Nathan Cunningham

CONTACT INFORMATION

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SUMMARY

Self-motivated final-year PhD student in statistics with experience working in data science and a proven track record of communicating complex statistical analyses to general audiences.

EDUCATION

University of Warwick, University of Oxford
PhD, Oxford-Warwick Statistics Programme **October 2015 - September 2019**

- Thesis Topic: *Particle Monte Carlo Methods to Integrate Multiple Datasets with Applications to Cancer Subtype Identification*
- Developed a novel algorithm for identifying risk clusters in cancer patients, with demonstrated application to real-life, complex data.
- Focused on software development with an emphasis on computational performance.
- Produced ParticleMDI.jl, a high-performance Julia package implementing the algorithm.
- Developed techniques for improving computational performance by up to an order of magnitude over traditional approaches with no impact on accuracy.
- Modules taken: Machine learning, computational statistics, stochastic simulation, scalable methods and analysis of large complex data.
- Taught undergraduate tutorials in statistical programming.

University College Dublin
MSc, Statistics **September 2011 - August 2012**

- Achieved first class honours degree, GPA: 3.9
- Dissertation Topic: *Model-based Clustering with Application to Fossil Pollen Spectra.*
- Developed a novel method for performing constrained model-based cluster analysis with an implementation in R.
- Taught undergraduates tutorials in statistics.

BSc, Economics & Finance **September 2008 - June 2011**

- Achieved first class honours degree, GPA: 3.69

PROFESSIONAL EXPERIENCE

Alan Turing Institute, British Library, Kings Cross, London
Data Science Research Assistant **October 2018 - April 2019**

- Implemented machine learning models for prediction of patient readmission for NHS Scotland.
- Contributed expertise in coding in R for machine learning and visualisation of results using ggplot2.
- Achieved improved performance over previously implemented models.
- Developed an R package to be deployed for use in practice.

Economic and Social Research Institute, Whitaker Square, Dublin 2, Ireland
Data Analyst, Health Research and Information Division **September 2012 - September 2015**

- Provided statistical expertise on the national statistics on hospital admissions and births, from collection and validation to analysis and dissemination.
- Developed machine learning models for the prediction of patient mortality.
- Informed government policy with analysis on potential costs of implementing a universal health insurance system in Ireland, requiring communication of analytical results to non-statisticians.
- Organised regular social events as part of the sports & social committee.

Honours and Awards

Turing Enrichment Scholarship 2017/18

- Selected as an enrichment student for the academic year of 2017/18, providing the opportunity to work on my PhD. within the Alan Turing Institute, the U.K.'s national center for data science and artificial intelligence.

Miriam Hederman O'Brien Prize 2016

- Shortlisted for award recognising outstanding contributions to Irish fiscal policy for involvement in a report examining the potential costs of implementing universal health insurance in Ireland.

Royal Statistical Society/Significance Magazine Young Statistical Writer award 2014

- Selected as a finalist for *'Does Christmas really come earlier every year?'*. Presented on work at the conference of the Royal Statistical Society and subsequently discussed work on a number of radio shows.

Selected Publications

Journal Articles

- N. Cunningham, J. Griffin & D. Wild. 2019. *particleMDI - Particle Monte Carlo methods for the cluster analysis of multiple datasets with applications to cancer subtype identification* (submitted)
- N. Cunningham, J. Griffin, D. Wild & A. Lee. 2019. *particleMDI: a Julia Package for the Integrative Cluster Analysis of Multiple Datasets* Bayesian Statistics: New Challenges and New Generations 2018 (in publication)
- A. Brick, S. Smith, C. Normand, S. O'Hara, E. Droog, E. Tyrrell, N. Cunningham & B. Johnston. 2017. *Costs of formal and informal care in the last year of life for patients in receipt of specialist palliative care.* Journal of Palliative Medicine.

Articles

- N. Cunningham. 2016. *Is Christmas really coming earlier? Maybe, but not as early as August.* Significance Magazine.
- N. Cunningham. 2016. *Lost in the crowd? A statistician explains how to find your friends at a music festival.* Significance Magazine.

Reports

- M.A. Wren, S. Connolly & N. Cunningham. 2015. *An examination of the potential costs of universal health insurance in Ireland.* ESRI Research Series.

Software Proficiency

- Statistical Packages: extensive experience with R, Julia, have developed packages for each. Experience with Python, Matlab, SPSS, Stata, some experience with C++, CUDA, SQL, Google Cloud, AWS, Azure.
- Applications: extensive experience with Git, LaTeX, Microsoft Word, Microsoft Excel
- Visualisation: extensive experience with ggplot2, some experience with D3

Other Interests

- I enjoy writing informal articles on data science in the real world, many of which have been picked up in the media: I discussed my article on how to find friends at music festivals with Tim Harford for the More or Less podcast; a regular piece on whether Christmas comes earlier every year has featured across UK and Irish newspapers, including The Times; and I have discussed my findings on a number of radio interviews.
  An article I wrote for my personal blog, 'i before e except after...w?' was featured in the Washington Post.
  I gave a talk on one of my other blog posts, 'When did the golden age of The Simpsons end?', at the DataBeers Dublin event.
- Other than statistics I enjoy playing music. I have been playing guitar and traditional Irish fiddle since my early teens and have performed live on a number of occasions.