

# University Academic Curriculum Vitae

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## Personal information



Name: **Seyed Mohsen Hosseini**  
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## Education since leaving school

- Nov. 2017 – Dec. 2020, **PhD in Electrical and Information Engineering**  
Polytechnic University of Bari, Italy  
*Thesis Title:* Robust Optimal Demand-side Management in Smart Grids  
*Supervisor:* Prof. Mariagrazia Dotoli
- Sep. 2019 – Mar. 2020, **Visiting research program**  
The University of Manchester, U.K.  
*Research Title:* Robust Decentralized Control Strategy for Optimal Charging of Electric Vehicles under Uncertainties on Base Load and Energy Price  
*Supervisor:* Prof. Alessandra Parisio
- Sep. 2010 – Feb. 2013, **MSc in Electrical Engineering**  
Semnan University, Iran  
*Thesis Title:* (Subject I): Multi-Objective Optimization of Parameters in a Z-source Hybrid Power Filter;  
(Subject II): Design and Implementation of a New Active Power Factor Correction Method Using a Dual-purpose Inverter in a Flyback Converter
- Sep. 2005 – Sep. 2010, **BSc in Electrical Engineering**  
Shahed University, Iran  
*Thesis Title:* Design and Hardware Implementation of a Switching AC/DC Converter for LED Drivers

## Present appointment

- Feb. 2022 – present, **Assistant Professor (Researchers with a fixed-term contract RTD-A) in Systems and Control Engineering** (academic discipline: ING-INF/04, academic recruitment field: 09/G1)  
Faculty of Science and Technology, Free University of Bozen-Bolzano, Italy  
*Project:* Robot-supported Order and Raw Material-optimized Cutting and Processing of Round Timbers  
*Supervisor:* Prof. Angelika Peer  
*Research activity:* A robot-supported system is to be developed that automatically processes the roundwood with an energy-, process- and raw material-optimized cutting technology. The system is supposed to dynamically accept customer orders, provide the raw material round wood in different geometries and qualities, and on this basis to plan and execute an optimal utilization and cutting process.

## Professional experience

From / to	Job title	Name of corporation	Responsibilities
Feb. 2022/ present	Assistant professor (RTD-A)	Free University of Bozen-Bolzano, Italy	Tackling the challenges of expensive, energy and space-intensive machinery and the problem of high wastage in cutting and processing round timbers by developing novel optimization and control approaches for robot-supported sawing systems
Feb. 2021/ Jan. 2022	Postdoctoral research fellow	Polytechnic University of Bari, Italy	Developing decision and control techniques for enhancing the power system resilience/ Investigating decision and control techniques for demand-side management in smart grids
Dec. 2014/ Jul. 2017	Researcher, PLC/WinCC programmer	Electro-Mehrvarzan Company, Iran	Researcher, PLC and WinCC programmer and a member of the executive team in automation systems
Jun. 2010/ Sep. 2010	Researcher and Technical Trainee	Tehran Power Distribution Company, Iran	Participating in maintenance, modifying, and repairing electrical equipment and energy efficiency research projects; inspecting and testing components of electrical systems/ Participating in research for reducing power losses in distribution networks

## Research experiences

- Extensive use of simulation tools to investigate **robust energy management and control strategies** for optimal scheduling of large-scale **microgrids** under uncertainties, Polytechnic University of Bari, Bari, Italy.
- Extensive use of simulation tools to investigate **robust decentralized control strategy** for optimal charging of **electric vehicle fleets** under uncertainties, The University of Manchester, Manchester, U.K.
- Extensive use of simulation tools to investigate **smart centralized and decentralized demand response** techniques for **heating, ventilation, and air conditioning (HVAC)** systems, Polytechnic University of Bari, Bari, Italy.
- A major participation in the design and implementation of a 230 KW **industrial cheese-puffs-making machine** by **programming PLCs** and **designing HMI interfaces**, Electro Mehrvarzan Company, Tehran, Iran.
- Controller designing and prototyping of a lab-scale **power factor correction (PFC) converter** with a dual-purpose inverter and backup power supply capability, Shahed University, Iran.
- A practical teamwork experience as a **team leader** (an 8-member research team) in the design and hardware implementation of lab-scale **power**

**electronic circuits**, Shahed University, Iran.

- Simulation and prototyping of average current mode control (ACMC) and critical conduction mode control (CRMC) in AC/DC **PFC flyback converters**, Shahed University, Iran.
- Programming, simulation, and prototyping of a multi-objective optimization technique for **ZSI hybrid power filters**, Semnan University & Shahed University, Iran.
- Simulation and prototyping of a **switching AC/DC converter** for **LED light drivers**, Shahed University, Iran.
- Simulation and prototyping of a **bidirectional full bridge DC/DC converter** with a smart clamp for circuit protection and loss reduction, Shahed University, Iran.
- Extensive use of MATLAB and VISUAL C++ to simulate **active and passive power filters** for harmonic mitigation in power systems.

**Teaching activities, editorial and organizational activities, and memberships**

**Conference committees:**

- A member of the **program committee** for 15th International Conference on Systems and Networks Communications (ICSNC), 2020, Porto, Portugal
- A member of the **organizing committee** for 29th Mediterranean Conference on Control and Automation, 2021, Bari, Italy
- A member of the **organizing committee** for AEIT International Conference, 2018, Bari, Italy
- A **co-chair** of the session “Smart Transportation Systems”, 29th Mediterranean Conference on Control and Automation (MED 2021), Bari, Italy, June 2021.
- A **co-chair** of the session “Applications of Discrete-event Systems in Smart Systems”, 29th Mediterranean Conference on Control and Automation (MED 2021), Bari, Italy, June 2021.

**Teaching/ tutoring:**

- Teaching Assistant, Power System Analysis, Shahed University, Iran
- Co-supervision of a bachelor’s thesis entitled: Robust optimization techniques for energy scheduling of residential electrical loads, Polytechnic of Bari
- Holding an 8-hour workshop on “Electrical Transient Analyzer Program (ETAP) training”, Shahed University, Tehran, Iran

**Editorial activities and memberships:**

- A **reviewer** for the following international **journals** and **conferences**:
  - IEEE Transactions on Systems, Man and Cybernetics: Systems
  - IEEE Transactions on Automation Science and Engineering
  - IEEE Transactions on Automatic Control
  - IEEE Control Systems Letters
  - Journal of Artificial Intelligence Review - Springer
  - MDPI Journals including Applied Sciences/ Energies/ Processes/ Sustainability
  - Journal of Electric Power Components & Systems - Taylor and Francis
  - International Journal of Electronics - Taylor and Francis
  - Journal of Power Electronics
  - IEEE European Control Conference

- IEEE International Conference on Emerging Technologies and Factory Automation
- IEEE International Conference on Systems, Man, and Cybernetics
- IEEE International Conference on Automation Science and Engineering
- IEEE Conference on Control Technology and Applications
- Mediterranean Conference on Control and Automation
- IEEE Member
- IEEE Young Professionals member
- IEEE Robotics and Automation Society member

### **Selected publications**

A co-author of several scientific papers for international journals and conferences including:

- [1] **S.M. Hosseini**, R. Carli and M. Dotoli, "Robust Optimal Energy Management of a Residential Microgrid Under Uncertainties on Demand and Renewable Power Generation," in *IEEE Transactions on Automation Science and Engineering*, vol. 18, no. 2, pp. 618-637, April 2021, doi: 10.1109/TASE.2020.2986269.
- [2] **S.M. Hosseini**, R. Carli, G. Cavone, M. Dotoli, "Distributed Control of Electric Vehicle Fleets Considering Grid Congestion and Battery Degradation", in *Internet Technology Letters*, vol. 3, no. 3, pp. 1-6, 2020; doi: 10.1002/itl2.161.
- [3] **S.M. Hosseini**, R. Carli, A. Parisio and M. Dotoli, "Robust Decentralized Charge Control of Electric Vehicles under Uncertainty on Inelastic Demand and Energy Pricing", *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Oct. 2020, Toronto, Canada, doi: 10.1109/SMC42975.2020.9283440.
- [4] **S.M. Hosseini**, R. Carli, M. Dotoli, "Model Predictive Control for Real-Time Residential Energy Scheduling under Uncertainties", *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Oct., 2018, Miyazaki, Japan, doi: 10.1109/SMC.2018.00242.
- [5] **S.M. Hosseini**, R. Carli, M. Dotoli, "A Residential Demand-Side Management Strategy under Nonlinear Pricing Based on Robust Model Predictive Control", *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Oct. 2019, Bari, Italy, doi: 10.1109/SMC.2019.8913892.
- [6] **S.M. Hosseini**, R. Carli, M. Dotoli, "Robust Day-ahead Energy Scheduling of a Smart Residential User under Uncertainty", *IEEE European Control Conference (ECC)*, June 2019, Naples, Italy, doi: 10.23919/ECC.2019.8796182.
- [7] **S.M. Hosseini**, R. Carli, M. Dotoli, "Robust Energy Scheduling of Interconnected Smart Homes with Shared Energy Storage under Quadratic Pricing", *IEEE International Conference on Automation Science and Engineering (CASE)*, Aug. 2019, Vancouver, Canada, doi: /10.1109/COASE.2019.8843230
- [8] **S.M. Hosseini**, R. Carli, G. Cavone, M. Dotoli, "Distributed Control of Electric Vehicles Charging Considering Grid Congestion and Battery

Degradation”, International Workshop on Smart Mobility in Future Cities (SMFC), Oct. 2019, Bari, Italy.

[9] **S.M. Hosseini**, R. Carli, M. Dotoli, “A Model Predictive Control Based Scheduling of Energy Systems with Shared Energy Generation and Storage”, Extended Research Abstract, *The 1st Poliba PhDays*, 2017, Bari, Italy.

[10] **S.M. Hosseini**, R. Carli, M. Dotoli, “Robust Optimal Demand Response of Energy-efficient Commercial Buildings”, *IEEE European Control Conference (ECC)*, July 2022, London, UK (accepted paper).

[11] **S.M. Hosseini**, R. Carli, J. Jantzen, M. Dotoli, “Multi-block ADMM Approach for Decentralized Demand Response of Energy Communities with Flexible Loads and Shared Energy Storage System”, *The 30th Mediterranean Conference on Control and Automation*, June-July 2022, Athens, Greece (accepted paper).

[12] **S.M. Hosseini**, S.M. Sadeghzadeh, Y. Alinejad Beromi, “A New Method for Active Power Factor Correction Using a Dual-purpose Inverter in Flyback Converters”, *Turkish Journal of Electrical Engineering and Computer Sciences*, vol. 24, No. 6, pp. 4736-4750, 2016; doi: 10.3906/elk-1502-213.

[14] **S.M. Hosseini**, Y. Alinejad Beromi, “A Multi-objective Optimization for Performance Improvement of the Z-source Active Power Filter”, *Journal of Electrical Engineering*, vol. 67, no. 5, pp. 358-364, 2016; doi: 10.1515/jee-2016-0051.

[15] M. Gholami, A. Pisano, **S.M. Hosseini** and E. Usai, "Distributed Finite-Time Secondary Control of Islanded Microgrids by Coupled Sliding-Mode Technique," 2020 25th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), 2020, pp. 454-461, doi: 10.1109/ETFA46521.2020.9212052, doi: 10.1109/ETFA46521.2020.9212052.

[16] **S.M. Hosseini**, Y. Alinejad Beromi, S.M. Sadeghzadeh, “Implementation and Comparison of Two Common Power Factor Correction Techniques in AC/DC Switching Converters”, *The 5th International Power Electronics Drive Systems and Technologies Conference (PEDSTC)*, 5-6 Feb. 2014, Tehran, Iran, 10.1109/PEDSTC.2014.6799387.

#### **Scholarships and grants**

- Fully funded by Polytechnic University of Bari for PhD study (Nov. 2017 – Dec. 2020)
- Fully funded by Polytechnic University of Bari for visiting research program at The University of Manchester, U.K. (Sep. 2019 – Mar. 2020)
- Winner of the European Embedded Control Institute (EECI) grant for three years (2018, 2019, 2020)

#### **Further data**

- **Conference Presentations:**
  - IEEE European Control Conference (ECC) 2019, Naples, Italy
  - International Power Electronics Drive Systems and Technologies Conference (PEDSTC) 2014, Tehran, Iran
  - International Congress on Electric Industry Automation 2013, Mashhad, Iran
  - Poliba PhDays 2017, Bari, Italy

- **Registered patent:**

A registered patent entitled "An active power factor correction circuit with dual-purpose inverter and backup power supply capability in switching converters", Iranian Patent and Trademark Office, Tehran, Iran, declaration num. 13915014000310259.

- **Research collaborations**

- Research group led by Dr. Alessandra Parisio (The University of Manchester, U.K.)
- Samsø Energy Academy, an enterprise focused on energy efficiency solutions (Samsø, Denmark)
- Research group led by Prof. Elio Usai (The University of Cagliari, Italy)
- Research group led by Dr. Seyed Mohammad Sadeghzadeh (Shahed University, Iran)

**Language competence**

- **English:** Proficient
- **Italian:** Basic knowledge
- **Persian:** First language

**Driving license**

Yes - 3rd Grade (Motor vehicles with a seating capacity for not more than 9 passengers and vehicle up to 3500 kg Gross Vehicle Weight)