Matthew Knowles

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Education

University of Sheffield Sheffield, UK

MSc, Statistics with Medical Applications *September 2022 – Present*

- Competing for University of Sheffield Athletics Cross Country Club

University of York York, UK

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

Statistical Analyst June 2022 – Present

Open Health *York, UK*

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

Research Intern (Mathematical Finance) July 2021 – September 2021

Department of Mathematics, University of York *York, UK*

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

Equities Analyst November 2020 – January 2021

Griff Investment Fund *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) July 2020 – September 2020

Department of Biology, University of York *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) July 2017 – August 2017

School of Physics and Astronomy, University of Birmingham *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^{th} annual HiSPARC conference at the University of Bath

Projects

Statistical Methods for Resetting Score Targets in Limited-Overs Cricket October 2021 - Present

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

Data Science Final Project April 2021 - May 2021

- 3^{rd} year data science module final project, achieved 69%
- Implemented decision trees and random forest classifiers on health data
- Performed k-means clustering and PCA analysis on multiple data sets

Differential Equations in Viral Pathology September 2020 - March 2021

- 3^{rd} 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

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

Institute for Mathematics and it's Applications

Royal Statistical Society