

# Matthew Knowles

07794235668 | mattknowles314@gmail.com

## EDUCATION

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### University of Sheffield

*MSc, Statistics with Medical Applications*

Sheffield, UK

September 2022 – Present

- Competing for University of Sheffield Athletics Cross Country Club

### University of York

*MMath (Hons), Mathematics, Grade: 2:1*

York, UK

October 2018 – June 2022

- Focus on Pure Mathematics and Statistics in years 1-3, Specialised in Statistics and Financial Maths in year 4
- Third year project: On Differential Equations in in-host Viral Pathology (70%)
- Fourth year project: Statistical Methods for Resetting Score Targets in Limited-Overs Cricket (72%)
- Recived full colours for representing the university at cricket
- Treasurer and Vice-President for the University of York Men's Cricket Club

## EXPERIENCE

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### Statistical Analyst

*Open Health*

June 2022 – Present

York, UK

- Performed survival analysis in clinical trial data to help support health economic model development
- Gave talks about my work both internally and to clients
- Supported the delivery of indirect treatment comparissons
- Helped maintain in-house R packages for survival analysis and network meta analysis

### Research Intern (Mathematical Finance)

*Department of Mathematics, University of York*

July 2021 – September 2021

York, UK

- EPSRC-Funded research internship
- Working on algorithms for finding convex envelopes of a given set of functions
- Review current and past literature to identify possible improvements
- Implementing algorithms using Python and looking for improvements in efficiency.

### Equities Analyst

*Griff Investment Fund*

November 2020 – January 2021

York, UK

- Largest student lead investment fund in the UK
- Pitched a stock to the fund, with a 15% return on investment since
- Analysis of equities held by the fund, making decisions on whether to buy, hold or sell.

### Research Intern (Bioinformatics)

*Department of Biology, University of York*

July 2020 – September 2020

York, UK

- Developed a pipeline in Python for using the Burrows-Wheeler-Aligner and SAMTools to collect, sequence, align and call the peaks of ChIP-Seq data
- Created an R pipeline to apply machine learning libraries to the acquired data
- Identified transcription factors for further study into breast cancer treatment

### Research Intern (Particle Physics)

*School of Physics and Astronomy, University of Birmingham*

July 2017 – August 2017

Birmingham, UK

- Using Python to visualise HiSPARC Cosmic ray data through Matplotlib
- Applying statistical methods to the data to locate stars which are potential sources of cosmic radiation
- Presented results at the 6<sup>th</sup> annual HiSPARC conference at the University of Bath

## PROJECTS

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### High Performance Network Meta Analysis

April 2023 - Present

- Experimenting with improving the performance of Network Meta Analyses

### Statistical Methods for Resetting Score Targets in Limited-Overs Cricket

October 2021 - April 2022

- Wrote python scripts to clean large amounts of match data
- Performed exploratory data-analysis using R
- Built and trained a neural network to predict cricket scores
- Built an R package for reproducible results

### Differential Equations in Viral Pathology

September 2020 - March 2021

- 3<sup>rd</sup> year group project, looking at deterministic vs stochastic differential equations, achieved 70%
- Wrote a Python program to graph the evolution of an infection in a host's cells
- Organised, chaired, and took minutes at group meetings.

## SKILLS

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**Programming Languages:** Python, C++, R, Java, SQL, HTML/CSS

**Developer Tools:** Git, Vim, VS Code, Rstudio Server, Rstudio Desktop

**Communicative Languages: Fluency:** English, Norwegian; **Intermediate:** German

**Presenting:** Experienced at creating and giving talks/presentations in either Beamer or PowerPoint

## PROFESSIONAL MEMBERSHIPS

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Institute for Mathematics and it's Applications

Royal Statistical Society