Marco Fabris

Curriculum vitae et studiorum

Personal information

Birth: Born in Dolo (Italy), on January 13, 1992
Current position: Research fellow (RTDA) at the Università degli Studi di Padova
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Summary
Marco Fabris received the Laurea (M.Sc.) degree (with honors) in Automation Engineering and his Ph.D. both from the University of Padua (UniPD), in 2016 and 2020, respectively. In 2018, he spent six months at the University of Colorado Boulder, USA, as a visiting scholar (funded by the awarded grant "Ing. Aldo Gini") focusing on optimal time-invariant formation tracking. In 2020-2021, he was post-doctoral fellow at the Philadelphia Flight Control Lab. in the Faculty of Aerospace Engineering, Technion - Israel Institute of Technology, Haifa. There, he was in charge to work on the project "Development of a secure-by-design approach for design and analysis of consensus networks under attack". From January 2022 to July 2023 he was post-doctoral fellow at UniPD and he focused on the projects "Preliminary study for the development of flow estimation and control algorithms in a water-channel network", "Water-channel network modeling, estimation, and control" and "Development and analysis of data-driven control methods". He is currently research fellow (RTD-A) with the Telecommunications group at the Department of Information Engineering (DEI), UniPD and he is involved in work packages 3 and 4 of the spoke 8 "MaaS and Innovation Service", under the Centro Nazionale per la Mobilità Sostenibile (MOST). His main research interests involve graph-based consensus theory, analysis and control of resilient networks, optimal decentralized control and estimation for networked systems, data-driven predictive control and optimization strategies for mobility as a service.
Dr. Fabris fluently speaks Italian, English, Portuguese and Spanish. In 2010 he spent a few months in an internship with Serai S.p.a., Legnaro (PD), where he worked as a technician on electronic devices. Since 2017, he has been in charge to assist students in their thesis activity and lectures. Also, since 2023 he has been part of the teaching faculty at UniPD. Dr. Fabris has been co-author of more than 20 scientific papers. He is currently member of the IEEE and IFAC communities, the Centro studi di economia e tecnica dell'energia Giorgio Levi Cases, the Space, Aerial and Ground Control Systems (SPARCS) and the Artificial Intelligence, Machine learning and Control (AMCO). He served as session chair for the 18th European Control Conference (ECC) in Naples and the 1st IFAC Joint Conference on Computers, Cognition and Communication (J3C). He has served as a reviewer for several journals and congresses, he is currently an associate editor for the ECC, and he is member of two IFAC technical committees (TC 1.1 Modelling, Identification and Signal Processing; TC 1.5 Networked systems).

Education, training and qualifications

Nov 2023 - Dec 2023 — **Teaching for Learning**, *Università degli Studi di Padova*, Padua (Italy), level: new faculty and base.

Oct 2016 – Dec 2019 — **Ph.D. in Information Science and Technology**, *Università degli Studi di Padova*, Padua (Italy).
Thesis : "Distributed Optimization Strategies for Mobile Multi-Agent Systems".
Research areas: Multi-agent Systems, Distributed Estimation, Robotic Coverage, Formation Control, Spectral Graph Theory, Optimal Control.
Advisor: prof. Angelo Cenedese.

Dec 2016 — **Information Engineering State Exam**, *Università degli Studi di Padova*, Padua (Italy), final grade: 193/240.

Oct 2014 – Sep 2016 — **Master's degree in Automation Engineering**, *Università degli Studi di Padova*, Padua (Italy), final grade: 110/110 summa cum laude, weighted mean of grades: 28.733/30.
Thesis : "Coverage and dispatch of robotic swarms for event detection and monitoring".
Supervisor: prof. Angelo Cenedese.

Oct 2011 – Jul 2014 — **Bachelor's degree in Information Engineering**, *Università degli Studi di Padova*, Padua (Italy), final grade – 110/110, weighted mean of grades – 28.034/30.
Thesis : "Analysis and design of a class B buffer stage with compensation of the crossover distortion".
Supervisor: prof. Leopoldo Rossetto.

Sep 2006 – Jul 2011 — **High schools**, *I.T.I.S. F. Severi*, Padua (Italy), final grade: 100/100.
Qualification: industrial technician specialized in Electronics and Telecommunications.

Attendance to graduate schools

Feb 2024 — **EECI course**, *visiting researcher at the University of Oxford*, Oxford (UK), final examination: passed (21 hours, 3 ECTS).
Topic: Optimization and Control of Complex Multi-Agent Systems: Theory and Applications
Instructors: K. Margellos, M. Prandini, A. Falsone

Oct 2019 — **Ph.D. course**, *visiting student at IMT School for Advanced Studies*, Lucca (Italy).
Topic: Numerical Methods for Optimal Control
Instructor: M. Zanon

Jul 2017 — **Ph.D. summer school**, *visiting student at SIDRA*, Bertinoro (Italy).
Topics: (1) Formal methods for the control of large-scale networked nonlinear systems with logic specifications; (2) Port-Hamiltonian modelling and passivity-based control of physical systems.
Instructors: (1) M.D. Di Benedetto, G. Pola, P. Pepe and A. Borri; (2) A. Macchelli, B. Maschke, C. Secchi, S. Stramigioli.

Attendance to international workshops

Sep 2022 — **European Research Network on System Identification (ERNSI) 2022**, *Catholic University of Leuven*, Leuven (Belgium).

Jan 2017 — **Hybrid Dynamical Systems**, *Università degli Studi di Trento*, Trento (Italy).
Optimization techniques for hybrid dynamical systems: from theory to applications [`https://r.unitn.it/en/maths/opthysys/participants`].

Attendance to additional Ph.D. and master courses

Important note.
In addition to the regular courses I attended during my Master's and PhD studies, I also completed the following courses, driven by my strong interest in STEM subjects and by my commitment to continuous learning and professional development.

Oct 2023 - Dec 2023 — **Reinforcement Learning**, *Università degli Studi di Padova, Department of Information Engineering*, Padova (Italy).
Master course. Instructors: prof. G. A. Susto and R. Carli.

Oct 2022 - Jan 2023	**Machine Learning**, *Università degli Studi di Padova, Department of Information Engineering*, Padova (Italy).
	Master course. Instructor: prof. A. Chiuso. Homework has been solved during the course.
Mar 2021 - Jun 2021	**Robust Control**, *Technion - Israel Institute of Technology, Department of Aerospace Engineering*, Haifa (Israel).
	Master Course. Instructor: prof. D. Zelazo. Homework has been solved during the course.
Nov 2020 - Dec 2020	**Rigidity Theory**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Ph.D. course. Instructor: prof. G. Michieletto.
Jun 2019 - Jul 2019	**Deep Learning**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Ph.D. course. Instructors: prof. G. A. Susto, C. Masiero (Ph.D.) and M. Terzi.
May 2019 - Jun 2019	**Heuristics for Optimization**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Ph.D. course. Instructor: prof. D. Salvagnin.
Apr 2019 - Jun 2019	**Analysis and Control of Multi-agent Systems**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Ph.D. course. Instructor: prof. D. Zelazo. Homework has been solved during the course.
Nov 2018 - Jan 2019	**Analisi Superiore (Optimal Control: the Pontryagin's Maximum Principle)**, *Università degli Studi di Padova, Department of Mathematics*, Padua (Italy).
	Master course. Instructor: prof. F. Rampazzo.
May 2017 - Jun 2017	**Statistical Methods**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Ph.D. course. Instructor: prof. L. Finesso.
Mar 2017 - Jun 2017	**Game Theory**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Master course. Instructor: prof. L. Badia.

Academic activity

Academic appointments

Jul 2023 – currently	**Research fellow / nontenure-track assistant professor**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Contract denomination in Italian: ricercatore a tempo determinato - tipo A Topic: Reinforcement Learning, Operations Research and Networked Control for Mobility as a Service (MaaS) Related research projects and contracts: ○ MaaS and Innovative Services (Spoke 8, MOST)
Jul 2022 – Jul 2023	**Postdoctoral fellow**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Advisor: prof. Alessandro Chiuso Topic: machine learning and data-driven control Related research projects and contracts: ○ Development and analysis of Data Driven Control methods
Oct 2021 – Jul 2022	**Postdoctoral fellow**, *Università degli Studi di Padova, Department of Information Engineering*, Padua (Italy).
	Advisor: prof. Angelo Cenedese Topic: control of networked systems Related research projects and contracts: ○ Water-channel network modeling, estimation, and control ○ Preliminary study for the development of flow estimation and control algorithms in a water-channel network

Jan 2020 – Sep 2021	**Postdoctoral fellow**, *Technion: Israel Institute of Technology, Faculty of Aerospace Engineering*, Haifa (Israel).

Advisor: prof. Daniel Zelazo
Topic: security and control of networked systems
Related research projects and contracts:
○ Development of a secure-by-design approach for design and analysis of consensus networks under attack

Feb 2018 – Aug 2018	**Visiting scholar**, *University of Colorado Boulder, Department of Electrical, Computer & Energy Engineering Engineering*, Boulder (Colorado, United States of America).

Advisor: prof. John Hauser
Topic: control of mobile multi-agent systems
Related research projects:
○ Optimal Time-Invariant Formation Tracking for a Second-Order Multi-agent System

Research interests

Control of mobile multi-agent and networked systems.
Designing and controlling groups of mobile agents to achieve specific collective goals has drawn a considerable attention over the last decades. An individual agent may be programmed to be fully autonomous; however, due to physical and resource constraints, its capabilities may be limited. On the other hand, groups of individuals exchanging information and optimally self-organizing may achieve higher performances while accomplishing a prescribed task. In nature, examples of interacting "swarms" abound and, such inspired, designs for multi-agent systems have been widely provided to be used in applications like vehicle coordination, exploration and mapping of unknown environments, cooperative transportation, surveillance and monitoring of dynamic scenes and crowds. Similarly, a network can be generically defined as a system composed of multiple devices (e.g., sensor nodes) endowed with limited computation, sensing and communication capabilities, which interact in order to solve problems that are beyond the capacity and knowledge of each single element, accomplishing complex global tasks through the realization of simple local rules.

Most of my research activity has been spent in order to find new strategies, protocols, control techniques and analyze the interactions of multi-agent systems and networks. The following lists summarizes my main investigations pertaining to the analysis, control and design of mobile multi-agent systems:
○ dynamic coverage and dispatch with limited sensing capabilities;
○ smart control for robotic formation maintenance highly based on formation control;
○ disruption of adversarial semi-autonomous networks;
whereas, the following list illustrates my efforts towards the study stationary networked systems:
○ distributed estimation from relative measurements;
○ localization and estimation in virtual sensor networks;
○ secure and adaptive agreement protocols;
○ analysis of the complexity of dynamical networks;
○ characterization of certain classes of networks.

Machine learning and data-driven control.
Among advanced control strategies, Model Predictive Control (MPC) is nowadays one of the most widely employed in practice, thanks to its intrinsic ability to handle constraints, time-varying dynamics and multiple (potentially conflicting) objectives. Nonetheless, the ultimate performance attained in closed-loop with MPC critically depends on the predictive capabilities of the model featured within its optimization routine. As such, the ability of MPC to deliver the desired control performance might be jeopardized when such a mathematical description of the plant is not accurate enough. This well-known issue, that has led many research efforts towards the development of robust and adaptive MPC solutions, is particularly relevant when no mathematical model of the plant is available. In this case, system identification can be of help in allowing one to retrieve an accurate model of the system from data. Alternatively, in such a data-driven context, the unavoidable uncertainty of models can be dealt with by skipping an explicit modeling step, using data to directly map the control law. One of the key ideas to make this shift possible is to think of past input/output records, traditionally used in system identification as training data to learn a parametric dynamical model, as a nonparametric description of its dynamical behavior.

My research also copes with the so called data-driven predictive control problem. This can be intended as a Machine Learning problem in which the goal is to compute the best predictive control without exploiting the classic initial identification step to retrieve the underlying model. Here we look at input/output trajectories from a subspace identification oriented perspective in order to develop a systematic framework to deal with uncertainty in designing data-driven predictive controllers within a stochastic setting. Specifically, by relying on the statistical analysis of the uncertainty in the data-driven predictions, regularization schemes are introduced to limit mismatches between the true outputs and their prediction and, ultimately, improve closed-loop performance.

Mobility as a service and innovative services.

Smart mobility represents a shift in how we approach transportation, aiming to create efficient, sustainable, and user-centric systems. Digital technologies like IoT, AI, and data analytics drive smart mobility solutions, enabling seamless integration of transportation modes and real-time monitoring. Examples include traffic optimization and monitoring, demand forecasting, public transit enhancement, micromobility management, and predictive maintenance. By leveraging data-driven and OR-based algorithms, my research on MaaS aims to enhance transportation quality, making transport and urban networks more efficient and sustainable.

Research projects

Jul 2023 – currently
MaaS and Innovative Services.
- Project PIs: proff. G. A. Susto, A. Zanella
- Role in the project: co-investigator in the Spoke 8 "Mobility as a Service and Innovation Service"(chair of the committee: prof. Michele Ottomanelli), within the National Italian Center for Sustainable Mobility (CN MOST) [`https://www.centronazionalemost.it/Spoke8.html`]. Activity spent in two work packages: system monitoring and control (WP3, leader: prof. Luigi Atzori); data integration, analysis, security and delivery (WP4, leader: prof. Giuseppe Vizzari). Duties: directive manager of the WP3 and WP4 workflow for the team members of the Department of Information Engineering (UniPD); organizer of several WP3 research modules; coauthor of deliverables D3.3, D3.4, D3.5, D4.4, D4.4b; reviewer of D3.4, D4.4; main coordinator of D3.5. Invited guest to the workshop: "MaaS & Servizi Innovativi per la Mobilità"at the Politecnico di Bari (July 19, 2024).
- Contract type: ricercatore a tempo determinato - tipo A (research fellow / nontenured-track assistant professor), awarded by DEI, UniPD, Padua (Italy).
- Funds: 36 months, from the National Recovery and Resilience Plan

Jul 2022 – Jul 2023
Development and analysis of data-driven control methods.
- Project PI: prof. A. Chiuso
- Role in the project: participant
- Contract type: assegno di ricerca (research associate grant), awarded by DEI, UniPD, Padua (Italy).
- Funds: 12-month grant No. 67/2022 Prot. No 2151 Tit. VII cl 16 Fasc. 81.

Feb 2022 – Jul 2022
Water-channel network modeling, estimation, and control.
- Project PI: prof. A. Cenedese
- Role in the project: participant and coauthor of deliverables on the topic
- Contract type: borsa di ricerca (research scholarship), awarded by DEI, UniPD, Padua (Italy).
- Funds: 5-month scholarship No. 3/2022 Prot. 35 Tit. VI Cl. 16.

Oct 2021 – Jan 2022
Preliminary study for the development of flow estimation and control algorithms in a water-channel network.
- Project PI: prof. A. Cenedese
- Role in the project: participant
- Contract type: prestazione di lavoro autonomo (freelancing research activity), awarded by DEI, UniPD, Padua (Italy).
- Funds: 1-month scholarship No. 104/2021 Tit. III Cl. 13.

Jan 2020 – Sep 2021
Development of a secure-by-design approach for design and analysis of consensus networks under attack.
- Project PIs: prof. D. Zelazo, prof. X. Chen and prof. M.A. Belabbas
- Role in the project: participant and coauthor of research proposals
- Contract type: postdoctoral fellowship (research associate grant), awarded by dept. of Aerospace Eng., Technion.
- Funds: 20-month grant No. 2017658 from the United States-Israel Binational Science Foundation and 20-month grant No. 1809315 from the United States National Science Foundation.

Feb 2018 – Aug 2018 **Optimal Time-Invariant Formation Tracking for a Second-Order Multi-agent System**.
- Project PI: M. Fabris, the undersigned (under the supervision of prof. A. Cenedese and prof. J. Hauser)
- Contract type: recepient of borsa di ricerca (research scholarship), awarded by "Fondazione Ing. Aldo Gini 2017", Padua, Italy.
- Funds: 6-month scholarship for abroad activity, No. 64/17.

Academic network and collaborations

- In addition to my work within the Automatica group in the Department of Information Engineering, I collaborate with the following research groups of the University of Padova:
  - Information and Communication Technology (the SIGNET team; in particular, prof. Andrea Zanella, Dr. Federico Chiariotti, Dr. Jacopo Pegoraro) in the Department of Information Engineering.
  - Operations Research (prof. Roberto Roberti) in the Department of Information Engineering.
  - Transportation Systems (prof. Riccardo Rossi, prof. Massimiliano Gastaldi, Dr. Riccardo Ceccato) in the Department of Civil, Environmental and Architectural Engineering.
  - Energy Systems (Dr. Gianluca Carraro) in the Department of Industrial Engineering.
- Moreover, I maintain academic collaborations with the following universities:
  - Politecnico di Bari (prof. Michele Ottomanelli, prof. Agnese Pinto, Dr. Ilaria Cianci)
  - Politecnico di Milano (prof. Simone Formentin)
  - University of Cagliari (prof. Luigi Atzori, prof. Virginia Pilloni, Dr. Simone Porcu, Dr. Francesca Marcello, Dr. Lucia Pintor)
  - University of Calabria (prof. Gianfranco Gagliardi, Dr. Ayman El Qemmah)
  - University of Milan-Bicocca (prof. Giuseppe Vizzari)
  - University of Naples (prof. Alfredo Grieco, Dr. Alessandro Borghese)
  - Eindhoven University of Technology (prof. Valentina Breschi)
  - Technion (prof. Daniel Zelazo)
  - University of Colorado at Boulder (prof. John Hauser)

Conference talks

- "VoI-aware Scheduling Schemes for Multi-Agent Formation Control", *1st J3C*, Padua, Italy, Sep 15-18, 2025.
- "Unleashing Mixed Integer Linear Programming: Optimal Shuttle Routing Solutions for Enhanced Urban Mobility", *EURO 2024*, Copenhagen, Denmark, Jun 30 - Jul 3, 2024.
- "Efficient Sensors Selection for Traffic Flow Monitoring: An Overview of Model-based Techniques leveraging Network Observability", *EuCNC*, Antwerp, Belgium, Jun 3-6, 2024.
- "Uncertainty-aware data-driven predictive control in a stochastic setting", *IFAC*, Yokohama, Japan, Jul 9-14, 2023.
- "A Proximal Point Approach for the Distributed Estimation from Relative Measurements", *IFAC*, Berlin (virtual), Germany, Jul 12-17, 2020.
- "Distributed Strategies for Dynamic Coverage with Limited Sensing Capabilities", *MED*, Akko, Israel, Jul 03, 2019.
- "Optimal Time-Invariant Formation Tracking for a Second Order Multi-Agent System", *ECC*, Naples, Italy, Jun 29, 2019.

Seminars and invited talks

- "Robust Design of Networked Linear Dynamic Systems", seminar at DEI, UniPD, Padua, Italy, Nov 6, 2023.
- "Secure Consensus via Objective Coding: Robustness Analysis to Channel Tampering", *Israeli Association for Automatic Control*, Technion, Haifa, Israel, Jul 5, 2021. [http://iaac.technion.ac.il/workshops/2021/IAAC3abstracts.pdf]
- "Convergence of Consensus-based Estimation Algorithms on Circulant Structures", *Control Days 2019*, Università degli Studi di Padova, Padua, Italy, May 10, 2019. [https://events.math.unipd.it/controldays2019/node/40]

2021 **Network Defense Against Enemy Swarms**, *with D. Zelazo*, to Rafael Academy.

Editorial and review activity

Sep 2025 – **Member of technical committees**, *Università degli Studi di Padova*, Padua (Italy).
currently
- IFAC TC 1.1 Modelling, Identification and Signal Processing
- IFAC TC 1.5 Networked Systems

Jan 2025 – **Special session organizer**, *Università degli Studi di Padova*, Padua (Italy).
currently
- "Control and Data-Driven Approaches in IoT and Smart City Systems" at the 1st IFAC Joint Conference on Computers, Cognition and Communication, Padova, Italy, Sep. 15-18, 2025.

Jul 2024 – **Associate Editor**, *Università degli Studi di Padova*, Padua (Italy).
currently
- IFAC World Congress 2026 (TC 3.3, Telematics: Control via Communication Networks)
- European Control Conference 2026
- 1st Joint Conference on Computers, Cognition and Communication 2025
- European Control Conference 2025

Jun 2018 – **Session chair**, *Università degli Studi di Padova*, Padua (Italy).
currently
- "Control of Networks I", 64th IEEE Conference on Decision and Control, Dec 10-12, Rio de Janeiro, Brazil
- "Intelligent Control and Automation III", 1st Joint Conference on Computers, Cognition and Communication, Sep 15-18, Padua, Italy
- "Control and Data-Driven Approaches in IoT and Smart City Systems", 1st Joint Conference on Computers, Cognition and Communication, Sep 15-18, Padua, Italy
- "Autonomous Systems I", 18th European Control Conference 2019, Jun 25-28, Naples, Italy

Jan 2017 – **Reviewer for**: Automatica, Transactions on Control Networks (TCNS), IEEE Transactions on
currently Automatic Control (TAC), IEEE Control Systems Letters (L-CSS), IEEE Transaction on Industrial Informatics (IIT), Journal on Advances in Signal Processing (EURASIP), IEEE Robotics and Automation Letters (RAL), American Control Conference (ACC), Mechatronics, Mediterranean Conference on Control and Automation (MED), Multidisciplinary Digital Publishing Institute (MDPI), Mechatronics (MECH), Joint Conference on Computers, Cognition and Communication (J3C), International Conference on Decision and Control (CDC), European Control Conference (ECC), International Conference on Robotics and Automation (ICRA), International Conference on Intelligent Robots and Systems (IROS), IFAC World Congress, IFAC Journal of Systems and Control, Neurocomputing, International Journal of Robust and Nonlinear Control.

Experience

Academic service

Feb 2017 – **Orientation and dissemination activity**, *Università degli Studi di Padova*, Padua (Italy).
currently
- Expo Vision Garden 2025, Castelfranco Veneto (TR) `https://visiongarden.it/expo/`
- ITIS G. Marconi, Verona (2024)
- Scegli con noi (editions: 2017, 2024, 2025)

May 2024 – **Effective member of graduation commissions**, *Università degli Studi di Padova*, Padua (Italy).
currently
- COMM_LM_DEI_17/10/2025_ORE 14:30_AULA MAGNA A. LEPSCHY
- COMM_LM_DEI_03/04/2025_ore14.30_AULA MAGNA A. LEPSCHY
- COMM_LT_DEI_19/11/2024_ore 15_AULA MAGNA A. LEPSCHY
- COMM_LM_DEI_21/10/2024_ore 14.30_AULA MAGNA A. LEPSCHY
- COMMISSIONE DI LAUREA DEL 15 OTTOBRE 2024 MATTINA (GI2539)
- COMMISSIONE DI LAUREA DEL 3 OTTOBRE 2024 MATTINA (GI2539)
- COMMISSIONE DI LAUREA DEL 15 LUGLIO 2024 MATTINA (GI2539 - DIRITTO E TECNOLOGIA)
- COMMISSIONE DI LAUREA DEL 05 APRILE 2024 POMERIGGIO (GI2539)

Nov 2024 – **Member of the Examination Staff - Mathematics OFA Recovery Exam**, *Università degli*
currently *Studi di Padova*, Padua (Italy).
- Scuola di Ingegneria, UniPD. Editions: Nov 2024

Jul 2023 – currently	**Commission member for PhD annual review examination**, *Università degli Studi di Padova*, Padua (Italy). I examined several Ph.D. students of Department of Information Engineering advised by my colleagues prof. Angelo Cenedese, prof. Gian Antonio Susto, and prof. Ruggero Carli.
Jul 2023 – currently	**Commission member for grant assignations**, *Università degli Studi di Padova*, Padua (Italy). I served as a committee member ("componente") examining several students who applied for scientific projects supervised by my colleagues Prof. Angelo Cenedese, Prof. Giulia Michieletto, Prof. Gian Antonio Susto, and Dr. Alberto Dalla Libera.
Apr 2025 – currently	**Member of peer observations**, *Università degli Studi di Padova*, Padua (Italy). Active in peer observation activities, observing and being observed by colleagues, with reciprocal feedback on teaching performance. In 2025 I coordinated the "Triade Rosa".
Dec 2022 – Jul 2023	**Representative of postdocs**, *Università degli Studi di Padova*, Padua (Italy). ○ At the "consiglio di dipartimento"of the Deparment of Information Engineering.
May – Jun 2021	**Co-supervisor of undergraduate research**, *Technion*, Haifa (Israel). ○ "Secure consensus via objective coding", supervised student: A. Enbal.
Oct 2016 – Dec 2019	**Representative of Ph.D. students**, *Università degli Studi di Padova*, Padua (Italy). ○ At the "consiglio di dipartimento"of the Deparment of Information Engineering. ○ At the "consiglio direttivo"of the Deparment of Information Engineering.

Thesis supervision

Oct 2023 – currently	**PhD thesis co-advisor**, *Università degli Studi di Padova*, Padua (Italy). ○ "Machine learning approaches for sustainable mobility", M. Cederle, 30/09/2026.
Dec 2023 – currently	**Master's thesis advisor**, *Università degli Studi di Padova*, Padua (Italy). ○ "Efficient street sensor selection for traffic flow monitoring leveraging network observability metrics", A. Sen, 21/10/2024.
Oct 2021 – currently	**Master's thesis co-advisor/ consultant**, *Università degli Studi di Padova*, Padua (Italy). ○ "Fair Dynamic Rebalancing in Bike Sharing Systems with Deep Reinforcement Learning ", A. Pettena, 24/10/2025. ○ "Fully Dynamic Rebalancing of Dockless Bike Sharing Systems using Deep Reinforcement Learning", E. Scarpel, 03/04/2025. ○ "A Fairness Oriented Reinforcement Learning Approach for the Operation and Control of Shared Micromobility Services ", L.V. Piron, 19/04/2024. ○ "Water distribution network control via adaptive consensus", M.D. Bellinazzi, 18/07/2022. ○ "Modeling and control of multiple channel pools", E. Bordin, 11/04/2022. ○ "Modeling and analysis of open-channel networks", M. Frigo, 28/02/2022.
Jun 2024 – currently	**Bachelor's thesis advisor**, *Università degli Studi di Padova*, Padua (Italy). ○ "A sensor selection strategy for effective weather monitoring systems", L. Boscolo Berto, 19/11/2024. ○ "Key performance and value indicators for enhancing sustainable and intelligent Mobility as a Service solutions", M. Gardan, 15/10/2024. ○ "Self-driving car technology: liability and security issues", A. Del Gallo, 15/10/2024.

Teaching

Important note.

I am strongly motivated by teaching and student advising, and I actively engage in both educational and orientation activities. I regularly provide student tutoring outside regular class hours, offering numerous exercise sessions.

Scheduled (Feb 2026 – Jun 2026)	**Lecturer**, *at DEI, Università degli Studi di Padova*, Padua (Italy). Bachelor course for the degree on "Information Engineering": Signals and Systems (48h + extra tutoring sessions, 6 CFU, w/ responsibility assignment).
Jul 2025 – Aug 2025	**Contributor to the project "Fifteen"**, *at DEI, Università degli Studi di Padova*, Padua (Italy). I was responsible for designing and managing the exercise section in Signals and Systems within the Fifteen educational project, aimed at strengthening fundamental courses in Information Engineering.

Feb 2025 – Jun 2025	**Lecturer**, *at DEI, Università degli Studi di Padova*, Padua (Italy). Bachelor course for the degree on "Information Engineering": Signals and Systems (48h + extra tutoring sessions, 6 CFU, w/ responsibility assignment).
Nov 2024 – Jan 2025	**Lecturer**, *at DEI, Università degli Studi di Padova*, Padua (Italy). Ph.D. course for the degree on "Information Science and Technology": Analysis and Control for Multi-Agent Systems (20h, 4 CFU, w/ responsibility assignment).
Jun 2024 – Sep 2024	**Instructor**, *online at Federica Web Learning* `https://lms.federica.eu/mod/book/view.php?id=31850`, *Università di Napoli Federico II*, Padua (Italy). MOOC "AI for smart mobility", within the MOST project "MaaS and Innovative Services".
Feb 2024 – Mar 2024	**Lecturer**, *at Law department, Università degli Studi di Padova*, Padua (Italy). Bachelor course for the degree on "Diritto e Tecnologia": Internet of Things (24h, 3 CFU, w/o responsibility assignment).
Oct 2023 – Jan 2024	**Lecturer**, *at DEI, Università degli Studi di Padova*, Padua (Italy). Ph.D. course for the degree on "Information Science and Technology": Analysis and Control for Multi-Agent Systems (20h, 5 CFU, w/ responsibility assignment).
Oct 2017 – Jan 2020	**Teaching assistant**, *academic tutor at Università degli Studi di Padova*, Padua (Italy). Courses: "Analisi 1" (basic calculus) for 2 times, nearly 71 hours each time, and "Networked Control for Multi-Agent Systems" for 3 times, nearly 20 hours each time. Tasks: explanations of exercises through frontal lessons, lecture notes writing, laboratory organization, supervision of groups of students developing engineering projects.

Memberships

Oct 2024 – currently	**International Federation of Automatic Control (IFAC), affiliate**, *Università degli Studi di Padova*, Padua (Italy).
Mar 2024 – currently	**Centro Giorgio Levi Cases**, *Università degli Studi di Padova*, Padua (Italy). Member of the group "Advanced Control and Monitoring Systems", along with R. Carli, A. Cenedese, M. Rampazzo. [`https://levicases.unipd.it/`]
Oct 2023 – currently	**Artificial Intelligence, Machine Learning & Control (AMCO) team of Automatica group**, *Università degli Studi di Padova*, Padua (Italy). [`https://www.linkedin.com/company/amco-lab-unipd/posts/?feedView=all`]
Aug 2023 – currently	**IEEE, member**, also associated to the *IEEE Control System Society*.
Aug 2023 – currently	**SIDRA, member**.
Jan 2017 – currently	**Space, Aerial and Ground Control Systems (SPARCS) team of Automatica group**, *Università degli Studi di Padova*, Padua (Italy), [`https://sparcs.dei.unipd.it/index.php/team/`].
Jan 2020 – Sep 2021	**Philadelphia Flight Control Laboratory**, *Technion: Israel Institute of Technology*, Haifa (Israel), [`https://pfcl.technion.ac.il/`].

Work

Jun 2010 – Jul 2010	**Internship at SERAI S.p.a.**, *tester for electronic applications*, Legnaro (PD, Italy).
	○ Total amount of 125 hours under the supervision of C. Biesuz and M. Marchesini.
	○ Studying and applying CEI guidelines for electromagnetic devices used in automatic gates, alarm and fire prevention systems.
	○ Analysis of a particular firmware in an alarm system during its development and quality check of some related electronic devices.

Miscellaneous

2011 – currently	**Educational support activity**, *private tutor*, Venice and Padua areas (Italy). Private tutor for scientific subjects, consultant for developing high school theses.
2007 – 2023	**Occasional jobs at fairs and festivals**, *workman/assistant*, Veneto (Italy).

Languages

Italian	**Native speaker**				
Venetian dialect	**Native speaker**				

Foreign languages	Understanding		Speaking		Writing
	Listening	**Reading**	**Spoken interaction**	**Spoken production**	**Written production**
English	**C1**	**C1**	**C1**	**C1**	**C1**
Portuguese	**B2**	**B2**	**B2**	**B2**	**B2**
Spanish	**B1**	**B1**	**B1**	**B1**	**B1**
Hebrew	**A1**	**A1**	**A1**	**A1**	**A1**

Jul 2025 — **Communicating and Teaching in English**, *Language Centre*, Università degli Studi di Padova (Padua, Italy).
English course of the duration of 30 hours, organized as a part of the aCLAaim Project.

Oct 2018 – Mar 2019, Oct 2021 – Mar 2021 — **Courses of Portuguese and Spanish languages**, *Università Popolare di Camponogara*, Camponogara (VE, Italy).
From the basis to intermediate level (4 hours per week). Besides this course, my Portuguese and Spanish are still being practiced with many native speakers and have achieved a good level of fluency.

Aug 2015 – Sep 2015 — **Course of English language**, *Studio Cambridge*, Cambridge (England, United Kingdom), final grade: A (classic grading systems from A to F).
Upper-intermediate-leveled English course of the duration of 25 hours per week. Stay in a host family in Cambridge for three weeks, in contact with several cultures.

Skills

Computer skills

Advanced — LaTeX and TikZ, MATLAB, PYTHON, use of: browsers, text editors, e-mail, clouds, chat services, Microsoft Windows software, AI-based tools and general applications.

Intermediate — JAVA, C, C++, MIKRO C, STEP 7 for PLC Siemens Simatic S7, PASCAL, PSpice, Multisim & Ultiboard, assembly for microprocessor Intel 8051, Linux Ubuntu.

Basic — Use of easy programs for audio-video recording, knowledge of hardware and technical support, other operative systems and virtual machines.

Technical skills

- Vast knowledge on Control Systems Design, Optimization, Electronics and Telecommunications.
- Good use of measurement tools, welders, electronic components and designing electric circuits with discrete components.

Soft skills

- High-level skills at developing presentations, writing scientific reports and preparing talks in Italian and English.
- High-level team work skills as a result of attendance of many heterogeneous and intercultural groups during my education.
- Good project management skills and analysis of scientific trends.

Achievements

Prizes

2024   UniPD Teaching Excellence for Fellow Researchers (a.y. 23/24). For carrying out assigned teaching duties with great effectiveness, achieving a high level of satisfaction among students.

2010   First prize by Mostra "Sperimentando", 9th edition, Padua (Italy).

2010   First prize by Camera di Commercio di Padova and Parco Tecnologico "Galilei", Padua (Italy).

Further certifications

2024   Courses for Equity and inclusion at Università degli Studi di Padova, Padua (Italy): issues of gender, homophobia, racism, and discrimination.

2022   Courses for laboratory access at Università degli Studi di Padova, Padua (Italy): general formation and high risk activities.

2021   Courses for laboratory access at Università degli Studi di Padova, Padua (Italy): electrical and mechanical risks.

2011   Preliminary English Test, ESOL typology, Padua (Italy).

2010   1st kyu in Martial Arts (kickboxing-karate), Camponogara (VE, Italy).

2010   Driving license: A1 and B, Camponogara, (VE Italy).

Scientific publications

To be submitted

"Sensor Selection for Traffic Flow Monitoring: A System Observability Perspective", *M. Fabris and A. Cenedese*, to Foundations and Trends in Systems and Control.

"Deep Reinforcement Learning for Fair Rebalancing in Dockless Bike-Sharing ", *E. Scarpel, A. Pettena, M. Cederle, F. Chiariotti, M. Fabris and G. A. Susto*, to the 2026 IFAC World Congress.

Under peer review process

"Optimization Methods for a Shuttle Bus Routing Problem arising in Urban Mobility", *M. Fabris, L. B. Berto, R. Roberti, R. Carli, A. Zanella*, to EURO Journal on Transportation and Logistics.

Accepted

[L3]   **"How Complex is a Complex Network? Insights from Linear Systems Theory"**, *G. Baggio and M. Fabris*, in the 63nd IEEE Conference on Decision and Control in Rio de Janeiro, Brazil. DOI: `https://doi.org/10.1109/LCSYS.2025.3582197`

Poster and abstract presentations

[Po3]   **"Unleashing Mixed Integer Linear Programming: Optimal Shuttle Routing Solutions for Enhanced Urban Mobility"**, *M. Fabris*, to EURO 2024 Copenhagen, Denmark, Jun-Jul 2024.

[Po2]   **"Distributed Identification of Leader Agents Semi-Autonomous Networks"**, *M. Fabris and D. Zelazo*, to Rafael Academy, Haifa, Israel, Feb 2022.

[Po1]   **"How Complex is a Complex Dynamical Network?"**, *G. Baggio and M. Fabris*, to The Network Science Society: NetSci, Rome (online), Italy, Sep 17-25, 2020. Online: `https://easychair.org/smart-program/NETSCI2020/`

Books

[TM]   **"Multi-agent coverage and dispatch – Strategies for coverage and focus on event for robotic swarms with limited sensing capabilities"**, *M. Fabris*, Edizioni Accademiche Italiane (EAI), 2018. Online: `https://my.edizioni-ai.com/catalog`, ISBN-13: 978-620-2-08255-6, ISBN-10: 6202082550, EAN: 9786202082556.

Conference papers and workshops

[C15] **"A Fairness-Oriented Multi-Objective Reinforcement Learning approach for Autonomous Intersection Management"**, *M. Cederle, M. Fabris, and G.A. Susto*, to the 1st IFAC Joint Conference on Computers, Cognition and Communication (J3C), Padua, Italy, Sep. 15-18, 2025.
arXiv:2507.09311v1 `https://doi.org/10.48550/arXiv.2507.09311`

[C14] **"Towards Scalable IoT Deployment for Visual Anomaly Detection via Efficient Compression "**, *A. Stropeni, F. Borsatti, M. Barusco, D. Dalle Pezze, M. Fabris, G. A. Susto*, to the 1st IFAC Joint Conference on Computers, Cognition and Communication (J3C), Padua, Italy, Sep. 15-18, 2025.
arXiv:2505.07119v3 [cs.CV], `https://doi.org/10.48550/arXiv.2505.07119`

[C13] **"VoI-aware Scheduling Schemes for Multi-Agent Formation Control"**, *F. Chiariotti, M. Fabris*, to the 1st IFAC Joint Conference on Computers, Cognition and Communication (J3C), Padua, Italy, Sep. 15-18, 2025.
arXiv:2507.06392v1 [eess.SY], `https://doi.org/10.48550/arXiv.2507.06392`

[C12] **"A Fairness-Oriented Reinforcement Learning Approach for the Operation and Control of Shared Micromobility Services"**, *M. Cederle, L.V. Piron, M. Ceccon, F. Chiariotti, A. Fabris, M. Fabris, G.A. Susto*, accepted to American Control Conference, Jul. 8-10, 2025.
DOI: `https://doi.org/10.23919/ACC63710.2025.11107820`, ISSN: 2378-5861

[C11] **"Regulating Spatial Fairness in a Tripartite Micromobility Sharing System via Reinforcement Learning"**, *M. Cederle, M. Fabris, and G.A. Susto*, to the 12th Innovation & Society: Statistics and Data Science for Evaluation and Quality (IES2025), Bressanone, Italy, Jun. 25-27, 2025.
`https://ies2025.sis-statistica.it/book-of-short-paper/`

[C10] **"A Distributed Approach to Autonomous Intersection Management via Multi-Agent Reinforcement Learning"**, *M. Cederle, M. Fabris, and G.A. Susto*, to the Agents in Traffic and Transportation (ATT2024), Santiago de Compostela, Spain, Oct. 19th, 2024.
`https://ceur-ws.org/Vol-3813/`

[C9] **"On the impact of regularization in data-driven predictive control"**, *V. Breschi, A. Chiuso, M. Fabris and S. Formentin*, in the 62nd IEEE Conference on Decision and Control in Marina Bay Sands, Singapore, pp. 3061-3066, 2023.
DOI: `https://doi.org/10.1109/CDC49753.2023.10383820`, ISSN: 2576-2370

[L2] **"A Robustness Analysis to Structured Channel Tampering over Secure-by-design Consensus Networks"**, *M. Fabris and D. Zelazo*, in the 62nd IEEE Conference on Decision and Control in Marina Bay Sands, Singapore, pp. 3061-3066, 2023.
DOI: `https://doi.org/10.1109/LCSYS.2023.3284482`, ISSN: 2475-1456

[C8] **"Distributed Identification of Leader Agents in Semi-Autonomous Networks"**, *L. Peled, M. Fabris and D. Zelazo*, in the 62nd Israel Annual Conference on Aerospace Sciences, Mar 15-16, 2023, (a collaboration with Rafael Advanced Defense Systems).
Online: `https://connect-lab-technion.github.io/Publications/IACAS2023_zelazo.pdf`

[C7] **"Uncertainty-aware data-driven predictive control in a stochastic setting"**, *V. Breschi, M. Fabris, S. Formentin and A. Chiuso*, in 22nd IFAC World Congress in Yokohama, Japan, Volume 56, Issue 2, pp. 10083-10088, Jul 9-14, 2023.
DOI: `https://doi.org/10.1016/j.ifacol.2023.10.878`, ISSN: 2405-8963

[L1] **"A General Regularized Distributed Solution for System State Estimation from Relative Measurements"**, *M. Fabris, G. Michieletto and A. Cenedese*, in IEEE 2022 American Control Conference (ACC), pp. 5004-5009, Atlanta, Georgia, USA Jun 08-10, 2022.
DOI: `https://doi.org/10.1109/LCSYS.2021.3126258`, Electronic ISSN: 2378-5861, Print on Demand(PoD) ISSN: 0743-1619

[C6] **"A Proximal Point Approach for the Distributed Estimation from Relative Measurements"**, *M. Fabris, G. Michieletto and A. Cenedese*, in 21st IFAC World Congress in Berlin (online), Germany, Volume 53, Issue 2, 2020, pp. 2702-2707, Jul 12-17, 2020.
DOI: `https://doi.org/10.1016/j.ifacol.2020.12.408`, ISSN: 2405-8963.

[C5] **"Distributed Strategies for Dynamic Coverage with Limited Sensing Capabilities"**, *M. Fabris, A. Cenedese*, in IEEE 27th Mediterranean Conference on Control and Automation 2019, pp. 203-208, Akko, Israel, Jul 01-04, 2019.
DOI: `https://doi.org/10.1109/MED.2019.8798554`, Electronic ISSN: 2473-3504, Print on Demand(PoD) ISSN: 2325-369X.

[C4] **"Optimal Time-Invariant Formation Tracking for a Second-Order Multi-Agent System"**, *M. Fabris, A. Cenedese and J. Hauser*, in IEEE 18th European Control Conference 2019, pp. 1556-1561, Napoli, Italy, Jun 25-28, 2019.
DOI: `https://doi.org/10.23919/ECC.2019.8796245`, Electronic ISBN:978-3-907144-00-8, USB ISBN:978-3-907144-01-5, Print on Demand(PoD) ISBN:978-1-7281-1314-2.

[C3] **"Distributed Dual Quaternion Based Localization of Visual Sensor Networks"**, *L. Varotto, M. Fabris, G. Michieletto, A. Cenedese*, in IEEE 18th European Control Conference, pp. 1836-1841, Napoli, Italy, Jun 25-28, 2019.
DOI: `https://doi.org/10.23919/ECC.2019.8796165`, Electronic ISBN:978-3-907144-00-8, USB ISBN:978-3-907144-01-5, Print on Demand(PoD) ISBN:978-1-7281-1314-2.

[C2] **"On the Distributed Estimation from Relative Measurements: a Graph-Based Convergence Analysis"**, *M. Fabris, G. Michieletto, A. Cenedese*, in IEEE 18th European Control Conference 2019, pp. 1550-1555, Napoli, Italy, Jun 25-28, 2019.
DOI: `https://doi.org/10.23919/ECC.2019.8796213`, Electronic ISBN:978-3-907144-00-8, USB ISBN:978-3-907144-01-5, Print on Demand(PoD) ISBN:978-1-7281-1314-2.

[C1] **"Efficient Tracking of Heart Rate under Physical Exercise from Photoplethysmographic Signals"**, *G. Frigo, M. Fabris, A. Galli, F. Gambarin, I.A. Marsili, G. Giorgi, C. Narduzzi*, in IEEE 1st International Forum on Research and Technologies for Society and Industry, pp. 306-311, Torino, Italy, Sep 16-18, 2015.
DOI: `https://doi.org/10.1109/RTSI.2015.7325116`, Electronic ISBN:978-1-4673-8167-3, CD:978-1-4673-8166-6.

Journal papers and Letters

[L3] **"How Complex is a Complex Network? Insights from Linear Systems Theory"**, *G. Baggio and M. Fabris*, to Control Systems Letters, vol. 9, pp. 1195-1200, 2025.
DOI: `https://doi.org/10.1109/LCSYS.2025.3582197`

[J8] **"Efficient Sensors Selection for Traffic Flow Monitoring: An Overview of Model-Based Techniques leveraging Network Observability"**, *M. Fabris, R. Ceccato and A. Zanella*, MDPI: Sensors, vol. 25, No. 5, p. 1416.
DOI: `https://doi.org/10.3390/s25051416`

[J7] **"Harnessing the Final Control Error for Optimal Data-Driven Predictive Control"**, *A. Chiuso, M. Fabris, V. Breschi and S. Formentin*, Automatica, vol. 173, p. 112070.
DOI: `https://doi.org/10.1016/j.automatica.2024.112070`

[J6] **"On the Characterization of Regular Ring Lattices and their Relation with the Dirichlet Kernel"**, *M. Fabris*, in the Italian Journal of Pure and Applied Mathematics, No. 51, pp. 137-160 (11), 2024.
Online: `https://ijpam.uniud.it/online_issue/202451/11%20Fabris.pdf`

[J5] **"Optimal Time-Invariant Distributed Formation Tracking for Second-Order Multi-Agent Systems"**, *M. Fabris, G. Fattore and A. Cenedese*, in the European Jorunal of Control, vol. 77, pp. 100985, 2024.
DOI: `https://doi.org/10.1016/j.ejcon.2024.100985`

[J4] **"Adaptive Consensus-Based Reference Generation for the Regulation of Open-Channel Networks"**, *M. Fabris, M. D. Bellinazzi, A. Furlanetto and A. Cenedese*, in IEEE Access, vol. 12, pp. 14423-14436, 2024.
DOI: `https://doi.org/10.1109/ACCESS.2024.3357722`

[L2] **"A Robustness Analysis to Structured Channel Tampering over Secure-by-design Consensus Networks"**, *M. Fabris and D. Zelazo*, in IEEE Control Systems Letters, vol. 7, pp. 2011-2016, 2023.
DOI: `https://doi.org/10.1109/LCSYS.2023.3284482`, ISSN: 2475-1456.

[J3] **"Visual Sensor Network Stimulation Model Identification via Gaussian Mixture Model and Deep Embedded Features"**, *L. Varotto, M. Fabris, G. Michieletto and A. Cenedese*, in IFAC Engineering Applications of Artificial Intelligence (Special Issue on Intelligent Control and Optimisation: TC3.2 Computational Intelligence and Control), 2022.
DOI: `https://doi.org/10.1016/j.engappai.2022.105096`, ISSN: 0952-1976.

[J2] **"Secure Consensus via Objective Coding: Robustness Analysis to Channel Tampering"**, *M. Fabris and D. Zelazo*, in IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2022.
DOI: `https://doi.org/10.1109/TSMC.2022.3177756`, Print ISSN: 2168-2216, Electronic ISSN: 2168-2232.

[J1] **"Bearing-based Autonomous Communication Relay Positioning under Field-of-View Constraints"**, *M. Fabris and D. Zelazo*, in Advanced Control for Applications, vol. 4, No. 2, pp. e103, 2022.
DOI: `https://doi.org/10.1002/adc2.103`, Online ISSN:2578-0727.

[L1] **"A General Regularized Distributed Solution for System State Estimation from Relative Measurements"**, *M. Fabris, G. Michieletto and A. Cenedese*, in Published in: IEEE Control Systems Letters, vol. 6, pp. 1580 - 1585, 2021.
DOI: `https://doi.org/10.1109/LCSYS.2021.3126258`, Electronic ISSN: 2378-5861, Print on Demand(PoD) ISSN: 0743-1619