



Luca Ballotta

Date of birth: 24/10/1995 | **Nationality:** Italian | **Gender:** Male | **Phone number:** (+39) 3496238948 (Mobile) | **Email address:** luca.ballotta95@gmail.com | **Address:** Via Scapin 10, 35020, Ponte San Nicolo', Italy (Home)

EDUCATION AND TRAINING

01/10/2019 – 30/10/2022 Padova, Italy

PHD DEGREE University of Padova, Department of Information Engineering

Field of study Information Engineering |

Thesis Fundamental trade-offs and architecture design in networked control systems (advisor: Luca Schenato)

15/10/2017 – 09/09/2019 Padova, Italy

MASTER'S DEGREE University of Padova, Department of Information Engineering

Field of study Automation Engineering | **Final grade** 100 with honors | **Number of credits** 120 |

Thesis Control and estimation of networked dynamical systems subject to computation latency (advisor: Luca Schenato)

01/10/2014 – 20/09/2017 Padova, Italy

BACHELOR'S DEGREE University of Padova, Department of Information Engineering

Field of study Information Engineering | **Final grade** 110 with honors | **Number of credits** 180 |

Thesis A new approach to robust transport over networks (advisors: Michele Pavon and Luca Schenato)

WORK EXPERIENCE

15/12/2023 – 12/2024 Delft, Netherlands

POSTDOC TU DELFT, FACULTY OF MECHANICAL, MARITIME AND MATERIAL ENGINEERING

- Challenge: Accelerate the Transition to Renewable Energy Generation
- Change: Develop secure and optimal control algorithms for wind farms

01/11/2022 – 31/10/2023 Padova, Italy

RESEARCH FELLOW UNIVERSITY OF PADOVA, DEPARTMENT OF INFORMATION ENGINEERING

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

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

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● ADDITIONAL INFORMATION

MOBILITY

03/02/2020 – 18/08/2020

Visiting Student at MIT (as part of PhD program)

01/02/2022 – 30/06/2022

Visiting Student at MIT (as part of PhD program)

PUBLICATIONS

Journal articles

1. [L. Ballotta](#), L. Schenato, L. Carlone, "Computation-communication trade-offs and sensor selection in real-time estimation for processing networks," in *IEEE Transactions on Network Science and Engineering*, 7 (4), pp. 2952-2965, 1 Oct.-Dec 2020.
 2. E. Rossi, M. Tognon, [L. Ballotta](#), R. Carli, J. Cortés, A. Franchi, L. Schenato, "Coordinated multi-robot trajectory tracking control over sampled communication," in *Automatica*, 151, 2023.
 3. [L. Ballotta](#), M.R. Jovanović, L. Schenato, "Can decentralized control outperform centralized? The role of communication latency," in *IEEE Transactions on Control of Network Systems*, 10(3), pp. 1629-1640, Sept. 2023.
 4. [L. Ballotta](#), V. Gupta, "Faster consensus via a sparser controller," in *IEEE Control Systems Letters*, 7, pp. 1459-1464, 2023.
 5. [L. Ballotta](#)^{*}, G. Peserico^{*}, F. Zanini^{*}, P. Dini, "To compute or not to compute? Adaptive smart sensing in resource-constrained edge computing," in *IEEE Transactions on Network Science and Engineering*, 2023.
 6. Y. Chang^{*}, [L. Ballotta](#)^{*}, L. Carlone, "D-Lite: Navigation-oriented compression of 3D Scene Graphs for Multi-Robot Collaboration," in *IEEE Robotics and Automation Letters*, 8 (11), pp. 7527-7534, Nov. 2023.
 7. [L. Ballotta](#), G. Como, J.S. Shamma, L. Schenato, "Can competition outperform collaboration? The role of malicious agents." [2nd round of review at *IEEE Transactions on Automatic Control*].
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Conference papers

1. [L. Ballotta](#), L. Schenato, L. Carlone, "From sensor to processing networks: Optimal estimation with computation and communication latency," in *IFAC-PapersOnLine*, 53 (2), pp. 11024-11031, 2020 [Young Author Prize at IFAC World Congress].
 2. [L. Ballotta](#), M.R. Jovanović, L. Schenato, "Optimal network topology of multi-agent systems subject to computation and communication latency," in *Proceedings of the Mediterranean Conference on Control and Automation*, pp. 249-254, 2021.
 3. V. Tripathi^{*}, [L. Ballotta](#)^{*}, L. Carlone, E. Modiano, "Computation and communication co-design for real-time monitoring and control in multi-agent systems," in *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks*, 2021.
 4. [L. Ballotta](#)^{*}, G. Peserico^{*}, F. Zanini^{*}, "A reinforcement learning approach to sensing design in resource-constrained wireless networked control systems," in *Proceedings of the IEEE Conference on Decision and Control*, pp. 3914-3919, 2022.
 5. [L. Ballotta](#), G. Como, J.S. Shamma, L. Schenato, "Competition-based resilience in distributed quadratic optimization," in *Proceedings of the IEEE Conference on Decision and Control*, pp. 6454-6459, 2022.
 6. [L. Ballotta](#), S. Gil, M. Yemini, "The Role of Confidence for Trust-Based Resilient Consensus." [Submitted to *2024 American Control Conference*].
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In preparation (titles are tentative)

1. [L. Ballotta](#)^{*}, N. Dal Fabbro^{*}, G. Perin^{*}, L. Schenato, M. Rossi, G. Piro, "VREM-FL: Mobility-aware computation-scheduling co-design for vehicular federated learning". [To be submitted to *IEEE Transactions on Vehicular Technology*].
 2. [L. Ballotta](#), J. Arbelaiz, V. Gupta, L. Schenato, M.R. Jovanović, "Control of Reaction-Diffusion Processes under Communication Delays." [To be submitted to *2024 European Control Conference*].
 3. [L. Ballotta](#), J. Arbelaiz, V. Gupta, M.R. Jovanović, L. Schenato, "Effects of Communication Delays on the Control of Spatially Invariant Systems." [To be possibly submitted to *IEEE Transactions on Automatic Control*].
 4. [L. Ballotta](#), S. Gil, M. Yemini, "The Role of Confidence for Trust-Based Resilient Consensus in Cyberphysical Systems." [To be possibly submitted to *IEEE Transactions on Signal and Information Processing over Networks*].
 5. [L. Ballotta](#)^{*}, S. Zhang^{*}, R. Talak, C. Fan. "Certifiable learning-based safe control for multi-agent systems with communication delays."
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INTERNATIONAL COLLABORATIONS

Co-authors

1. Luca Carlone (Associate professor, MIT)
2. Eytan Modiano (Professor, MIT)
3. Mihailo R. Jovanović (Professor, University of Southern California)
4. Jeff S. Shamma (Professor, University of Illinois at Urbana-Champaign)
5. Giacomo Como (Professor, Politecnico di Torino)
6. Stephanie Gil (Assistant Professor, Harvard University)
7. Michal Yemini (Assistant Professor, Bar Ilan University)
8. Vijay Gupta (Professor, Purdue University)
9. Paolo Dini (Senior Researcher, Centre Tecnològic de Telecomunicacions de Catalunya)
10. Antonio Franchi (Professor, University of Twente)
11. J. Cortés (Researcher, LAAS Toulouse)
12. Marco Tognon (Researcher, INRIA Rennes)
13. Chuchu Fan (Assistant professor, MIT)

Invited speakers at workshops

1. Dimitra Panagou (Associate professor, University of Michigan)
2. Vaibhav Katewa (Assistant Professor, Indian Institute of Science Bangalore)
3. Sivaranjani Seetharaman (Assistant Professor, Purdue University)
4. Subhrakanty Dey (Professor, Uppsala University)
5. Angelia Nedić (Professor, Arizona State University)
6. Sergio Grammatico (Associate Professor, TU Delft)
7. Claudio Altafini (Professor, Linköping University)
8. Francesco Bullo (Professor, UC Santa Barbara)
9. Frédéric Jean (Professor, ENSTA Paris)
10. Maria Laura Delle Monache (Assistant professor, UC Berkeley)

TEACHING ACTIVITIES

10/2019 – 01/2020

Tutor junior

- Calculus I (University of Padova, DEI)
- Project "University in prison" (University of Padova, School of Engineering)

10/2020 – 06/2021

Tutor junior

- Math prerequisites class (University of Padova, DTG)
- Elements of automatic control (University of Padova, DEI)
- Project "University in prison" (University of Padova, School of Engineering)

10/2021 – 01/2022

Tutor

Project "University in prison" (University of Padova)

05/02/2024 – 26/02/2024

Doctoral course "Introduction to Optimal Linear Quadratic Control"

Course offered within the National Ph.D. Program in Autonomous Systems (DAUSY)

ORGANIZATION OF SCIENTIFIC MEETINGS

22/09/2023 – 23/09/2023

Workshop "Control Days" at University of Padova, Department of information Engineering

09/07/2023

Workshop "Emerging trends in resilient control of networked systems" at 22nd IFAC World Congress

INSTITUTIONAL RESPONSIBILITIES

2019 – 2022

Representative of PhD students at University of Padova, Department of Information Engineering

2021 - 2023

Organizer of "DEITalks" at University of Padova, Department of information Engineering

AWARDS AND FELLOWSHIPS

Winner of Young Author Prize at 2020 IFAC World Congress out of 170 nominations and 3000 accepted papers

Scholarship granted by MIT for research visit from Feb - June 2022

Winner of Postdoc Secure and Optimal Control of Renewable Energy Systems

Link <https://www.tudelft.nl/over-tu-delft/werken-bij-tu-delft/vacatures/details?jobId=14051>

Winner of IEEE CSS Student Travel Support for participation to the IEEE Conference on Decision and Control, 2022.
