Giovanni Briglia

Ph.D. Student in Causal Reinforcement Learning - University of Pisa
giovanni.briglia@phd.unipi.it - LinkedIn - GitHub - Scholar - Personal Website
Interested and experienced in Reinforcement Learning, Causal Inference, and Probabilistic Knowledge Representation through Bayesian and Causal (World) Models.

Research Positions

Alan Turing Institute - Ph.D Researcher *January 2025– February 2025*
Selected for `Data Study Group`, working on the challenge proposed by C-DICE. Published work: [1]

`Distributed and Pervasive Intelligence Group` - **Research Fellow** *November 2023– November 2024*
Causal Reinforcement Learning methods to improve exploration and safety through causal action filtering [2].

Education

Ph.D. in Artificial Intelligence - AI for Society *November 2024 - present*
University of Pisa, Italy
Researching on *Efficient and Explainable Causal Reinforcement Learning*, integrating causal reasoning to improve generalization, sample efficiency, and interpretability in single and multi-agent systems [3, 4]. Also working on scalable neural approaches for multi-agent epistemic planning [5].

M.Sc. Mechatronics, Robotics and Automation Engineering *October 2023*
University of Modena and Reggio Emilia, Italy - 110 cum laude/110 (honors), GPA: 28.4/30
Thesis: *"Integrating Causality into Q-Learning for Adaptive Control in Dynamic Environments"*.

B.Sc. Mechatronics, Robotics and Automation Engineering *October 2021*
University of Modena and Reggio Emilia, Italy - 96/110, GPA: 24.5/30
Thesis: *"Artificial Intelligence Applied to Predictive Maintenance"*. Related papers [6, 7].

Additional Skills

- *Programming*: Python, C, Matlab. *Systems*: Linux, Windows.
- *AI Libraries*: PyTorch, scikit-learn, NumPy, SciPy, TorchRL, TorchGeometric, Pandas, Matplotlib.

Awards and Achievements

- *July 2024* - 1st rank at the selection for the Ph.D. Program in AI – Society
- *June 2024* - OxML 2024 partial scholarship
- *November 2023* - Best 20 recent graduates in Italy in the engineering area, AlmaLaurea

References

[1] D. S. G. Team, "Data study group final report: Centre for postdoctoral development in infrastructure, cities, and energy (c-dice) - a cost-effective roadmap for achieving net zero carbon emissions by 2050."

[2] G. Briglia, M. Lippi, S. Mariani, and F. Zambonelli, "Improving reinforcement learning-based autonomous agents with causal models," in *International Conference on Principles and Practice of Multi-Agent Systems*, pp. 267–283, Springer, 2024.

[3] G. Briglia, S. Mariani, and F. Zambonelli, "Towards safe action policies in multi-robot systems with causal reinforcement learning," in *Workshop on Agents and Robots for reliable Engineered Autonomy*, pp. 51–71, Springer, 2025.

[4] G. Briglia, S. Mariani, and F. Zambonelli, "A roadmap towards improving multi-agent reinforcement learning with causal discovery and inference," *arXiv preprint arXiv:2503.17803*, 2025.

[5] G. Briglia, F. Fabiano, and S. Mariani, "Scaling multi-agent epistemic planning through gnn-derived heuristics," *arXiv preprint arXiv:2508.12840*, 2025.

[6] G. Briglia, F. Immovilli, M. Cocconcelli, and M. Lippi, "Bearing fault detection and recognition from supply currents with decision trees," *IEEE Access*, vol. 12, pp. 12760–12770, 2023.

[7] G. Briglia, F. Immovilli, M. Cocconcelli, and M. Lippi, "Cross-load generalization of bearing fault recognition with decision trees," in *2023 7th International Conference on System Reliability and Safety (ICSRS)*, pp. 400–406, IEEE, 2023.