fourth Year Statistics	Best Performing Student**	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, DEPARTMENT OF MATHEMATICS AND STATISTICS	*2018*
**David Myer's Medallion	La Trobe's most prestigious undergraduate award**	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, COLLEGE OF SCIENCE, HEALTH AND ENGINEERING	*2018*
**Silver Scholarship	Community Involvement and Dedication to Mathematics**	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY STUDENT UNION, UNIVERSITY-WIDE	*2017*
**Department Prize in Third Year Statistics	Best Performing Student**	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, DEPARTMENT OF MATHEMATICS AND STATISTICS	*2016*
Prof CJ Eliezer Prize in Second Year Mathematics| Best Performing Student	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, DEPARTMENT OF MATHEMATICS AND STATISTICS	*2015*
**Prof Jim Morrison Prize in Chemistry	Best Performing Student (awarded twice)**	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, SCHOOL OF MOLECULAR SCIENCES	*2014*
**La Trobe Award in Community Engagement	Volunteer Efforts**	*Melbourne, VIC, AU*
LA TROBE UNIVERSITY, UNIVERSITY-WIDE	*2014*

Publications

Pipeline

HD Nguyen, D Fryer, G McLachlan	*arXiv*
ORDER SELECTION WITH CONFIDENCE FOR FINITE MIXTURE MODELS	*2021*
D Fryer, I Strümke, H Nguyen	*arXiv*
SHAPLEY VALUES FOR FEATURE SELECTION: THE GOOD, THE BAD, AND THE AXIOMS	*2021*
D Fryer, I Strümke, H Nguyen	*arXiv*
EXPLAINING THE DATA OR EXPLAINING A MODEL? SHAPLEY VALUES THAT UNCOVER NON-LINEAR DEPENDENCIES	*2020*
M Terrett, D Fryer, T Doody, H Nguyen, P Castellazzi	*arXiv*
SARGDV: EFFICIENT IDENTIFICATION OF GROUNDWATER-DEPENDENT VEGETATION USING SYNTHETIC APERTURE RADAR	*2020*

HD Nguyen, D Fryer *arXiv*

A BINARY-RESPONSE REGRESSION MODEL BASED ON SUPPORT VECTOR MACHINES *2020*

Published

D Fryer, M Li, A Olenko *The R Journal*

RCOSMO: R PACKAGE FOR ANALYSIS OF SPHERICAL, HEALPIX AND COSMOLOGICAL DATA *2020*

D Fryer, M Li, A Olenko *Astrophysics Source Code Library, ascl:*

RCOSMO: COSMIC MICROWAVE BACKGROUND DATA ANALYSIS *2020*

D Fryer, I Strümke, H Nguyen *Frontiers in Applied Mathematics and Statistics*

SHAPLEY VALUE CONFIDENCE INTERVALS FOR ATTRIBUTING VARIANCE EXPLAINED

D Fryer, H Nguyen, P Castellazzi

K-MEANS ON POSITIVE DEFINITE MATRICES, AND AN APPLICATION TO CLUSTERING IN RADAR IMAGE SEQUENCES *2020*

D Fryer, A Olenko *Research School on Statistics and Data Science*

SPHERICAL DATA HANDLING AND ANALYSIS WITH R PACKAGE RCOSMO *2019*

D Fryer, H Nguyen, P Orban *Journal of Open Source Software*

STUDENTLIFE: TIDY HANDLING AND NAVIGATION OF A VALUABLE MOBILE-HEALTH DATASET *2019*

Presentations and events

IEEE Symposium Series on Computational Intelligence *Brisbane*

K-MEANS ON POSITIVE DEFINITE MATRICES, AND AN APPLICATION TO CLUSTERING IN RADAR IMAGE SEQUENCES *2020*

• Talk and conference publication

Statistical Society of Australia *Melbourne*

EARLY CAREER INDUSTRY SHOWCASE, CHIEF EVENT ORGANISER *2020*

• 6 panelists, 180 attendees https://vimeo.com/ssavic/20200922-showcase

Victorian Research Students Meeting in Probability and Statistics *Melbourne*

EXPLAINING, EXPLORING AND CLUSTERING WITH NON-LINEAR AND COMPLEX DATA *2020*

• Building the Melbourne research student community

UQ Research Video Pitch *St Lucia*

FORECASTING PSYCHIATRIC SYMPTOMS WITH DIGITAL PHENOTYPING *2020*

• First prize. youtu.be/h-m8QwLq29Y

UQ Three Minute Thesis Presentation *St Lucia*

MACHINE LEARNING: THE BIG BLACK BOX *2020*

• People's choice award. vimeo.com/434959101

RSSDS2019 Poster Presentation *Melbourne*

SPHERICAL DATA HANDLING AND ANALYSIS WITH R PACKAGE RCOSMO *2019*

• Poster and Springer book chapter

UseR!2018 Conference *Brisbane*

COSMIC MICROWAVE BACKGROUND DATA ANALYSIS WITH R *2018*

• R package published on CRAN. https://youtu.be/7KBsguOlEHs

Australian Mathematical Sciences Institute Summer Research School *Melbourne*

FUNCTIONALS OF LONG-RANGE DEPENDENT FIELDS AND HERMITE DISTRIBUTIONS *2017*

• Summer Research Scholarship recipient. vrs.amsi.org.au/daniel-vidali-fryer-2017/

UNSW Statistical Challenges in Astronomy *Sydney*

LIGHTING TALK: A NEW R PACKAGE FOR COSMOLOGY *2017*

• Fostering new collaborations in statistics and astronomy