

Curriculum vitae di *Mariagrazia Dotoli*

Sottosettori ERC primari:

PE7_1 Control engineering, PE7_3 Simulation engineering and modelling, PE7_10 Robotics

PERSONAL DETAILS

Family name, First name: Dotoli, Mariagrazia

Birthdate: June 30th 1971

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URL for web site: <http://dclab.poliba.it/people/mariagrazia-dotoli/>, <https://dei.poliba.it/author/mariagrazia-dotoli/>

• **Education and key qualifications**

- 14/04/1999 PhD in Electrotechnical Engineering
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 13/07/1995 Master in Electronics Engineering, summa cum laude
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 1996- Professional Engineer Qualification
Politecnico di Bari, Italy.

• **Current positions**

- 2019- Full Professor of Automation
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 2022- Coordinator of the National PhD Program in Autonomous Systems
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 2025-2028 President of SIDRA-Società Docenti e Ricercatori di Automatica
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 2024- IEEE Fellow
Robotics and Automation Society, IEEE, USA
- 2026-2031 Editor in Chief of the IEEE Transactions on Automation Science and Engineering
Robotics and Automation Society, IEEE, USA
- 2023-2026 Vice President for Membership and Student Activities
Systems, Man and Cybernetics Society, IEEE, USA
- 2025-2027 Member of the Administrative Committee
Robotics and Automation Society, IEEE, USA
- 2025-2031 Rector's Delegate for European and International Research
Politecnico di Bari, Italy
- 2016- Member of the Scientific Committee
Apulian Production District for Renewable Energy and Energy Efficiency, Apulia, Italy
- 2020- Member of the Executive Board
MEDITECH, the Italian Competence Center for Industry 4.0 established by the Ministry of Economic Development

• **Previous positions**

- 2015-2019 Associate Professor of Automation
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 1999-2015 Assistant Professor of Automation
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 2020-2022 Coordinator of the PhD Program in Industry 4.0
Dipartimento di Ingegneria Elettrica e dell'Informazione, Politecnico di Bari, Italy
- 2012-2013 ViceRector for Research
Politecnico di Bari, Italy
- 2009-2011 Rector's Delegate for Research
Politecnico di Bari, Italy

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- 2020-2023 Member of the Board of Governors
Systems, Man and Cybernetics Society, IEEE, USA
- 2021-2026 Senior Editor of the IEEE Transactions on Automation Science and Engineering
Robotics and Automation Society, IEEE, USA
- 2016-2020 Editor in Chief of the IEEE Systems, Man and Cybernetics Newsletter
Systems, Man and Cybernetics Society, IEEE, USA
- 2016-2025 Associate Editor of the IEEE Transactions on Systems, Man and Cybernetics: Systems
Systems, Man and Cybernetics Society, IEEE, USA
- 2016-2021 Associate Editor of the IEEE Transactions on Control Systems Technology
Control Systems Society, IEEE, USA
- 2018-2020 Associate Editor of the IEEE Transactions on Automation Science and Engineering
Robotics and Automation Society, IEEE, USA
- 2012-2016 Associate Editor of the IEEE Transactions on Automation Science and Engineering
Robotics and Automation Society, IEEE, USA
- 2015-2018 Associate Editor of the IEEE Robotics and Automation Letters
Robotics and Automation Society, IEEE, USA
- 2014-2019 Member of the Regional Section
National Register of Environmental Managers of Puglia, Bari, Italy
- 2011-2014 Member of the Steering Committee
ARTI Puglia (Regional Agency for Technology and Innovation), Bari, Italy

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

The following are my main research outputs in my fields of interest, which are industrial automation, smart cities, logistics systems, transportation systems, energy management, and human-robot collaboration. Many of the following papers are in the top 10 cited papers under the relevant topic in the Automation Control System category of Web Of Science (WOS).

1. S. M. Hosseini, R. Carli, M. Dotoli, Robust Optimal Energy Management of a Residential Microgrid under Uncertainties on Demand and Renewable Power Generation, *IEEE Transactions on Automation Science and Engineering*, 2021, Vol. 18, No. 2, pp. 618-637. (264 Google Scholar citations)
2. R. Carli, G. Cavone, S. Ben Othman, M. Dotoli, IoT Based Architecture for Model Predictive Control of HVAC Systems in Smart Buildings, *Sensors*, Vol. 20, No. 3, 18 pp., 2020. (223 GS cit.)
3. A. M. Helmi, R. Carli, M. Dotoli, H. S. Ramadan: Efficient and Sustainable Reconfiguration of Distribution Networks via Recent Metaheuristic Optimization, *IEEE Transactions on Automation Science and Engineering*, 2022, Vol. 19, No. 1, pp. 82–98. (197 GS cit.)
4. P. Scarabaggio, S. Grammatico, R. Carli, M. Dotoli, Distributed Demand Side Management with Stochastic Wind Power Forecasting, *IEEE Transactions on Control Systems Technology*, 2022, Vol. 30, No. 1, pp. 97 – 112, doi: 10.1109/TCST.2021.3056751. (136 GS cit.)
5. R. Carli, G. Cavone, T. Pippia, B. De Schutter, M. Dotoli, Robust Optimal Control for Demand Side Management of Multi-Carrier Microgrids, *Transactions on Automation Science and Engineering*, 2022, Vol. 19, No.3, pp. 1338-1351, doi: 10.1109/TASE.2022.3148856. (117 GS cit.)

These papers develop advanced control, optimization, and decision-making techniques for smart energy systems, microgrids, and sustainable power networks. They propose robust and distributed energy management methods under uncertainty, integrating renewable generation, demand-side management, IoT architectures, HVAC control, and metaheuristic optimization for distribution networks. The works improve efficiency, resilience, and sustainability through predictive and data-driven automation strategies. Together, they define a coherent research line on intelligent energy management for smart grids, smart buildings, and interconnected multi-energy systems. In all these papers I was the main supervisor and project coordinator.

6. Proia S., Carli R., Cavone G., Dotoli M., Control Techniques for Safe, Ergonomic, and Efficient Human-Robot Collaboration in the Digital Industry: a Survey, *Transactions on Automation Science and Engineering*, 2022, Vol. 19, No.3, pp. 1798-1819. (235 GS cit.)
7. M. Dotoli, A. Fay, M. Miskowicz, C. Seatzu, An Overview of Current Technologies and Emerging Trends in Factory Automation, *International Journal of Production Research*, Vol. 57, Nos 15-16, pp. 5047-5067, pp. 2019. (171 GS cit.)

In these two papers we surveyed key Industry 4.0 technologies and automation methods. The first paper focuses on safe and efficient human–robot collaboration, while the other reviews emerging trends in intelligent factory automation. Together, they define the foundations of smart, human-centered industrial systems. In the first paper I was the main supervisor and project coordinator, while in the second and older paper I was the corresponding and main author.

8. M. Dotoli, M. P. Fanti, A.M. Mangini, W. Ukovich, On-line Fault Detection in Discrete Event Systems by Petri Nets and Integer Linear Programming, *Automatica*, Vol. 45, No. 11, pp. 2665-72, 2009. (214 GS cit.)

The paper introduces an online fault detection framework for discrete event systems using Petri nets and integer linear programming. The method enables real-time identification of abnormal system behaviors in industrial processes. It contributed significantly to automated diagnosis and monitoring techniques for complex manufacturing and logistics systems. In this paper I was the corresponding and main author.

9. R. Carli, M. Dotoli, R. Pellegrino, L. Ranieri, Measuring and Managing the Smartness of Cities: a Framework for Classifying Performance Indicators, 2013 IEEE Conference on Systems, Man and Cybernetics (SMC 2013), Manchester, United Kingdom, October 13-16, 2013. (213 GS cit.)
10. R. Carli, M. Dotoli, R. Pellegrino, Multi-criteria Decision-Making for Sustainable Metropolitan Cities Assessment, *Journal of Environmental Management*, Vol. 226, pp. 46-61, 2018. (150 GS cit.)
11. R. Carli, M. Dotoli, R. Pellegrino, A decision-making tool for energy efficiency optimization of street lighting, *Computers&Operations Research*, Vol. 96, pp. 223-235, 2018. (111 GS cit.)

These papers develop decision-support and optimization methodologies for smart and sustainable cities. The first introduces a framework for classifying and managing smart city performance indicators, while the second proposes multi-criteria methods for assessing metropolitan sustainability. The third applies

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optimization techniques to improve the energy efficiency of urban street lighting systems. Together, they establish an integrated research line on smart city analytics, sustainability assessment, and urban energy management. In all these three papers I was the main supervisor and project coordinator.

12. N. Costantino, M. Dotoli, M. Falagario, M. P. Fanti, A. M. Mangini, A model for supply management of agile manufacturing supply chains, *International Journal of Production Economics*, Vol. 135, No. 1, pp. 451-457, 2012. (198 GS cit.)
13. M. Dotoli, N. Epicoco, M. Falagario, F. Sciancalepore, A cross-efficiency fuzzy Data Envelopment Analysis technique for performance evaluation of decision making units under uncertainty, *Computers and Industrial Engineering*, Vol. 79, no. 1, 2015, pp. 103–114. (195 GS cit.)
14. M. Dotoli, N. Epicoco, M. Falagario, N. Costantino, B. Turchiano, An integrated approach for warehouse analysis and optimization: A case study, *Computers in Industry*, Impact factor 1.709 in 2013, Vol. 70, no. 1, June 2015, pp. 56–69. (181 GS cit.)
15. M. Dotoli, M.P. Fanti, C. Meloni, M.C. Zhou, Design and Optimization of Integrated E-Supply Chain for Agile and Environmentally Conscious Manufacturing, *IEEE Transactions on Systems Man and Cybernetics*, part A, Vol. 36, No. 1, 2006, pp. 62-75. (167 GS cit.)
16. M. Dotoli, M.P. Fanti, C. Meloni, M.C. Zhou, A Multi-Level Approach for Network Design of Integrated Supply Chains, *International Journal of Production Research*, Vol. 43, No. 20, pp. 4267-4287, October 2005. (128 GS cit.)

These papers develop integrated optimization, modeling, and decision-support methodologies for supply chains, logistics, and manufacturing systems. They address agile and environmentally conscious supply chain design, warehouse optimization, supplier and performance evaluation under uncertainty, and multi-level network configuration using mathematical programming, fuzzy logic, and decision-analysis techniques. The works combine operational efficiency, sustainability, and robustness in industrial logistics processes. Together, they establish a coherent research line on intelligent supply chain management and data-driven industrial optimization for advanced manufacturing systems. In all the five papers I was the corresponding and main author.

17. M. Dotoli, M.P. Fanti, C. Meloni, A Signal Timing Plan Formulation for Urban Traffic Control, *Control Engineering Practice*, Vol. 14, No.11, November 2006, pp. 1297-1311. (192 GS cit.)
18. M. Dotoli, M.P. Fanti, An Urban Traffic Network Model via Coloured Timed Petri Nets, *Control Engineering Practice*, Vol. 14, No.10, October 2006, pp. 1213-1229. (155 GS cit.)

These papers develop modeling and control methodologies for intelligent urban traffic management. The first proposes an optimization-based signal timing formulation for urban traffic control, the second introduces a colored timed Petri net model for representing and analyzing urban traffic networks. Together, they provide a formal scalable framework for traffic modeling, performance evaluation, and real-time congestion management in smart transportation systems. In both papers I was the main author.

19. R. Carli, G. Cavone, N. Epicoco, P. Scarabaggio, M. Dotoli, Model predictive control to mitigate the COVID-19 outbreak in a multi-region scenario, *Annual Reviews in Control*, 2020, 50, pp. 373–393. (152 GS cit.)
20. P. Scarabaggio, R. Carli, G. Cavone, N. Epicoco, M. Dotoli, Non-Pharmaceutical Stochastic Optimal Control Strategies to Mitigate the COVID-19 Spread, *Transactions on Automation Science and Engineering*, 2022, Vol. 19, No. 2, pp. 560–575. (40 GS cit.)

These papers apply control theory and optimization to epidemic management during COVID-19. The first proposes a model predictive control framework for coordinated containment policies across multiple regions, while the second develops stochastic optimal control strategies for non-pharmaceutical interventions under uncertainty. Together, they demonstrate how automation and decision-control techniques can support resilient and data-driven public health policies. In both papers I was the main supervisor and project coordinator

Peer recognition

- IEEE Fellow
- Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA)
- Fellow of the Artificial Intelligence Industry Alliance (AIIA)
- IEEE Systems, Man and Cybernetics Society Outstanding Contribution Award (2021).
- Award for Most Active SMCS Technical Committee (TC) in Systems –TC on Intelligent Systems for Human-Aware Sustainability by the IEEE Systems Man and Cybernetics Society (2021).

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- Since 2021 she is included in Stanford/Elsevier's "Top 2% Scientists" ranking in the following categories: Industrial Engineering & Automation; Artificial Intelligence & Image Processing. She appears in both the career-long impact and single-year impact rankings.
- Numerous invited plenary talks at IEEE and IFAC international conferences. Invited plenaries: "Control Techniques for Safe, Ergonomic, and Efficient Human-Robot Collaboration in the Digital Industry" at 2025 IEEE 21st International Conference on Automation Science and Engineering August 20, 2025, Los Angeles, California, USA; "Decision and Control Strategies for Smart Energy Systems" at SOSE2025 -20th Annual System of Systems Engineering Conference June 10, 2025| Tirana, Albania; "Control Techniques for Safe, Ergonomic, and Efficient Human-Robot Collaboration in the Digital Industry" at 2025 IEEE International Conference on Systems, Man, and Cybernetics (SMC) October 6, 2025 - Vienna, Austria; "Control Frameworks for Energy Trading and Sharing in Smart Grids" at 2026 IEEE/SICE International Symposium on System Integration (SII 2026) January 11-14, 2026 -Cancun, Mexico; "Decision and Control Strategies for Smart Energy Communities" at Automation and Robotics Summit April 14, 2025, Paris, France; "Control techniques for collaborative robotic systems", at the 2025 International Conference on Mechanical Automation and Engineering Applications (ICMAEA 2025), Chongqing, China, August 2025; "Control for Empowering Energy Communities", at the 2024 4th edition of the International Conference on Computer science, Electronic information engineering, and Intelligent control technology (CEI 2024), Guangzhou, China, November 2024; "Decision and Control for Smart Energy Communities" at 10th International Conference on Control, Decision and Information Technologies July 1st 2024, La Valletta, Malta; "Decision and Control Techniques for Energy Management of Smart Cities" at 2022 IFAC Workshop on Control for Smart Cities.
- Invited speaker: 1st IEEE International Summer School on E-CARGO and Applications, IEEE Systems, Man, and Cybernetics Society, 2023, 2021 tutorial series of IEEE CSS TC on Discrete Event Systems; 2021 IEEE SMC Italian Chapter Virtual Lecture Series, IEEE CASE2020, IEEE IESES2020.
- Awards won by students under her supervision:
 - PhD Student N. Mignoni won 2025 IFAC TC Award Young Author Publication on Optimization and Control of Power and Energy Systems
 - PhD Student P. Scarabaggio won IEEE-CSS Italy Best Young Paper Award 2022.
 - MSc Student G. Tresca won "ABB 2021 Master Thesis Award".
 - PhD Student L. Dammacco was finalist of Premio Italiano Meccatronica 2022.

ADDITIONAL INFORMATION

Other contributions to the research community

Research management responsibilities

- Steering Committee Member of MED, annual MCA Mediterranean Conference on Control and Automation (CSS and RAS co-sponsored).
- General chair/co-chair of conferences: IFAC SENSYS 2025, IEEE RAS CASE2024, MED2021 IEEE/IFAC co-sponsored.
- Program chair/co-chair of conferences: IEEE SMCS2028 IEEE RAS CASE2027 IEEE SMCS2026 IEEE RAS CASE2026 IEEE SMCS2023 IEEE ICCSI2022 IEEE RAS CASE2020 CODIT2020 IEEE RAS CASE2017.
- Steering Committee Member of conferences: IEEE CASE, IEEE ICRA, IEEE MED.
- Founder and Coordinator of the Italian National PhD Program in Autonomous Systems (since 2022), involving 25 Italian universities.
- Founder and Coordinator (2020–2022) of the Interuniversity PhD Program in Industry 4.0 between Politecnico di Bari and the University of Bari.
- Rector's Delegate for European and International Research (since 2025).
- Research Delegate of the Department of Electrical and Information Engineering (2017–2021).
- Vice Chancellor for Research (2012–2013) and Rector's Delegate for Research (2009–2011) at Politecnico di Bari.
- Scientific founder and head of the Decision and Control Laboratory (since 2012).
- Editor-in-Chief (appointed 2026–2031) of IEEE Transactions on Automation Science and Engineering and Senior Editor/Associate Editor for several leading IEEE journals.
- Coordinator or task lead of numerous international, national, and regional research projects funded by the European Commission, MIUR, and the Apulia Region, particularly in smart cities, energy systems, logistics, transportation, and Industry 4.0: EUNITE – European Network of Excellence for Intelligent Technologies and Smart Adaptive Systems (2001–2004) funded by the European Commission under

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the IST Programme; Dotoli served as Key Node Reference; ERUDIT / ERUDIT II – European Networks of Excellence for Fuzzy Logic and Uncertainty Techniques (1998–2001) Funded by the European Commission ESPRIT Programme; Dotoli served as Steering Committee Member. Management of Discrete Event Logistics Systems (2012–2013), Collaboration between Politecnico di Bari and École Centrale de Lille; scientific coordinator. CORRECT – COnTrol of RuRal Energy CommuniTies (PRIN 2022), Scientific Coordinator. Focused on control and optimization architectures for rural energy communities, coordinating Politecnico di Bari and University of Genoa. RES NOVAE – Urban Control Center (2012–2015), MIUR-funded Smart Cities project on urban energy management and smart city infrastructures, in collaboration with IBM, e-distribuzione, Tera SRL, and the Municipality of Bari. UCCSM – Urban Control Center for monitoring energetic flows of Apulian municipalities (2016–2018), Regional Technological Clusters project on smart energy monitoring and urban control systems, Coordinator. SEMINA – Advanced systems for Smart Mobility in Agile Urban Networks (2013–2014), Smart mobility and urban transportation optimization project involving Planetek and the Municipality of Bari, Coordinator. MIND – MINE Detection (2012–2014), Regional partnership project on automated mine detection technologies, Coordinator.

Third mission responsibilities and technology transfer

- Founder and partner of the Politecnico di Bari spin-off company “Innolab” (since 2012).
- Coordinator of industrial research and technology transfer projects with companies such as IBM, Enel, Bosch, COMAU, E80 Group, PAL Robotics, OM Carrelli Elevatori, Planetek, GTS and others.
- Responsible for applied research collaborations with public authorities and regional stakeholders, including: Municipality of Bari, Bari General Hospital, Ferrovie dello Stato, Banque Centrale du Luxembourg.
- Scientific coordinator of consultancy and process re-engineering projects for logistics, manufacturing, mobility, and smart energy systems.
- Representative for innovation and internationalization initiatives linked to regional development and university-industry collaboration.
- Member of the Scientific and Technical Committee of the Apulia Region Productive District on renewable energy and energy efficiency.

Outreach and dissemination activities

- Delivered numerous invited plenary talks and public lectures internationally and nationally on: smart cities, sustainable mobility, Industry 4.0, energy communities, robotics, automation and AI.
- Participated in public engagement initiatives promoting STEM and engineering awareness, including events focused on women in ICT and automation.
- Organized workshops, summer schools, tutorials, and international scientific sessions.
- Served in leadership roles within IEEE and IFAC technical committees and scientific societies.
- Promoted international mobility agreements and collaborations (e.g., Erasmus agreements, double-degree programs).
- Contributed to dissemination of automation and digitalization technologies for sustainability, healthcare, transportation, and energy efficiency through conferences, workshops, and public-facing events.

Career breaks, diverse career paths and major life events

None