Giovanni Briglia

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Website LinkedIn Scholar GitHub LeetCode

Research Positions

Nov 2024 - present — **PhD Student, National PhD in AI**
University of Pisa || University of Modena and Reggio Emilia
Causality Driven Reinforcement Learning in multi-agent system scenarios.
Supervisors: Franco Zambonelli and Stefano Mariani.

Nov 2023 - Nov 2024 — **Research Fellow,** Distributed and Pervasive Intelligence Group, University of Modena and Reggio Emilia.
Causality Driven Reinforcement Learning in single-agent system scenarios. Supervisors: Franco Zambonelli and Stefano Mariani.

Education

Sep 2021 – Oct 2023 — **M.Sc. Mechatronics, Robotics and Automation Engineering, University of Modena and Reggio Emilia**, Grade: 110 with honors/110.
Thesis title: *Integrating Causality into Q-Learning for Adaptive Control in Dynamic Environments*.

Oct 2022 – Mar 2023 — **Erasmus+ exchange semester, Technische Universität München (TUM)**
Courses: Embedded Network Systems, Concept and Software Design for CPS, Experimental Vibration Analysis, Visual Data Analytics, Robotics.

Sep 2018 – Oct 2021 — **B.Sc. Mechatronics, Robotics and Automation Engineering, University of Modena and Reggio Emilia**, Grade: 96/110.
Thesis title: *Artificial Intelligence applied to predictive maintenance*.

Summer Schools

May 2024 and July 2024 — **Summer school: OxML, University of Oxford**
Fundamentals (online)
Representation Learning and Generative AI (in-person).

Sep 2022 — **Summer school: Advanced Course in AI, AImageLab**
Topics: Deep Learning, Vision and Language in Industry.

Partecipation to Research Projects

Feb 2024 - Nov 2024 — **Agrarian**, *University of Modena and Reggio Emilia*: this project aims to create an advanced agricultural solution focused on utilizing both drones and rovers to gather images and data for analyzing vineyards, specifically targeting the detection of golden flavescence.

Partecipation to Research Projects (continued)

Mar 2021 - Aug 2023

ProjectRED: transitioned from a member to leader within the Mechanical Division and R&D, driving innovation and team management across significant projects. Developed the electronic case and machine learning applications for a new semi-adaptive suspension system. Led a team of 20 in rover assembly and technical documentation. Spearheaded the development of an autonomous robotic system for rover localization and mapping in unknown environments, using advanced technologies such as YOLOv5, homography, and SLAM.

Research Publications

Journal Articles

1. G. Briglia, F. Immovilli, M. Cocconcelli, and M. Lippi, "Bearing fault detection and recognition from supply currents with decision trees," *IEEE Access*, 2023.

Conference Proceedings

1. 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)*, IEEE, 2023, pp. 400–406.

In progress

1. G. Briglia, F. Favali, S. Mariani, and V. Villani, "Reinforcement learning for gesture generation," for IEEE 19th International Conference on Automatic Face and Gesture Recognition.
2. G. Briglia, M. Lippi, F. Zambonelli, and S. Mariani, "Improving reinforcement learning exploration with causal models of core environment dynamics," submitted to PRIMA 2024 Kyoto.
3. G. Briglia, F. Zambonelli, and S. Mariani, "Causality driven reinforcement learning: The general framework," for AAMAS 2025 Detroit.

Skills

Languages	Italian mother tongue and fluent in English
Coding	Python, PyTorch, Tensorflow, C, C++, Matlab, R, Rapid
RL Libraries	stable-baselines3, cleanrl, minimalRL, RLLib, torchrl
RL Environments	Gymnasium, VMAS
Causality Libraries	causalnex, pgmpy, gCastle, do-why, causal-learn
Distributed Systems	CUDA, file systems, multi-threaded design, parallel/distributed computing
Version Control	GitHub, Git-Lab, CI/CD, Machine/Deep/Reinforcement Learning pipelines
Operating Systems	Windows, Linux
Misc.	Academic research, teaching, training, consultation, Office, LaTeX

Miscellaneous Experience

Awards and Achievements

2024 **OxML 2024 partial scholarship**, University of Oxford

Miscellaneous Experience (continued)

2023 — **Best 20 recent graduates in Italy in the engineering area**, `AlmaLaurea`.

Certifications

2024 — **`Reinforcement Learning Specialization`**, University of Alberta.

2023 — **`Deep Learning Specialization`**, DeepLearning.AI.

`Game Theory`, Stanford Online.

2022 — **`Crash Course on Python`**, Google.

2021 — **English Language Certification: B2**, Trinity College of London.

Others

Nov 2023 - present — **TechSportTrackAnalysis**, *by me and colleague*: development of a social network based on amateur sports statistics obtained from video footage of matches. The core of the system is a set of AI algorithms refined ad-hoc for the purpose.

Jan 2018 - Feb 2018 — **PLC software developer,** `Elettric80`.
School-work experience, PLC department.

I authorize the processing of personal data contained in my curriculum vitae on the basis of Legislative Decree 196/2003, coordinated with Legislative Decree 101/2018, and EU Regulation 2016/679.