

Curriculum of the scientific, didactic, and professional activity

Prof. Engr. Raffaele Carli, PhD

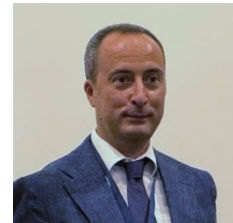
Department of Electrical and Information Engineering
Polytechnic of Bari – Italy

Updated to February 2026

Personal Information

Biographical data

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Current Position

- **Associate Professor** in Systems and Control Engineering (academic discipline Italian code: IINF-04/A) at [Polytechnic of Bari - Dept. of Electrical and Information Engineering](#).
- **Technical responsible** for the [Decision and Control Laboratory](#) (coordinated by prof. Mariagrazia Dotoli) at Polytechnic of Bari - Dept. of Electric and Information Engineering.

Previous Academic Positions

He held the following positions in Systems and Control Engineering (academic discipline Italian code: IINF-04/A) at Polytechnic of Bari - Dept. of Electric and Information Engineering:

- March 2022 – February 2025: Assistant Professor (*RTD-b*, pursuant to Italian Law no. 240/2010, art. 24)
- December 2020 – February 2022: Assistant Professor (*RTD-a*, pursuant to Italian Law no. 240/2010, art. 24)
- January 2016 – November 2020: Post-doc Research Fellow (*Assegnista di Ricerca*, pursuant to Italian Law no. 240/2010, art. 22).

Qualifications

- Qualified as a **Full Professor** in Systems and Control Engineering (academic recruitment field Italian code: 09/IINF-04) in accordance with Italian Law no. 240/2010, art. 16, as of November 2023.
- Ph.D. in Electrical and Information Engineering, Polytechnic of Bari, Bari, Italy, 2016. Thesis: Decision and Control Techniques for Energy Management Systems in Smart Cities, Supervisor: Prof. Mariagrazia Dotoli.

- Acoustic Expert Qualification (Italian law 447/95), Polytechnic of Bari, Bari, Italy, 2012.
- Italian State Examination and Professional Qualification to practice as an Engineer, Polytechnic of Bari, Bari, Italy, 2002, 2nd session (marks 140/140).
- Master's Degree in Electronic Engineering, Polytechnic of Bari, Bari, Italy, 2002 (marks 110/110 with honors). Thesis: Study, design and realization of a K-band last mile wireless system: transmission front-end, Supervisor: Prof. Gianfranco Avitabile.
- Scientific Degree, Scientific High School "G. Galilei", Province of Bari, 1997 (marks 60/60).

Foreign Languages

Italian: native speaker

English: proficient in written and spoken communication

French: basic proficiency in written and spoken communication.

Didactic Activity

Official Teaching Appointments

He holds or held the following courses for Master's or Bachelor's Degree programs:

- "Control systems for e-transition and e-mobility" (6 ECTS) in Electrical Engineering Master's Degree at Polytechnic of Bari – Academic Years 2022/23 - 2025/26.
- "Fundamental of Control Systems Engineering" (first module, 6 ECTS) in Electronic Engineering and Internet Technologies (formerly Electronic and Telecommunication Engineering) Bachelor's Degree at Polytechnic of Bari – Academic Years 2018/19 - 2020/21, 2022/23 - 2025/26.
- "Fundamental of Control Systems Engineering" (second module, 6 ECTS) in Management Engineering Bachelor's Degree at Polytechnic of Bari – Academic Years 2021/22 - 2025/26.
- "Fundamental of Control Systems Engineering" (first module, 6 ECTS) in Management Engineering Bachelor's Degree at Polytechnic of Bari – Academic Year 2021/22.
- "Systems Analysis and Simulation" (6 ECTS) in Management Engineering (5-Years Laurea) at Polytechnic of Bari – Academic Year 2017/18.

He holds or held the following courses for PhD programs:

- "Distributed/Decentralized Control and Optimization of Large-Scale Systems" (1 ECTS) at Doctorate School – Academic Year 2024/25 - course given in English language.
- "Duality-based Decentralized and Distributed Optimization" (1 ECTS) at Doctorate School – Academic Year 2022/23 - course given in English language.
- "Optimization and Control of Complex System" (2 ECTS) at Doctorate School – Academic Years 2022/23, 2020/21 - course given in English language.
- "Management and control approaches for flexible and efficient smart grids" (3 ECTS) at Doctorate School – Academic Year 2018/19, course given in English language.
- "Optimization and Control of Complex System" (3 ECTS) at Doctorate School – Academic Years 2016/17, 2015/16, course given in English language.

Didactic Activity as an Assistant to Other Courses

He develops or developed the numerical and experimental laboratory of the following courses:

- "Dynamical Systems Theory" in Automation Engineering (5-Years Laurea) at Polytechnic of Bari – Academic Years 2017/18 - 2021/22.
- "Systems Analysis" in Management Engineering (5-Years Laurea) at Polytechnic of Bari – Academic Years 2013/14 - 2016/17.

- “Fundamentals of Control Systems Engineering” in Electronics and Telecommunications Engineering (3-Years Laurea) at Polytechnic of Bari – Academic Year 2014/15.
- “Fundamentals of Control Systems Engineering” in Agricultural Logistic System Engineering (3-Years Laurea) at University of Foggia – Academic Years 2015/16 - 2017/18.

Teaching Activity Abroad

He held the following didactic activity in foreign Universities:

- Academic Year 2025-2026, lectures on “Decision and control techniques for sustainable rural energy communities: a focus on vertical farms” (8 hours), “Department of Computer Science and their interactions” of Aix-Marseille Université (France) – January 2026.
- Academic Year 2022-2023, lectures on “Distributed Waterfilling of Networked Control Systems” (8 hours), “Department of Automatic Control and Systems Engineering” of Universitatea Politehnica din Bucuresti, Romania – March 2023.
- Academic Year 2020-2021 (postponed due to Covid-19 contingency), lectures on “Non-centralized Control of Smart Energy Systems” (8 hours), “Department of Automatic Control (ESAII)” of Universitat Politècnica de Catalunya (Spain) – October 2022.
- Academic Year 2019-2020 (postponed due to Covid-19 contingency), lectures on “Decision and control approaches for flexible and efficient smart grids” (2.5 hours), “Department of Automatic Control (ESAII)” of Universitat Politècnica de Catalunya (Spain) – May 2022.
- Academic Year 2018-2019, lectures on “Decentralized and Distributed Optimization for Energy Scheduling of Smart Users” (8 hours), “Department of Computer Science and their interactions” of Aix-Marseille Université (France) – April 2019.

Tutoring Activity

He has been the official co-tutor of more than 50 Master and Bachelor Theses at Politecnico di Bari, many of which have been developed in collaboration with co-tutors belonging to institutions and companies of the local regional territory.

He is currently co-tutor of 6 PhD candidates:

- Engr. Mojtaba Porghoveh, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XXXIX cycle (a.y. 2023-2026), on: “Platforms for optimization and control of Drone-as-a-service in logistics”.
- Engr. Claudia Delprete, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XXXIX cycle (a.y. 2023-2026), on: “Autonomous systems for guided endoscopic navigation and theranostics”.
- Engr. Valeriana Mancazzo, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XXXIX cycle (a.y. 2023-2026), on: “Digital driven diagnostics, prognostics, and therapeutics for sustainable Health care”.
- Engr. Fabio Mastromarino, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XL cycle (a.y. 2024-2027), on: “Intelligent systems for industrial robotics”.
- Engr. Federico Signorile, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XL cycle (a.y. 2024-2027), on: “Algorithms for management and control of mobile agent fleets”.
- Engr. Maria Campobasso, Ph.D. student in Robotics and Intelligent Machines - curriculum Autonomous Systems, Administrative Headquarters: University of Genoa, Hosting University: Politecnico di Bari, Italy, XLI cycle (a.y. 2025-2028), on: “Coordination and Control Techniques for Heterogeneous Multi-Agent Systems”.

He was co-tutor of 10 PhD candidates:

- Engr. Saba Askari Noghani, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XXXVIII cycle (a.y. 2022-2025), on: “Smart control systems for rural energy communities”.

- Engr. Michela Prunella, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XXXVIII cycle (a.y. 2022-2025), on: “Decision and Control Techniques for Intelligent Diagnostic and Surgery Using Digital Twins”.
- Engr. Roberto Scardigno, Ph.D. student in Autonomous Systems, Politecnico di Bari, Italy, XXXVIII cycle (a.y. 2022-2025), on: “Study, development and design of Intelligent Systems for automated diagnostics in the industrial and biomedical fields”.
- Engr. Nicola Mignoni, Ph.D. student in Electrical and Information Engineering, Politecnico di Bari, Italy, XXXVII cycle (a.y. 2021-2024), on: “Control techniques for green and efficient energy communities”.
- Engr. Augusto Bozza, Ph.D. student in Electrical and Information Engineering, Politecnico di Bari, Italy, XXXVII cycle (a.y. 2021-2024), on: “Digital Twin for controlling industrial systems”.
- Engr. Bahman Askari, Ph.D. student in Electrical and Information Engineering, Politecnico di Bari, Italy, XXXVI cycle (a.y. 2020-2023), on: “Learning-based Approaches for Automatic Fault Detection and Diagnosis in Industrial Systems”.
- Engr. Lucilla Dammacco, Ph.D. student in Industry 4.0 (Interuniversity PhD Course of Polytechnic of Bari in collaboration with Università degli Studi di Bari “Aldo Moro”), XXXVI cycle (a.y. 2020-2023), on: “Digital Technologies for Design and Performance Optimization of Manufacturing Lines in Industry 4.0”.
- Engr. Silvia Proia, Ph.D. student in Industry 4.0 (Interuniversity PhD Course of Polytechnic of Bari in collaboration with Università degli Studi di Bari “Aldo Moro”), XXXVI cycle (a.y. 2020-2023) on: “Control Techniques for Collaborative and Cooperative Robotic Systems”.
- Engr. Paolo Scarabaggio, Ph.D. student in Electrical and Information Engineering, Politecnico di Bari, Italy, XXXV cycle (a.y. 2019-2022), on "Game-theoretical Control of Autonomous Power Grids".
- Engr. Mohsen Seyed Hosseini, Ph.D. student in Electrical and Information Engineering, Politecnico di Bari, Italy, XXXIII cycle (a.y. 2017-2020), on "Distributed and Decentralized Scheduling and Control of Smart Electrical Energy Systems".

Didactic Services

Since November 2025 he is the Vice-Coordinator of the Smart and Sustainable Industry PhD Course of Politecnico di Bari.

Since May 2023 he is the Vice-Coordinator of the [National PhD Program in Autonomous Systems \(DAuSy\)](#).

He is or was member of the Council of professors:

- from November 2022 (cycle XXXVIII) ongoing (cycle XL): National PhD Program in Autonomous Systems (DAuSy) – Administrative headquarter: Politecnico di Bari.
- from November 2025 ongoing (cycle XLI): National PhD Program in Robotics and Intelligent Machines (DRIM) – Administrative headquarter: University of Genoa.
- from May 2023 (cycle XXXIX) ongoing (cycle XLI): Smart and Sustainable Industry PhD Course of Politecnico di Bari.
- from April 2021 to October 2023 (cycles XXXVII-XXXVIII): Electrical and Information Engineering PhD Course of Politecnico di Bari.

He has served as a member of the Commission for State Exams for Engineers at Politecnico di Bari in the following sessions:

- 2025 (first and second session): Full Member.
- 2023 (first and second session): Substitute Member.

Organizational services

Since October 2024, he has been a member of the management team for the Bachelor's Degree program in Electronic Engineering and Internet Technologies at Politecnico di Bari.

Participation to PhD Thesis Committees in Italy and Abroad

- In March 2023 he was a member with the role of examiner of a PhD Thesis Committee at the Dalarna University, Sweden (PhD Candidate: Ross May).
- In March 2023 he was referee and a member with the role of examiner of a PhD Thesis Committee at the University of Genoa, Italy (PhD Candidate: Luca Parodi).
- In March/April 2024 he was referee of a PhD Thesis at the Free University of Bozen-Bolzano, Italy (PhD Candidate: Cheikh Melainine El Bou).
- In October 2024 he was a member with the role of examiner of a PhD Thesis Committee at the University of Roma Tre, Rome, Italy (PhD Candidate: Jacopo Pisani).
- In February 2026 he will be referee of a PhD Thesis at the School of Engineering and IT, UNSW Canberra (PhD Candidate: Amin Zakhirekar Sahih).

Participation to PhD Admission Committees in Italy

- In 2025-2026 he was member of the Evaluation Commission for the admission examination to the Smart and Sustainable Industry PhD Course of Politecnico di Bari (XLI cycle - second call).
- In 2025 he was Chair of the Evaluation Commission for the admission examination to the National PhD Program in Robotics and Intelligent Machines - Autonomous Systems Curriculum (XLI cycle, first call).
- In 2023-2024 he was member of the Evaluation Commission for the admission examination to the National PhD Program in Autonomous Systems (XL cycle - second call, XXXIX cycle, second call).

Participation in the Evaluation of Master's and PhD Programs Abroad

- In 2026 he is an external reviewer of the PhD Program in Microdata Analysis and Data Analytics at the Dalarna University, Sweden.
- In 2026 he is the external academic expert for the European Master in Sustainable Systems Engineering - Erasmus Mundus joint master degree offered by the University of Genoa, University of Technology of Compiègne, Polytechnic of Catalunya, and Polytechnic of Tirana.

Scientific Activity

Technical Direction

He is the technical responsible for the Decision and Control Laboratory (coordinated by prof. Mariagrazia Dotoli) at the Department of Electric and Information Engineering of Polytechnic of Bari since May 2020 (<http://dclab.poliba.it/>). The main objectives of the Decision and Control Laboratory are: the promotion of the results of the scientific research obtained in collaboration with both Public and Private Partners on Regional, National, and International Levels in the field of Automation (09/G1), together with the advancement of technology transfer of these research results.

Research Topics

The scientific activity primarily focuses on the following fields of automation:

1. *Management and Control of Energy Systems* - This activity is centered on defining decision-making and control techniques to address the emerging needs of energy systems within smart grids and smart cities.
2. *Modeling, Control, and Optimization for Industrial Applications* - This activity is focused on the development of modeling, simulation, decision-making, and control techniques for logistics activities, production processes, and robotic systems.
3. *Decision Support, Modeling, Simulation, Management, and Control of Complex Systems* - This activity involves developing modeling, simulation, decision-making, and control techniques across various application contexts, including urban sectors, transportation, social systems, and healthcare, with a particular focus on large-scale networked systems.

Scientific Recognitions

He achieved:

- the **Full Professor** qualification in Systems and Control Engineering according to art. 16 of Italian Law n. 240/2010 (academic recruitment field Italian code: 09/IINF-04) in November 2023.
- the **Associate Professor** qualification in Systems and Control Engineering according to art. 16 of Italian Law n. 240/2010 (academic recruitment field Italian code: 09/IINF-04) in May 2021.

He won the following award:

- **2024 IEEE Italy Section SMCS Chapter Award for Excellence of Early Career Researchers.**

Awards won by students under his supervision:

- Assistant Professor N. Mignoni won the prestigious “**2025 IFAC TC Award Young Author Publication on Optimization and Control of Power and Energy Systems**” for the paper “Control frameworks for transactive energy storage services in energy communities” authored by N. Mignoni, P. Scarabaggio, R. Carli, and M. Dotoli, and published in *Control Engineering Practice* – awarded at IFAC SENSYS 2025 workshop, Bari (Italy), June 2025.
- PhD Student L. Dammacco was one of the three finalists of the prestigious “**Premio Italiano Meccatronica**” organized by Unindustria Reggio Emilia and Nova-II Sole 24 Ore with her Ph.D. research program “Virtual and augmented reality in manufacturing lines for performance and maintenance optimization in industry 4.0”, Tutors: Prof. M. Dotoli, R. Carli, M. Fiorentino, Engr. V. Lazazzera (Masmec SpA) – December 2022.
- PhD Student P. Scarabaggio won the prestigious “**IEEE-CSS Italy Best Young Paper Award 2022**” for the paper “Distributed Demand Side Management with Stochastic Wind Power Forecasting” authored by P. Scarabaggio, S. Grammatico, R. Carli, and M. Dotoli, and published in the IEEE Transactions on Control Systems Technology (TCST) – awarded at the AUTOMATICA.IT 2022 workshop, Cagliari (Italy), September 2022.
- MSc Student G. Tresca won the prestigious “**ABB 2021 Master Thesis Award**” sponsored by ABB, IEEE Italy Section, and IEEE Italy Section Women In Engineering Affinity Group for her thesis “Automating Bin Packing: A Layer Building Matheuristics for Cost Effective Logistics”, Supervisors: Prof. M. Dotoli, R. Carli, G. Cavone, Engr. A. Cerviotti (Elettric80 SpA) – December 2021.

In 2022 he was elevated to **Senior Member** of the international IEEE association (the Institute of Electrical and Electronics Engineers)

He was the recipient of the following researcher grant:

- 2026–2031: “Control and Optimization of Networked Smart ENergy Systems through User-driven and Sustainability-oriented strategies (CONSENSUS)”, Italian Science Fund 2024–2025 (FIS 3) Call. Budget: €1,532k.

He was the recipient of the following researcher grant:

- December 2020 - December 2023: “Decision and control algorithm for flexible and efficient Energy Communities”, Call n. 2/FSE/2019 “Research for Innovation (REFIN)” - Apulia Region, POR PUGLIA FESR-FSE 2014/2020, project no. C9A3735B. Budget: €150k.

He was the recipient of the following fellowships in Systems and Control Engineering (research field 09/G1):

- from April 2019 to December 2020: “Distributed decision and control techniques for industrial processes in automotive” at Polytechnic of Bari – Supervisor: Prof. M. Dotoli.
- from November 2016 to March 2019: “Definition and development of Control and Optimization techniques for energy management of smart buildings and smart cities” at Polytechnic of Bari – Supervisor: Prof. M. Dotoli.
- from January 2016 to October 2016: “Sensor and acquisition systems for geotechnical instrumentation in smart cities” at Polytechnic of Bari – Supervisors: Prof. M. Dotoli, Prof. A. M. L. Lanzolla.

Collaborations with National and International Research Groups

He collaborate with the following national and international research groups:

- research group guided by Prof. Carla Seatzu, University of Cagliari, Italy;
- research group guided by Prof. Roberto Sacile, University of Genoa, Italy;
- research group guided by Prof. Michela Robba, University of Genoa, Italy;
- research group of Prof. Graziana Cavone, University of Roma Tre, Italy;
- research group of Prof. Nicola Epicoco, University LUM, Bari, Italy;
- research group of Dr. Mario Di Ferdinando, University of L’Aquila, Italy;
- research group of Dr. Silvia Proia, University of Modena and Reggio Emilia, Italy;
- research group led by Prof. Bart De Schutter, Delft University of Technology, Netherlands;
- research group led by Prof. Sergio Grammatico, Delft University of Technology, Netherlands;
- research group led by Prof. Carlos Ocampo-Martinez, Universitat Politècnica de Catalunya, Spain;
- research group led by Prof. Nicanor Quijano, Universidad de los Andes, Colombia;
- research group led by Prof. Fei-Yue Wang, Chinese Academy of Sciences, Beijing, China;
- research group guided by Prof. Umberto Montanaro, University of Surrey, United Kingdom;
- research group guided by Prof. Alessandra Parisio, Manchester University, United Kingdom;
- research group guided by Prof. Valery Vyatkin, Luleå University of Technology, Luleå, Sweden;
- research group guided by Prof. Frank Allgöwer, University of Stuttgart, Germany;
- research group guided by Prof. Jörg Raisch, Technische Universität Berlin, Germany;
- research group led by Prof. Slim Hammadi, CRISAL Laboratory - Ecole-Central of Lille, Lille, France;
- research group led by Prof. Haitham Ramadan, Electrical Power and Machines Department of the Zagazig University, Zagazig, Egypt - FEMTO-ST Institute and FCLAB of the University Bourgogne Franche-Comt’e, Belfort, France;

- research group of Prof. Antoine Grall, Computer Science and Digital Society (LIST3N) Laboratory, Université de Technologie de Troyes, France;
- research group of Prof. João Paulo Ribeiro Pereira, Departamento de Informática e Comunicações, Instituto Politécnico de Bragança, Portugal.

He is the *Chair of the International Federation of Automatic Control (IFAC) Technical Committee on Smart Cities and Sustainability (TC 6.3C)* under the Coordinating Committee on Power, Energy and Sustainability or Sustainable Energy Cities (CC 6.3), since 2025.

He is or has been a member of the following international Technical Committees:

- International Federation of Automatic Control on Control for Smart Cities (TC 9.3), 2017-2025.
- International Federation of Automatic Control Technical Committee on Transportation System (TC 7.4), 2017-2025.
- IEEE Technical Committee on Intelligent Systems to Human Aware Sustainability, since 2018.
- International Federation of Automatic Control Technical Committee on Power and Energy Systems (TC 6.3), 2023-2025.

Editorial Activity

He is a *Senior Editor* of the following international journal:

- IEEE Transactions on Automation Science and Engineering, since November 2025.

He is an *Associate Editor* of the following international journals:

- IEEE Transactions on Systems, Man, and Cybernetics, since 2022.

He was an *Associate Editor* of the following international journals:

- IEEE Transactions on Automation Science and Engineering, 2022-2025.
- MDPI Sustainability, 2019-2022
- MDPI Electronics, 2019-2022.

He was awarded:

- **2023 IEEE T-ASE (Transactions on Automation Science and Engineering) Best Associate Editor**
- **2024 IEEE T-ASE (Transactions on Automation Science and Engineering) Outstanding Associate Editor.**

He was or is a guest editor of the following special issues of international journals:

- “TC 6.3 Smart-PES (IFAC WC 2026)” Special Issue in *Control Engineering Practice* (with M. Robba, G. Ferro, L. Parodi, H. Lens, D. Flynn, C. Ocampo-Martinez, I. Lestas, Z. Vale).
- “Networked Predictive Control for Complex Systems” special issue of the international journal MDPI “Automation” (with G. Cavone, M. Di Ferdinando, and N. Epicoco).
- “Empowering Rural Communities: Control Strategies for a Sustainable and Resilient Energy Future” special issue of the international journal MDPI “Energies” (with R. Sacile, M. Dotoli, and E. Zero).

Since 2013 he is *reviewer* for international journals and conferences:

- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Systems, Man and Cybernetics
- IEEE Transactions on Automatic Control

- IEEE Transactions on Control Systems Technology
- IEEE Transactions on Control of Network Systems
- IFAC Automatica
- IEEE Robotics and Automation Letters
- IEEE Control Systems Letters
- ELSEVIER Computers & Operations Research
- ELSEVIER Discrete Applied Mathematics
- MDPI Energies
- MDPI Sustainability
- MDPI Electronics
- IEEE International Control and Decision Conference
- IEEE International European Control Conference
- IEEE International Conference on Automation Science and Engineering
- IEEE International Conference on Intelligent Transportation Systems

He was awarded:

- **2020 MDPI Energies Outstanding Reviewer**
- **2021 MDPI Sustainability Outstanding Reviewer**
- **2022 MDPI Sustainability Outstanding Reviewer**
- **2022 MDPI Energies Outstanding Reviewer.**

Invited Talks

International Invited Talks

- “Control Techniques for Energy-Efficient and Sustainable Agriculture: A Focus on Vertical Farms”, plenary talk at the 2025 IEEE International Congress on Smart Agriculture and Sustainable Systems Engineering (SmartAgri&SuSY), December 5-9, 2025, Marrakech, Morocco.
- “Control Techniques for Energy-Efficient and Sustainable Agriculture: A Focus on Vertical Farms”, plenary talk at the 2025 10th International Conference on Renewable Energy and Conservation (ICREC 2025), November 21-23, Florence, Italy.
- “Optimal Solar Tracking for Sustainable Crop Cultivation and Energy Generation in Agrivoltaics”, online plenary talk at the 5th IEEE International Conference on Electrical, Computer and Energy Technologies (ICECET 2025), July 3-6, 2025, Paris, France.
- “Decision and control techniques for sustainable rural energy communities: a focus on agrovoltaics”, online plenary talk at the 2025 International Conference on Renewable Energy and Energy Conservation (REEC 2025), March 7-9, Xinyu, Jiangxi, China.
- “Game-theoretical Control Frameworks for Multiple Energy Storage Services in Energy Communities” online keynote talk at the 2025 International Conference on New Power System and Power Electronics (PEED 2025), March 7-9, Dali, China.
- “Decision and control techniques for sustainable rural energy communities: a focus on agrovoltaics”, plenary talk at the 2024 9th International Conference on Renewable Energy and Conservation (ICREC 2024), November 22-24, Rome, Italy.
- “Decision and control techniques for the sustainable coexistence of agriculture and energy systems” keynote talk at the 1st International Workshop on Agritech Engineering, July 4-5, 2024 - National School of Applied Sciences - Kenitra, Morocco.
- “Distributed Game-theoretical Control for Electric Vehicles-integrated Energy Communities” online keynote talk at the 2024 International Conference on Power Systems and Smart Grids (PSSG 2024), April 19-21, Xiamen, China.
- “Game-theoretical Control Frameworks for Efficient and Flexible Energy Communities”

- online keynote talk at the 2023 9th International Symposium on Hydrogen Energy, Renewable Energy and Materials (HEREM 2023), October 13-14, Bangkok, Thailand.
- “Distributed Game-theoretical Control for EV-integrated Energy Communities” online plenary talk at the 2023 International Conference on Power, Communication, Computing and Networking Technologies (PCCNT 2023), September 22-24, Wuhan, China.
 - “Distributed control algorithms for waterfilling of networked control systems” online keynote talk at the 2023 IEEE International Conference on Applied Intelligence and Sustainable Computing (ICAISC-2023), June 16-17, Dharwad, India.
 - “Control Frameworks for Energy Resource Trading and Sharing in Energy Communities”, invited lecture at the School of Information and Engineering, Dalarna University, Borlänge (Sweden), 2023 March 31.
 - “Control Frameworks for Energy Resource Trading and Sharing in Energy Communities”, invited lecture at the Center for Intelligent and Networked Systems (CFINS) - Department of Automation of the Tsinghua University, Beijing (China), December 15, 2022.
 - “Control Frameworks for Energy Resource Trading and Sharing in Energy Communities”, plenary talk at the 2022 7th International Conference on Renewable Energy and Conservation (ICREC 2022), November 18-20, Paris, France.
 - “Decentralized and Distributed Optimization for Energy Scheduling of Interconnected Smart Homes”, workshop “Energy management for large-scale smart systems” at the 2015 IEEE International Conference on Automation Science and Engineering (CASE 2015), August 20-24, Gothenburg, Sweden.

National Invited Talks

- “Research and Trends in Automation and Control for Smart and Sustainable Logistics” – Richmond Logistics Forum – October 12-14, 2025 – Rimini, Italy
- “Optimization and control for enhancing the resilience of power grids” at the Specialization Course in Homeland Security (“Systems, methods, and tools for security and crisis management”), 13rd edition, organized by Università Campus Bio-Medico di Roma – May 2021.
- “I paradigmi emergenti di automazione e robotica nell’industria 5.0” talk at the workshop “La rivoluzione culturale di industria 5.0 prospettive di sviluppo della robotica” - November 2023, Bari, Italy.

Organization of International Scientific Events

Organizational Responsibilities

He is member of the Organizing Committee in the following international conferences:

- *General Co-chair* of the IEEE International Congress on Smart Agriculture and Sustainable Systems Engineering (SmartAgri&SuSY 2026), June 7-10, Tirana, Albania.
- *Publicity Chair* of the 2026 21st International Conference on Industrial Electronics and Applications (ICIEA 2026), August 3-6, Catania, Italy.
- *Publicity Chair* of the Automation Science and Engineering, 2026 IEEE International Conference on, August 17 – 21, 2026, Shenyang, China.

He was member of the Organizing Committee in the following international conferences:

- *General Co-chair* of the IEEE International Congress on Smart Agriculture and Sustainable Systems Engineering (SmartAgri&SuSY 2025), December 5-9, Marrakech, Morocco.
- *General Co-chair* of the 2025 10th International Conference on Renewable Energy and Conservation (ICREC 2025), November 21-23, Florence, Italy.
- *General Chair* of the IFAC Workshop on Smart Energy Systems for Efficient and Sustainable Smart grids and Smart Cities (SENSYS 2025), June 18-20, 2025, Bari – Italy.

- *Finance Chair* and *Special Session Chair* of the Automation Science and Engineering, 2024 IEEE International Conference on, August 28-September 1, 2024, Bari - Italy (CASE 2024).
- *Tutorial Co-chair* of the Systems, Man and Cybernetics, 2023 IEEE International Conference on (SMC 2023), October 1–4, Maui, Hawaii.
- *General Co-chair* of the 2022 7th International Conference on Renewable Energy and Conservation (ICREC 2022), November 18-20, Paris, France.
- *Publication Chair* of the 2022 International Symposium on Intelligent Robotics and Systems (ISoIRS 2022), October 14-16, Chengdu, China.
- *Young career Chair* of the Automation Science and Engineering, 2020 IEEE International Conference on, August 20-24, Hong Kong (CASE 2020).
- *Publication Co-chair* of the Automation Science and Engineering, 2017 IEEE International Conference on, August 20-23, 2017, Xi'an China (CASE 2017).

In 2024, he served as the Chair of the Scientific Committee for the Best Student Paper Award and the Peter Luh Memorial Best Paper Award for Young Researchers at the IEEE International Conference on Automation Science and Engineering (CASE) 2024.

He is member of the Organizing Committee in the following international PhD School:

- 2026 PhD Winter School on Autonomous Systems - Politecnico di Bari, Italy - January 19-23, 2026.

Belonging to Steering Committees

He has been Steering Committee Member of the following IEEE Future Directions initiative:

- IEEE Telepresence.

Belonging to Program Committees and Editorial Activity

He has been Associate Editor for the following international conferences:

- IFAC World Congress – 2026.
- IEEE/SICE International Symposium on System Integration (SII) – 2026.
- European Control Conference (ECC) – 2024-2026.
- IEEE International Conference on Control Technology and Applications (CCTA) – 2017, 2018, 2025, 2026.
- Mediterranean Conference on Control and Automation (MED) – 2021, 2022, 2025.
- IEEE International Conference on Automation Science and Engineering (CASE) – 2017-2026.
- IEEE International Conference on Systems, Man and Cybernetics (SMC) – 2019-2026.
- IEEE Conference on Telepresence – 2024, 2025.
- IEEE International Conference on Intelligent Transportation Systems (ITSC) – 2024-2026.

He has been member of the International Program Committee of the following international Conferences and Symposia:

- 2025 International Conference on New Power System and Power Electronics (PEED 2025), March 7-9, Dali, China.
- 2024 International Conference on Power Systems and Smart Grids (PSSG 2024), April 19-21, Xiamen, China.
- Industrial Control Track - the 28th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), Sinaia, Romania, September 12-15, 2023.
- 2023 International Conference on Power, Communication, Computing and Networking Technologies (PCCNT 2023), September 22-24, Wuhan, China

- 2023 International Conference on Control Theory and Applications (ICoCTA 2023), October 20-22, 2023, Xiamen, Fujian, China.
- Industrial Control Track - the 27th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), Stuttgart, Germany, September 6-9, 2022.
- 2022 International Conference on Control Theory and Applications (ICoCTA 2022), June 14-17, 2022, Chengdu, China.
- Industrial Control Track - the 26th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), Västerås, Sweden, September 7-10, 2021.
- 2021 International Conference on Control Theory and Applications (ICoCTA 2021), February 23-25, 2021, Guangzhou, China.
- 16th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), Dubrovnik, Croatia, October 10-15, 2021.
- Industrial Control Track, Complex Systems and Systems Engineering Track - the 25th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), Vienna, Austria, September 8-11, 2020.
- 2020 International Conference on Control Theory and Applications (ICoCTA 2020), February 14-16, 2020, Sydney, Australia.
- 4th South East European Conference on Sustainable Development of Energy, Water and Environment Systems (AP.SDEWES2020), Sarajevo, Bosnia and Herzegovina, June 28 - July 02, 2020.
- 1st Asia Pacific Conference on Sustainable Development of Energy, Water and Environment Systems (AP.SDEWES2020), Gold Coast, Australia, April 6-9, 2020.
- 2nd Latin American Conference on Sustainable Development of Energy, Water and Environment Systems (LA.SDEWES2020), Buenos Aires, Argentina, February 9-12, 2020.
- 14th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), Dubrovnik, Croatia, October 1-5, 2019.
- The Eleventh International Conference on Emerging Networks and Systems Intelligence (EMERGING 2019), September 22 - 26, 2019 in Porto, Portugal
- Industrial Control Track, Complex Systems and Systems Engineering Track - the 24th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), Zaragoza, Spain, September 10-13, 2019.
- Development of Ultra Complex Man-Made Engineering Systems - the first Conference on Societal Automation, Krakow, Poland on September 4-6, 2019.
- The Eighth International Conference on Smart Cities, Systems, Devices and Technologies (SMART 2019), July 28, 2019 to August 02, 2019 - Nice, France
- IFAC Workshop on Control of Smart Grid and Renewable Energy Systems (CSGRES 2019), Jeju, Korea, June 10-12, 2019.
- 5th International Conference on Vehicle Technology and Intelligent Transport Systems (VEHITS 2019), Heraklion, Greece, May 3-5, 2019.
- The Seventh International Conference on Smart Cities, Systems, Devices and Technologies (SMART 2018) July 22, 2018 to July 26, 2018 - Barcelona, Spain
- Industrial Control Track, Complex Systems and Systems Engineering Track - the 23th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), Torino, Italy, September 4-7, 2018.

He has been member of the Program Committee of the following national Conferences:

- “Automatica.it 2025” National Conference of the Italian Society of Professors and Researchers in Automation (SIDRA) - September 3-5, 2025, Perugia, Italy.

- “RIM-3D 2024” 6th Italian Conference on Robotics and Intelligent Machines - October 25-27, 2024, Rome, Italy.
- “Automatica.it 2022” National Conference of the Italian Society of Professors and Researchers in Automation (SIDRA) - September 1-3, 2022, Cagliari, Italy.
- “Automatica.it 2021” National Conference of the Italian Society of Professors and Researchers in Automation (SIDRA) - September 9-10, 2021, Catania, Italy.

He has been the chair/co-chair in the following sessions of international Conferences and Symposia:

- “Water, food, energy” - 2024 IEEE International Humanitarian Technologies Conference (IEEE IHTC 2024), November 27-30, 2024, Bari – Italy.
- “Innovative Applications of AI and Automation in Industrial Scenarios” - IEEE International Conference on Automation Science and Engineering (CASE 2024), August 28-September 1, 2024, Bari – Italy.
- “Controlling Energy Systems” - 21st European Control Conference (ECC 2023), June 13-16, 2023, Bucharest, Romania.
- “Control and Optimization of Transportation and Energy Systems” - 29th Mediterranean Conference on Control and Automation (MED 2021), Bari Italy, June 22-25, 2021.
- “Smart Control Strategies of Energy Storage Systems” - 29th Mediterranean Conference on Control and Automation (MED 2021), Bari Italy, June 22-25, 2021
- “Nonlinear Systems and Nonlinear Control III” - 29th Mediterranean Conference on Control and Automation (MED 2021), Bari Italy, June 22-25, 2021
- “Intelligent energy system I” (regular session) - Systems, Man and Cybernetics (SMC), IEEE International Conference on (SMC), Toronto, Canada, October 11 - 14, 2020.
- “Smart energy systems” (regular session) - 13rd Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES), Palermo, Italia, September 30 - October 4, 2018.
- “Planning, scheduling, coordination, and allocation of resources in logistics and transportation systems” (invited session) - 2017 IEEE International Conference on Service Operations and Logistics, and Informatics, September 18-20, 2017, Bari, Italy.
- “Automation and Optimization for Energy Systems” (special session) - IEEE International Conference on Networking, Sensing and Control, May 16-18, 2017, Calabria, Southern Italy.

Invited Sessions Organization

He is/has been the organizer of the following invited sessions of international Conferences and Symposia:

- “Modeling, Control, and Design of Next-Generation Rural and Agricultural Energy Systems” - IFAC World Congress 2026, Busan, Korea, August 23-28, 2026 (IFAC WC 2026).
- “Control, Optimization, and Learning-Based Approaches for Energy Communities” - IFAC World Congress 2026, Busan, Korea, August 23-28, 2026 (IFAC WC 2026).
- “Automated Optimization for Energy Systems” - Automation Science and Engineering, 2025 IEEE International Conference on, August 17-21, 2025, Los Angeles - California (CASE 2025).
- “System-of-Systems Approaches for Enhancing Sustainability in Rural Communities” - 20th Annual System of Systems Engineering Conference (SoSE 2025), June 8-11, Tirana, Albania.
- “Noncentralized Control and Optimization of Energy Systems and Buildings” - Automation Science and Engineering, 2024 IEEE International Conference on, August 28- September 1, 2024, Bari - Italy (CASE 2024).

- “Decision and control techniques for autonomous systems” - Automation Science and Engineering, 2024 IEEE International Conference on, August 28- September 1, 2024, Bari - Italy (CASE 2024).
- “Energy Communities: optimization and control for sustainability” - Automation Science and Engineering, 2024 IEEE International Conference on, August 28- September 1, 2024, Bari - Italy (CASE 2024).
- “Robotics for logistics and transportation systems” - 9th International Conference on Control, Decision and Information Technologies (CODIT 2023), Rome, Italy, June 3-6, 2023.
- “Control and optimization of coupled transportation and energy systems” - 29th Mediterranean Conference on Control and Automation (MED 2021), Bari, Italy, June 22-25, 2021.
- “Smart Control Strategies of Energy Storage Systems” - 29th Mediterranean Conference on Control and Automation (MED 2021), Bari Italy, June 22-25, 2021.
- “Planning, scheduling, coordination, and allocation of resources in logistics and transportation systems”, 2017 IEEE International Conference on Service Operations and Logistics, and Informatics, September 18-20, 2017, Bari, Italy.

Workshop Organization

He is/ has been the organizer of the following international workshop:

- “IEEE CSS Italy Chapter Seminar Series @ Poliba – Fall 2025” – A series of four hybrid seminars held at the Politecnico di Bari: Dr. E. Zero (University of Genoa), November 3, 2025; Dr. P. Scarabaggio (Polytechnic of Bari), November 17, 2025; Dr. N. Mignoni (Polytechnic of Bari), December 3, 2025; Dr. B. Caiazzo (Universitas Mercatorum), December 15, 2025.
- 6th Colloquium Roberto Tempo in Automatica – in-person invited talk “Resiliency in Multi-Agent Consensus under Adversarial Attacks” by Professor Hideaki Ishii (Dept. of Information Physics and Computing, The University of Tokyo, Tokyo, Japan) at Polytechnic of Bari, October 10, 2025 - Organizers: Raffaele Carli, Mariagrazia Dotoli (Polytechnic of Bari, Italy), and Fabrizio Dabbene (National Research Council, Italy).
- “Decision and Control Techniques for Smart Energy Communities” - online, December 20, 2023.

He was the co-organizer of the following workshop of international Conferences and Symposia:

- “Control for complex Socio-Technical systEMs (Co-STEM)” - Co-organizers: G. De Pasquale (Eindhoven University of Technology), L. Zino, A. Rizzo (Politecnico di Torino), and M. Dotoli (Politecnico di Bari) - IEEE 65th Conference on Decision and Control, December 15–18, 2026, Honolulu, Hawaii, USA (CDC 2026).
- “Decision and Control Techniques for Power, Energy and Sustainability” – Main promoter: R. Carli, Co-organizers: M. Robba, K. Lee, L. Sun, Z. Vale, M. Dotoli - IFAC World Congress 2026, Busan, Korea, August 23-28, 2026 (IFAC WC 2026).
- “2nd French-Italian Workshop on Robotics 4.0” - Automation Science and Engineering, 2024 IEEE International Conference on, August 28- September 1, 2024, Bari - Italy (CASE 2024) – Organizers: Raffaele Carli, Mariagrazia Dotoli (Polytechnic of Bari, Italy), and Andrea Cherubini (Ecole Centrale Nantes / LS2N, France).
- “Control, Cooperation, and Resilience in Rural Energy Communities” - Automation Science and Engineering, 2024 IEEE International Conference on, August 28- September 1, 2024, Bari - Italy (CASE 2024) – Organizers: Raffaele Carli, Mariagrazia Dotoli (Polytechnic of Bari, Italy), Roberto Sacile, and Enrico Zero (University of Genoa, Italy).

- “Acceptance and Trust of Robots in Automation 5.0” - Automation Science and Engineering, 2024 IEEE International Conference on, August 28- September 1, 2024, Bari - Italy (CASE 2024) – Organizers: Raffaele Carli, Graziana Cavone (University of Roma Tre, Italy), Lorenzo Sabattini, Silvia Proia, and Valeria Villani (University of Modena and Reggio Emilia).

Tutorial Organization

He is the co-organizer of the following international tutorial:

- “Non-centralized Optimization of Distributed Energy Systems (NODES)”, 2026 IEEE International Conference on Systems, Man and Cybernetics (SMC 2026), October 4–7, 2026 – Bellevue (WA, USA) - Organizers: Raffaele Carli, Nicola Mignoni, Paolo Scarabaggio, and Mariagrazia Dotoli (Polytechnic of Bari, Italy).
- “Optimization and Non-centralized Optimization Applied to Energy Systems”, 2025 IEEE International Conference on Systems, Man and Cybernetics (SMC 2025), October 5–8, 2025 – Vienna (Austria) - Organizers: Raffaele Carli, Nicola Mignoni, Paolo Scarabaggio, and Mariagrazia Dotoli (Polytechnic of Bari, Italy).

Participation to Research Projects

He took part in the following international research program:

- 2019-2024: “Smart Design and Control of Energy Storage Systems” project (Annex 37) supported by the Energy Conservation through Energy Storage (ECES) Technical Collaboration Program of International Energy Agency (IEA) (<https://iea-es.org/task-37/>), aimed at investigating smart design and control strategies for energy storage systems on both the demand and supply side.
Role: Work Package Leader of “Control and optimization of energy storage systems in power networks”.

He takes part in the following national research project:

- 2026-2031: fundamental research project “Control and Optimization of Networked Smart ENergy Systems through User-driven and Sustainability-oriented strategies (CONSENSUS)” funded through the competitive procedure of the Italian Science Fund 2024-2025 (FIS 3 Call).
Role: Principal Investigator, Budget: 1532 k€.

He takes or took part in the following national research programs:

- 2023-2026: research project “Control, cOoperation and Resilience in Rural Energy CommuniTies (CORRECT)” supported by the National Recovery and Resilience Plan (NRRP) - Mission 4 Component 2 Investment 1.1 – Call for “Projects of significant national interest - Progetti di rilevante interesse nazionale (PRIN)” - Decree no. 104 of February 2, 2022 of Minister of University and Research (project code: 202248PWRY).
Role: Task Leader for “Control Frameworks for Energy Trading and Energy Resource Sharing in Rural Energy Communities”.
- 2023-2026, project “Digital Driven Diagnostics, prognostics and therapeutics for sustainable Health care (D34Health)”, funded by the National Plan complementary to the National Recovery and Resilience Plan (PNC) - Call for tender No. 931 of June 22 2022 of Italian Ministry of University and Research.
Role: Team Member.
- 2023-2025: project “Circular and Sustainable Made-in-Italy (MICS)”, funded by the

- National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.3 - Call for tender No. 341 of March 15 2022 of Italian Ministry of University and Research.
Role: Task Leader of “Decision and Control Techniques for In-Space Manufacturing”.
- 2018-2022: Project “Integrated and connected processes for the industrial production evolution (PICO&PRO)” project, funded by the Italian Ministry for Education, University and Research in the context of the National Research Program 2015-2020 (project code: ARS01_01061, project area: “Smart factory”), aimed at developing smart manufacturing in automotive (<https://murricerca.cineca.it/Home/Detail?key=be66FXLVkl6IZYO2nWmgjg%3D%3D>).
Role: Work Package Leader of “Design and implementation of control systems for manufacturing execution systems”.
 - 2019-2022: project “Railway infrastructure active monitoring (MAIA)”, funded by the Italian Ministry for Education, University and Research in the context of the National Research Program 2015-2020 (project code: ARS01_00353, project area: “Smart mobility”), aimed at developing innovative solutions aimed at a thorough assessment of the safety and security of the railway infrastructure (<https://murricerca.cineca.it/Home/Detail?key=be66FXLVkl6IZYO2nWmgjg%3D%3D>).
Role: Task leader of “Decision-making and control techniques for railway diagnostics”.
 - 2018-2021: project “System for risk Analysis and Forecast for critical infrastructure in the ApenninEs dorsaL Regions (RAFAEL)”t, funded by the Italian Ministry for Education, University and Research in the context of the National Research Program 2015-2020 (project code: ARS01_00305, project area: “Smart Secure & Inclusive Communities”), aimed at developing ICT solution for critical infrastructure risk management and forecast in South Italy (<https://murricerca.cineca.it/Home/Detail?key=be66FXLVkl6IZYO2nWmgjg%3D%3D>).
Role: Work Package Leader of “Decision and control techniques for forecasting and managing the risk of extreme natural events in power networks”.
 - 2013-2015: project “Networks, Buildings, Roads: New virtuous objectives for the Environment and Energy (RES NOVAE), funded by the Ministry for Education, University and Research and by the Ministry of the Economic Development in the context of the National Operative Program for Research and Competitiveness 2007-2013 for the development of Smart Cities (<http://www.ponrec.it/open-data/progetti/scheda-progetto?ProgettoID=5837>).
Role: Task Leader of “Control and command functionalities of the Urban Control Center”

He took part in the following regional research projects:

- 2020-2023: project “Decision and control algorithm for flexible and efficient Energy Communities” project (project code: C9A3735B), funded by the Call n. 2/FSE/2019 “Research for Innovation (REFIN)” - Apulia Region, POR PUGLIA FESR-FSE 2014/2020 (<https://www.refin.regione.puglia.it/pages/index>).
Role: Principal Investigator, Budget: 150k€.
- 2016-2019, project “Urban Control Center for the sustainable management of energy flows in Metropolitan Smart cities (UCCSM)” (project code: 6L4QP75), funded by the Apulia Region (Italy) under the Innovation Technology Cluster call (<https://www.sistema.puglia.it/portal/page/portal/SistemaPuglia/bando-clustertecnologici>).
Role: Work Package Leader of “Definition, design, and prototyping of a dynamic Building Energy Management System”.
- 2016, Urgent remediation of Taranto area, funded by the Taranto Special Commissioner (Commissioner Decree n.38 of 15.06.2015).
Role: Team Member.

- 2014-2015, project “Evolved Systems for the Intelligent Mobility in Urban Agile Networks (SEMINA)” (project code: CC1Y7S6), funded by the Apulian Region (Italy) in the call “Apulian ICT Living Lab” of the Operative Regional Program FESR 2007-2013 (<https://www.sistema.puglia.it/SistemaPuglia/LivingLabs>, <https://www.facebook.com/progsemina>).
Role: Task Leader of “Prototyping and customization of traffic analysis solutions”.

He took part in the following University research project:

- 2021: research project “Control techniques for the optimal sharing of community energy storage systems in microgrids”, funded by the University Research Fund of Politecnico di Bari.
Role: Coordinator; Budget: 5 k€.

Research Collaborations

Collaborations with Authorities and Enterprises of the Territory

He collaborates or has collaborated with the following authorities and enterprises of the territory:

- e-distribution SpA (Enel group), the largest electricity operator in Italy and Europe's second listed utility for installed capacity.
- IBM Italia SpA, world leader company in the computers industry.
- Centro Ricerche Fiat SpA, an Italian company that develops innovative power units, vehicle systems, materials, methods and processes for the Fiat Chrysler Automobiles N.V. (FCA) products.
- Elettric80 SpA, a world leader company in automated logistic solutions for daily consumer goods manufacturing in the beverage, food and tissue sectors and other diversified areas.
- Comau SpA, an Italian company specialising in automation and robotic solution for production lines.
- Masmec SpA, an Italian company specialising in precision technologies, robotics and mechatronics, which are applied to automotive and biomedical.
- Tesmec SpA, an Italian company specialising in automation solution for power grids and railway systems.
- Icam Srl, an Italian company specialising in automated solutions for the storage, distribution and sales of goods.
- Tera Srl, an Italian company that develops ICT solutions aimed at the energy efficiency of smart homes and smart buildings.
- Predict Srl, an Italian company that develops innovative healthcare technologies and medical diagnostic imaging systems.
- Planetek in Bari, an Italian company that develops ICT solutions based on the use of geo-localized data.
- Casalinghi Srl, an Italian company specialized in the distribution of household goods.
- Best Srl, a spin-off of Polytechnic of Bari.
- Innolab Srl, a spin-off of Polytechnic of Bari.

Collaborations with Foreign Enterprises

He collaborates or has collaborated with the following foreign enterprises:

- PAL Robotics, Barcelona, Spain, a world leader company in robotics, collaborative robotics, and humanoid robotics.
- Samsø Energy Academy, Samsø, Denmark, a small enterprise focused on energy efficiency solutions.

Bibliometric Indices

Database accessed on February 19, 2026:

- Google Scholar database:
 - *Author's profile*: <https://scholar.google.it/citations?user=OvXT8Y0AAAAJ&hl=en>
 - *Number of citations*: 4119
 - *h-index*: 38.
- Scopus database:
 - *Author's profile*: <https://www.scopus.com/authid/detail.uri?authorId=56027814000>
 - *Number of papers*: 133
 - *Number of citations*: 3032
 - *h-index*: 33.

c-score ranking released by Stanford University:

- He was named for five consecutive years (2020–2024) in the World's Top 2% scientists list for the single-year category in the "Industrial Engineering & Automation" field in accordance with the c-score ranking released by Stanford University – <https://doi.org/10.17632/btchxktzyw.8>

Publication List

Since 2013 he has been co-author of +130 scientific papers for international journals and conferences (see the publication list below), which are registered in the following databases:

- <https://scholar.google.it/citations?user=OvXT8Y0AAAAJ&hl=en>
- <https://www.scopus.com/authid/detail.uri?authorId=56027814000>

Articles accepted for publication in International Journals:

- j1 Mancazzo, V.; Sibilano, E.; Buongiorno, D.; **Carli, R.**; Bevilacqua, V.; Brunetti, A., "Parkinson's disease detection from resting-state EEG using a Transformer model with Multi-Head Attention explanations", *Biomedical Signal Processing and Control*, vol. 119 A, 2026, 1098112025. doi: 10.1109/JBHI.2025.3625431.
- j2 Scarabaggio P.; **Carli, R.**; Dotoli, M., "Influence Spread Maximization in Social Networks via Activation Probability Overlap Reduction", *IEEE Transactions on Computational Social Systems (TCSS)*, 2025. doi: 10.1109/TCSS.2025.3635909. In press.
- j3 Prunella, M.; Altini, N.; D'Alessandro, R.; Schirizzi, A.; De Leonardis, G.; Arborea, G.; Savino, M.T.; Valentini, A.M.; Armentano, R.; Ricci, A.D.; Lotesoriere, C.; **Carli, R.**; Dotoli, M.; Giannelli, G.; Bevilacqua, V. "Automated Pathomic Analysis of Angiogenesis and Immune Profiles unveils an Interpretable Prognostic Biomarker in Colon and Gastric Cancers", *IEEE Journal of Biomedical and Health Informatics (JBHI)* 2025. doi: 10.1109/JBHI.2025.3625431. In press.
- j4 Zhukovskii, K.; Scarabaggio, P.; Ovsianikova, P.; Jhunjhunwala, P.; **Carli, R.**; Dotoli, M.; and Vyatkin, V. "Decentralized Control of Crop Growth Conditions in Vertical Farms under Dynamic Energy Markets" *IEEE Transactions on Automation Science and Engineering (TASE)*, vol. 22, pp. 21498-21511, 2025. doi: 10.1109/TASE.2025.3609694.
- j5 Askari Noghani, S.; Scarabaggio, P.; **Carli, R.**; Dotoli M. "Predictive Energy Scheduling of Smart Parking Infrastructure with Solar-powered Electric Vehicles," *IFAC Journal of Systems and Control*, 2025, 33, 100322. doi: 10.1016/j.ifacsc.2025.100322.
- j6 Prunella, M.; Altini, N.; D'Alessandro, R.; Schirizzi, A.; Ricci, A.D.; Lotesoriere, C.; Scarabaggio, P.; **Carli, R.**; Dotoli, M.; Giannelli, G.; Bevilacqua, V. "Pharmacometric and Digital Twin modeling for adaptive scheduling of combination therapy in advanced gastric cancer," *Computer Methods and Programs in Biomedicine*, 2025, 270, 108919. doi: 10.1016/j.cmpb.2025.108919.
- j7 Scardigno, R. M.; Brunetti, A.; Marvulli, P.M.; **Carli, R.**; Dotoli, M.; Bevilacqua, V.; Buongiorno, D. "CALIMAR-GAN: An Unpaired Mask-Guided Attention Network for Metal Artifact Reduction in CT Scans," *Computerized Medical Imaging and Graphics*, 123, 102565, 2025. doi: 10.1016/j.compmedimag.2025.102565.
- j8 Mignoni, N.; Scarabaggio P.; **Carli, R.**; Dotoli, M. "A Framework for the Automated and Optimal Design of Vertical Lift Modules" *IEEE Transactions on Systems, Man and Cybernetics: Systems (TSMC)*, vol. 55, no. 6,

- pp. 4001-4014, 2025. doi: 10.1109/TSMC.2025.3547302.
- j9 Proia, S.; Cavone, G.; Scarabaggio, P.; **Carli, R.**; Dotoli, M., “An Integrated Control Framework for Safe and Ergonomic Human-Drone Interaction in Automated Warehouses,” *IEEE Transactions on Systems, Man and Cybernetics: Systems (TSMC)*, vol. 55, no. 5, pp. 3570-3585, 2025. doi: 10.1109/TSMC.2025.3540635.
- j10 Bozza, A.; Martin, T.; Cavone, G.; **Carli, R.**; Dotoli, M.; Allgöwer, F., “Online Data-Driven Robust Control of Nonlinear Systems using Semidefinite Programming”, *IEEE Control Systems Letters*, 2025. DOI: 10.1109/LCSYS.2024.3521645. The contents of this paper were also selected by ACC Program Committee for presentation at the 2025 *American Control Conference (ACC 2025)*, July 8-10, 2025, Denver, Colorado US.
- j11 Mignoni, N.; **Carli, R.**; and Dotoli, M. “Layout Optimization for Photovoltaic Panels in Solar Power Plants via a MINLP Approach,” *IEEE Transactions on Automation Science and Engineering (TASE)*, vol. 22, pp. 18148-18161, 2025. doi: 10.1109/TASE.2023.3322786.
- j12 Tresca, G.; Cavone, G.; **Carli, R.**; Scarabaggio, P.; Dotoli, M., “A Matheuristics for the Configuration of Automated Vertical Lift Modules Warehouses”, in *IEEE Transactions on Automation Science and Engineering (TASE)*, vol. 22, pp. 7284-7295, 2025. doi: 10.1109/TASE.2024.3490986.
- j13 Caponio, C.; Stano, P.; **Carli, R.**; Olivieri, I.; Ragone, D.; Sornioiti, A.; Gruber, P.; Montanaro, U., “Modelling, Positioning, and Deep Reinforcement Learning Path Following Control of Scaled Robotic Vehicles: Design and Experimental Validation”, *IEEE Transactions on Automation Science and Engineering (TASE)*, vol. 22, pp. 9856-9871, 2025. doi: 10.1109/TASE.2024.3513701.
- j14 Scarabaggio P.; **Carli, R.**; Grammatico S.; Dotoli, M., “Local Generalized Nash Equilibria with Nonconvex Coupling Constraints,” *IEEE Transactions on Automatic Control (TAC)*, 2025, vol. 70, no. 3, pp. 1427-1439. doi: 10.1109/TAC.2024.3462553.
- j15 Proia, S.; Cavone, G.; Scarabaggio, P.; **Carli, R.**; Dotoli, M., “Safety Compliant, Ergonomic and Time Optimal Trajectory Planning for Collaborative Robotics,” *IEEE Transactions on Automation Science and Engineering (TASE)*, vol. 22, pp. 594-605, 2025. doi: 10.1109/TASE.2023.3331505.
- j16 Vlacic, L., Huang, H., Dotoli, M., Wang, Y., Ioannou, P. A., Fan, L., Wang, X., **Carli, R.**, Chen, L., Li, L., Na, X., Han, Q.L., & Wang, F.Y. (2024). Automation 5.0: The Key to Systems Intelligence and Industry 5.0. *IEEE/CAA Journal of Automatica Sinica*, 11(8), 1723-1727. doi: 10.1109/JAS.2024.124635.
- j17 Mignoni, N.; **Carli, R.**; and Dotoli, M. “Optimal Decision Strategies for the Generalized Cuckoo Card Game,” *IEEE Transaction on Games (ToG)*, vol. 16, no. 1, pp. 185-194, 2024. doi: 10.1109/TG.2023.3239795.
- j18 Askari, B.; Bozza, A.; Cavone, G.; **Carli, R.**; Dotoli, M., “An Adaptive Constrained Clustering Approach for Real Time Fault Diagnosis of Industrial Systems,” *European Journal of Control*, vol. 74, 100858, 2023. doi: 10.1016/j.ejcon.2023.100858. This paper was selected by the Program Committee of *21st European Control Conference (ECC 2023)* for inclusion in the ECC 2023 Special Issue and presentation at the ECC 2023 conference - participation in the conference and presentation of the work.
- j19 Mignoni, N.; **Carli, R.**; and Dotoli, M. “Distributed Noncooperative MPC for Energy Scheduling of Charging and Trading Electric Vehicles in Energy Communities” *IEEE Transactions on Control Systems Technology (TCST)*, vol. 31, no. 5, pp. 2159-2172, 2023. doi: 10.1109/TCST.2023.3291549.
- j20 Prunella, M.; Scardigno, R. M.; Buongiorno, D.; Brunetti, A.; Longo, N.; **Carli, R.**; Dotoli, M.; Bevilacqua, V. “Deep Learning for Automatic Vision-based Recognition of Industrial Surface Defects: a Survey,” *IEEE Access*, vol. 11, pp. 43370-43423, 2023, doi: 10.1109/ACCESS.2023.3271748.
- j21 Atrigna, M.; Buonanno, A.; **Carli, R.**; Cavone, G.; Scarabaggio, P.; Valenti, M.; Graditi, G.; Dotoli, M., “Power Distribution Grids Condition Monitoring under Heatwaves: a Machine Learning Approach to Fault Prediction”, *IEEE Transactions on Industry Applications (TIA)*, vol. 591, no. 4, pp. 4835-4845, 2023. doi: 10.1109/TIA.2023.3262230.
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Preprints submitted to International Conference with Proceedings:

- c92 Signorile, F.; Mignoni, N.; **Carli, R.**; Dotoli, M., “Thermal- and Congestion-Aware Dynamic Routing of Connected Vehicles in Cold-Chain Logistics”, *29th IEEE International Conference on Intelligent Transportation Systems (ITSC)*, September 15–18, 2026, Naples, Italy. Submitted.
- c93 Signorile, F.; **Carli, R.**; Bertogli, A.; Olmi, R.; Koenig, S.; Dotoli, M., “Continuous-time priority-based search with offline collision detection and roadmap annotation for efficient multi-AGV coordination”, *Automation Science and Engineering (CASE), 2026 IEEE International Conference on*, August 17–21, 2026, Shenyang, China. Submitted.
- c94 Campobasso, M.; Mignoni, N.; Scarabaggio, P.; **Carli, R.**; Dotoli, M., “Trajectory Optimization of Robotic Manipulators with Collision Avoidance via Learning-Based Human Motion Prediction”, *Automation Science and Engineering (CASE), 2026 IEEE International Conference on*, August 17–21, 2026, Shenyang, China. Submitted.
- c95 Proia, S.; **Carli, R.**; Cavone, G.; Dotoli, M.; Sabattini, L., “Pontryagin-based Receding Horizon Control for Rendezvous with Free-Final-Time” *Decision and Control (CDC), 2026 IEEE 65th Conference on*, December 15–18, 2026, Honolulu, Hawaii, USA. Submitted.
- c96 Mignoni, N.; Scarabaggio, P.; **Carli, R.**; Dotoli, M., “Automatic Fast Tilt Control for the Optimal Balance of Crops’ Lighting and Power Generation in Agrivoltaics” *Decision and Control (CDC), 2026 IEEE 65th Conference on*, December 15–18, 2026, Honolulu, Hawaii, USA. Submitted.
- c97 Pantazis, G.; Mignoni, N.; **Carli, R.**; Dotoli, M.; Grammatico, S., “Adversarially and Distributionally Robust Virtual Energy Storage Systems via the Scenario Approach” *24th European Control Conference (ECC)*, July 7–10, 2026, Reykjavik, Island. Submitted.
- c98 Scarabaggio, P.; Mignoni, N.; **Carli, R.**; Dotoli, M., “Equilibria Existence in Games: A Perspective from the Lefschetz-Nielsen Theory” *24th European Control Conference (ECC)*, July 7–10, 2026, Reykjavik, Island. Submitted.

Articles presented to International Conference without Proceedings:

- c99 **Carli, R.**; Dotoli, M.; Pellegrino, R., “Evaluating the Sustainable Development of Metropolitan Cities by the Analytic Hierarchy Process,” *12th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES Conference), Dubrovnik, 2017*.
- c100 **Carli, R.**; Dotoli, M.; Epicoco, N.; Pellegrino, R., “Defining sustainable action plans in metropolitan cities using the fuzzy Analytic Hierarchy Process group decision analysis,” *13th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES 2018)*, Sept. 30-Oct. 4, 2018, Palermo (Italy) - participation in the conference and presentation of the work.

Articles presented to National Conference without Proceedings:

- c101 Ardito, G.; Costantino, N.; Dotoli, M.; **Carli, R.**, “An innovative decision support tool for a sustainable building design”, *3rd Italian Conference on ICT for Smart Cities & Communities (i-Cities 2017)*, Bari, Italy - September 27-29, 2017 - participation in the conference and presentation of the work.

Publications in National Journals:

- i1 Dammacco, L., **Carli, R.**, Fiorentino, M., Dotoli, M. (2022) Realtà Virtuale per il Virtual Commissioning dei Sistemi Manifatturieri Complessi, *Automazione e Strumentazione*, Vol.70, No. 8, pp. 92-95, November-December 2022, ISSN 0005-1284 (in Italian). Online: <https://automazione-plus.it/brochure/as/8-2022/92/>.
- i2 Tresca, G., Cavone, G., **Carli, R.**, Dotoli, M. (2022) Algoritmi intelligenti di bin packing per la logistica 4.0, *Automazione e Strumentazione*, Vol.70, No. 6, pp. 89-91, September 2022, ISSN 0005-1284 (in Italian). Online: <https://automazione-plus.it/brochure/as/6-2022/88/>.
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Chapters of National Books:

- i5 **Carli, R.;** Cavone, G.; Dotoli, M., Opportunità e sfide della micromobilità: Le tendenze emergenti dell'ICT per una mobilità urbana più sicura, efficiente e sostenibile. (in Italian). In *“Traffico: Caos e regole”* - Franco Angeli. In press

Professional Activities

Technology Transfer Activity

Since 2022, as a representative of Politecnico di Bari, he has served on the Board of the spinoff company [INNOLAB S.r.l.](#), which provides consulting for technology transfer in the following areas: production processes optimization; company logistics optimization; human resource organization and company reorganization.

Other activities

From September 2004 to September 2012, he was Command and Control Project Lead at the Weapon System Architecture and Equipments Unit - System and Missile Design Directorate - [MBDA Italy S.p.A.](#) (Leonardo Group).

- In charge of providing professional and technical contribution in the conception, development and co-ordination related to all aspects of BMC4I (Battle Management, Command, Control Communications, Computers, and Intelligence) within the following multinational programs:
 - Intercontinental program for Ground Based Air Defence: MEADS (Medium Extended Air Defense System)
 - Pan-european program for Naval Maritime Superiority: SAAM ESD (Surface Air Anti Missile – Extended Self Defence)
 - Pan-european program for Ground Based Air Defence: SAMP/T (Système Surface Air Moyenne Portée Terrestre)
 - PNR 315 - Simulator of Ballistic Missile Defense System.

From June 2003 to May 2004 he was a Reserve Officer (Ensign) at the Technical Section of Coast Guard Bari Office, Bari – Italy.

- Activities:
 - Bari Port shipping operations coordination and control
 - Contribution to Coast Guard criminal investigation and patrol activities in Bari district
 - Analysis and studies about Italian maritime traffic control system (VTS – Vessel Traffic System)
 - Member of Regional military trade union (COBAR).

Evaluation Activity

University Staff

- In 2026 he is an external reviewer for three promotion procedures to Associate Professor positions at the Department of Computing, Dalarna University, Sweden.

Projects Proposals

- Since 2025 he has been included in the Register of Experts appointed by the Italian Energy and Environmental Services Fund (CSEA) for the evaluation and monitoring of research projects in the electricity sector, established by the Decree of the Italian Ministry of the Environment and Energy Security (MASE) on May 15, 2019.
- Since 2025 he has been included in the Register of Experts in Technological Innovation, established by the Decree of the Italian Ministry of Enterprises and Made in Italy (MIMIT) on October 7, 2015.
- Since 2024 he is registered in the Portal Expert Database managed by the European Commission for the management of EU funding and tenders.
- Since 2024 he is registered in REPRISE -the register of scientific experts established by the Italian Ministry of University and Research (MUR)- in the following sections: “Basic Research” and “Competitive Industrial Research and Social Development”.
- Since 2024 he is included in the Register of the experts evaluators of technological research and developments projects of ARTI (Regional Agency for Technology and Innovation) of Apulia Region, area 09 “Industrial and Computing Engineering”.

Membership to Professional Organizations

International Professional Organizations

- Since 2016, he has been a member of the prestigious Institute of Electrical and Electronics Engineers ([IEEE](#)), attaining **Senior Member** status in 2022. He is a member of the following IEEE Societies:
 - Robotics and Automation Society (RAS)
 - Systems, Man, and Cybernetics Society (SMCS)
 - Control Systems Society (CSS).
- He currently serves as the **Secretary of the IEEE Italy Section Chapter CS23** of the CSS for the 2025-2026 term.
- He currently serves as the **Mentorship Subcommittee Chair of the IEEE SMCS** within the Membership and Student Activities Committee (MSAC) for the 2023-2024 and 2025-2026 term.
- Since 2016, he has been an affiliate of the prominent International Federation of Automatic Control ([IFAC](#)).

Italian Professional Organizations

- Since October 2003, he has been listed as no. 6890 in the Register of the [Bari Province Order of Engineers](#) and served as a member of the Energy Efficiency Committee and the Information Engineering Committee from 2018 to 2022.
- Since November 2012, he has been registered as no. 6546 in the National Acoustic Experts Register of the Italian Institute for Environmental Protection and Research ([ISPRA](#)).
- Since 2021, he has been a member of the Italian Society of Professors and Researchers in Automation ([SIDRA](#)).
- Since 2020, he has been a member of the Italian National Inter-university Consortium for Telecommunications ([CNIT](#)).

Declaration

Aware of penal sanctions, in the case of false declarations, training or use of false deeds, referred to art. 76 of the D.P.R. 445/2000, the undersigned Raffaele Carli, declares in accordance with articles 46 and 47 of the D.P.R. 445/2000 that the above is true and reserves the right to prove specific qualifications upon request by means of appropriate documentation. It also provides explicit formal consent to the processing of personal data, pursuant to Legislative Decree 196/2003 and EU General Data Protection Regulation 2016/679.

Bari, February 19, 2026

Prof. Engr. Raffaele Carli, PhD