Stefano Di Gregorio

Personal Details

AFFILIATION:	Department of Electrical, Electronic and Information Engineering "G. Marconi", Alma Mater Studiorum Università di Bologna, Viale del Risorgimento 2, 40136, Bologna, Italy
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DATE OF BIRTH:	April 21, 2000

Current Position

1 Nov 2024 – current	Ph.D. Candidate in Systems and Control Engineering Department of Electrical, Electronic and Information Engineering "G. Marconi", Alma Mater Studiorum Università di Bologna, Italy *Supervisor:* Prof. G. Notarstefano *Co-Supervisor:* Ing. I. Ragazzini *Topic:* Optimal Control and Learning for Complex Systems in Smart Industries *Industrial Collaboration:* I.M.A. S.p.A., Ozzano dell'Emilia (IT)

Education

Jul 2025	SIDRA PhD Summer School in STOCHASTIC CONTROL AND REINFORCEMENT LEARNING & CONTROL METHODS FOR DISTRIBUTED OPTIMIZATION *Institution:* Bertinoro University Centre, Italy *Teachers:* S. Dey, S. Garatti, R. Carli, I. Notarnicola, *Activities:* Analysis of stochastic control and reinforcement learning algorithms; design and analysis of distributed optimization algorithms for multi-agent systems.
Jun 2025	EECI International Graduate School on Control in THE SCENARIO APPROACH: DATA SCIENCE FOR SYSTEMS, CONTROL, AND MACHINE LEARNING *Institution:* University of Oxford, UK *Teachers:* M. Campi, S. Garatti *Activities:* Scenario approach for data-driven decision making; risk evaluation and out-of-sample robustness in control, learning, and optimization problems.
Feb 2025	International PhD Course in REINFORCEMENT LEARNING *Institution:* IMT School for Advanced Studies, Lucca, Italy *Teacher:* M. Zanon *Activities:* Analysis (stability and safety guarantees) and implementation of RL algorithms.
Dec 2024	International PhD Course in NUMERICAL OPTIMIZATION *Institution:* IMT School for Advanced Studies, Lucca, Italy *Teacher:* A. Bemporad *Activities:* Design and analysis of numerical algorithms for constrained optimization problems.
7 Oct 2024	Master degree in AUTOMATION ENGINEERING (LM-25), Alma Mater Studiorum Università di Bologna, Italy

	110/110 cum laude *Advisor:* G. Notarstefano *Thesis:* Learning-based control strategies for safe autonomous robot navigation in unknown environments.
19 Jul 2022	Bachelor degree in Automation Engineering (L-8), Alma Mater Studiorum Università di Bologna, Italy 110/110 cum laude *Advisor:* A. Tilli *Thesis:* Study of the MTPA control technique for SynRM motor.

Positions Held

1 Nov 2024 – Present	Research Collaboration *Company:* IMA, Ozzano dell'Emilia (BO), Italy
1 Nov 2023 – 31 Jan 2024	Project Collaboration *Company:* Sacmi Packaging and Chocolate, Bologna (BO), Italy

Research Projects Participation

1 Mar 2025 – 1 Apr 2025	*Project:* APACHE *Project Coordinator:* Prof. M. Carricato *Position:* PhD Student.
1 Mar 2025 – 1 Apr 2025	*Project:* DiScreet AI - Distributed Secure on Edge Platform for AI in industrial automation *Project Coordinator:* Prof. G. Notarstefano *Position:* PhD Student. *Role:* Integration of distributed optimization algorithms in a multiprocessor platform. Development of experimental demos for control and optimization case studies in robotics and industrial automation.
1 Nov 2024 – 1 Jul 2025	*Project:* Plaas+ (PLc As A Service) funded by PNRR - Next Generation EU *Project Coordinator:* IMA *Position:* PhD Student. Research activities within the IMA collaboration. *Role:* Development of models for control of industrial systems. Integration of advanced control algorithms and virtual PLCs via the OPC-UA communication protocol.

Awards

Sep 2025	*Finalist at the Best Thesis Award 2025 IEEE Control Systems Society Italy Chapter.* National award assigned to the 10 best master's theses in the field of Systems and Control discussed at Italian universities in the biennium 2024–2025
Sep 2022	*Total merit-based exemption from Alma Mater Studiorum Università di Bologna.*

Total exemption from enrolment fees if students obtained the first cycle degree during 2021/2022 a.y. at the University of Bologna, by 31 July 2022, within their course's established time period and with a degree mark of no less than 110/110

Mentoring Experience and Student Service

2024 – current	Co-supervision of Master Theses in Automation Engineering at University of Bologna: M. Zambelli (collab. with IMA, 2024), E. Cortecchia (collab. with IMA, 2025), D. Zarabini (2025), C. Dallara (2025), S. Lotfi (2025)
2025 – current	Co-supervision of Bachelor Theses in Computer Engineering at University of Bologna: A. Mazzani (2025)

Software Proficiency

Advanced:	Python, ROS 2, Matlab/Simulink, Latex, Microsoft Office Suite.
Intermediate:	Docker, Git, PLC, C, SkLearn, OpenCV, PyTorch, TensorFlow, Linux, Microsoft Windows, macOS.
Basic:	C++, 20-sim, Rust.

Projects

Sep 2025	Model Predictive Control for Thermal Systems. Development and experimental validation of an MPC for an industrial machine. Focused on thermal dynamics management and successfully tested on the real hardware.
Oct 2024	Autonomous mobile robot navigation in unknown environments. Development of a learning based control strategy for safe autonomous robot navigation in unknown environments. The project has been developed using ROS 2 and the Webots simulator. The reference control action sent to the robot is rectified by a CBF-based safety layer where the safety constraints are learned via a Gaussian Process trained with the data collected by the LIDAR sensor.
Jul 2024	Autonomous mobile robotics for Covid-19 sanitization. Development of an Autonomous Mobile Robotics system to sanitize environments from Covid-19. Design and implementation of a ROS 2 personalized stack for mapping, localization and navigation. The sanitization has been also simulated by training the robot via a Deep Reinforcement Learning algorithm.
Jul 2024	Modelling and Control of a UR5 Robot. Modelling of link, joints and harmonic drives of a UR5 robot using bond graphs and control in simulation via 20-sim. Development of a PID + gravity compensation controller and of a Sliding Mode robust controller (SMC).
Jun 2024	Distributed Algorithms for multi-agent systems.

	The project aims to develop a distributed classification algorithm and an aggregative optimization algorithm for multi-robot systems. In the first case, the data is randomly distributed among the agents. In the second case, the agents have to move in an aggregative way towards a target while satisfying local and global objectives. The second task has been performed using Python and ROS 2.
JAN 2024	PLC Control of an automatic machine for product manipulation. Design and implementation of a PLC control system to synchronize the movement of a conveyor belt and four slaves to manipulate chocolate bars. Collaboration with SACMI Packaging and Chocolate S.p.A.
FEB 2023	Product recognition on store shelves. Development of a computer vision system that, given a reference image for each product, is able to identify boxes of cereals of different brands (and different versions of the same brand) from a shelf image. For each type of product displayed on the shelf, the system reports the number of boxes present, the dimension of each box and the position of the box on the shelf.
JUL 2022	Modeling and Control of a SynRM Motor. Modelling and control in simulation of a SynRM motor via Matlab/Simulink. The developed control strategy is based on the MTPA technique.

Bologna, March 3, 2026	*Stefano Di Gregorio*