

Scarlette Ellis

PhD Researcher - Reinforcement Learning (she/her)

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Research Interests

Reinforcement learning, temporal abstraction, skill discovery, graph theory, and information theory. My research focuses on how AI can autonomously learn **human-like** skills, and how AI performs in tabletop games that simulate **real-world problems**.

Education

Doctor of Philosophy in Computer Science

University of Bath, UK

Supervisors: Professor Özgür Şimşek, Professor Guy McCusker

Oct 2023 - Oct 2028
(expected)

MRes in Accountable, Responsible, and Transparent AI

University of Bath, UK

Supervisors: Professor Özgür Şimşek, Professor Guy McCusker

Dissertation: *Unifying Graph and Information Skill Discovery in Reinforcement Learning*

Oct 2023-Oct 2024

Masters in Mathematics and Computer Science

University of Bath, UK

Grade: 1st (Hons)

Masters Dissertation: *Using Information and Graph Theory for Hierarchical Skill Discovery in Reinforcement Learning*

Undergraduate Dissertation: *Reinforcement Learning in the Board Game Pandemic*

Sep 2019 - Jul 2023

Teaching and Supervision

Teaching Assistant

University of Bath, UK

Teaching:

- Reinforcement Learning (Undergraduate & Masters Level)
- Bayesian Machine Learning (Masters Level)
- Artificial Intelligence (Undergraduate Level)

Responsibilities:

- Planning and delivering tutorials for undergraduate and postgraduate students.
- Marking coursework and providing feedback to students.
- Writing, running, and debugging automarking code.

Sep 2022 - Present

Dissertation Supervision

University of Bath, UK

- Marking of student work and providing feedback on their writing.
- Helping students solve technical problems.

Sep 2024-Present

Skills

Conceptual: Mathematics, linear algebra, machine learning

Programming: Python, Jax, NumPy, Matplotlib, LaTeX, Manim

Personal: Communicating complex concepts, delivering talks, managing students

Work Experience

Automarking Internship

Jun 2023–Sept 2023

University of Bath, UK

- Investigated the current state of automarking within the University of Bath Computer Science Department.
- Conducted interviews on how automarking was being used by lecturers.
- Delivered a seminar on how automarking is being used and gave advice on how to best use it, and the potential problems it has.

Lab Intern - Bath Reinforcement Learning Lab

Jun 2022–Sep 2022

University of Bath, UK

- Investigating hierarchical reinforcement learning methods.
- Contributing to internal talks and paper discussions within the lab.

Head of TTRPGs - Tabletop Gaming Society

Sep 2020–Jun 2021

University of Bath, UK

- Organising and running frequent society events.
- Running regular Dungeons & Dragons games.

Student Ambassador

Sep 2020–Jun 2023

University of Bath, UK

- Providing university campus tours to prospective students.
- Giving advice on student life and insights on studying at university.

Barista - Costa Coffee

Aug 2018–Jan 2020

Odeon Bridgend, UK

- Brewing delicious and consistent coffee during busy times.
- Talking with customers to create a warm and welcoming atmosphere.
- Communicating with difficult customers in a friendly but assertive manner.

Talks and Events

Whose Science Is It Anyway? Using Improv theatre and TTRPGs to enhance science communication skills

Jul 2025

BIG Event 2025 - Royal Institution

Being Prepared: Creating Multi-Level Skill Hierarchies using Graph and Information Theory

Oct 2024

University of Bath Centre for Mathematics and Algorithms for Data

The Current State and Best Practices for University Automarking

Sep 2023

University of Bath Lecturer Training Day

Charity Dungeons and Dragons Live Stream

Apr 2021

Off the Record Bath