

# Elle Miller

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## Education

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2023 – pres. **Ph.D. in Computer Science** [University of Edinburgh](#)

Thesis: “*Representation learning in reinforcement learning for robot control*”.

Developing generalisable RL frameworks for contact-rich manipulation with a focus on multimodal and tactile sensing. My research aims to enable robust, human-level dexterity in robots, with a specific focus on humanoid caregiving.

2017 – 2022 **B.Eng. Mechatronics (Space) & B.Sc. Physics** [University of Sydney](#)

Grade: High Distinction. Sole student in my cohort selected for an international thesis placement at NASA Jet Propulsion Laboratory.

## Publications

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### First author

- *Enhancing Tactile-based Reinforcement Learning for Robotic Control*. EM, et al. **NeurIPS 2025**.
- *Unknown Object Grasping for Assistive Robotics*. EM, et al. **ICRA 2024**.
- *The formation of wide exoKuiper belts from migrating dust traps*. EM, et al. **MNRAS 2021**

### Co-author

- *DemoBot: Efficient Learning of Bimanual Manipulation with Dexterous Hands From Third-Person Human Videos*. Yucheng Xu, Xiaofeng Mao, EM, et al. **ICRA 2026**.
- *Learning Long-Horizon Robot Manipulation Skills via Privileged Action*. Xiaofeng Mao, Yucheng Xu, Zhaole Sun, EM, et al., **CoRL 2025**.
- *Few-shot Semantic Learning for Robust Multi-Biome 3D Semantic Mapping in Off-Road Environments*. Deegan Atha, Xianmei Lei, Shehryar Khattak, Anna Sabel, EM, et al. **ACRA 2024**.

## Experience

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2025 – pres. **Visiting PhD Researcher** [Waseda University](#)

Leading research into reinforcement learning for physically-assistive caregiving using the AIREC humanoid robot, as part of the **Japanese Moonshot R&D Program**.

2023 **Robotics Research Engineer** [DLR Institute for Robotics and Mechatronics](#)

Designed an assistive manipulation framework for the EDAN robot to enhance user agency in grasping unknown objects. Work resulted in a first-author publication at **ICRA 2024**.

2022 **Visiting Student Researcher** [NASA Jet Propulsion Laboratory](#)

Developed semi-supervised learning methodologies for robust semantic segmentation of off-road terrain to support autonomous navigation in the **DARPA RACER Challenge**.

2022 **Robotics Engineer** [University of Edinburgh](#)

Developed the software stack (sensor drivers, motor controllers) for integrating a dual-armed torso with a mobile base. Implemented whole-body control for human-robot interaction. **Demo: EVA**.

2020 – 2021	<b>Astrophysics Research Intern</b>	Max Planck Institute for Astronomy
	Selected as 1 of 5 international interns. Proposed a new theory of debris disc formation through the study of planetesimal formation in simulation; published as a first-author paper in <b>MNRAS</b> .	
2020	<b>Firmware Engineering Intern</b>	Cochlear
2019	<b>Research Scholar in Cosmology</b>	Australian National University
2019	<b>Space Engineering Intern</b>	Saber Astronautics

## Honours

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2024, 2025	<b>Best Talk, Annual CDT Conference</b>	University of Edinburgh
2025	<b>Longlisted for Student Tutor of the Year</b>	University of Edinburgh
2022	<b>Engineering Student Industry Placement Scholarship</b>	NASA Jet Propulsion Laboratory
2017–2022	<b>Sydney Scholars Award</b>	University of Sydney
2016	<b>ATAR 99.6, top 0.6% of state</b>	NSW, Australia

## Teaching

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2024 – 2025	<b>Teaching Assistant</b>	University of Edinburgh
	Lead tutor for <i>Robot and Reinforcement Learning</i> , responsible for writing coursework and tutorials. Tutor for <i>Reinforcement Learning</i> , responsible for delivering tutorials on RL theory. Longlisted for Student Tutor of the Year for unique teaching strategies.	

## Skills

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**Technical** Reinforcement Learning, Robot Control, Deep Learning.

**Tools** Python, C++, PyTorch, ROS, Isaac Lab, MuJoCo, Slurm, WandB.

**Leadership** Postgraduate Student Representative, Public Speaking.