

# Adam Farooq<sup>PhD</sup>

DATA SCIENTIST · ASSISTANT PROFESSOR IN AI AND CS

Birmingham, UK

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## Professional Summary

I'm an experienced Data Scientist with an extensive academic background in AI and Machine Learning. I have experience in both academia, and industry; where I have developed predictive models, and implemented machine learning solutions that enhance accuracy and efficiency, without losing interpretability.

## Skills

<b>Programming</b>	Python (including PyTorch and Tensorflow), R, SQL, and MATLAB
<b>Software</b>	Power BI, AWS, Google Analytics, and MS Office
<b>Machine Learning</b>	Deep Learning, Bayesian Statistics, Optimisation, and Time-Series

## Experience

### Ulster University Qatar

Doha, Qatar

ASSISTANT PROFESSOR IN ARTIFICIAL INTELLIGENCE AND COMPUTER SCIENCE

October. 2023 - Present

- Successfully taught and led the Department of Computing as a course director which resulted in a **100%** student pass rate
- Research lead on using AI for education in Doha British School: Developed a novel model to predict student grades which decreased the prediction error by **50%**

### Various Organisations

Hybrid

FREELANCE DATA SCIENTIST

March. 2023 - Present

- Developed a customer-targeting model to predict if a customer would purchase a product using feature engineering with support vector machines, this increased the accuracy from **20%** to **87%**
- Developed a novel fraud detection system which increased the accuracy by **40%** points when compared to the legacy system
- Developed a CNN architecture to improve object detection on railway tracks. Compared to the existing method: (1) The accuracy improved from **85%** to **98%**, (2) Reduced the computational cost **5** folds by utilising a GPU in the pipeline

### Imperial College London

London, UK

SENIOR TEACHING FELLOW

May. 2023 - Oct. 2023

- Providing one-on-one Machine learning and AI supervision for **25** post-doctoral fellows (the Eric and Wendy Schmidt AI in Science Fellows) in Bioinformatics, Bioengineering, material design, and plant biology
- Academic project supervisor for **5** AI MSc students on their industrial placement. All students successfully met their deliverables and achieved a distinction on their placement

### Aston University

Birmingham, UK

LEAD DATA SCIENTIST

Dec. 2021 - May. 2023

- Successfully led a team of **4** in the research and development of machine learning techniques to predict human behaviour, this improved the accuracy by **25%** points
- Successfully developed two efficient machine learning solutions: (1) Predicting human activity with **97%** accuracy, (2) Forecasting sales using Bayesian techniques which halved the error
- Utilised variable selection methods (such as PCA and Factor Analysis) to improve the computational speed of machine learning models by **5** times
- Utilised visual informatics to reduce time spent by management looking at data by using **2** TSNE plots which provided the "same information" as **30** scatter plots
- Created and deployed a comprehensive Power BI dashboard, forecasting sales with a **95%** confidence, resulting in a **20%** reduction in costs and a **10%** boost in revenue

### Aston University

Birmingham, UK

TEACHING FELLOW

Sep. 2021 - May. 2023

- Designed, and taught both undergraduate and postgraduate modules in the Department of Mathematics, Department of Computer Science, and Business School
- Successfully supervised both undergraduate and postgraduate students on the dissertations

## Aston University

TEACHING ASSISTANT

Birmingham, UK

Oct. 2017 - Sep. 2021

- Assisting first and final year students in seminars for the module 'Introduction to MATLAB', 'Mathematical Algorithms', 'Mathematics for computing professionals', and 'Data Mining'
- Improved student satisfaction by 25% points contributing towards the planning of a module

## University of Manchester

RESEARCH VISIT IN RATTRAY LAB

Manchester, UK

Sep. 2019 - Feb. 2020

- Developed a novel inference scheme which reduced the computational time by 20 folds to cluster single-cell ATAC-Seq data
- Worked on Bayesian optimisation using Gaussian process latent variable models to learn manifolds

## TopCashback

SITE CONTENT EXECUTIVE PLACEMENT

Stafford, UK

Jun. 2016 - Jul. 2017

- Proposed the use of classical Machine Learning to predict "cashback elasticity of demand", which produced prediction that were 10 folds better than the existing method
- Used R with SQL and Google Analytics to automate weekly reporting, this reduced the time from 5 hours to 20 minutes
- Trained over 8 non-technical staff on how to use MS Excel for data analytics on a bi-weekly basis

## Education

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### Aston University

PHD. IN STATISTICAL MACHINE LEARNING

Birmingham, UK

Jul. 2018 - Jul. 2022

- Thesis title: "Modelling inference strategies and robust clustering topologies"

### Aston University

PG CERT IN FELLOWSHIP OF THE HIGHER EDUCATION ACADEMY

Birmingham, UK

Oct. 2022 - Mar. 2023

### Aston University

BSC. IN MATHEMATICS WITH ECONOMICS

Birmingham, UK

Oct. 2014 - Jun. 2018

- First class award (83.62%)
- Leslie Wickett Senior Memorial Prize: Highest joint honors mark
- Departmental Project Prize: Best final year project "A latent feature probabilistic principal component analysis model"

## Publications

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- **Farooq, A.**, Raykov, Y.P., Raykov, P. and Little, M.A., 2024. Adaptive Latent Feature Sharing for Piecewise Linear Dimensionality Reduction. *Journal of Machine Learning Research*
- **Farooq, A.**, Raykov, Y.P., Evers, L. and Little, M.A., 2019. Adaptive probabilistic principal component analysis. arXiv preprint arXiv:1905.11010
- Iqbal, M., Baker, S.M., **Farooq, A.** and Rattray, M. Scaled Bernoulli Mixture Model for Clustering of Single-cell ATAC-seq Data

## Awards

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|------|---|------------------|
| 2022 | <b>Winner: Inspiring Teacher</b> , Aston Students' Union, Academic Awards 2022  | Birmingham, UK   |
| 2021 | <b>Winner: Best talk</b> , ASTUTE, Technologies for the benefit of the urban citizen  | Birmingham, UK   |
| 2018 | <b>Awarded: Four year PhD scholarship</b> , Aston University School of Engineering and Applied Sciences in conjunction with Capgemini                           | Birmingham, UK   |
| 2018 | <b>Awarded: BNP@NeurIPS Travel Award</b> , BNP@NeurIPS  | Montreal, Canada |
| 2018 | <b>Awarded: Leslie Wickett Senior Memorial Prize : Highest joint honors mark in the Mathematics department</b> , Aston University                               | Birmingham, UK   |
| 2018 | <b>Awarded: Departmental Project Prize: Best final year project</b> , Aston University School of Engineering and Applied Sciences in conjunction with Capgemini | Birmingham, UK   |