

# CURRICULUM VITAE – LORENZO STECCANELLA

## PERSONAL INFORMATIONS

Lorenzo Steccanella  
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[Linkedin](#), [Github](#), [Google Scholar](#).

## WORKING EXPERIENCES

### **2023 March → Research Scientist Acciona Innovation Department - UPF.**

**Area:** Reinforcement Learning.

**Achievements:** Reduction in power consumption up to 18%.

**Tasks:** As a Research Scientist at Acciona Innovation Department, I collaborate with Universitat Pompeu Fabra to apply Reinforcement Learning techniques to control and optimize wastewater treatment plants and biological reactors.

### **2021 - 2023 → Teaching Assistant Barcelona School of Economics Summer School.**

**Area:** Deep Learning.

**Tasks:** Developed course material and taught practical sessions in collaboration with Prof. Vicenç Gómez and Prof. Anders Jonsson.

### **2018 October - 2023 February → Ph.D. and Teaching Assistant at UPF.**

**Area:** Reinforcement Learning, Deep Learning.

**Tasks:** My research focused on developing novel Reinforcement Learning algorithms to improve sample efficiency and exploration in sparse reward settings. As a teaching assistant, I helped develop course materials, led discussion sections and lab sessions, graded assignments, and provided one-to-one assistance to students.

### **2018 February - 2018 July → Internship at Blue Brain Project (EPFL).**

**Area:** Deep Learning, Generative Models.

**Achievements:** Improved speed of rendering up to 60fps with 2k resolution.

**Tasks:** My responsibilities included developing generative models such as Variational Autoencoders (VAE) and Generative Adversarial Networks (GANs) for image reconstruction, analyzing the performance of these models, and collaborating with other researchers on the project.

### **2016 December - 2018 January → Research Engineer European project INTCATCH 2020.**

**Area:** Localization, Computer Vision, Deep Learning, Embedded Systems.

**Achievements:** Autonomous navigation without the need of teleoperators.

**Tasks:** Developed and deployed localization algorithms based on Kalman Filters and Particle Filters. Led the development of an innovative system based on Deep Learning Semantic Segmentation for water-line detection and obstacle detection from images captured by cameras mounted on autonomous surface vehicles.

## EDUCATION

### **Ph.D. Reinforcement Learning.**

Universitat Pompeu Fabra, Artificial Intelligence and Machine Learning Research Group.

Thesis advisor: Prof. Anders Jonsson.

Thesis title: *Representation Learning for Hierarchical Reinforcement Learning*.

Completed: May, 2023.

### **Nanodegree in Self Driving Car.**

Udacity.

Completed: December, 2017.

Certificate: [Download Certificate](#).

### **Master degree (2 years) in Robotics and Intelligent Systems.**

University of Rome (Italy).

Thesis advisors: Prof. Daniele Nardi, Prof. Alessandro Farinelli.

Thesis title: *Coloured Petri Net Plans for cooperative multi-robot systems.*

Completed: July, 2016.

### **Short Master degree (1 year) in Robotics and Intelligent Systems.**

University of Örebro (Sweden).

Thesis advisor: Prof. Martin Magnusson.

Thesis title: *Fast, Continuous State Path Smoothing for Waist Articulated Vehicle.*

Completed: June, 2015.

### **Bachelor degree in Bioinformatics.**

University of Verona.

Thesis advisor: Prof. Manuele Bicego.

Thesis title: *Approcci per l'analisi del segnale cerebrale p300 per la realizzazione di un'interfaccia brain computer (bci).*

Completed: July 2013.

## PUBLICATIONS

### **Coloured Petri Net Plans for Cooperative Multi-robot Systems.**

Lorenzo Steccanella, Alessandro Farinelli, Luca Iocchi, Daniele Nardi. Coloured Petri Net Plans for Cooperative Multi-robot Systems - In Proceedings of the 3rd Italian Workshop on Artificial Intelligence and Robotics (AIRO) Genova, 28 November, 2016.

### **Waterline and obstacle detection in images from low-cost autonomous boats.**

Steccanella Lorenzo, et al. Waterline and obstacle detection in images from low-cost autonomous boats for environmental monitoring. - Robotics and Autonomous Systems 124 (2020): 103346.

### **Hierarchical reinforcement learning for efficient exploration and transfer.**

Steccanella Lorenzo, et al. Hierarchical reinforcement learning for efficient exploration and transfer. - 4th Lifelong Learning Workshop at ICML 2020.

### **Hierarchical Representation Learning for Markov Decision Processes.**

Steccanella Lorenzo, et al. Hierarchical Representation Learning for Markov Decision Processes. - IJCAI 2021 Generalization in Planning Workshop ([Best Spotlights Talk and Poster Award](#)) - CoLLAs 2023.

### **State Representation Learning for Goal-Conditioned Reinforcement Learning.**

Steccanella Lorenzo, et al. State Representation Learning for Goal-Conditioned Reinforcement Learning. - ECML PKDD 2022.

### **Asymmetric Norms to Approximate the Minimum Action Distance**

Steccanella Lorenzo, et al. Asymmetric Norms to Approximate the Minimum Action Distance - GCRL Workshop NeurIPS 2023.

## COMPUTER SKILLS

**Programming, scripting and markup languages** Bash, L<sup>A</sup>T<sub>E</sub>X.

**Advance Programming skills** C++, Java, Python, ROS(Robot Operating System), SQL.

**Library** OpenCV, Numpy, TensorFlow, Pytorch, Pandas, RLib, StableBaseline3, Gazebo.

**Embedded Systems** NVIDIA Jetson, Raspberry Pi.

**Others** AWS, Docker, Conda, Git, Weights & Biases, Jupyter Notebook, CI.

## PERSONAL SKILLS AND COMPETENCIES

**Mother tongue** Italian.

**Other Languages** English, Spanish.