Ashleigh C. Myall

Mathematics PhD Student in the *Centre for Mathematics of Precision Healthcare (Imperial College London)*

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Mathematics student working in healthcare with a strong programming background and experience using predictive modeling, data visualisations, and data mining algorithms. Currently pursuing a PhD at Imperial College London, I'm looking at antimicrobial-resistance from the perspective of Complex Networks and Machine Learning.

ACADEMIC HISTORY

Ph.D. Applied Mathematics, London — *Imperial College London (Funded by the Medical Research Foundation)*

SEPT 2019 - PRESENT

Controlling the prevalence of Carbapenem-resistance, a particularly critical type of resistance, I am analysing time-resolved network data from the Imperial College Healthcare NHS Trust. The research aims to forecast outbreaks of Antimicrobial Resistance amongst NHS hospital wards and understand dissemination patterns across healthcare facilities.

MRes Bioinformatics (Distinction), Liverpool — *University of Liverpool (Funded by DSTL and DTRA)*

SEPT 2018 - SEPT 2019

Identifying novel panels of biomarkers for differential diagnosis of bacterial and viral infections, I performed a meta-analysis of blood infection studies to discover a combination of genes that enabled faster infection diagnosis. As part of my project, I explored the problem of feature selection from a network perspective to uncover hidden convergence to key regions of the genome. The project (part of a larger pipeline) awarded to me as a studentship, was funded by the Defense Science and Technology Laboratory, aimed at developing a mobile diagnostics device for soldiers.

BSc Financial Computing (First Class Honours), Liverpool — *University of Liverpool*

SEPT 2015 - JUN 2018

For my final year project, I led a team to develop and backtest several automated trading strategies. I specifically looked at trading strategies including, pairs trading between times series, and trend pullbacks for bull markets, training both models on a number of stock series.

SKILLS

R

Python

Time Series Analysis

Machine Learning

Graph Theory

Network Analysis

Data Visualisations

Software Engineering

ACCOMPLISHMENTS

Forecasting Bed-demand Covid-19 Working with Imperial College's NHS Trust I predicted ICU and non ICU bed demand in the Covid-19 epidemic.

BlackRock Algothon 2019 I participated in the 48-hour data analysis competition where in a team we developed a trading strategy leveraging spikes in environment-related search terms in Google to predict a stock market index using an LSTM.

Loratario I developed a web-based proteomics search engine visualisation software; giving interactivity and novel linkages across multiple stages of the analysis pipeline.

Work Experience

Research Assistant, Liverpool — *Computational Biology Facility (CBF)*

SEPT 2018 - AUG 2019

Alongside my MRes degree, I assisted in the CBF, on a range of projects, from software development for grant applications to the analysis of proteomics data. The balance of academic theory and application is a strong reason why I pursued experience alongside my degree.

Genomics Data Science Intern, Liverpool — *University of Liverpool*

JUL 2018 - SEPT 2018

As part of the "*Distributed Computing and Analytics to Annotate the Human Genome*" project, my role involved doing statistical comparisons between protein spectrum matching search engines and designing a website to process and visualize the results from search engines in an interactive web-based visualisation suite which became its own stand alone software.

Imperial Lates: Infections (Volunteer), London — *Centre for Antimicrobial Optimisation (CAMO)*

NOV 2019 - PRESENT

During these evening celebrations of science and engineering I volunteer to bring Antimicrobial Resistance to life for one night only through live demonstrations, arty workshops, interactive experiments and inspiring talks aimed at raising public awareness.

LANGUAGES

English (Native)

Mandarin (Beginner)

REFERENCES

Prof. Andy Jones, Supervisor, Professor of Bioinformatics, Computational Biology Facility Director — *University of Liverpool*

Prof. Giorgos Christodoulou, Supervisor, Professor of Computer Science, Computer Science Department— *University of Liverpool*