Paul Russell

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Education

University of Bath 2018 - Present (expected graduation 2023)

Computer Science PhD. Supervised by Professor Özgür Şimşek. Funded by EPSRC.

Thesis: *Hierarchical Reinforcement Learning for Permutation Puzzles*

- The thesis draws inspiration from how humans solve permutation puzzles such as Rubik's cube. Novel hierarchical reinforcement learning methods have been developed using the insights generated.
- Other work has looked at the application of uncertainty estimation within offline reinforcement learning.
- Lecturing and tutoring experience in classes on foundational artificial intelligence, machine learning, reinforcement learning, and natural language processing.
- Supervised a masters dissertation on offline reinforcement learning for optimal trade execution.

University of Bath 2012 - 2017

Mathematics MMath (Hons) *First-class honours*

Studied a broad range of pure and applied mathematics, with a particular emphasis on analysis and probability.

Relevant Experience

Expedia Group, London July 2022 - September 2022

Machine Learning Scientist Intern

- Investigated gradient boosted trees for dynamic pricing. Experimented with a number of approaches to address the project requirements of (i) optimising a custom objective (ii) implementing multi-output regression.
- Delivered an effective solution which involved the interplay of XGBoost and Tensorflow. Incorporated new code into the existing software library. Explained the work through both documentation and a presentation.
- Learnt several new tools throughout the internship, including Databricks, MLflow, and Hyperopt. Gave regular updates at team meetings. Voluntarily presented an academic paper at a reading group.

Wood for Trees Ltd, Bath August 2020 - September 2020

Data Science Contractor

- Built a recommendation system for a client organisation. This contracting opportunity was offered following impressive performance and proven technical ability throughout previous employment.
- Proposed and implemented a solution that effectively addressed key issues of sparsity and implicit preferences within the data. The solution was deployed to inform the client's marketing strategy.

Wood for Trees Ltd, Bath September 2017 - March 2018

Data Analyst

- Used SQL to interrogate and transform large databases. Created graphs and dashboards in Tableau and Microsoft Power BI that served as key deliverables.
- Liaised with clients during projects and presented analysis at project completion. Honed an ability to convey conclusions more simply when talking with non-technical individuals.
- Contributed major analysis on two projects: (i) assessed the impact of the General Data Protection Regulation, (ii) modelled the value of different corporate donors.

Department of Mathematical Sciences, University of Bath June 2016 - September 2016

Summer Research Intern

Supervised by Dr. Melina Freitag and Dr. Silvia Gazzola. Funded by University of Bath Institute for Mathematical Innovation and The London Mathematical Society.

- Researched discrete inverse problems. Worked on image deblurring as a practical problem.
- Investigated preconditioners for Krylov subspace methods. Surveyed literature and compared several preconditioning techniques in Matlab.
- Acquired necessary knowledge before the internship, building on a foundation of courseworks in numerical analysis. Studied Tikhonov regularization in-depth, gaining insights valuable for later machine learning work.

Technical Skills

Conceptual:	Strengths in mathematical analysis, probabilistic modelling, statistics, and machine learning.
Programming:	Excellent Python skills. Experience with R, C++, Javascript, Matlab, SQL, Docker, Git.
Libraries:	Proficient in PyTorch, Tensorflow, and many other Python libraries.

Hobbies and interests

Fitness, surfing, climbing, tennis, meditation, poker, guitar, personal knowledge management, reading.