Sam A. **Whitaker**

POSTGRADUATE RESEARCHER · PHD CANDIDATE

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A final year postgraduate research student in Statistics at Newcastle University, with lecturing experience within the School of Mathematics, Statistics and Physics; demonstrating an understanding of complex mathematical methods and strong communication skills. Aspiring to use, and develop further, an existing skill set to positively impact research and development within an organisation. Looking to gain valuable experience as part of a dynamic workforce for an aspiring career in data sciences.

Education

PhD in Statistics (Full time)
Sep 2019 - Present

NEWCASTLE UNIVERSITY - NEWCASTLE, UK
Funded by the School of Mathematics, Statistics and Physics
Title: Scalable sequential inference schemes for complex epidemic models
Jointly supervised by Dr. Andrew Golightly and Dr. Colin Gillespie

Developed complex, yet computationally efficient, statistical inference schemes used on large-scale disease outbreak data. Inferred model parameter values used to generate accurate forecasts of future values of the epidemic. Applications of methodology included Ebola and Covid-19.

- Developed a Sequential Monte Carlo (SMC) scheme for mass action stochastic epidemic models with time varying infection rates, methodology tested on synthetic data and applied to two real data sets;
- Methodology and applications prepared and presented to statistics seminar group consisting of colleagues and peers, and at Newcastle University's Postgraduate Conference 2021;
- Further developments included a Linear Noise Approximation (LNA) suitable for surveillance data and leveraging cloud computing techniques to perform on-demand algorithm scaling;
- Co-authored; "Accelerating Bayesian inference for stochastic epidemic models using incidence data" (Published 12th October 23 in Statistics and Computing Journal). Currently writing; "Fast and efficient sequential Bayesian inference for stochastic epidemic models".

Key Skills

- Advanced programming skills highlighted by the development of code for complex inference schemes using a variety of languages, including R and Python;
- Strong communication and presentation skills with the ability to portray novel and complex mathematical ideas to a non-specialist audience, developed through numerous seminar and conference talks;
- Ability to provide insight into complex data sets using innovative adaptations of existing methodologies;
- Experience working in a collaborative team, both in-person and remotely, generating ideas through whiteboarding sessions and online collaborative tools;
- Project organisational skills including maintaining high levels of security and version control using industry standard tools such as GitHub. Delivering timely project milestones for reviews and presentations throughout the project.

MMathStat (Hons) Mathematics and Statistics, First Class (Hons)
Sep 2015 - Jun 2019

NEWCASTLE UNIVERSITY - NEWCASTLE, UK

Relevant Modules

- **MMathStat Project**
  Fourth Year, Obtained Mark - 78%
  Modelling brain injury recovery using Gaussian Processes
- **Time Series**
  Third Year, Obtained Mark - 83%

- **Big Data Analytics**
  Third Year, Obtained Mark - 94%
  Supervised/unsupervised learning techniques in big data.
- **Stochastic Modelling**
  Second Year, Obtained Mark - 90%

Key skills

- Ability to understand and apply complex statistical models to large and complex datasets, presenting findings to audiences of varying statistical expertise using an array of media;
- Proficiency in managing sensitive data, applying best practices in reporting and security;
- Excellent report writing and IT skills demonstrated by the research of complex statistical methods and their applications to real life data in the MMathStat project, with results presented in a dissertation.

A-level
Sep 2013 - Jun 2015

THOMAS WHITHAM SIXTH FORM - BURNLEY, UK
A* - Mathematics   **B** - Chemistry   **B** - Physics

Employment and Experience

Lecturer in Statistics
NEWCASTLE UNIVERSITY - NEWCASTLE, UK

Mid-PhD lecturing opportunity within the School of Mathematics, Statistics and Physics. Responsible for creating, managing and delivering a multitude of statistics modules for students reading all years including postgraduate students. Students were assessed and graded to the university's standard.

- Created engaging material for multiple modules to be delivered in lectures, with complementary lecture notes and accessible online resources;
- Managed a large and varied workload, delegating appropriate tasks to postgraduate students. Maintained an excellent standard via regular reviews with markers;
- Designed examination material working closely with senior lecturers, determined the assessment criteria and moderated the results;
- Received excellent evaluations from both students and colleagues commenting on the level of teaching and materials with special mentions from senior lecturers and head of Statistics.

Key skills

- Collaboration skills used whilst working with a variety of people, ranging from students to senior lecturers, to provide module material which was both engaging and accessible;
- Organisational skills used to manage large cohort of students, ensuring routine administrative tasks completed alongside lecture preparation and additional student support;
- Demonstrated a high level of understanding of complex mathematical material by being able to convey difficult concepts in a variety of ways, both in lectures and in one-to-one support sessions;
- Ability to manage a large workload whilst maintaining an excellent standard of work.

Marker, Tutor and tutorial helper
Sep 2019 - Present
NEWCASTLE UNIVERSITY - NEWCASTLE, UK
Worked efficiently to mark undergraduate assignments (both paper and online) with strict deadlines and aided in the running of in-person tutorial sessions within the School of Mathematics, Statistics and Physics. Provided comprehensive mathematical and statistical advice to people of varied levels of understanding and ability to help solve a range problems.

Maths, Stats and Physics Peer Mentor (Voluntary position)
Sep 2016 - Jun 2018
NEWCASTLE UNIVERSITY - NEWCASTLE, UK
Member of the peer mentor scheme within the School of Mathematics, Statistics and Physics at Newcastle University providing key support to a group of first year students. Acted as the first point of call for information regarding all aspects of university life.

Sales assistant
Jul 2013 - Aug 2015
SPORTS DIRECT - BURNLEY, UK
Part time position occupied during A-level study. Worked as part of a customer service team to provide a high standard retail experience to a wide range of customers.

Software and Technologies

Programming languages:

R:	▰▰▰▰▰
Python:	▰▰▰▰▱
Matlab:	▰▰▰▰▱
LaTeX:	▰▰▰▰▰

Software proficiencies:

MS Office:	▰▰▰▰▱
Linux:	▰▰▰▰▱
MacOS:	▰▰▰▰▰
Windows:	▰▰▰▰▱

Other tools:

Git	▰▰▰▰▰
Photoshop	▰▰▰▱▱
Rshiny	▰▰▰▰▱
HTML & CSS	▰▰▰▰▱

Professional Memberships

Royal Statistical Society e-student membership

Hobbies and Interests

Hobbyist wildlife photographer and lover of the outdoors, member and frequent visitor of Wildfowl and Wetlands Trust (WWT) Washington. Fervent interest in technology, including custom build desktop systems and home servers. Avid Burnley Football Club supporter.