

DANIEL BEECHEY

Department of Computer Science, University of Bath, United Kingdom

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RESEARCH INTERESTS

Reinforcement learning, explaining artificial intelligence, hierarchical reinforcement learning, bounded rationality, lifelong learning.

EDUCATION

Ph.D in Computer Science

Expected 2026

University of Bath, United Kingdom.

Supervisors: Özgür Şimşek (Computer Science), Emma Carmel (Social Policy)

Thesis: Self-Explaining Continual Reinforcement Learning Agents

M.Res. in Accountable, Responsible and Transparent AI

2022

University of Bath, United Kingdom.

Supervisors: Özgür Şimşek (Computer Science), Emma Carmel (Social Policy)

Dissertation: Explaining Reinforcement Learning with Shapley Values

Grade: Distinction

M.Sc. in Data Science

2021

University of Bath, United Kingdom.

Supervisor: Özgür Şimşek

Dissertation: Autonomous Routing of Printed Circuit Boards with Hierarchical Reinforcement Learning

Grade: Distinction

B.Sc.(Hons) in Mathematics

2020

University of Bath, United Kingdom.

Grade: First Class

PUBLICATIONS

Daniel Beechey, Thomas M. S. Smith and Özgür Şimşek

Explaining Reinforcement Learning with Shapley Values

ICML 2023

Toby Lewis-Atwell, **Daniel Beechey**, Özgür Şimşek and Matthew N. Grayson

Reformulating Reactivity Design for Data-Efficient Machine Learning

ACS Catalysis, 13(20), 2023

TALKS

How to Explain Reinforcement Learning with Shapley Values

2024

Bath Doctoral Festival of Ideas

An Introduction to Explainable and Hierarchical Reinforcement Learning

2024

Bath AI Society

Explaining Reinforcement Learning with Shapley Values

2023

Bath Conference of Computer Science

Explaining Reinforcement Learning with Shapley Values

2023

Alan Turing Institute Student Presentations

AWARDS

University of Bath, **Doctoral Recognition Award**

2024

Bath Conference of Computer Science, **Best Overall Contribution**

2023

Inter-CDT Conference on AI, **Best Poster**

2023

TEACHING EXPERIENCE

Fixed-Term Lecturer, <i>University of Bath</i>	2022 - 2023
Lecturer, Reinforcement Learning (MSc level, 110 students)	2023
Lecturer, Reinforcement Learning (MSc level, 29 students)	2023
Supervisor, Dissertations (MSc level, 5 students)	2022 - 2023
Supervisor, Dissertations (BSc level, 2 students)	2022 - 2023
Graduate Teaching Assistant, <i>University of Bath</i>	2020 - 2023
Teaching Assistant, Reinforcement Learning (MSc level)	2022 - 2023
Teaching Assistant, Reinforcement Learning (BSc level)	2022 - 2023
Supervisor, Dissertations (MSc level, 10 students)	2022
Teaching Assistant, Software Technologies for Data Science (MSc level)	2022
Teaching Assistant, Statistics for Data Science (MSc level)	2022
Teaching Assistant, Programming, Foundations and Connections (BSc level)	2022
Teaching Assistant, Programming and Discrete Mathematics (BSc level)	2021
Teaching Assistant, Mathematical Methods and Applications (BSc level)	2020

TECHNICAL SKILLS

Conceptual	Mathematics, statistics and machine learning.
Programming	Excellent Python skills. Experience with R, Matlab and Git.
Libraries	TensorFlow, PyTorch, Matplotlib, NumPy and many other Python libraries.

POSITIONS OF RESPONSIBILITY

Co-Organiser of the Bath Reinforcement Learning Workshop	2024 - present
<i>University of Bath</i> , United Kingdom	
The student lead on the organising committee.	
Co-Manager of the Bath Reinforcement Learning Laboratory	2023 - present
<i>University of Bath</i> , United Kingdom	
Organising lab activities, including weekly lab meetings, research sessions, paper discussions and social events.	