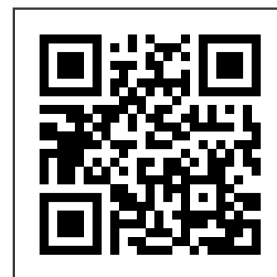


Lincoln Colling

DATA SCIENTIST, SOFTWARE ENGINEER, LECTURER (ASSISTANT PROFESSOR) IN QUANTITATIVE METHODS AND SCIENTIFIC COMPUTING

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- Software engineer and data scientist with a passion for building well tested and high performance code.
- Proven leadership ability with a track record of delivering large and complex research projects.
- Over 10 years of experience in research software engineering and data science in academia.
- Polyglot programmer who has worked in Python, R, JavaScript, Rust, and Go.
- Looking for roles in Software Engineering, Data Science, and Data Engineering.

Experience

University of Sussex

Brighton, UK

Lecturer (Assistant Professor)

2019–Present

- **Statistical Software Development:** Projects including an R Package and web-app (React / Golang) for Bayesian analysis.
- Interactive statistics demonstrations using Rust and WASM
- **Curriculum Design and Delivery:** Designed and delivered Masters level courses on Advanced Bayesian Statistics and Scientific Computing for Cognitive Neuroscience. Designed and delivered the school's first undergrad course in R.
- **Leadership:** Deputy Director of Doctoral Studies and Open Science Lead, championing reproducible research practices.
- Early Career Researcher Lead on University-level steering group. Research group leader managing a team of researchers.
- Led a teaching team of 2 lecturers and 7 doctoral tutors delivering a core undergraduate module to over 550 students.
- **Data and statistics consulting:** Data scientist on large COVID-19 project, managing and analysing a data-set with over a million data points.
- **Technical Skills:** R, Matlab, Python, React, Rust, Go, WASM, Statistics, Bayesian Statistics

Nested Minds

Remote

Software Engineer

June 2021–Sep 2021

- Drove an initiative to improve company-wide code testing practices
- Improved user experience on AI video director system by implementing live-streaming abilities
- Built data pipeline for community modelling system responsible for making decisions related to credit and loans.
- A trusted advisor who was frequently asked to consult on and review code across multiple business units.
- **Technical Skills:** Python, test-driven development, Flask, Spatial Data, Machine Learning, websockets

University of Cambridge

Cambridge, UK

Senior Research Scientist

2015–2019

- **Project management:** Successfully coordinated a large research project with over 30 staff from 17 universities to deliver one of the largest projects of its kind to date (see more at git.colling.net.nz/attentional_snarc).
- **Data science:** Performed data analysis on several projects including projects using brain imaging and multivariate time series data
- Built and deployed statistical models, including Bayesian models. Implemented containerised reproducible and portable analysis pipelines.
- **Technical Skills:** R, Matlab, Python, docker, Linux, Bayesian Statistics

ARC Centre of Excellence in Cognition and it's Disorders

Sydney, AU

Research Scientist

2014–2015

- Used supervised machine learning models (e.g., SVM) to understand the representational geometry of musical pitch in the brain
- **Technical Skills:** R, Matlab, machine learning

Selected Open Source Projects

Bayesplay web app

<http://bayesplay.colling.net.nz>

React / WASM (golang) Web app for performing Bayesian Statistical Analyses

- Webapp for specifying, computing, and visualising Bayesian statistical models
- All computations performed on the client side in WebAssembly (Go) using a statistical library that I developed.
- **Technical skills:** Javascript / React, WebAssembly, Go, UI Testing (cypress)

Bayesplay R package

<https://github.com/bayesplay/bayesplay>

R Package for performing Bayesian Statistical Analyses

- Provides a general purpose modelling syntax for defining priors and likelihoods and for computing and visualising posteriors and Bayes factors.
- It has also been incorporated into the popular JASP statistics package (jasp-stats.org)
- Well tested library with 100% test coverage
- **Technical skills:** R, package development, TDD, CI/CD, Docker, GitHub actions.

Pyby Python Package

<https://github.com/ljcolling/pyby>

Python / Rust package for simulation based power analysis

- Performance focused partial rewrite of the open source BFDA R-package.
- The BFDA Package makes heavy use of simulations that can take several minutes to run.
- I implemented a new algorithm for the simulations to reduce time complexity of the simulation procedure.
- Rewrote the computational core in Rust to increase the performance, and reduce simulation time to < 2 seconds
- **Technical skills:** Rust, Python, algorithms.

Skills

Programming languages Python (Pandas, NumPy, Scikit, Tensorflow), R (dplyr, ggplot2, brms), Javascript (React, Node)

Rust (including for building high performance python and R libraries), **Go**
Functional programming, OOP

Quantitative methods Applied statistician with experience in both frequentist and Bayesian methods.
Mathematical modeling of cognitive processes. Analysis of complex time series data.

DevOps Docker, GitHub Actions, CI/CD

Miscellaneous Linux, Shell (Bash), git, Test Driven Development

Academic

EDUCATION

Macquarie University

PhD in Human Cognitive and Brain Sciences

Sydney, Australia

2007–2012

University of Auckland

Master of Science and Bachelor of Science

Graduated MSc with First Class Honours

Auckland, New Zealand

2000–2006

SCIENTIFIC PUBLICATIONS Author of 20 scientific publications in scientific journals, conference proceedings, and scholarly books.

Selected recent publications include:

- 2022** Return of the Math: Markov blankets, dynamical systems theory, and the bounds of the mind in *Behavioural and Brain Sciences*
Investigating the effectiveness of the open data policy at psychological science through computational reproducibility in *Psychological Science*
- 2021** No evidence for a core deficit in developmental dyscalculia or mathematical learning disabilities in *Journal of Child Psychology and Psychiatry*
Predictors of mathematics in primary school: Magnitude comparison, verbal and spatial working memory measures in *Developmental Science*
Statistical inference and the replication crisis in *Review of Philosophy and Psychology*
- 2020** Registered replication report on Fischer, Castel, Dodd, and Pratt (2003) in *Advances in Methods and Practices in Psychological Science*
- 2019** From symbols to icons: The return of resemblance in the cognitive neuroscience revolution in *Synthese*
Justify your alpha in *Nature Human Behavior*