DANIEL BEECHEY

Department of Computer Science, University of Bath, United Kingdom
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RESEARCH INTERESTS

Reinforcement learning, explainable 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: How to Explain Reinforcement Learning with Shapley Values

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

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

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.