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, *University of Bath* ***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, *University of Bath* ***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*
University of Bath, United Kingdom
The student lead on the organising committee.

Co-Manager of the Bath Reinforcement Learning Laboratory *2023 - present*
University of Bath, United Kingdom
Organising lab activities, including weekly lab meetings, research sessions, paper discussions and social events.

SERVICE

Reviewing
European Workshop on Reinforcement Learning (EWRL) *2024*