

# Scarlette Ellis

PhD Researcher - Reinforcement Learning (she/her)

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A PhD student in **reinforcement learning**. I have experience in **public speaking**, **teaching** undergraduates and post-graduates, and **tutoring students**. My research questions are on the mathematical underpinnings of **hierarchical reinforcement learning**, and how AI performs in **tabletop games** that simulate real-world scenarios.

## 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 theoretical and technical problems.
- Giving guidance to students on their project direction.

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

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### **Assistant Lab Manager - Bath Reinforcement Learning Lab**

Sep 2025-Present

University of Bath, UK

- Organising and facilitating lab activities for more than 15 members.
- Activities include weekly lab meetings, paper discussions, and writing feedback sessions.

### **Automarking Internship**

Jun 2023–Sept 2023

University of Bath, UK

- Investigating the current state of automarking within the University of Bath Computer Science Department.
- Conducting interviews on how automarking was being used by lecturers.
- Delivering a seminar on how automarking was being used and providing advice on how best to 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.
- Maintaining a high standard of hygiene and cleanliness in a food preparation area.

## Talks and Events

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### **Whose Science Is It Anyway? Using Improv theatre and Dungeons & Dragons 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