

AMIR FARAKHOR

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PARTICULARS

EDUCATION

University of Kansas	Lawrence, KS
Ph. D. in Mechanical Engineering	<i>Jan 2021 - Present</i>

GPA: 4.00

Thesis Topic: On Advanced Battery Energy Storage Systems: Design, Optimal Control, and Experimentation

Supervisor: Dr. Huazhen Fang

University of Tabriz	Tabriz, Iran
Ph. D. in Electrical Engineering - Power Electronics	<i>Sep 2015 - Feb 2019</i>

Thesis Topic: Design and Derivation of New Power Electronic Converters For Renewable Energy Sources

Member of Organization Exceptional Talents of University of Tabriz

Azərbaycan Şahid Mədanı University	Tabriz, Iran
M. Sc. in Electrical Engineering	<i>Sep 2012 - May 2014</i>

Member of Organization Exceptional Talents of Azərbaycan Şahid Mədanı University

Azərbaycan Şahid Mədanı University	Tabriz, Iran
B. Sc. in Electrical Engineering	<i>Sep 2008 - Sep 2012</i>

Member of Organization Exceptional Talents of Azərbaycan Şahid Mədanı University

CURRENT STATUS

U.S. Permanent Resident, Citizen of Iran.

PUBLICATIONS

Google Scholar Profile

- Total Citations: 1245, H-index: 14, Link: Amir Farakhor

JOURNAL PAPERS: To be submitted

1. Efficient Optimal Power Management for Battery Energy Storage Systems via Bayesian Inference
Amir Farakhor, Di Wu, Yebin Wang, Huazhen Fang
IEEE Transactions on Control Systems Technology
2. Economic Optimal Power Management of Second-Life battery Energy Storage Systems
Amir Farakhor, Di Wu, Ping Chen, Junmin Wang, Yebin Wang, Huazhen Fang
IEEE Transactions on Sustainable Energy

JOURNAL PAPERS: In Press

3. A Scalable Optimal Power Management for Large-Scale Battery Energy Storage Systems
Amir Farakhor, Di Wu, Yebin Wang, Huazhen Fang
IEEE Transactions on Transportation Electrification

JOURNAL PAPERS: Published

4. A Novel Modular, Reconfigurable Battery Energy Storage System: Design, Control, and Experimentation
Amir Farakhor, Di Wu, Yebin Wang, Huazhen Fang
IEEE Transactions on Transportation Electrification, 9 (2), pp. 2878–2890, 2023
5. A Study on an Improved Three-Winding Coupled Inductor Based DC/DC Converter with Continuous Input Current
Amir Farakhor, Mehdi Abapour, Mehran Sabahi, Saeid Gholami Farkoush, Seung-Ryle Oh, Sang-Bong Rhee
Energies, 13 (7), 2020
6. Design, Analysis, and Implementation of a Multiport DC–DC Converter for Renewable Energy Applications
Amir Farakhor, Mehdi Abapour, Mehran Sabahi
IET Power Electronics, 12 (3), pp. 465–475, 2019
7. Study on the Derivation of the Continuous Input Current High-Voltage Gain DC/DC Converters
Amir Farakhor, Mehdi Abapour, Mehran Sabahi
IET Power Electronics, 11 (10), pp. 1652–1660, 2018
8. Design Optimization of a Ćuk DC/DC Converter Based on Reliability Constraints
Amirreza Zarrin Gharehkhoushan, Mehdi Abapour, **Amir Farakhor**
Turkish Journal of Electrical Engineering and Computer Sciences, 25 (3), pp. 1932–1945, 2017
9. Symmetric and Asymmetric Transformer Based Cascaded Multilevel Inverter with Minimum Number of Components
Amir Farakhor, Rouzbeh Reza Ahrabi, Hossein Ardi, Sajad Najafi Ravadanegh
IET Power Electronics, 8 (6), pp. 1052–1060, 2015
10. A Novel High Step-up DC/DC Converter Based on Integrating Coupled Inductor and Switched-Capacitor Techniques for Renewable Energy Applications
Ali Ajami, Hossein Ardi, **Amir Farakhor**
IEEE Transactions on Power Electronics, 30 (8), pp. 4255–4263, 2015
11. Design, Analysis and Implementation of a Buck–Boost DC/DC Converter
Ali Ajami, Hossein Ardi, **Amir Farakhor**
IET Power Electronics, 7 (12), pp. 2902–2913, 2014
12. Minimisations of Total Harmonic Distortion in Cascaded Transformers Multilevel Inverter by Modifying Turn ratios of the Transformers and Input Voltage Regulation
Ali Ajami, **Amir Farakhor**, Hossein Ardi
IET Power Electronics, 7 (11), pp. 2687–2694, 2014
13. Non-Isolated Multi-Input–Single-Output DC/DC Converter for Photovoltaic Power Generation Systems
Mohammad Reza Banaei, Hossein Ardi, Rana Alizadeh, **Amir Farakhor**
IET Power Electronics, 7 (11), pp. 2806–2816, 2014
14. Analysis and Implementation of a New Single-Switch Buck–Boost DC/DC Converter
Mohammad Reza Banaei, Hossein Ardi, **Amir Farakhor**
IET Power Electronics, 7 (7), pp. 1906–1914, 2014

CONFERENCE PROCEEDINGS: Under Review

15. Optimal Power Management of Battery Energy Storage Systems via Ensemble Kalman Inversion
Amir Farakhor, Iman Askari, Di Wu, Huazhen Fang
American Control Conference (ACC), 2024

CONFERENCE PROCEEDINGS: Published

16. Distributed Optimal Power Management for Battery Energy Storage Systems: A Novel Accelerated Tracking ADMM Approach
Amir Farakhor, Yebin Wang, Di Wu, Huazhen Fang
American Control Conference (ACC), 2023
17. A Novel Modular, Reconfigurable Battery Energy Storage System Design
Amir Farakhor, Huazhen Fang
47th Annual Conference of the IEEE Industrial Electronics Society (IECON), 2022

18. Dynamic Modeling and Online Parameter Identification of a Coupled-Inductor-Based DC-DC Converter with Leakage Inductance Effect Consideration
Amir Farakhor, Huazhen Fang
47th Annual Conference of the IEEE Industrial Electronics Society (IECON), 2022
19. A New Coupled Inductor-Based High Step-Up DC-DC Converter for PV Applications
Alireza Eyvazizadeh Khosroshahi, Amin Shotorbani, Hoda Dadashzadeh, **Amir Farakhor**, Liwei Wang
20th Workshop on Control and Modeling for Power Electronics (COMPEL), 2019
20. A Two-Stage Coupled-Inductor-Based Cascaded DC-DC Converter with a High Voltage Gain
Alireza E. Khosroshahi, Liwei Wang, Hoda Dadashzadeh, Hossein Ardi, **Amir Farakhor**, Amin Shotorbani
IEEE Canadian Conference of Electrical and Computer Engineering (CCECE), 2019
21. Analysis and Design Procedure of a Novel High Voltage Gain DC/DC Boost Converter
Amir Farakhor, Hossein Ardi, Mehdi Abapour
8th Power Electronics, Drive Systems & Technologies Conference (PEDSTC), 2017
22. Application of Finite Control Set Model based Predictive method for power flow control using Unified Power Flow Controller
Amir Farakhor, Alireza E Khosroshahi, Mehdi Abapour, Saeed Azimi Saadat
9th International Conference on Electrical and Electronics Engineering (ELECO), 2015
23. New Cascaded Multilevel Inverter Topology with Reduced Number of switches and Sources
Seyed Hossein Hosseini, **Amir Farakhor**, Saeideh Khadem Haghighian
8th International Conference on Electrical and Electronics Engineering (ELECO), 2013
24. Novel Algorithm of Maximum Power Point Tracking (MPPT) for Variable Speed PMSG Wind Generation Systems through Model Predictive Control
Seyed Hossein Hosseini, **Amir Farakhor**, Saeideh Khadem Haghighian
8th International Conference on Electrical and Electronics Engineering (ELECO), 2013
25. Novel Algorithm of MPPT for PV Array Based on Variable Step Newton-Raphson Method through Model Predictive Control
Seyed Hossein Hosseini, **Amir Farakhor**, Saeideh Khadem Haghighian
13th International Conference on Control, Automation and Systems (ICCAS), 2013

PATENTS & APPLICATIONS

1. A Modular, Reconfigurable Battery Energy Storage System (RBESS)
Amir Farakhor, Huazhen Fang
PCT/US2022/077918, 2022

RESEARCH INTERESTS

- **Energy Storage Systems:** Design, optimal control strategies, and experimental validation.
- **Renewable Energy:** Sustainable generation and distribution, efficient power extraction from wind and solar sources, and advancements in power electronics.
- **Energy Management:** Large-scale systems, including grid-interactive buildings, community-level energy systems, and energy solutions for outer space.
- **Electric Vehicles:** Battery pack, powertrain, and power electronics design and control.
- **Power Electronics:** Design, control, and experimentation of various power electronic converters with applications in charging stations, renewable energy generation systems, and advanced grid integration technologies.
- **Optimal Control:** Model predictive control, cloud-based optimal control, and distributed control in communication-rich environments, enhancing system efficiency and performance.

TEACHING EXPERIENCE

Lecturer Course: EECS 444 Control Systems	University of Kansas Dept. of Electrical Eng. and Computer Science <i>Spring 2024</i>
Graduate Teaching Assistant Course: Mechanical Engineering Measurements and Experiments Teaching Supervisor: Dr. Carl Luchies	University of Kansas Dept. of Mechanical Engineering <i>Fall 2023</i>
Volunteer Instructor KU Engineering Summer Camp: Control and Robotics	University of Kansas Dept. of Mechanical Engineering <i>Summer 2022-2023</i>
Graduate Teaching Assistant Course: Mechanical Engineering Measurements and Experiments Teaching Supervisor: Dr. Carl Luchies	University of Kansas Dept. of Mechanical Engineering <i>Fall 2021</i>
Graduate Teaching Assistant Course: Mechanical Engineering Measurements and Experiments Teaching Supervisor: Dr. Geng Ku	University of Kansas Dept. of Mechanical Engineering <i>Spring 2021</i>

PRESENTATIONS

CONFERENCE TALKS

1. “Distributed Optimal Power Management for Battery Energy Storage Systems: A Novel Accelerated Tracking ADMM Approach”, *American control Conference (ACC)*, San Diego, California, U.S., May 2023.
2. “Reconfigurable Design of Battery Energy Storage Systems: From Architecture to Control”, *4th International Conference on Smart Power & Internet Energy Systems*, Beijing, China, December 2022.
3. “A Novel Modular, Reconfigurable Battery Energy Storage System Design”, *47th Annual Industrial Electronics Conference (IECON)*, Virtual Conference, October 2021.
4. “Dynamic Modeling and Online Parameter Identification of a Coupled-Inductor-Based DC-DC Converter with Leakage Inductance Effect Consideration”, *47th Annual Industrial Electronics Conference (IECON)*, Virtual Conference, October 2021.
5. “Analysis and Design Procedure of a Novel High Voltage Gain DC/DC Boost Converter”, *8th Power Electronics, Drive Systems & Technologies Conference (PEDSTC)*, Mashhad, Iran, February 2017.
6. “Optimal Integration of Wind Power Resources in Distribution Networks Considering Demand Response Programs”, *9th International Conference on Electrical and Electronics Engineering (ELECO)*, Bursa, Turkey, November 2015.
7. “Impact of Active Network Management in Operation of Tabriz Distribution System”, *9th International Conference on Electrical and Electronics Engineering (ELECO)*, Bursa, Turkey, November 2015.

HONORS AND AWARDS

2023	Recipient , ACC Student Travel Grant	<i>American Control Conference</i>
2023	Recipient , Tradition of Excellence Award	<i>University of Kansas</i>
2023	First Place , Graduate Engineering Association - Research Showcase	<i>University of Kansas</i>
2023	First Place , Research Symposium of the Inst. for Information Sciences (I2S)	<i>University of Kansas</i>
2023	Presenter , Capital Graduate Research Summit (CGRS)	<i>University of Kansas</i>
2022	Student of the Year , Information and Smart Systems Laboratory (ISSL)	<i>University of Kansas</i>
2022	Winner , KU Engineering Research Showcase (Poster Presentation)	<i>University of Kansas</i>
2022	Third Place , KU Engineering Research Showcase (Virtual Presentation)	<i>University of Kansas</i>

ACADEMIC SERVICE

Publicity Chair	7th IEEE International Conference on Industrial Cyber-Physical Systems (ICPS) - 2024
Reviewer	IEEE Transactions of Power Electronics (20 Reviews)
Reviewer	IEEE Transactions of Industrial Electronics (32 Reviews)
Reviewer	IEEE Transactions of Energy Conversion (17 Reviews)
Reviewer	IEEE Open Journal of Industrial Electronics Society (11 Reviews)
Reviewer	IEEE Transactions of Vehicular Technology (2 Reviews)
Reviewer	IEEE Transactions of Transportation Electrification (2 Reviews)
Reviewer	IEEE Transactions of Industrial Applications (1 Reviews)
Reviewer	International Transactions in Electrical Energy Systems (3 Reviews)
Reviewer	IEEE Control Systems Letters (3 Reviews)

REFERENCES

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Chief Engineer and Team Leader
Optimization and Control Group
Pacific Northwest National Laboratory (PNNL), Richland, WA
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Dr. Carl Luchies
Associate Professor
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University of Kansas, Lawrence, KS
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Dr. Geng Ku
Laboratory Manager/Staff Scientist
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