

University Academic Curriculum Vitae

Personal information Name: **Seyed Mohsen Hosseini**
E-Mail: **seyedmohsen.hosseini@unibz.it**

- 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
 - 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
 - Sep. 2010 – Feb. 2013, **MSc in Electrical Engineering**
Semnan University, Iran
 - Sep. 2005 – Sep. 2010, **BSc in Electrical Engineering**
Shahed University, Iran

- 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 Engineering, Free University of Bozen-Bolzano, Italy
Project: Robot-supported Order and Raw Material-optimized Cutting and Processing of Round Timbers

Professional experience

From / to	Job title	Name of corporation	Responsibilities
Feb. 2022/ present	Assistant professor (RTD-A)	Free University of Bozen-Bolzano, Italy	<ul style="list-style-type: none"> • Project: Addressing challenges associated with expensive, energy and space-intensive machinery, and high wastage in round timber processing by developing innovative optimization and control strategies for robot-assisted sawing systems • University courses instruction • Supervising laboratory activities
Sept. to Nov. 2023/ May to Oct. 2024	Software developer/ Python and C++ programmer	Bidac Srl	Developing innovative software for optimizing wood cutting, tailored for industrial application and market integration
Feb. 2021/ Jan. 2022	Postdoctoral research fellow	Polytechnic University of Bari, Italy	Developing decision and control techniques for enhancing the power system resilience/ Investigating 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	Tehran Power Distribution Company, Iran	Involved in maintenance and modification of electrical equipment for energy efficiency projects; inspecting and testing electrical system components; engaged in research to reduce power loss in distribution networks

Research experiences

- ✓ **Control, automation, and optimization of Machines and Robots:**
 - Developing heuristic optimization techniques for **wood manufacturing optimization** in sawmills, Free University of Bozen-Bolzano, Italy
 - Engaged in lab supervision including implementing and operating **human-robot interaction systems**, Free University of Bozen-Bolzano, Italy
- ✓ **Control, automation, and optimization of Energy Systems:**
 - 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.
- ✓ **Control and automation in Industrial Application:**
 - 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 Mehr. Company, Tehran, Iran.
- ✓ **Power Electronics Projects:**
 - 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

✓ **Teaching Activities:**

- Advanced Control and Feedback Sensing, PhD in Advanced-Systems Engineering, AY 2022/2023
- Fundamentals of Systems and Control, Bachelor in Electronics and Cyber-Physical Systems Engineering, AY 2023/2024
- Modern Control, Bachelor in Electronics and Cyber-Physical Systems Engineering, AY 2023/2024

✓ **Conference Committees:**

- A member of the **technical 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.
- A member of the **technical program committee** for 16th International Conference ICSNC, 2021, Barcelona, Spain
- A member of the **technical program committee** for 17th International Conference on Systems and Networks Communications (ICSNC), 2022, Lisbon, Portugal
- A member of the **technical program committee** for 18th International Conference on Systems and Networks Communications (ICSNC), 2023, Valencia, Spain
- A member of the **technical program committee** for International Conference on Mechanics, Electronics, Automation and Automatic Control (MEAAC), 2023, Wuhan, China

✓ **Editorial activities:**

- 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
 - Sustainable Energy, Grids and Networks - Elsevier
 - Journal of Wood Science and Technology - Springer
 - 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

✓ **Memberships:**

- IEEE Member (6 years - 2018-2024)
- IEEE Young Professionals member (6 years - 2018- 2024)
- IEEE Robotics and Automation Society member (3 years – 2022-2024)
- IEEE Control Systems Society Membership (2 years – 2024)

Selected publications

Main contributor of several scientific papers for international journals and conferences including:

(Google scholar link:

<https://scholar.google.com/citations?user=KJhdGWAAAAAJ&hl=en>)

[1] **S. M. Hosseini** and A. Peer, "Wood Products Manufacturing Optimization: A Survey," in *IEEE Access*, vol. 10, pp. 121653-121683, 2022, doi: 10.1109/ACCESS.2022.3223053.

[2] **S. M. Hosseini**, M. Frego and A. Peer, "Cutting Unequal Rectangular Boards from Cylindrical Logs in Wood Products Manufacturing: A Heuristic Approach," 2023 31st Mediterranean Conference on Control and Automation (MED), Limassol, Cyprus, 2023, pp. 946-953, doi: 10.1109/MED59994.2023.10185875.

[3] **S. M. Hosseini**, S. -E. -I. Hasseni, M. Frego and A. Peer, "Improving Wood Yield Recovery in Live Sawing Using Strip-bottom-left-fill Bin-packing Heuristic," 2023 IEEE 28th International Conference on Emerging Technologies and Factory Automation (ETFA), Sinaia, Romania, 2023, pp. 1-8, doi: 10.1109/ETFA54631.2023.10275524.

[4] **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.

[5] **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.

[6] **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.

[7] **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, Miazaki, Japan, doi: 10.1109/SMC.2018.00242.

[8] **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.

[9] **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.

[10] **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

[11] E. Bertolazzi, C. Frego, M. Frego, **S. M. Hosseini** and A. Peer, "The clothoid: a historical, literary and artistic introduction with applications to technology," 2023 8th IEEE History of Electrotechnology Conference (HISTELCON), Florence, Italy, 2023, pp. 16-19, doi: 10.1109/HISTELCON56357.2023.10365736.

[12] **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.

[13] **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.

[14] **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).

[15] **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).

[16] **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.

[17] **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.

[18] 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.

[19] **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 program (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 ✓ Presentation in International Conferences:

- IEEE International Conference on Emerging Technologies and Factory Automation (ETFAs) 2023, Sinaia, Romania
- The 30th Mediterranean Conference on Control and Automation (MED) 2022, Athens, Greece
- IEEE European Control Conference (ECC) 2022, London, United Kingdom
- Invited speaker, International Forum on Automotive and Mechanical Engineering, June 2023, Osaka, Japan
- IEEE European Control Conference (ECC) 2019, Naples, Italy
- International Power Electronics Drive Systems and Technologies Conference (PEDSTC) 2014, Tehran, Iran
- International Conference on Electric Industry Automation 2013, Mashhad, Iran
- Poliba PhDays Conference 2017, Bari, Italy
- International Conference on Electrical Engineering 2013, Tehran, Iran

✓ **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**

• **With Academia:**

- Research group led by Prof. Alessandra Parisio, The University of Manchester, U.K. (Output: Conference Publication)
- Samsø Energy Academy, an enterprise focused on energy efficiency solutions, Samsø, Denmark, Prof. Jan Jantzen, (Output: Conference Publication)
- Research group led by Prof. Mariagrazia Dotoli, Polytechnic University of Bari, Italy (Output: PhD thesis, Journal and Conference Publications)
- Research group led by Prof. Elio Usai, The University of Cagliari, Italy (Output: Conference Publication)
- Research group led by Prof. Angelika Peer, Free University of Bozen-Bolzano, Italy (Output: Journal and Conference Publications)
- Research group led by Prof. Seyed Mohammad Sadeghzadeh, Shahed University, Iran (Output: Journal and Conference Publications)
- Research group led by Prof. Enrico Bertolazzi, The University of Trento, Italy (Output: Conference Publication)
- Research group led by Prof. Mahdi Akhbari, Shahed University, Iran (Output: Conference Publication)
- Research group led by Prof. Yousef Alinejad-Beromi, Semnan University, Iran (Output: Journal and Conference Publications)

• **With Industry:**

- Bidac automation company, Caldaro, Italy
- Electro-Mehrvarzan company, Tehran, Iran

Language competence

- **English:** Proficient (C1 certificate)
- **Italian:** Average knowledge
- **Persian:** First language