Sam A. **Whitaker**

POSTGRADUATE RESEARCHER · PHD CANDIDATE

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A final year postgraduate research student in Statistics at Newcastle University, with experience in tutoring within the School of Mathematics, Statistics and Physics; showcasing an understanding of complex mathematical methods and strong communication skills. Aspiring to use, and develop further, an existing skill set to positively impact the education of undergraduate students. Looking to gain valuable experience in university lecturing for an aspiring career in academia.

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

ACHIEVEMENTS AND AIMS

- 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 include a Linear Noise Approximation (LNA) suitable for surveillance data and leveraging cloud computing techniques to perform on-demand algorithm scaling, allowing for accurate and reliable parameter inferences in large scale scenarios where currently no such scheme exists.

SKILLS ACQUIRED

- Problem solving and analytical skills developed from application of new methodologies to real data scenarios;
- Highly developed collaboration and team working skills with the ability to work confidently and comfortably alongside supervisors demonstrated by the production of a novel bridge construct to be implemented within our SMC scheme;
- Ability to work to deadlines whilst maintaining high quality and well structured work presented to senior members of the department;
- Advanced programming skills highlighted by the development of code for complex inference schemes;
- 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.

MMathStat (Hons) Mathematics and Statistics, First Class (Hons)

Sep 2015 - Jun 2019

NEWCASTLE UNIVERSITY - NEWCASTLE, UK

RELEVANT MODULES

- **Stochastic Modelling**
  Second Year, Obtained Mark - 90%
- **Big Data Analytics**
  Third Year, Obtained Mark - 94%
- **Time Series**
  Third Year, Obtained Mark - 83%
- **MMathStat Project**
  Fourth Year, Obtained Mark - 78%

SKILLS ACQUIRED

- Ability to understand and apply complex statistical models encompassed by the MMathStat curriculum;
- Proficiency in handling and manipulating big data to produce conclusive analyses suitable for reports, presentations and publications;
- 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

Publications

Accelerating Bayesian inference for stochastic epidemic models using incidence data

SUBMITTED TO ARXIV 27.03.23 - AWAITING PUBLICATION

Statistical paper

Fast and efficient sequential Bayesian inference for stochastic epidemic models

IN PROGRESS, PREDICTED SUBMISSION - SEPTEMBER 2023

Scientific paper containing work on SMC scheme including novel bridge construct and two real data applications. Paper in collaboration with Dr. Andrew Golightly and Dr. Colin Gillespie.

Conferences and Training

Newcastle University Postgraduate Conference 2021 — 5th-9th Jul 2021
Newcastle (Virtual)
Attendee and Speaker - Presenting; "Sequential inference schemes for epidemic models with real data applications"

ODSC Europe Virtual Conference 2020 — 18th-19th Sep 2020
Europe (Virtual)
Attendee

Academy for PhD Training in Statistics Week 1 — 16th-20th Dec 2019
University of Cambridge
Attendee

Employment and Experience

Lecturer in Statistics — Jan 2022 - Jan 2023
Newcastle University - Newcastle, UK
Add details about lectureship

Skills acquired

- Add some relevant skills here

Marker 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.

Skills acquired

- Ability to confidently mark assessments to a high standard including the provision of helpful comments and advice;
- Strong understanding of undergraduate course structure and assessment criteria.

Maths Aid Tutor — Sep 2019 - Present
Newcastle University - Newcastle, UK
Provided comprehensive mathematical and statistical advice to people of varied levels of understanding and ability to help solve a range problems.

Skills acquired

- Demonstrated proficiency to coherently explain complex ideas to individuals from a range of scientific backgrounds using a variety of methodologies;
- Ability to provide an approachable and insightful environment to facilitate the learning of students in their undergraduate study.

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.

Achievements and Positions of Responsibility

Maths, Stats and Physics Peer Mentor — 2016 - 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.

Skills acquired

- Ability to take responsibility and effectively communicate with a wide range of people;
- Competently managed and planned material and activities for the scheme including regular meetings and support sessions.

Skills acquired

- Independence and confidence to apply creativity when tasked with creating a new curriculum;
- Leadership and communications skills to organise and deliver new course content.

Skills

Programming languages Proficient in: R, Python, Matlab, LaTeX. Keen to learn and work with other languages
Software skills Proficient in: MS Office products including Excel; Linux, Git, Photoshop
Full UK driving license

Professional memberships

Royal Statistical Society e-student membership