Matthew Knowles

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Research Interests

I am interested primarily in Theoretical Computer Science. More specifically, problems in Optimisation, Complexity Theory and Computational Algebra.

Education

University of York — York, UK
MMath Mathematics, Grade: First (Expected) — *October. 2018 – June 2022*

- Focus on Pure Mathematics, namely Algebra. I have also taken modules in Statistics.
- Third year group dissertation: *Numerical Solutions to Equations of In-Host Viral Dynamics.*

Droitwich Spa High School — Worcester, UK
A-Levels in Maths, Further Maths and Physics, Grades: ABB respectively — *September. 2014 – June 2018*

Experience

Healthcare Market Analyst — November 2020 – Present
The Griff Investment Fund — *York, UK*

Undergraduate Research Intern (Bioinformatics) — July 2020 – September 2020
Department of Biology, University of York — *York, UK*

- Developed a pipeline in Python to using the Burrows-Wheeler-Aligner and SAMTools to collect, sequence, align and call the peaks of ChIP-Seq data
- Further developed an R pipeline to apply machine learning libraries to the acquired data
- Identified transcription factors for further study into breast cancer treatment
- Collaborated with other interns to write up a report giving our findings

Mathematics Student Ambassador — November 2018 – March 2020
Department of Mathematics, University of York — *York, UK*

Store Assistant — October 2017 – December 2018
WHSmth — *Worcester, UK*

Reaserch 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
- 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

Stock Price Prediction using Neural Networks | *Numpy, Yahoo Finance API, SciKitLearn* — September 2020

- Implemented a simple prorgram to fetch stock price data using Yahoo Finance
- Time-series of price on close plotted using Matplotlib
- Used a recurrant nerual network to predict future stock prices

Pandemic Modeller using S.I.R equations | *Python, Matplotlib, Numerical Integration* — March 2020

- Implemented a python program to solve SIR equations using Numpy and Scipy
- Plotted results on a graph using Matplotlib
- Worked collabritavely with someone to develop a UI for the program

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:** Russian, German **Beginner:** Mandarin