

Engr. Paolo Scarabaggio

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Education

- 2019 –
 - ◇ **Ph.D., Electrical and Information Engineering.** Polytechnic of Bari, Bari (Italy).
Work in the research group of Prof. M. Dotoli at the "Decision and 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 Smart Grids.
- 2017 – 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.
- 2013 – 2017
 - ◇ **B.Sc., Mechanical Engineering.** Polytechnic of Bari, Bari (Italy).
- 2008 – 2013
 - ◇ **Industrial Diploma of Chemistry.** Istituto Tecnico Galileo Galilei, Altamura (Italy).

International Education

- 2020
 - ◇ **EECI Int. Graduate School on Control.** Technical University of Eindhoven, Eindhoven (The Netherlands).
Module on "Networked Control of Multi-Agent Systems", Prof. Engr. Jan Lunze.
- 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 and complex multi-agent systems.
- 2018
 - ◇ **Erasmus Student Mobility for Studies.** Technical University of Graz, Graz (Austria).

Didactic Activity

- 2019 – 2021
 - ◇ **Teaching Assistant.** Polytechnic of Bari, Bari (Italy).
Numerical and experimental lectures of the course: "Systems Analysis and Simulation", M.Sc. in Management.
- 2019 – 2021
 - ◇ **Tutoring Activity.** Polytechnic of Bari, Bari (Italy).
Tutoring activities for project work, traineeships, and thesis for the student of the courses: "Systems Analysis and Simulation", M.Sc. in Management Engineering, "Dynamical Systems Theory", M.Sc. in Automation Engineering and "Fundamentals of Control Systems Engineering", B.Sc. in Electronics and Telecommunications Engineering.

Research Activity

- Research topics
 - ◇ Management and control of complex systems.
 - ◇ Modelling, control, and optimization for industrial applications.
 - ◇ Management and control of energy systems.
- Chair activity
 - ◇ **Associate editor.** 29th Mediterranean Conference on Control and Automation (MED 2021).
 - ◇ **Session chair.** "Foundations of Automation III", IEEE 16th International Conference on Automation Science and Engineering, 21 August 2020, Hong Kong.
- Reviewer activity
 - ◇ IEEE Transactions on Automation Science and Engineering
 - ◇ IEEE Transactions on Systems, Man and Cybernetics
 - ◇ IEEE Transactions on Control System Technology
 - ◇ IEEE/CAA Journal of Automatica Sinica
 - ◇ IEEE Transactions on Intelligent Transportation Systems
 - ◇ IEEE International Conference on Automation Science and Engineering
 - ◇ IEEE International Conference on Systems, Man, and Cybernetics
 - ◇ Mediterranean Conference on Control and Automation

Research Publications

International Journal Articles

1. **Scarabaggio, P.**, Carli, R., Cavone, G., Epicoco, N., & Dotoli, M. (2021b). Non-pharmaceutical stochastic optimal control strategies to mitigate COVID-19. *IEEE Transaction on Automation Science and Engineering* (**under review**). [doi:10.36227/techrxiv.14413259](https://doi.org/10.36227/techrxiv.14413259)
2. **Scarabaggio, P.**, Carli, R., & Dotoli, M. (2021a). 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. (2021b). Decentralized convergence to Nash equilibria in power networks. *IEEE Transactions on Control of Network Systems* (**under review**).
4. **Scarabaggio, P.**, Grammatico, S., Carli, R., & Dotoli, M. (2021). Distributed demand side management with stochastic wind power forecasting. *IEEE Transactions on Control Systems Technology*, 1–16. [doi:10.1109/TCST.2021.3056751](https://doi.org/10.1109/TCST.2021.3056751)
5. 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)
6. **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_EnergyCommunity_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.

Conference Proceedings

1. **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 2021) – (accepted for publication)*.
2. **Scarabaggio, P.**, Carli, R., & Dotoli, M. (2021c). Stochastic model predictive control of community energy storage under high renewable penetration. In *2021 29th Mediterranean Conference on Control and Automation (MED 2021) – (accepted for publication)*.
3. 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)
4. **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)
5. **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)
6. **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*.
7. **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)
8. 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)

Languages

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

Skills

Coding	◇ MATLAB, Simulink, PHP, Python, R, C++, SQL, HTML, CSS, JavaScript.
CAD	◇ AutoCAD, Solidworks.

Employment History

2018 – 2018	◇ Bartender , Flann O'Brien, Graz (Austria).
2017 – 2017	◇ Traineeship , Neo Yatch, Bitonto (Italy). <i>Management of the assembly process of a new mould for a 35 ft hull.</i>
2017 – 2017	◇ Maintenance technician , Mecservice, Altamura (Italy). <i>Installation and maintenance of industrial plant and equipment.</i>

Miscellaneous Experience

Qualifications and Memberships	◇ Italian State Examination and Professional Qualification to practice as an Engineer. ◇ Graduate student member of the Institute of Electrical and Electronics Engineers (IEEE).
Student volunteering activities	◇ ADI (Associazione dottorandi e dottori di ricerca italiani) – student representative. ◇ Polytechnic of Bari – representative in the PhD School Board (2020–2022). ◇ Polytechnic of Bari – representative in the Student Board (2020–2022). ◇ Link Politecnico – student representative.
European volunteering activities	◇ Beyond Borders – Organiser of European projects financed by the European Commission in the framework of Erasmus+ and by the Council of Europe. In particular, of four Erasmus+ KA1 projects for youth mobility.
Sport activities	◇ CNSAS (National Alpine and Caving Rescue Corps) – Operator (2014–2017). ◇ CARS – Responsible for safety control and review of climbing and caving materials (2016–). ◇ SSI – National instructor of caving and rope techniques (2015–).