Niccolò Turcato

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Date of birth: 29/09/1998 Nationality: Italiana Mother tongue(s): Italiano

Qualified to practice Engineering profession in Italy since 19th January 2023.

CURRENT OCCUPATION

Software and Advanced Systems R&D Engineer: Isolcell S.p.a.
Main expertise: Artificial Intelligence and Machine Learning for Advanced Systems

EDUCATION
Doctorate

PhD Candidate: Department of Information Engineering of the University of Padova.

Supervisor: prof. Ruggero Carli.

Thesis Title: Reinforcement Learning Applications in Robotic Systems, from Athletic Intelligence to Manipulation.

Graduate studies

MSc degree in Computer Engineering (University of Padova) 2020-2022

Final Grade: 110L

Final Project: Model Based Reinforcement learning for industrial robotics applications.

Supervisor: prof. Ruggero Carli

Undergraduate studies

First level degree in Ingegneria Informatica (University of Padova) 2017-2020

Final Grade: 110

Final Degree Project: Implementazione dell'euristico ZIRound per problemi MIP

Supervisor: prof. Domenico Salvagnin

High School

High School Diploma: "Diploma di istruzione Tecnica - indirizzo INFORMATICA e TELECOMUNICAZIONI - articolazione INFORMATICA"
I.I.S. Viola-Marchesini (Rovigo - Italy - https://www.iisviolamarchesini.edu.it)

Start (12, 09) –End (17, 07)

Grade: 89 (over 100)

RELEVANT EDUCATIONAL EXPERIENCES

(21/03/2022 - 06/05/2022) Research Training experience at the department of Information Engineering of the University of Padova, under the supervision of prof. Ruggero Carli, the topic was: "Development of Deep Learning and Gaussian Processes based learning algorithms for estimation of inverse dynamics of mechanical systems".

(2017) Computer technical certification Cisco IT essentials v5.0 at I.I.S. "VIOLA-MARCHESINI", Rovigo.

(2016) General worker training, Medium-risk worker training, low risk fire worker training, at I.I.S. "VIOLA-MARCHESINI", Rovigo.

RELEVANT PROFESSIONAL EXPERIENCES

(Jun–Dec 2024) Visitor Researchers at ABB Corporate Research Center, Västerås, Sweden. Research topic: “Reward design for Reinforcement Learning with Large Language models, with robotics manipulation applications“. Supervisor: Matteo Iovino.

(2022-2025) Teaching Assistant for Reinforcement Learning course at the Information Engineering Department of the University of Padova.

(Mar-Jun 2025) Teaching Assistant for Mobile Robotics laboratory course at the Information Engineering Department of the University of Padova.

(2021- 2023) Tutor for Calculus 1 and Linear Algebra courses for the Information Engineering, Ingegneria Biomedica and Ingegneria Aerospaziale BcS Degrees at the Information Engineering and Industrial Engineering Departments of the University of Padova.

(2020) Tutor for volunteer project TOP (Tutoring Online Project) organized by Harvard and Bocconi University. (https://leap.unibocconi.eu/projects/progetto-top)

(2015-2016) Highschool internships

PERSONAL SKILLS

English

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Computer skills

Advanced: Programming (C++, Python, Matlab, Java, C#, ARM Assembly), software development and versioning. Machine Learning and Deep Learning knowledge and experience. Robot programming knowledge and experience.

Intermediate: LaTeX and Office packages skills. Web development. Computer systems and computer networks repair and maintenance.

Basic: Video editing, CAD.

ADDITIONAL INFORMATION

Awards

Winner of the 2nd competition “AI Olympics With RealAIGym: Is AI Ready for Athletic Intelligence in the Real World?” held at the International Conference on Intelligent Robots and Systems 2024 (IROS 2024).

Paper name: “Learning control of underactuated double pendulum with Model-Based Reinforcement Learning ”.

(https://ai-olympics.dfki-bremen.de/aiolympics-at-iros-2024/)

Winner of the competition “AI Olympics With RealAIGym: Is AI Ready for Athletic Intelligence in the Real World?” held at the International Joint Conference on Artificial Intelligence 2023 (IJCAI 2023).

Paper name: “Athletic Intelligence Olympics challenge with Model-Based Reinforcement Learning”.

(https://ai-olympics.dfki-bremen.de/aiolympics-at-ijcai-2023/)

Premio “Sergio Gambi”, in both 2021 and 2022. Awarded as first ranked between Master’s Degree students and 4th and 5h year single-cycle Master’s Degree students of the Schools of Engineering and Science, of the University of Padova, in possession of the merit and income requirements established by the call for applications.

(https://www.unipd.it/archivio-borse-premi-studio-studenti)

PUBLICATIONS

Journals

Turcato, N., Iovino, M., Synodinos, A., Dalla Libera, A., Carli, R., & Falco, P. (2025). Towards autonomous reinforcement learning for real-world robotic manipulation with large language models. *IEEE Robotics and Automation Letters*.

Sinigaglia, A., Turcato, N., Ruggero, C., & Susto, G. A. (2025). Edge Delayed Deep Deterministic Policy Gradient: efficient continuous control for edge scenarios. *IEEE Transactions on Automation Science and Engineering*.

Wiebe, F., Turcato, N., Libera, A. D., Choe, J. S. B., Choi, B., Faust, T. L., ... & Kumar, S. (2025). Reinforcement Learning for Robust Athletic Intelligence: Lessons from the 2nd 'AI Olympics with RealAIGym' Competition. IEEE *Robotics and Automation Magazine*.

International Conferences

G. Giacomuzzo, N. Turcato, A. Dalla Libera, R. Carli, “Advantages of a physics-embedding kernel for robot inverse dynamics identification”, MED’22 30th Mediterranean Conference on Control and Automation.

G. Giacomuzzo, N. Turcato, A. Dalla Libera, R. Carli, “Embedding the Physics in Black-box Inverse Dynamics Identification: a Comparison Between Gaussian Processes and Neural Networks”, IFAC 22nd World Congress 2023, Yokohama, JAPAN.

N. Turcato, A. Dalla Libera, G. Giacomuzzo, R. Carli, “Teaching a Robot to Toss Arbitrary Objects with Model-Based Reinforcement Learning”, 9thInternational conference on control, decision and information technologies 2023, Rome, Italy.

D. De Lazzari, P. Simonetto, N. Turcato, L. Tonin, R. Carli, “Nonlinear Model Predictive Control of a BMI-Guided Wheelchair for Navigation in Unknown Environments “, 2024 European Control Conference (ECC), Stockholm, Sweden, 2024.

Wiebe, F., Turcato, N., Dalla Libera, A., Zhang, C., Vincent, T., Vyas, S., ... & Kumar, S. (2024, January). Reinforcement learning for athletic intelligence: Lessons from the 1st “ai olympics with realaigym” competition,”. In Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence, IJCAI-24 (K. Larson, ed.) (pp. 8833-8837).

Niccolò Turcato, Giulio Giacomuzzo, Felix Wiebe, Ruggero Carli, Alberto Dalla Libera “Experimental Application of Soft-Constrained Model-Based Reinforcement Learning to a Real Underactuated Robot”, IFAC J3C 2025.

Marco Calì, Alberto Sinigaglia, Niccolò Turcato, Ruggero Carli, Gian Antonio Susto ”Finetuning Deep Reinforcement Learning Policies with Evolutionary Strategies for Control of Underactuated Robots”, IFAC J3C 2025.

Matteo Dal Nevo, Niccolò Turcato, Alberto Sinigaglia, Riccardo Lorigiola, Olivia Casadei, Ruggero Carli, Angelo Cenedese, Gian Antonio Susto “Deep Reinforcement Learning for Autonomous Navigation: Sim-To-Real Transfer on TurtleBots”, IFAC J3C 2025.

Niccolò Turcato, Alberto Sinigaglia, Alberto Dalla Libera, Ruggero Carli, Gian Antonio Susto “Exploiting Estimation Bias in Clipped Double Q-Learning for Continous Control Reinforcement Learning Tasks”, IFAC J3C 2025.

PREPRINTS

Turcato, N., Libera, A. D., Giacomuzzo, G., Carli, R., & Romeres, D. (2024). Learning control of underactuated double pendulum with model-based reinforcement learning. *arXiv preprint arXiv:2409.05811*.

Turcato, N., Calì, M., Libera, A. D., Giacomuzzo, G., Carli, R., & Romeres, D. (2025). Learning global control of underactuated systems with Model-Based Reinforcement Learning. *arXiv preprint arXiv:2504.06721*.

Turcato, N., Giacomuzzo, G., Terreran, M., Allegro, D., Carli, R., & Libera, A. D. (2025). Data efficient Robotic Object Throwing with Model-Based Reinforcement Learning. *arXiv preprint arXiv:2502.05595*. Under Review.