

# Dr. Samuel D. Relton

📍 10.12 Worsley Building, Univ. Leeds, LS2 9NL  
☎ +44 7814374008  
✉ [s.d.relton@leeds.ac.uk](mailto:s.d.relton@leeds.ac.uk)  
🌐 [www.samrelton.com](http://www.samrelton.com)

## EDUCATION

- 2011 – 2014 **Ph.D. Numerical Analysis & Scientific Computing**  
THE UNIV. OF MANCHESTER  
*Research in both matrix theory and efficient algorithm design, including the production of high quality software implementations. Significantly advanced both the theoretical and practical aspects of computing matrix functions, with algorithms implemented in commercial software libraries.*
- 2008 – 2011 **B.Sc. Mathematics 1:1**  
THE UNIV. OF MANCHESTER  
*Graduated top of year group. Received two John Dalton awards, a University of Manchester Outstanding Achievement Award, and a free membership of the Institute for Mathematics and its Applications (IMA).*

## PROFESSIONAL EXPERIENCE

JULY 2017 – PRESENT

The Univ. of Leeds

### *Assoc. Prof. Health Data Science*

Application of machine learning, statistics, and HPC techniques to routinely collected healthcare data directly from hospitals or via NHS Digital and GP datasets. Requires understanding of relevant legal and ethical restrictions on patient data. Interactions with both clinicians and various researchers in a multidisciplinary environment. Wellcome Trust fellow and supervisor of 10 PhD students. N8 Digital Health Lead and Head of the Centre for Healthcare Analytics Research and Translation (CHART) within LIDA Health.

MARCH 2018 – DEC 2018

Anabis

### *Statistical Consultant*

Providing validation of statistical methodology and software implementation on a safety monitoring task applying Variable Life Adjusted Display charts (VLADs) to data from Public Health England.

MARCH 2016 – JUNE 2017

The Univ. of Manchester

### *Postdoctoral Researcher*

Design and implementation of high-performance linear algebra software using OpenMP, MPI, GPU programming, and runtime systems for distributed memory computation. Specific focus on Batched BLAS operations that underpin machine learning calculations. Algorithms implemented in the popular Intel MKL and NVIDIA CuBLAS libraries.

DEC 2014 – DEC 2015

Prozone Sports

### *Statistical Modelling Consultant*

Developing models and metrics to analyse football player performance together with Prof. Ian McHale (Univ. of Liverpool). Combined statistical modelling with network analysis and machine learning to find the factors influencing the success probability of a pass. Involved handling of large datasets using Python, designing effective features from data, and presenting results to a nontechnical audience.

OCT 2014 – MARCH 2016

The Univ. of Manchester

### *Postdoctoral Researcher*

Developing theory and algorithms relating to the understanding and computation of functions of matrices. Numerous projects with the Cheminformatics and Statistics groups in Machine Learning, Data Analysis, and Epidemiology utilising matrix functions.

OCT 2014 – DEC 2014

MathWorks

### *Software Development Consultant*

Replaced a number of MATLAB functions with state-of-the-art implementations based upon my recent research. The resulting software was incorporated into MATLAB 2015b onwards to update the implementation of the `expm`, `logm`, and `sqrtn` functions.

SUMMER 2010 AND 2011

GCHQ – British Government

### *Prototype Software Designer*

Involved stream data mining, geographical data visualization, high-performance computer code, and rigorous testing. Required setup and optimization of a SQL server to store, clean, and analyze data before passing to a browser-based GUI. Each prototype was designed and implemented over a ten week period before being handed over to a full-time staff member.

## PUBLICATIONS

---

*Parkinsonian Hand or Clinician's Eye? Finger Tap Bradykinesia Interrater Reliability for 21 Movement Disorder Experts.*  
J. Parkinson's Disease, 2023.

*Associations with non-persistence with intra-vitreous therapy for neovascular age-related macular degeneration at 24 months.*  
Ophthalmologica, 2023.

*Analysis of an adaptive lead weighted ResNet for multiclass classification of 12-lead ECGs.*  
Physiological Measurement, 2022

*Advanced care planning during the COVID-19 pandemic: ceiling of care decisions and their implications for observational data.*  
BMC Palliative Care, 2021

*Association of heart failure and its comorbidities with loss of life expectancy.*  
Heart, 2021

GOOGLE SCHOLAR <https://bit.ly/2I919SQ>

## FUNDING

---

NIHR Co-I on Programme Grant for Applied Research, £2.6M

NIHR Co-I on AI for Multiple Long-Term Conditions Award, £2.8M

NIHR Co-I on Health Technology Assessment Award, £2.5M

NIHR Co-I on Health Services and Delivery Research Award, £1.3M

NIHR Co-I on Health Services and Delivery Research Award, £660k

NIHR Co-I on Health Technology Assessment Award, £549k

WELLCOME TRUST PI on ISSF fellowship, £50k

## RESEARCH INTERESTS

---

HEALTH SERVICES RESEARCH Using predictive models to understand healthcare services, delivering better patient care and clinical decisions.

AI & STATISTICS Application of complex models to healthcare data, neural network architectures for EHRs.

LINEAR ALGEBRA Theoretical and computational aspects of numerical linear algebra and matrix functions, HPC algorithm design.

## PROFESSIONAL ACTIVITIES

---

TEACHING Module leader for two sections of the MSc Health Data Science and Health Informatics. Involves curriculum design, delivery, and marking for medical statistics, modelling, and artificial intelligence courses.

N8 DIGITAL HEALTH LEAD Community building between N8 universities, organising conferences, training, and research sandpits.

STUDENTS Currently supervising ten PhD students.

PROFESSIONAL SOCIETY President of the Manchester SIAM Student Chapter from 2011–2014, responsible for organizing local and national conferences.

CONFERENCES Organised the inaugural SIAM National Student Chapter Conference (SNSCC) series in the UK. Organised 6 minisymposia at SIAM and IMA sponsored conferences in the UK, USA, and Spain.