

Daniel Fryer

STATISTICS PHD | LECTURER | INDEPENDENT CONSULTANT

School of Mathematics and Physics, The University of Queensland

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I'm an early career PhD data scientist, and I'm in the rare position of having combined a rigorous understanding of applied statistics with strong skills in computer science, software engineering, and collaboration on technical projects. I have worked independently, as a researcher, project leader, and software developer, on multiple large exploratory and confirmatory analysis projects, and on research software development projects. I am great at working in messy unprocessed "big" data scenarios, involving local and cloud based SQL database management systems. I liaise with statisticians, scientists, medical professionals, and executives, and I work with local and international partners, to deliver analysis and preprocessing pipelines that deliver security, confidentiality, interactivity / usability, modularity / reusability, documentation, collaboration, and machine learning / statistical rigour. I have written many private and open source R packages, two of which are currently on CRAN. I teach meta-analysis to Master's students, and I teach database design and SQL programming to professional statisticians and social scientists. I also currently serve as a council member and deputy Communications Officer at the Statistical Society of Australia, as well as technical sub-editor at the Australian & New Zealand Journal of Statistics. In my spare time I enjoy camping, video games, exercise, tasty food, and good conversation.

Education

The University of Queensland

PHD | STATISTICS AND MATHEMATICS

- Explaining, exploring and clustering with non-linear and complex data

Saint Lucia, QLD, AU

2019–Current

La Trobe University

BACHELOR OF SCIENCE | MATHEMATICS AND STATISTICS WITH FIRST CLASS HONOURS (WEIGHTED AVERAGE MARK: 97)

- Random fields: Long memory, and R for cosmology

Melbourne, VIC, AU

2014–2018

Experience

The University of Queensland

RESEARCH ASSISTANT | DEPARTMENT OF MATHEMATICS AND PHYSICS

- AI for Pandemics and IDDO/ISARIC partner program

Melbourne, Victoria, AU

2021–Current

Monash University

RESEARCH ASSISTANT

- Politics & International Relations

Melbourne, Victoria, AU

2020–Current

The University of Queensland

CASUAL INSTRUCTOR | DEPARTMENT OF MATHEMATICS AND PHYSICS

- Master's of Data Science project support

Saint Lucia, QLD, AU

2020–Current

University of Auckland

COURSE INSTRUCTOR | NEW ZEALAND SOCIAL STATISTICS NETWORK

- Introduction to SQL for academics and professionals

Auckland, Auckland Region, NZ

2018–Current

La Trobe University

SESSIONAL LECTURER | DEPARTMENT OF MATHEMATICS AND STATISTICS

- Master's level meta-analysis | Master's level database fundamentals

Melbourne, VIC, AU

2018–Current

The University of Queensland

RESEARCH ASSISTANT | DEPARTMENT OF MATHEMATICS AND PHYSICS

- Digital phenotyping for transdiagnostic clustering and psychiatric prognosis

Saint Lucia, QLD, AU

2019–2019

La Trobe University

RESEARCH SOFTWARE DEVELOPER | DEPARTMENT OF MATHEMATICS AND PHYSICS

- Spherical data analysis in R on the HEALPix grid

Melbourne, VIC, AU

2018–2019

Service

Statistical Society of Australia COUNCIL MEMBER COMMUNICATIONS OFFICER	Melbourne, VIC, AU 2020–Current
Dimension Reduction and Meta Analysis Research Group MEMBER WEBSITE MAINTAINER	Melbourne, VIC, AU 2017–Current
Australian & New Zealand Journal of Statistics TECHNICAL SUB-EDITOR	Melbourne, Victoria, AU 2020–2020
Campus Consultancy SENIOR MENTOR AND FOUNDING MEMBER	Melbourne, VIC, AU 2017–2019
Research School on Statistics and Data Science PEER REVIEWER (3 ARTICLES)	Melbourne, VIC, AU 2019–2019
Journal of Open Source Software PEER REVIEWER (1 ARTICLE)	Melbourne, VIC, AU 2019–2019
Victorian State Emergency Services EMERGENCY FIRST RESPONDER	Melbourne, VIC, AU 2017–2018
La Trobe University Mathematics and Statistics Society VICE PRESIDENT NEWSLETTER EDITOR	Melbourne, VIC, AU 2016–2016
In2Science MENTOR MATHEMATICS SCHOOL OUTREACH	Melbourne, VIC, AU 2015–2015

Awards

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

Publications

Pipeline

D Fryer, I Strümke, H Nguyen	<i>arXiv</i>
SHAPLEY VALUES FOR FEATURE SELECTION: THE GOOD, THE BAD, AND THE AXIOMS	2021
HD Nguyen, D Fryer, G McLachlan	<i>arXiv</i>
ORDER SELECTION WITH CONFIDENCE FOR FINITE MIXTURE MODELS	2021
M Terrett, D Fryer, T Doody, H Nguyen, P Castellazzi	<i>arXiv</i>
SARGDV: EFFICIENT IDENTIFICATION OF GROUNDWATER-DEPENDENT VEGETATION USING SYNTHETIC APERTURE RADAR	2020
HD Nguyen, D Fryer	<i>arXiv</i>
A BINARY-RESPONSE REGRESSION MODEL BASED ON SUPPORT VECTOR MACHINES	2020

Published

D Fryer, M Li, A Olenko	<i>Astrophysics Source Code Library,</i>
RCOSMO: COSMIC MICROWAVE BACKGROUND DATA ANALYSIS	<i>ascl:</i>
	2020
D Fryer, M Li, A Olenko	<i>The R Journal</i>
RCOSMO: R PACKAGE FOR ANALYSIS OF SPHERICAL, HEALPIX AND COSMOLOGICAL DATA	2020
D Fryer, I Strümke, H Nguyen	<i>Frontiers in Applied Mathematics</i>
SHAPLEY VALUE CONFIDENCE INTERVALS FOR ATTRIBUTING VARIANCE EXPLAINED	<i>and Statistics</i>
	2020
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	<i>Research School on Statistics and</i>
SPHERICAL DATA HANDLING AND ANALYSIS WITH R PACKAGE RCOSMO	<i>Data Science</i>
	2019
D Fryer, H Nguyen, P Orban	<i>Journal of Open Source Software</i>
STUDENTLIFE: TIDY HANDLING AND NAVIGATION OF A VALUABLE MOBILE-HEALTH DATASET	2019
DV Fryer, I Strumke, H Nguyen	<i>PeerJ Computer Science</i>
MODEL INDEPENDENT FEATURE ATTRIBUTIONS: SHAPLEY VALUES THAT UNCOVER NON-LINEAR DEPENDENCIES	2021

Presentations and events

IEEE Symposium Series on Computational Intelligence	<i>Brisbane</i>
K-MEANS ON POSITIVE DEFINITE MATRICES, AND AN APPLICATION TO CLUSTERING IN RADAR IMAGE SEQUENCES	2020
• Talk and conference publication	
Statistical Society of Australia	<i>Melbourne</i>
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	<i>Melbourne</i>
EXPLAINING, EXPLORING AND CLUSTERING WITH NON-LINEAR AND COMPLEX DATA	2020
• Building the Melbourne research student community	
UQ Research Video Pitch	<i>St Lucia</i>
FORECASTING PSYCHIATRIC SYMPTOMS WITH DIGITAL PHENOTYPING	2020
• First prize. youtu.be/h-m8QwLq29Y	
UQ Three Minute Thesis Presentation	<i>St Lucia</i>
MACHINE LEARNING: THE BIG BLACK BOX	2020
• People's choice award. vimeo.com/434959101	
RSSDS2019 Poster Presentation	<i>Melbourne</i>
SPHERICAL DATA HANDLING AND ANALYSIS WITH R PACKAGE RCOSMO	2019
• Poster and Springer book chapter	
UseR!2018 Conference	<i>Brisbane</i>
COSMIC MICROWAVE BACKGROUND DATA ANALYSIS WITH R	2018
• R package published on CRAN. https://youtu.be/7KBsguOlEHs	

Australian Mathematical Sciences Institute Summer Research School

FUNCTIONALS OF LONG-RANGE DEPENDENT FIELDS AND HERMITE DISTRIBUTIONS

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

UNSW Statistical Challenges in Astronomy

LIGHTING TALK: A NEW R PACKAGE FOR COSMOLOGY

- Fostering new collaborations in statistics and astronomy

Melbourne

2017

Sydney

2017