Matthew Sainsbury-Dale
Curriculum Vitae

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EDUCATION

2020 – PRESENT	**Doctor of Philosophy** *University of Wollongong*
2015 – 2019	**Bachelor of Mathematics Advanced** FIRST CLASS HONOURS *University of Wollongong*

WORK EXPERIENCE

SEP 2021 – MAR 2022   (FT)

University of Wollongong
Associate Research Fellow

Working with Dr. Andrew Zammit-Mangion and Dr. Raphael Huser, I conducted research into the use of neural networks for parameter estimation in statistical models.

MAR 2019 – PRESENT   (PT)

University of Wollongong
Tutor

Mathematics and statistics tutor for several subjects. I have also created the official subject notes for an Honours-level statistics subject.

NOV 2018 – MAR 2019   (FT)

Centre for Bioinformatics and Biometrics
Intern

As part of this summer internship, I conducted statistical analyses of single-site trials for the National Variety Trials (NVT) program. Under the guidance of Prof. Brian Cullis, I wrote a report that provided a statistical explanation of a peculiarity in crop-yield estimates that had been the source of confusion for those involved with the NVT.

SKILLS

Personal traits

Excellent written and oral communication skills. Experience working in team situations, but also a highly self-motivated learner able to work alone. Take pride in producing work that is to the best of my ability.

Statistical modelling

In addition to the core statistical methodology taught in my bachelor degree, my research has made heavy use of hierarchical models; generalised linear mixed models for non-Gaussian data; dimension reduction techniques for coping with massive data sets, particularly via basis function representations; basic areal units for facilitating spatial change-of-support; and deep neural networks for parameter estimation.

Programming

Highly proficient with `R` and `Julia`, and experience using `Python` and `C++`. Able to quickly learn and use unfamiliar programming languages and packages. Experience building websites with `Hugo` and `HTML`.

PUBLICATIONS

Sainsbury-Dale, M., Zammit-Mangion, A., Cressie, N. (2021) "Modelling, fitting, and prediction with non-Gaussian spatial and spatio-temporal data using FRK." *arXiv:2110.02507*

Cressie, N., **Sainsbury-Dale, M.,** Zammit-Mangion, A. (2021). "Basis-function models in spatial statistics." Annual Review of Statistics and Its Application, in press.

OPEN-SOURCE SOFTWARE

FRK, an R package for carrying out spatial and spatio-temporal fixed rank kriging on massive datasets. It caters for both Gaussian and non-Gaussian data, and it facilitates spatial change-of-support. Available on CRAN.

testarguments, an R package which automates the testing of any user-defined prediction algorithm over an arbitrary number of arguments. Available on CRAN.

OTHER

CONFERENCES	Presentation at the Australian and New Zealand Statistical Conference – 2021
PEER REVIEW	Peer review of an article for the JCGS – 2021

REFEREES

Dr. Andrew Zammit-Mangion

POSITION	Senior Research Fellow
INSTITUTION	NIASRA
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Prof. Brian Cullis

POSITION	Senior Professor
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