

YASIR ZUBAYR BARLAS

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EDUCATION

The University of Manchester

September 2024 - September 2027

PhD Computer Science

Affiliated with the ELLIS Society as a PhD Student

Thesis Title: Enhancing Out-of-Distribution Generalisation in Human-Guided Sequential Experimental Design

Supervisory Team: Prof Samuel Kaski, Dr Sabina Sloman, Dr Mingfei Sun, Dr Frans A. Oliehoek

City, University of London

September 2023 - September 2024

MSc Artificial Intelligence

Expected Grade: Distinction (≈ 4.0 GPA)

Queen Mary, University of London

September 2020 - July 2023

BSc (Hons) Mathematics

Grade: 1st Class Honours (≈ 4.0 GPA)

Certification: Bloomberg Market Concepts, Microsoft Office Specialist: Excel Associate

Relevant Modules: Statistical Modelling, Linear Programming and Game Theory, Bayesian Statistics, Random Processes, Python/R/C++, Time Series, Machine Learning, Computational Statistics, Deep Learning, Deep Reinforcement Learning, Agents and Multi-Agent Systems

EXPERIENCE

Queen Mary, University of London

May 2023 - September 2023

Academic Research Intern in Image Analysis and Network Science

London, UK

- Conducted in-depth analysis of calcium imaging video-data derived from cardiac tissue, employing advanced techniques in image analysis
- Utilised Python for comprehensive data analytics, encompassing image processing and methods from network science to extract meaningful insights from videos of atrioventricular nodes
- Collaborated with supervisor Dr Anna Maltsev in developing code and producing results, with the work being presented at the Biophysical Society Meeting 2024 - pending acceptance at a journal

Infosys

June 2022 - August 2022

Research Intern

London, UK

- Formulated innovative solutions for business marketing challenges, demonstrating analytical and problem-solving skills
- Investigated the application of artificial intelligence in marketing strategies, contributing insights into cutting-edge technologies
- Conducted comprehensive research in the intersection of data and marketing, in preparation of a detailed report for the Digital Experience team, providing valuable strategic guidance

Queen Mary, University of London

June 2021 - August 2021

Academic Research Intern in Probability

London, UK

- Conducted research into the probabilistic field of the law of small numbers
- Utilised the programming language R to perform complex calculations and generate insightful visualisations to enhance data interpretation
- Collaborated with supervisor Dr Dudley Stark in the creation of an academic paper, which has been successfully accepted by a journal, showcasing the research findings

PROJECTS (GITHUB: YASIR BARLAS)

Algorithmic Comparisons for Sequential Experimental Design

Python

Libraries: Garage, Pyro, PyTorch

- Assessed the generalisation capabilities of reinforcement learning agents on experimental design problems, when the statistical models differ at test time from training time
- Devised an improved, but costly, combination of the SUNRISE and DroQ algorithms that performs well on two experimental design problems
- Written a paper of the findings, which has been accepted for publication at the 8th Workshop on Generalization in Planning at AAAI 2025

Undergraduate Dissertation: Naive Bayes and Sentiment Analysis

R

Packages: e1071, gmodels, tm, wordcloud

- Conducted sentiment analysis on Amazon and Yelp reviews using a machine learning algorithm known as the naive Bayes classifier
- Implemented a comparative analysis with a logistic regression model, showcasing a nuanced approach to model selection and evaluation
- Achieved an accuracy rate of 77%, and proposed strategies to improve this accuracy further

POSITIONS OF RESPONSIBILITY

The University of Manchester

January 2025 - September 2027

Graduate Teaching Assistant

Manchester, UK

- Assisting lecturers on modules in statistics and machine learning
- Helping students understand module content better, and debugging relevant code
- Marking coursework and exams

Queen Mary, University of London Students' Union

September 2022 - June 2023

Mathematics Course Representative

London, UK

- Engaged in constructive discussions with the student-staff-liaison committee to analyse and address feedback provided by students in regular meetings
- Demonstrated leadership by co-chairing segments of liaison committee meetings
- Implemented a systematic approach to surveying students, seeking their insights to make improvements and adjustments to the Mathematics curriculum

Queen Mary, University of London

September 2022 - June 2023

Peer Assisted Study Support Mentor

London, UK

- Delivered valuable support to first-year students by addressing questions and clarifying concepts related to their Mathematics course modules
- Provided a supportive and engaging environment for students to discuss study-related challenges and seek advice
- Orchestrated weekly mentoring sessions, tailoring each session to meet the specific needs and challenges of participating students

Loxford School

November 2018 - July 2019

Computing Assistant Teacher

London, UK

- Collaborated with the class teacher to provide valuable assistance and to address student queries
- Demonstrated a passion for teaching and a commitment to empowering students with essential programming skills
- Inspired and motivated students to pursue computer science in the future

PUBLICATIONS

Barlas, Y. Z. and Salako, K. (2025), “Performance Comparisons of Reinforcement Learning Algorithms for Sequential Experimental Design”, *8th Workshop on Generalization in Planning (GenPlan) AAAI 2025* [**PAPER**]

Maltsev, A. V., **Barlas, Y. Z.**, Hazan, A. T., Zhang, R., and Goldhaber, J. I. (2024), “Dual network structure of the AV node”, *arXiv preprint arXiv:1409.0473*. [**PRE-PRINT, FINAL JOURNAL TBC**]

Barlas, Y. Z. and Stark, D. (2023), “An investigation into the law of small numbers using R”, *Ball State Undergraduate Mathematics Exchange*, **17**(1):2–14 [**PAPER**]

AWARDS

Below are awards provided to pursue research or further study:

- The University of Manchester Department of Computer Science Studentship (2024 - 2027)
- G-Research ELLIS Doctoral Symposium Travel Fund (2024)
- City, University of London Global STEM Leadership Masters Scholarship (2023 - 2024)
- Royal Society Summer Research Stipend through Dr Anna Maltsev (2023)
- Queen Mary Undergraduate Summer Research Studentship (2021)

SKILLS

Programming Languages

C++, R, Python, MySQL, L^AT_EX, HTML, CSS

Machine Learning Frameworks

scikit-learn, PyTorch, TensorFlow, Keras

Data Visualisation

Excel, Tableau