AMIR FARAKHOR

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Lawrence, KS-66049
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PARTICULARS

EDUCATION

University of Kansas — Lawrence, KS
Ph. D. in Mechanical Engineering — *Jan 2021 - Present*
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 — *Sep 2015 - Feb 2019*
Thesis Topic: Design and Derivation of New Power Electronic Converters For Renewable Energy Sources
Member of Organization Exceptional Talents of University of Tabriz

Azarbaijan Shahid Madani University — Tabriz, Iran
M. Sc. in Electrical Engineering — *Sep 2012 - May 2014*
Member of Organization Exceptional Talents of Azarbaijan Shahid Madani University

Azarbaijan Shahid Madani University — Tabriz, Iran
B. Sc. in Electrical Engineering — *Sep 2008 - Sep 2012*
Member of Organization Exceptional Talents of Azarbaijan Shahid Madani 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, 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 Gharehkoushan, 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 — University of Kansas
Course: EECS 444 Control Systems — Dept. of Electrical Eng. and Computer Science
Spring 2024

Graduate Teaching Assistant — University of Kansas
Course: Mechanical Engineering Measurements and Experiments — Dept. of Mechanical Engineering
Teaching Supervisor: Dr. Carl Luchies — *Fall 2023*

Volunteer Instructor — University of Kansas
KU Engineering Summer Camp: Control and Robotics — Dept. of Mechanical Engineering
Summer 2022-2023

Graduate Teaching Assistant — University of Kansas
Course: Mechanical Engineering Measurements and Experiments — Dept. of Mechanical Engineering
Teaching Supervisor: Dr. Carl Luchies — *Fall 2021*

Graduate Teaching Assistant — University of Kansas
Course: Mechanical Engineering Measurements and Experiments — Dept. of Mechanical Engineering
Teaching Supervisor: Dr. Geng Ku — *Spring 2021*

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

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 Electification (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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Associate Professor
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University of Kansas, Lawrence, KS
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Dr. Di Wu
Chief Engineer and Team Leader
Optimization and Control Group
Pacific Northwest National Laboratory (PNNL), Richland, WA
di.wu@pnnl.gov

Dr. Geng Ku
Laboratory Manager/Staff Scientist
Dept. of Mechnical Engineering
California Institute of Technology (Caltech)
gku@caltech.edu