Matteo Bettini
Curriculum Vitae

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Ⓡ *Matteo Bettini*

Education

2021– Jun 2025(Est)	**PhD in Computer Science**, *University of Cambridge* Researching heterogeneity and resilience in learning for multi-robot/agent systems
2020–2021	**MPhil in Advanced Computer Science**, *University of Cambridge* *Distinction* GPA: 87.09/100 Thesis on transport network design for multi-agent routing
2017–2020	**BEng in Computer Engineering**, *Politecnico di Milano* *110 Cum Laude/110 (Honors)* GPA: 29.16/30

Experience

Work

Jun–Oct 2023	**Machine Learning Engineer Intern (PhD)**, *Meta - PyTorch*, London Worked in the TorchRL team. ○ Integrated multi-agent in TorchRL ○ Developed *BenchMARL*, a facebook research multi-agent reinforcement learning benchmarking library
Jun–Sept 2021	**Software Development Engineer Intern**, *Amazon Web Services (AWS)*, Cambridge Worked in the EC2 team using the Rust programming language to implement an interactive serial console for Xen-based EC2 instances. ○ Developed a deep knowledge of the Rust programming language ○ Used cryptographic and asynchronous programming libraries

Teaching

2021–present	**Teaching Assistant and Supervisor**, *University of Cambridge*, Cambridge ○ Teaching assistant, demonstrator, and robot fleet manager for the "Introduction to Robotics" undergraduate and postgraduate course ○ MPhil Thesis Supervisor ○ Supervisor for the "Concepts in Programming Languages" undergraduate course

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Awards and Recognition

2017-2020	Merit-based scholarship at Politecnico di Milano - 50% tuition reduction
2017-2020	Achieved 30 Cum Laude/30 (Honors) for 13 of 25 exams at Politecnico di Milano
2017	Best Freshmen of Politecnico di Milano Award - 1500€

Skills

Programming languages	Python, Java, Rust, C, JavaScript	*Deep learning*	PyTorch, scikit-learn, NumPy, RLlib, SciPy
Systems	Linux, ROS, Networking, Bash	*Others*	HTML, CSS, Java Servlets, SQL, RDF, OWL, XML, VHDL, LaTeX

Languages

English   Full proficiency

Italian   Native

Publications

[1] **Matteo Bettini**, Ajay Shankar, and Amanda Prorok. Heterogeneous multi-robot reinforcement learning. AAMAS '23. International Foundation for Autonomous Agents and Multiagent Systems, 2023.

[2] Steven Morad, Ryan Kortvelesy, **Matteo Bettini**, Stephan Liwicki, and Amanda Prorok. Popgym: Benchmarking partially observable reinforcement learning. In *International Conference on Learning Representations*, 2023.

[3] **Matteo Bettini**, Ryan Kortvelesy, Jan Blumenkamp, and Amanda Prorok. Vmas: A vectorized multi-agent simulator for collective robot learning. *The 16th International Symposium on Distributed Autonomous Robotic Systems*, 2022.

[4] **Matteo Bettini** and Amanda Prorok. On the properties of path additions for traffic routing. *IEEE International Conference on Intelligent Transportation Systems (ITSC) Workshop on Co-Design and Coordination of Future Mobility Systems*, 2022.

Interests

○ Multi-Robot Systems

○ Reinforcement Learning

○ Heterogeneous Multi-Agent Learning

○ Graph Neural Networks

Selected projects

○ **Heterogeneous robot learning**: crystallized the role of heterogeneity in multi-robot reinforcement learning through simulations and real-world experiments [1] (Fig. 1a). *Link*

○ **Vectorized multi-agent simulator**: designed and implemented a batched multi-agent simulator in PyTorch for multi-agent reinforcement learning [3] (Fig. 1b). *Link*

○ **Santorini videogame**: reinvented the table game "Santorini" as a Java multiplayer online game with 3D graphics and many new features (Fig. 1c). *Link*
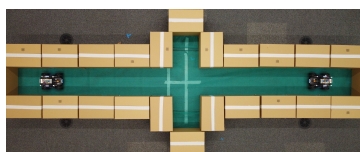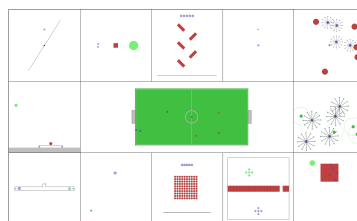
(a) Heterogeneous robot learning   **(b)** Vectorized multi-agent simulator   **(c)** Santorini videogame

Figure 1: Project media