

## Education

- Nov 2019 – Present **Ph.D., Electrical and Information Engineering**, *Polytechnic of Bari*, Bari (Italy),  
Innovative Ph.D. scholarship with industrial characterization in co-tutorship with *University of Manchester*, Manchester (United Kingdom) and *E-distribuzione S.p.A*, Roma (Italy).  
Work in the research group of Prof. M. Dotoli at the *Decision & Control Lab* on issues related to the control and management of energy storage systems in the distribution network and on the analysis and control of complex multi-agent systems for energy optimization in energy communities.
- Oct 2017 – Oct 2019 **M.Sc., Management Engineering**, *Polytechnic of Bari*, Bari (Italy),  
Thesis title: “Distributed control and optimization techniques for demand-side management under uncertainty in renewable power generation”.
- Oct 2013 – Oct 2017 **B.Sc., Mechanical Engineering**, *Polytechnic of Bari*, Bari (Italy),  
Thesis title: “I materiali compositi: applicazioni nautiche (Composite materials: nautical applications)”.
- Sep 2008 – Jul 2013 **Chemistry industrial degree**, *Istituto Tecnico Galileo Galilei*, Altamura (Italy).
- ### International Education
- Feb 2020 – Feb 2020 **ECCI Graduate School on Control**, *Technical University of Eindhoven*, Eindhoven (The Netherlands).  
Module on “Networked Control of Multi-Agent Systems”, Prof. Engr. Jan Lunze.
- Mar 2019 – Sep 2019 **Master’s thesis**, *Technical University of Delft*, Delft (The Netherlands).  
Work in the research group of prof. S. Grammatico at the “*Delft Center for Systems and Control*” on theoretical and computational topics related to the game theoretic control of complex multi-agent systems.
- Feb 2018 – Jul 2018 **Erasmus Student Mobility for Studies**, *Graz University of Technology*, Graz (Austria).  
Modelling and simulation of complex systems within the topic of sustainable transportation, Financial management, Business management.

## Didactic Activity

- Oct 2019 – Present **Teaching Assistant**, *Polytechnic of Bari*, Bari (Italy),  
Numerical and experimental lectures of the following course.
  - “Systems Analysis and Simulation”, M.Sc. in Management Engineering.
- Oct 2019 – Present **Tutoring Activity**, *Polytechnic of Bari*, Bari (Italy),  
Tutoring activities for project work, traineeships, and thesis revision for the students of the following courses.
  - “Systems Analysis and Simulation”, M.Sc. in Management;
  - “Dynamical Systems Theory”, M.Sc. in Automation Engineering;
  - “Fundamentals of Control Systems Engineering”, B.Sc. in Electronics and Telecommunications Engineering.
- Oct 2019 – Present **Thesis co-relator**, *Polytechnic of Bari*, Bari (Italy).
  - Nicola Mignoni, A.Y. 2020 – 21, “Control techniques for multiple energy storage systems in smart grids”;
  - Andrea Roberto, A.Y. 2020 – 21, “A GRASP approach for the Multi-Drop Multiple Container Loading Problem resolution in Logistics 4.0. The Elettric80 case study”.

## Research Activity

- Research topics
  - Management and control of complex systems;
  - Modelling, control, and optimization for industrial applications;
  - Management and control of energy systems.
- Editorial activity **Associate editor**.
  - *30th Mediterranean Conference on Control and Automation*, 28 June - 1 July 2022, Athens, Greece.
  - *29th Mediterranean Conference on Control and Automation*, 22-25 June 2021, Bari, Italy.
- Chair activity **Session chair**.
  - “Foundations of Automation III”, *IEEE 16th International Conference on Automation Science and Engineering*, 21 August 2020, Hong Kong.**Session co-chair**.
  - “Robotics II”, *29th Mediterranean Conference on Control and Automation*, 22-25 June 2021, Bari, Italy.
  - “Systems and Control Insight into Modeling, Predicting, and Controlling COVID-19”, *29th Mediterranean Conference on Control and Automation*, 22-25 June 2021, Bari, Italy.
  - “Nonlinear Systems and Nonlinear Control II”, *29th Mediterranean Conference on Control and Automation*, 22-25 June 2021, Bari, Italy.

- Reviewer activity
- o IEEE Transactions on Automation Science and Engineering
  - o IEEE Transactions on Systems, Man and Cybernetics
  - o IEEE Transactions on Control System Technology
  - o IEEE/CAA Journal of Automatica Sinica
  - o IEEE Transactions on Intelligent Transportation Systems
  - o IEEE International Conference on Automation Science and Engineering
  - o IEEE International Conference on Systems, Man, and Cybernetics
  - o Mediterranean Conference on Control and Automation

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## Work Experience

- Mar 2018 – Sep 2018 **Bartender**, FLANN O'BRIEN, *Graz (Austria)*.
- Feb 2017 – Oct 2017 **Traineeship**, NEO YATCH, *Bitonto (Italy)*.  
Management of the assembly process of a new mould for a 35 ft hull
- Jan 2016 – Dec 2016 **Maintenance technician**, MECSERVICE, *Altamura (Italy)*.  
Installation and maintenance of industrial plant and equipment

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## Achievements and Awards

- Jul 2020 **Excellence in energy research 2021**, with the project "Controllo distribuito per la gestione ottimale delle reti di distribuzione con sistemi di accumulo".

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## Languages

- Italian** Native
- English** Advanced – International English Language Testing System – C2
- German** Intermediate – Österreichisches Sprachdiplom – B1
- Chinese** Basic – Hanyu Shuiping Kaoshi (HSK) – A1

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## Qualifications and Memberships

- 2020 – Present Italian State Examination and Professional Qualification to practice as an Engineer
- 2020 – Present Graduate student member of the Institute of Electrical and Electronics Engineers (IEEE)

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## Skills

- Coding** MATLAB, Simulink, PHP, Python, R, C++, SQL, JavaScript
- CAD** AutoCAD, Solidworks
- Web design** HTML, CSS, Wordpress, Joomla
- Utilities** L<sup>A</sup>T<sub>E</sub>X, Linux and Windows systems, Office and LibreOffice packages

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## Extra Curriculars

### Student volunteering activities

- Apr 2019 – Present **ADI (Associazione Dottorandi e Dottori di Ricerca in Italia)**, *Communication manager*
- Oct 2020 – Present **Polytechnic of Bari**, *Representative in the PhD School Board (2020–2022)*
- Oct 2020 – Present **Polytechnic of Bari**, *Representative in the Student Board (2020–2022)*
- Jan 2014 – Oct 2017 **Link Politecnico**, *Student volunteering activities*

### European volunteering activities

- Oct 2019 – Present **Beyond Borders**, *Organizer of European Erasmus+ KA1 projects for youth mobility financed by the European Commission*
- Oct 2019 – Present **Beyond Borders**, *Participant in numerous Erasmus+ training courses in Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, France, Germany, Greece, Turkey and Romania*
- Jan 2014 – Oct 2014 **Vopool.net**, *Website translator and communications manager*

### Sport volunteering activities

- Jan 2014 – Dec 2017 **CNSAS (National Alpine and Caving Rescue Corps)**, *Operator*
- Jan 2016 – Present **CARS (Centro Altamurano Ricerche Speleologiche)**, *Responsible for safety control and review of climbing and caving materials*
- Aug 2015 – Present **SSI (Società Speleologica Italiana)**, *National instructor of caving and rope techniques*

## Workshops and challenges

Dec 2021 **Polibathon**, Politecnico di Bari, 9-10-11 December 2021.

MAr 2019 **EBEC – European BEST Engineering Competition**, Delft University of Technology, 16 March 2019

Apr 2018 **EBEC – European BEST Engineering Competition**, Graz University of Technology, 23 April 2018

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## Interests

- Climbing
- Cycling
- Photography
- Caving
- Hiking

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## Research Publications

### International Journal Articles

- 1 Mignoni, N., **Scarabaggio, P.**, Carli, R., & Dotoli, M. (n.d.). Control frameworks for multiple energy storage services in energy communities. *Control Engineering Practices (under review)*.
- 2 **Scarabaggio, P.**, Carli, R., & Dotoli, M. (n.d.[a]). A novel approach for fast and effective influence spread maximization in social networks. *IEEE Transactions on Control of Network Systems (under review)*. doi:[10.36227/techrxiv.13153139](https://doi.org/10.36227/techrxiv.13153139)
- 3 **Scarabaggio, P.**, Carli, R., & Dotoli, M. (n.d.[b]). Noncooperative equilibrium seeking in distributed energy systems under ac power flow nonlinear constraints. *IEEE Transactions on Control of Network Systems (conditionally accepted)*.
- 4 **Scarabaggio, P.**, Grammatico, S., Carli, R., & Dotoli, M. (n.d.). Clarke's local equilibria in nash games with nonconvex coupling constraints. *IEEE Transactions on Automatic Control (under submission)*.
- 5 **Scarabaggio, P.**, Grammatico, S., Carli, R., & Dotoli, M. (2022). Distributed demand side management with stochastic wind power forecasting. *IEEE Transactions on Control Systems Technology*, 30(1), 97–112. doi:[10.1109/TCST.2021.3056751](https://doi.org/10.1109/TCST.2021.3056751)
- 6 **Scarabaggio, P.**, Carli, R., Cavone, G., Epicoco, N., & Dotoli, M. (2021b). Nonpharmaceutical stochastic optimal control strategies to mitigate the COVID-19 spread. *IEEE Transaction on Automation Science and Engineering*, 1–16. doi:[10.1109/TASE.2021.3111338](https://doi.org/10.1109/TASE.2021.3111338)
- 7 Carli, R., Cavone, G., Epicoco, N., **Scarabaggio, P.**, & Dotoli, M. (2020). Model predictive control to mitigate the COVID-19 outbreak in a multi-region scenario. *Annual Reviews in Control*, 50, 373–393. doi:[10.1016/j.arcontrol.2020.09.005](https://doi.org/10.1016/j.arcontrol.2020.09.005)
- 8 **Scarabaggio, P.**, Carli, R., Cavone, G., & Dotoli, M. (2020). Smart control strategies for primary frequency regulation through electric vehicles: A battery degradation perspective. *Energies*, 13(17), 4586. doi:[10.3390/en13174586](https://doi.org/10.3390/en13174586)

### Italian Journal Articles

- 1 Carli, R., Cavone, G., Dotoli, M., Jantzen, J., Kristensen, M., & **Scarabaggio, P.** (2020). Controllo predittivo per lo sviluppo di energy community flessibili ed efficienti. Retrieved from [https://www.tekneco.it/documenti/notizie/Articolo\\_EnergyCommunitiy\\_v5.pdf](https://www.tekneco.it/documenti/notizie/Articolo_EnergyCommunitiy_v5.pdf)
- 2 **Scarabaggio, P.**, La Scala, M., Carli, R., & Dotoli, M. (2020a). Analisi degli effetti della pandemia da COVID-19 sulla domanda di energia elettrica: Il caso del Nord Italia. Retrieved from [https://www.aeit.it/aeit/edicola/ee/ee2020/ee2020\\_05\\_cisa/ee2020\\_05\\_riv.pdf](https://www.aeit.it/aeit/edicola/ee/ee2020/ee2020_05_cisa/ee2020_05_riv.pdf)

### Conference Proceedings

- 1 Calefati, M., Proia, S., **Scarabaggio, P.**, Carli, R., & Dotoli, M. (2022). A decentralized noncooperative control approach for sharing energy storage systems in energy communities. In *2019 IEEE International Conference on Systems, Man and Cybernetics (SMC) (accepted and to appear)* (Vol. s). IEEE.
- 2 Mignoni, N., **Scarabaggio, P.**, Carli, R., & Dotoli, M. (2022). Control frameworks for multiple energy storage services in energy communities. In *European control conference (under review)* (Vol. s). IEEE.
- 3 Atrigna, M., Buonanno, A., Carli, R., Cavone, G., Scarabaggio, P., Valenti, M., . . . Dotoli, M. (2021). Effects of heatwaves on the failure of power distribution grids: A fault prediction system based on machine learning. In *2021 IEEE International Conference on Environment and Electrical Engineering and 2021 IEEE Industrial and Commercial Power Systems Europe (IEEEIC / ICPSEurope)* (pp. 1–5). doi:[10.1109/IEEEIC/ICPSEurope51590.2021.9584751](https://doi.org/10.1109/IEEEIC/ICPSEurope51590.2021.9584751)
- 4 **Scarabaggio, P.**, Carli, R., Cavone, G., Epicoco, N., & Dotoli, M. (2021a). Modeling, estimation, and analysis of covid-19 secondary waves: The case of the Italian country. In *2021 29th Mediterranean Conference on Control and Automation (MED)* (pp. 794–800). IEEE. doi:[10.1109/CASE49439.2021.9551418](https://doi.org/10.1109/CASE49439.2021.9551418)
- 5 **Scarabaggio, P.**, Carli, R., Jantzen, J., & Dotoli, M. (2021). Stochastic model predictive control of community energy storage under high renewable penetration. In *2021 29th Mediterranean Conference on Control and Automation (MED)* (pp. 973–978). IEEE. doi:[10.1109/MED51440.2021.9480353](https://doi.org/10.1109/MED51440.2021.9480353)

- 6 Carli, R., Cavone, G., Epicoco, N., Di Ferdinando, M., **Scarabaggio, P.**, & Dotoli, M. (2020). Consensus-based algorithms for controlling swarms of unmanned aerial vehicles. In *International Conference on Ad-Hoc Networks and Wireless* (pp. 84–99). doi:[10.1007/978-3-030-61746-2\\_7](https://doi.org/10.1007/978-3-030-61746-2_7)
- 7 **Scarabaggio, P.**, Carli, R., & Dotoli, M. (2020a). A fast and effective algorithm for influence maximization in large-scale independent cascade networks. In *2020 7th International Conference on Control, Decision and Information Technologies (CoDIT)* (Vol. 1, pp. 639–644). doi:[10.1109/CoDIT49905.2020.9263914](https://doi.org/10.1109/CoDIT49905.2020.9263914)
- 8 **Scarabaggio, P.**, Carli, R., & Dotoli, M. (2020b). A game-theoretic control approach for the optimal energy storage under power flow constraints in distribution networks. In *2020 IEEE 16th International Conference on Automation Science and Engineering (CASE)* (pp. 1281–1286). doi:[10.1109/CASE48305.2020.9216800](https://doi.org/10.1109/CASE48305.2020.9216800)
- 9 **Scarabaggio, P.**, Grammatico, S., Carli, R., & Dotoli, M. (2020). Distributed demand-side management with uncertainty in wind power forecasting. In *IFAC 2020, 21st IFAC World Congress 2020, 12-17 Jul. 2020, Berlin, Germany* (Vol. 53, pp. 12620–12625). doi:<https://doi.org/10.1016/j.ifacol.2020.12.1830>
- 10 **Scarabaggio, P.**, La Scala, M., Carli, R., & Dotoli, M. (2020b). Analyzing the effects of COVID-19 pandemic on the energy demand: The case of Northern Italy. In *2020 AEIT International Annual Conference (AEIT)* (pp. 1–6). doi:[10.23919/AEIT50178.2020.9241136](https://doi.org/10.23919/AEIT50178.2020.9241136)
- 11 Carli, R., Cavone, G., Dotoli, M., Epicoco, N., & **Scarabaggio, P.** (2019). Model predictive control for thermal comfort optimization in building energy management systems. In *2019 IEEE International Conference on Systems, Man and Cybernetics (SMC)* (pp. 2608–2613). doi:[10.1109/SMC.2019.8914489](https://doi.org/10.1109/SMC.2019.8914489)