



Mohammad Sadegh Javadi Estahbanati

Associate Professor-Senior Member IEEE



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Collaboration:



Experience

2019–Present

Associate Professor • Islamic Azad University, Shiraz, Iran

2014–2018

Assistant Professor • Islamic Azad University, Shiraz, Iran

Developing optimization tools for microgrids, investigating and testing new open-access tools for energy industries, and collaborating with several universities, like Aalborg University in Denmark, Petroleum University of Technology and Islamic Azad University in Iran. He is the faculty member of Islamic University Shiraz, Iran.

Education

- **PhD**, Electrical Engineering, GPA: 18.54/20, Shahid Chamran University of Ahwaz, Iran. (2009-2014). Thesis: “*Coordinated Generation and Transmission Expansion Planning within Power Market Environment*”.

- **MSc**, Electrical Engineering, GPA: 18.19/20, University of Tehran, Iran. (2007-2009) Dissertation: “*Security Constrained Unit Commitment in Modern Power Systems*”.

- **MSc**, Electrical Engineering, GPA: 15.85/20, Shahid Chamran University of Ahwaz, Iran. (2003-2007) Dissertation: “*Self-Scheduling of Power Systems in the Presence of Hydro-thermal Generating Units*”.

Professional History

- Senior Member IEEE, (2020-Now)
 - Several Projects with industry in Iran and EU.
- Associate Professor, Islamic Azad University (2019-Now)
- Guest Researcher at Aalborg University, Aalborg, Denmark (2018-2019)
 - Serving as Researcher and Teacher/Research Assistant
- Assistant Professor at Islamic Azad University, Shiraz, Iran (2014-2017)
 - Supervisor of Robotics Team (2015-2016)

TEACHING INTERESTS AND COURSES TAUGHT

Undergraduate Courses	Postgraduate Courses
<ul style="list-style-type: none"> - Operational Research - Linear Algebra - Numerical Analysis - Microeconomics - Electromagnetics - Decision Support Systems - Fundamental of Electrical Engineering - Industrial Electronics - Linear Control - Energy Management Theory - Industrial Control Systems - Renewable Energy - Energy Market - Optimal Control - Electrical Circuit Design I-II - Installation and System Design 	<ul style="list-style-type: none"> - Advanced Operational Research - Research Methodology - Advanced Topics in Engineering - Resource Planning - Sustainable Energy Resource Planning - Advanced Decision Making Strategies - Applied Optimization for Engineering - Smart Grids - Energy Management System - Energy Audit - Demand Response - Smart Cities and Societies - Non-linear Optimization - Remote System Monitoring - Real-Time Domain Simulation - Advanced Mathematics for Engineers

EXPERIMENTAL PROTOTYPES DEVELOPED

INDUSTRIAL PROJECTS
<p>Developing Energy Management System for Mobile Energy Storage Flexibility Provision by Active End-Users. Smart Home Energy Management System- Mobile Applications. Knowledge-based Model for IoT applications for <i>Danfoss</i> Heating Systems. Semantic Manager for Circuit Breaker Transient Voltage Recovery.</p>
EXPERIMENTAL PROJECTS
<p>Market Power Monitoring Simulator for Rational Power Markets Model Predictive Control Simulator for Mixed Integer Programming Problems (Day-ahead Operation) Net-Zero Smart Buildings with Home Energy Management Systems Real-Time Domain Simulations for Smart Solid State Transformers Smart Application for Internet of Things (IoT) in the Residential Home Energy Management Systems Data-Driven Simulator for Smart Transportation and Electrical Parking Lots (Smart Cities Application) Smart Buildings with Sensor Network Monitoring, Data Privacy and Data Streaming for Middleware</p>
RESEARCH PROTOTYPES
<p>Smart Transformer Monitoring System for 132-230 kV Transformers-NIROO Research Institute (NRI), 2010 Self-Generation Monitoring System for 40 kW Solar System, 2016, Islamic Azad University, Shiraz, Iran Current-Voltage Interface Board for dSPACE and OPAL-RT, 2019, Aalborg University, Denmark Optic Fiber Interface Board for Danfoss Inverters (AC-DC microgrids), 2019, Aalborg University, Denmark</p>

VIRTUAL EDUCATION AND DATA VISUALIZATION

<p>Virtual Laboratory Models for Basic Linear Elements for Electrical and Non-Electrical Engineering Students Data Privacy and Energy Consumptions Models for Consumer Behavior Estimation, E-Mobility, Bidding Strategy Platform for Energy and Ancillary Service Markets (Web-based Platform) Blockchain Framework for Strategic Bidding Strategy (Web-based Platform)</p>
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PRIZES AWARDS AND HONOR STUDENTS

Best Thesis Awards 2018: Seyed Amir Mansouri, Master Student, Islamic Azad University of Ahwaz, Iran

Best Researcher Awards 2016: Ali EsmaeelNezhad, Master Student, Islamic Azad University, NajafAbad, Iran

BEST PAPER AWARDS (STUDENT AWARDED)

Lotfi M (PhD Student), Ashraf A, Zahran M, Samih G, **Javadi M**, Osario GJ, et al. A Dijkstra-Inspired Algorithm for Optimized Real-Time Tasking with Minimal Energy Consumption. Proc. - 2020 IEEE Int. Conf. Environ. Electr. Eng. 2020 IEEE Ind. Commer. Power Syst. Eur. IEEEIC / I CPS Eur. 2020, Institute of Electrical and Electronics Engineers Inc.; 2020. **(Best Poster)**

<https://doi.org/10.1109/IEEEIC/ICPSEurope49358.2020.9160688>

WORKSHOP AND SHORT-TERM PRESENTATIONS

- Multi-Carrier Energy Systems for Smart Energy Communities, (2019), Aalborg University, Denmark
- PyPulp: An Open Source Python Package for Mixed-Integer Optimization Problems (2019), Aalborg University, Denmark
- Hardware in the Loop: (HIL) with dSPACE, for AC-DC microgrids (2019), Aalborg University, Denmark
- Application of GAMS Software in Power System Optimization Problems (2015). ICEE Conference, Tehran, Iran

EDITORIAL BOARD

2021

Associate Editor, **E-Prime** Journal, ISSN: 2772-6711 Published by **Elsevier**

<https://www.journals.elsevier.com/e-prime/editorial-board>

EXPERIMENTAL PROTOTYPES DEVELOPED FOR ACADEMIC PURPOSES

UNDERGRADUATE LEVEL

Developing Knowledge-based Laboratory for Power System Studies, including Visual Power System Studies
Practical Relay Testing for Electromechanical and Solid-State Relays (Injecting Current for Simulating Faults)
Electromagnetic Transient Simulation Program based on Python/MATLAB GUI for Power System Engineers
Visualization of Mathematics and Fourier Series for Signal and System Purposes
Graphic User Interface Design for Circuit Breaker Transient Voltage Recovery
Economic Load Dispatch Model for Bidding Strategy (Game Theory Application for Power Market Studies)

POSTGRADUATE LEVEL

Market Power Monitoring Simulator for Rational Power Markets
Model Predictive Control Simulator for Mixed Integer Programming Problems (Day-ahead Operation)
Net-Zero Smart Buildings with Home Energy Management Systems
Real-Time Domain Simulations for Smart Solid State Transformers
Smart Application for Internet of Things (IoT) in the Residential Home Energy Management Systems
Data-Driven Simulator for Smart Transportation and Electrical Parking Lots (Smart Cities Application)
Smart Buildings with Sensor Network Monitoring, Data Privacy and Data Streaming for Middleware

AWARDS, HONORARY DEGREES, MEDALS AND POSITIONS

Title of Award, Medal, Position	Issuing Authority	Year
One of 0.5 % top students among more than 25000 participants in the university entrance exam for M.Sc. Degree in Iran.	Ministry of Science, Research and Technology	2007
Scholarship for M.Sc. Course	University of Tehran	2007
Distinguished MSc Student Researcher	University of Tehran	2009
Honor MSc Student	University of Tehran	2009
Scholarship for PhD Course	Shahid Chamran University of Ahwaz, Iran	2009
Distinguished PhD Student Researcher	Shahid Chamran University of Ahwaz, Iran	2014
Best Reviewer IEEE Trans. Smart Grids and Power System	IEEE	2019

SOFTWARE-PROGRAMMING LANGUAGE

Software	Level	Programming Language	Level
GAMS, LINDO, LINGO, CPLEX-IBM	95%	Python	70%
MATLAB and Simulink, DlgSILENT, CYME	70%	Fortran	60%
dSPACE, Opal-RT, NS3, WIFI-Mininet	30%	Java, C, C#	30%

BOOK CHAPTERS

2021	S.A. Mansouri, A. Ahmarinejad, M.S. Javadi , A. Esmaeel Nezhad, M. Shafie-khah, J.P.S. Catalão, “Demand response role for enhancing the flexibility of local energy systems”, in: Distributed Energy Resources in Local Integrated Energy Systems: Optimal Operation and Planning, G. Graditi and M. Di Somma (Editors), ACADEMIC Press (ELSEVIER), 2021. https://www.sciencedirect.com/science/article/pii/B978012823899800011X
2020	M. S. Javadi , A.E. Nezhad, S.-E. Razavi, A. Ahmadi, J.P.S. Catalão, “A modified fireworks algorithm to solve the heat and power generation scheduling problem in power system studies”, in: Evolutionary Computation in Scheduling, A.H. Gandomi, A. Emrouznejad, M.M. Jamshidi, K. Deb, I. Rahimi (Editors), WILEY, Hoboken, New Jersey, USA, ISBN: 978-1-119-57429-3, pp. 299-326, May 2020. https://doi.org/10.1002/9781119574293.ch10

PUBLICATIONS

(BRIEF OVERVIEW)

Coauthored of more than **90 publications**, including 60 articles in journals (mainly in **Q1** ranked journals in IEEE, Elsevier, IET, and Wiley), 35 conference proceedings papers (the large majority of which in **IEEE** conferences, such as PowerTech, UPEC, SEST, EEEIC, and IECON), and 2 book chapters, with **h-index of 20**, **i10-index of 36** and more than **1200 total citations**.

GoogleScholar: <https://scholar.google.pt/citations?user=plkKOUeAAAAJ&hl=en>

ResearchGate: https://www.researchgate.net/profile/Mohammad_Javadi16

SCOPUS: <https://www.scopus.com/authid/detail.uri?authorId=56902737600>

ORCID: <https://orcid.org/0000-0003-1484-2594>

SCOPUS REPORT#12-10-2021



RANK ACCORDING TO ISI-WoS	TOTAL NUMBER AND PERCENTAGE
Q1	22 (57%)
Q2	7 (19%)
Q3	9 (23%)

JOURNAL PAPERS INDEXED BY ISI-WOS

- [1] Javadi MS, Nezhad AE, Jordehi AR, Gough M, Santos SF, Catalão JPS. Transactive Energy Framework in Multi-Carrier Energy Hubs: A Fully Decentralized Model. *Energy* 2021;121717. <https://doi.org/10.1016/J.ENERGY.2021.121717>.
- [2] Amir Mansouri S, Javadi MS, Ahmarinejad A, Nematbakhsh E, Zare A, Catalão JPS. A coordinated energy management framework for industrial, residential and commercial energy hubs considering demand response programs. *Sustain Energy Technol Assessments* 2021;47:101376. <https://doi.org/10.1016/J.SETA.2021.101376>.
- [3] Mansouri SA, Ahmarinejad A, Nematbakhsh E, Javadi MS, Jordehi AR, Catalão JPS. Energy management in microgrids including smart homes: A multi-objective approach. *Sustain Cities Soc* 2021;69:102852. <https://doi.org/10.1016/j.scs.2021.102852>.
- [4] Javadi MS, Nezhad AE, Nardelli PHJ, Gough M, Lotfi M, Santos S, et al. Self-scheduling model for home energy management systems considering the end-users discomfort index within price-based demand response programs. *Sustain Cities Soc* 2021;68:102792. <https://doi.org/10.1016/j.scs.2021.102792>.
- [5] Javadi MS, Gough M, Lotfi M, Esmaeel Nezhad A, Santos SF, Catalão JPS. Optimal self-scheduling of home energy management system in the presence of photovoltaic power generation and batteries. *Energy* 2020;210:118568. <https://doi.org/10.1016/j.energy.2020.118568>.
- [6] Javadi, Sadegh M, Lotfi M, Nezhad AE, Anvari-Moghaddam A, Guerrero JM, et al. Optimal Operation of Energy Hubs Considering Uncertainties and Different Time Resolutions. *IEEE Trans. Ind. Appl.*, vol. 56, Institute of Electrical and Electronics Engineers Inc.; 2020, p. 5543–52. <https://doi.org/10.1109/TIA.2020.3000707>.
- [7] Javadi MS, Nezhad AE, Shafie-khah M, Siano P, Catalão JPS. Assessing the benefits of capacity payment, feed-in-tariff and time-of-use programme on long-term renewable energy sources integration. *IET Smart Grid* 2019;2:602–11. <https://doi.org/10.1049/iet-stg.2018.0298>.
- [8] Javadi MS, Razavi S-E, Ahmadi A, Siano P. A novel approach for distant wind farm interconnection: Iran South-West wind farms integration. *Renew Energy* 2019;140:737–50. <https://doi.org/10.1016/j.renene.2019.03.099>.
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- [10] Razavi S-E, Rahimi E, Javadi MS, Nezhad AE, Lotfi M, Shafie-khah M, et al. Impact of distributed generation on protection and voltage regulation of distribution systems: A review. *Renew Sustain Energy Rev* 2019. <https://doi.org/10.1016/j.rser.2019.01.050>.
- [11] Ali ZM, Razavi S-E, Javadi MS, Gandoman FH, Abdel Aleem SHE. Dual enhancement of power system monitoring: Improved probabilistic multi-stage PMU placement with an increased search space & mathematical linear expansion to consider zero-injection bus. *Energies* 2018;11. <https://doi.org/10.3390/en11061429>.
- [12] Simab M, Javadi MS, Nezhad AE. Multi-objective programming of pumped-hydro-thermal scheduling problem using normal boundary intersection and VIKOR. *Energy* 2018;143. <https://doi.org/10.1016/j.energy.2017.09.144>.
- [13] Razavi S-E, Javadi MS, Esmaeel Nezhad A. Mixed-integer nonlinear programming framework for combined heat and power units with nonconvex feasible operating region: Feasibility, optimality, and flexibility evaluation. *Int Trans Electr Energy Syst* 2019;29:1–18. <https://doi.org/10.1002/etep.2767>.
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- [15] Javadi MS, Esmaeel Nezhad A. Intelligent particle swarm optimization augmented with chaotic searching technique to integrate distant energy resources. *Int Trans Electr Energy Syst* 2017;27. <https://doi.org/10.1002/etep.2447>.
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- [17] Mansouri SA, Javadi MS. A robust optimisation framework in composite generation and transmission

- expansion planning considering inherent uncertainties. *J Exp Theor Artif Intell* 2017;29:717–30. <https://doi.org/10.1080/0952813X.2016.1259262>.
- [18] Gutiérrez-Alcaraz G, Galván E, González-Cabrera N, Javadi MS. Renewable energy resources short-term scheduling and dynamic network reconfiguration for sustainable energy consumption. *Renew Sustain Energy Rev* 2015;52. <https://doi.org/10.1016/j.rser.2015.07.105>.
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- [21] Javadi MS, Saniei M, Rajabi Mashhadi H. An augmented NSGA-II technique with virtual database to solve the composite generation and transmission expansion planning problem. *J Exp Theor Artif Intell* 2014;26. <https://doi.org/10.1080/0952813X.2013.815280>.
- [22] Nezhad AE, Javadi MS, Rahimi E. Applying augmented E-constraint approach and lexicographic optimization to solve multi-objective hydrothermal generation scheduling considering the impacts of pumped-storage units. *Int J Electr Power Energy Syst* 2014;55. <https://doi.org/10.1016/j.ijepes.2013.09.006>.
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- [29] Mortazavi SMB, Shiri N, Javadi MS, Dehnavi SD. Optimal Planning and Management of Hybrid Vehicles in Smart Grid. *Ciência e Nat* 2015;37:253–63. <https://doi.org/10.5902/2179460X20781>.

INTERNATIONAL CONFERENCES (SCOPUS)

- [1] M. H. Shams, M. MansourLakouraj, M. Shahabi, M. S. Javadi, and J. P. S. Catalao, “Robust Scenario-Based Approach for the Optimal Scheduling of Energy Hubs,” *2021 IEEE Madrid PowerTech*, pp. 1–6, Jun. 2021, doi: 10.1109/POWERTECH46648.2021.9494837.
- [2] K. T. Farsani, N. Vafamand, M. M. Arefi, M. H. Asemani, M. S. Javadi, and J. P. S. Catalao, “Robust Controller Design for Frequency Regulation of Power Systems,” *2021 IEEE Madrid PowerTech*, pp. 1–6, Jun. 2021, doi: 10.1109/POWERTECH46648.2021.9494750.
- [3] S. Neisarian, M. M. Arefi, N. Vafamand, M. Javadi, S. F. Santos, and J. P. S. Catalao, “Finite-time Adaptive Sliding Mode Control of DC Microgrids with Constant Power Load,” *2021 IEEE Madrid PowerTech*, pp. 1–6, Jun. 2021, doi: 10.1109/POWERTECH46648.2021.9495071.
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- management system containing photovoltaic sources considering supercapacitor and battery storages,” 2020, doi: 10.1109/SEST48500.2020.9203135.
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- [11] M. Lotfi, S. Fikry, G. J. Osório, M. Javadi, S. F. Santos, and J. P. S. Catalão, *A Hybrid Probabilistic Algorithm for Computationally Efficient Estimation of Power Generation in AC Optimal Power Flow*, vol. 1. 2020.
- [12] M. Gough *et al.*, *Optimization of Prosumer’s Flexibility Taking Network Constraints into Account*. 2020.
- [13] T. Almeida, M. Lotfi, M. Javadi, G. J. Osório, and J. P. S. Catalão, *Economic Analysis of Coordinating Electric Vehicle Parking Lots and Home Energy Management Systems*. 2020.
- [14] M. Lotfi, T. Almeida, M. Javadi, G. J. Osório, and J. P. S. Catalão, *Coordinated Operation of Electric Vehicle Parking Lots and Smart Homes as a Virtual Power Plant*. 2020.
- [15] M. Lotfi *et al.*, “A Dijkstra-Inspired Algorithm for Optimized Real-Time Tasking with Minimal Energy Consumption,” Jun. 2020, doi: 10.1109/EEEIC/ICPSEurope49358.2020.9160688.
- [16] M. Gough *et al.*, “Optimisation of Prosumers’ Participation in Energy Transactions,” in *2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)*, Jun. 2020, pp. 1–6, doi: 10.1109/EEEIC/ICPSEurope49358.2020.9160507.
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- [25] M. S. Javadi, M. Lotfi, M. Gough, A. E. Nezhad, S. F. Santos, and J. P. S. Catalao, “Optimal Spinning Reserve Allocation in Presence of Electrical Storage and Renewable Energy Sources,” *2019 IEEE Int. Conf. Environ. Electr. Eng. 2019 IEEE Ind. Commer. Power Syst. Eur. (EEEIC / I&CPS Eur.)*, pp. 1–6, Jun. 2019, doi: 10.1109/EEEIC.2019.8783696.
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- [27] M. S. Javadi, A. E. Nezhad, A. Anvari-Moghaddam, and J. M. Guerrero, “Optimal Overcurrent Relay Coordination in Presence of Inverter-Based Wind Farms and Electrical Energy Storage Devices,” 2018, doi: 10.1109/EEEIC.2018.8494605.
- [28] M. S. Javadi, A. Anvari-Moghaddam, and J. M. Guerrero, “Optimal Planning and Operation of Hybrid Energy System Supplemented by Storage Devices,” in *7th Solar Integration Workshop*, 2017, pp. 1–6.

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- [31] L. F. Fuerte-Ledezma, G. Gutierrez-Alcaraz, and M. S. Javadi, "Static transmission expansion planning considering uncertainty in demand using BPSO," 2013, doi: 10.1109/NAPS.2013.6666918.

REFEREES

Name	Role/Academic Degree	University/organization	Email Address	Phone NO.
Prof. Josep M. Guerrero	Post-doc Supervisor/ Professor	Department Energy, Aalborg University, Aalborg, Denmark	joz@et.aau.dk	+45-20378262
Prof. Mohsen Saniei	PhD Thesis Supervisor/Associate Professor	Department of Electrical and Electronic Engineering, Shahid Chamran University, Ahwaz, Iran	Mohsen.saniei@gmail.com	+98-916-307-4686
Prof. Hasan Monsef	MSc. Thesis Supervisor/ Professor	Department of Electrical Engineering, University of Tehran	h_monsef@ut.ac.ir	+98-912-304-8320
Prof. Mahmood Joorabian	PhD Thesis Advisor/ Professor	Department of Electrical and Electronic Engineering, Shahid Chamran University	mjoorabian@scu.ac.ir	+98-916-118-3017