

FARZAD FERDOWSI, PH.D.

Electrical & Computer Engineering, University of Louisiana at Lafayette
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EDUCATION

University of Louisiana Master of Business Administration	<i>Expected: 2026</i>
Florida State University Ph.D., Electrical Engineering	<i>2016</i>
Tabriz University of Technology M.S., Electrical Engineering	<i>2012</i>
University of Tehran B.S., Electrical Engineering	<i>2010</i>

EMPLOYMENT HISTORY

Associate Professor (Tenured) , University of Louisiana at Lafayette	<i>2024-Present</i>
Research Fellow , NASA Glenn Research Center	<i>Summer 2025</i>
Founder and CEO , Ferdynamics (small business)	<i>2025-Present</i>
Visiting Scholar , Center for Energy Studies, Baton Rouge- Louisiana	<i>Jan 2025- May 2025</i>
Assistant Professor– Tenure Track , University of Louisiana at Lafayette	<i>2018-2024</i>
Co-Founder and CEO , SP Tech LLC (small business)	<i>2020-2022</i>
Lecturer and Research Associate , Louisiana State University	<i>2017-2018</i>
Graduate Research Assistant , Center for Advanced Power Systems, Florida State University	<i>2014-2017</i>

EXTERNAL RESEARCH CONTRACTS & GRANTS

G32 <i>Prototyping a Strategic Energy Resilience Algorithm (SERA)</i> , Louisiana Board of Regents, PI, \$40,000	<i>June 2025- June 2026</i>
G31 <i>Resilient Control for CubeSat's Power System Through Digital Twinning</i> , Louisiana Space Grant Consortium, PI, \$20,000	<i>Aug 2025- May 2026</i>
G30 <i>Louisiana Port System Benchmarking and Preliminary Energy & Economic Assessment Planning Project</i> , Louisiana Department of Transportation and Development, CO-PI, \$2,999,870	<i>June 2025- June 2028</i>
G29 <i>Lunar Power System Digital Twinning For Surface Exploration Advancement</i> , National Science Foundation (NSF), PI, \$225,000	<i>May 2025- May 2027</i>
G28 <i>Solar-Aided UAV to Extend Flight Duration</i> , LaSPACE, PI, \$6,000	<i>Aug 2024- May 2025</i>
G27 <i>Modular Design and Scalability in Space-Based Power Systems through Digital Twinning</i> , NASA EPSCoR, PI, \$35,000	<i>Aug 2024- May 2025</i>
G26 <i>I-Corps: Translation Potential of an Energy Resilience Algorithm for Power Management</i> , National Science Foundation, PI, \$50,000	<i>May 2024- May 2025</i>

G25 *Hubs for Resilient Energy Operations (HERO)*, US Dept of Energy, Co-PI, \$56,420,000 Jun 2025- Jun 2033

G24 *Building Capacity at the University of Louisiana for Engineering Education Research: Preliminary Proposal to Bridge Senior S-STEM Scholars to the NSF Graduate Research Fellowship Program (GRFP)*, NSF, subaward from Virginia Polytechnic Institute & State University, Co-PI, \$15,000 Jul 2023- Jul 2024

G23 *LURA: Wireless Laser-Based Battery Charger*, NASA LaSPACE, PI, \$6,000 Aug 2023- Aug 2024

G22 *Smart Nanogrids for Safer Roads*, Louisiana Transportation Research Center, PI, \$30,000 July 2023- July 2024

G21 *Autonomous Health Management System for Space Power DC Nanogrids*, NASA EPSCoR, PI, \$35,000 Sep 2023- Mar 2025

G20 *Prototyping Advanced Control Schemes for Space Power Systems*, NASA EPSCoR, PI, \$38,041 Apr 2022- Jun 2023

G19 *ML-Enabled Piezoelectric-Driven Defect Detection in Additive Manufacturing*, Louisiana Board of Regents, PI, \$38,658 Jan 2022- Dec 2023

G18 *Improved Grid Resiliency Using Microgrids and Renewable Energy*, Louisiana Board of Regents, Co-PI, \$200,000 Jun 2022- Jun 2025

G17 *Distributed Control for DC Nanogrids*, Louisiana Board of Regents, PI, \$4,000 Sep 2022- May 2023

G16 *LURA: Resilient Charge Control for Battery Operated Rovers*, LaSPACE, PI, \$4,700 Aug 2022- Aug 2023

G15 *ML-Enabled Early Warning for Stringing in 3D Printing*, Louisiana Board of Regents, PI, \$5,000 Jan 2022- Dec 2022

G14 *Cleco Grid Test Facility: Investigating the Grid Impact of Emerging Technologies in Louisiana*, Cleco Power LLC, Co-PI, \$816,000 Oct 2021- Dec 2022

G13 *Digital Image Standards for Use with AI*, Entergy Services LLC, Co-PI, \$37,000 Aug 2021- Dec 2021

G12 *Secure and Efficient Power Delivery and Management in Modern Electric Power Grids*, Louisiana Board of Regents, PI, \$187,797 Jun 2021- Jun 2024

G11 *Smart Visual Inspection in Testing Polymers*, Louisiana Board of Regents, PI, \$5,000 Jun 2021- May 2022

G10 *An Embedded-base System for 3D Printing Visual Defect Detection with AI*, Louisiana Board of Regents, PI, \$5,000 Jun 2021- May 2022

G9 *Financial Support, Mentoring, and Career Development for Scholars in Energy Technologies*, National Science Foundation, PI, \$649,825 Jun 2021- Jun 2026

G8 *Investigation of Different Converter Topologies for Efficient Battery Charging in Space Power Systems*, LaSPACE, PI, \$6,000 Aug 2020- Aug 2021

G7 *AI Based Quality Assessment in Micro Tube Hydroforming*, Louisiana Board of Regents, PI, \$9,970 Sep 2020- Jun 2021

G6 *Application of Internet of Things (IoT) in Manufacturing Operations*, Louisiana Board of Regents, PI, \$5,000 Sep 2020- Jun 2021

- G5** *Smart Visual Inspection (SVI) in Manufacturing Operations*, Louisiana Board of Regents, PI, \$5,000 Sep 2020- Jun 2021
- G4** *Incorporation of Dual Active Bridge (DAB) Converters into Space Power Systems; A Simulation Study*, LaSPACE, PI, \$6,000 Aug 2020- Aug 2021
- G3** *Real-Time Quality Assessment for 3D Printers Using the Complexity Metric*, Louisiana Board of Regents, PI, \$9,925 Jan 2020- Jan 2021
- G2** *Quantification of Operation Resiliency in Space Power Systems*, LaSPACE, PI, \$6,000 Aug 2019- May 2020
- G1** *Efficient Battery Deployment in Space Power Systems*, LaSPACE, PI, \$6,000 Aug 2019- May 2020

PEER-REVIEWED JOURNALS

- (J25)** Kumar, Deepak Jain Veerendra, Kenneth A. Ritter III, Johnathan Richard Raush, Farzad Ferdowsi, Raju Gottumukkala, and Terrence Lynn Chambers. "Optimizing Photovoltaic Soiling Loss Predictions in Louisiana: A Comparative Study of Measured and Modeled Data Using a Novel Approach." *Progress in Photovoltaics: Research and Applications* 33, no. 4 (2025): 560-579.
- (J24)** Md Khairul Islam, Usama Aslam, Md. Zahirul I Khan, Shayan Ebrahimi, Farzad Ferdowsi, and Marc A. Carbone "Power System Digital Twins in Action: What We Learned and Where We Go Next" **Wiley- Digital Twins and Applications**, [Under review](#)
- (J23)** Mohammad Seyedi, Shayan Ebrahimi, Kouhyar Sheida, and Farzad Ferdowsi, "Digital Twin-Enabled Transfer Learning of RL-Driven Control for DC Microgrids" **Wiley- Digital Twins and Applications**, Sep 2025
- (J22)** Shayan Ebrahimi, Mohammad Seyedi, Farzad Ferdowsi, "Digital Twin-Driven Fault Detection and Classification in DC Converters" **IEEE Access**, Sep 2025
- (J21)** Kouhyar Sheida, Shayan Ebrahimi, Mohammad Seyedi, Farzad Ferdowsi "Resilience-Oriented Intelligent Load Management to Enhance Outage Response" **Springer Nature- Discover Energy**, [under review](#)
- (J20)** Sheida, Kouhyar, Mohammad Seyedi, Muhammad Ali Afridi, Farzad Ferdowsi, Mohammad J. Khattak, Vijaya K. Gopu, and Tyson Rupnow. "Resilient Reinforcement Learning for Voltage Control in an Islanded DC Microgrid Integrating Data-Driven Piezoelectric." *Machines* 12, no. 10 (2024): 694.
- (J19)** Ullah, SM Safayet, Samuel Yankson, Shayan Ebrahimi, Farzad Ferdowsi, and Terrence Chambers. "Smart investment framework for energy resilience: A case study of a campus microgrid research facility." *Next Energy* 4 (2024): 100131.
- (J18)** Mohammad Seyedi, Kouhyar Sheida, Savion Siner, Farzad Ferdowsi. "Enhanced Resilience in Battery Charging through Co-Simulation with RL " **T&F International Journal of Modelling and Simulation** (2024): [under review](#) .
- (J17)** Ullah, SM Safayet, Farzad Ferdowsi, and Terrence Chambers. "Cost-Aware Strategies for Enhancing Energy Resilience in Microgrids via Stationary and Mobile Resources." *Elsevier Journal of Safety Science and Resilience* (2024): .
- (J16)** Yankson, Samuel, Kouhyar Sheida, Farzad Ferdowsi, Terrence Chambers, and Shahab Mehraeen. "Strategic Investments for Enhancing Power System Resilience through Zonal Microgrids." *Energy Nexus* (2025): 100505.
- (J15)** Shayan Ebrahimi, Arvin Seyedi, SM Safayet Ullah, Farzad Ferdowsi. "Resilient Operations in Space with Digital Twin Integration for Solar PV and Energy Storage " *IEEE Open Access Journal of Power and Energy (OAJPE)* (2024)

- (J14) Shayan Ebrahimi, SM Safayet Ullah, Farzad Ferdowsi. "Adaptable Volt-VAR Control Digital Twinning for Smart Solar Inverters" *Renewable Energy Focus* (2023)
- (J13) Daniel Adeleye, Mohammad Seyedi, Farzad Ferdowsi, Jonathan Raush, and Ahmed Khattab. "ML-Enabled Piezoelectric-Driven Internal Defect Assessment in Metal Structures." *Machines* (2023)
- (J12) Mahazabeen, Maliha, Ali Jafarian Abianeh, Shayan Ebrahimi, Hisham Daoud, and Farzad Ferdowsi. "Enhancing EV Charger Resilience with Reinforcement Learning Aided Control." *e-Prime-Advances in Electrical Engineering, Electronics and Energy* (2023): 100276.
- (J11) Ullah, SM Safayet, Shayan Ebrahimi, Farzad Ferdowsi, and Masoud Barati. "Techno-Economic Impacts of Volt-VAR Control on the High Penetration of Solar PV Interconnection." *Cleaner Energy Systems* (2023): 100067.
- (J10) Veerendra Kumar, Deepak Jain, Lelia Deville, Kenneth A. Ritter III, Johnathan Richard Raush, Farzad Ferdowsi, Raju Gottumukkala, and Terrence Lynn Chambers. "Performance evaluation of 1.1 mw grid-connected solar photovoltaic power plant in louisiana." *Energies* 15, no. 9 (2022): 3420.
- (J9) Ferdowsi, Farzad, Hesam Vahedi, Ali Jafarian Abianeh, Chris S. Edrington, and Touria Elmezyani. "A data-driven real-time stability metric for SST-based microgrids." *International Journal of Electrical Power & Energy Systems* 134 (2022): 107397.
- (J8) Abianeh, Ali Jafarian, Yihao Wan, Farzad Ferdowsi, Nenad Mijatovic, and Tomislav Dragičević. "Vulnerability identification and remediation of fdi attacks in islanded dc microgrids using multiagent reinforcement learning." *IEEE Transactions on Power Electronics* 37, no. 6 (2021): 6359-6370.
- (J7) Abianeh, Ali Jafarian, Mohammad Mehdi Mardani, Farzad Ferdowsi, Raju Gottumukkala, and Tomislav Dragičević. "Cyber-resilient sliding-mode consensus secondary control scheme for islanded AC microgrids." *IEEE Transactions on Power Electronics* 37, no. 5 (2021): 6074-6089.
- (J6) Abianeh, Ali Jafarian, and Farzad Ferdowsi. "Sliding mode control enabled hybrid energy storage system for islanded dc microgrids with pulsing loads." *Sustainable Cities and Society* 73 (2021): 103117.
- (J5) Ferdowsi, Farzad, Matin Hosseini, and Majid Hosseini. "Classification of emergent dynamics in microgrids utilizing an entropic complexity-based feature extractor." *Data-Enabled Discovery and Applications* 4 (2020): 1-10.
- (J4) Ferdowsi, Farzad, Shahab Mehraeen, and Gregory B. Upton Jr. "Assessing distribution network sensitivity to voltage rise and flicker under high penetration of behind-the-meter solar." *Renewable Energy* 152 (2020): 1227-1240.
- (J3) Dabbaghjamesh, Morteza, Boyu Wang, Abdollah Kavousi-Fard, Shahab Mehraeen, Nikos D. Hatziargyriou, Dimitris N. Trakas, and Farzad Ferdowsi. "A novel two-stage multi-layer constrained spectral clustering strategy for intentional islanding of power grids." *IEEE Transactions on Power Delivery* 35, no. 2 (2019): 560-570.
- (J2) Ferdowsi, Farzad, Hesam Vahedi, Chris S. Edrington, and Touria El-Mezyani. "Dynamic behavioral observation in power systems utilizing real-time complexity computation." *IEEE Transactions on Smart Grid* 9, no. 6 (2017): 6008-6017.
- (J1) Sajjadi, Sayyid Mohssen, Ahmad Sadeghi Yazdankhah, and Farzad Ferdowsi. "A new gumption approach for economic dispatch problem with losses effect based on valve-point active power." *Electric Power Systems Research* 92 (2012): 81-86.

PATENTS

- (P3) Farzad Ferdowsi, Shayan Ebrahimi, and S.M. Safayet Ullah. "ADAPTABLE LOW-COST VOLT-VAR CONTROL DEVICE FOR SMART PHOTOVOLTAIC INVERTER" U.S. Patent 17/220,181, June 2023.

(P2) Abianeh, Ali Jafarian, and Farzad Ferdowsi. "Systems and methods for sliding mode control enabled hybrid energy storage." U.S. Patent 17/881,912, February 2023.

(P1) Abianeh, Ali Jafarian, and Farzad Ferdowsi. "SLIDING MODE CONSENSUS BASED CONTROL SCHEME." U.S. Patent 17/220,147, October 2022.

PEER-REVIEWED CONFERENCE PAPERS

(C37)Md Zahirul Islam khan, Md Khairul Islam, Farzad Ferdowsi, Terrence Chambers, Weather-Adaptive Solar Forecasting and Energy Management for Post-Disaster Resilience. North American Power Symposium (NAPS) 2025 (pp. 1-6). IEEE.

(C36)Usama Aslam, Md Khairul Islam, Farzad Ferdowsi, Terrence Chambers, A Cost-Resilience Trade-Off Framework for Optimizing Microgrid Resource Allocation, North American Power Symposium (NAPS) 2025 (pp. 1-6). IEEE.

(C35)Md Zahirul Islam khkan,Kouhyar Sheida, Farzad Ferdowsi, Terrence Chambers, Resilience-Oriented Grid Partitioning using Graph Theory and Load Balancing, North American Power Symposium (NAPS) 2025 (pp. 1-6). IEEE.

(C34)Usama Aslam, Kouhyar Sheida, Farzad Ferdowsi, Terrence Chambers, Balancing Resilience and Resource Allocation in Microgrids, North American Power Symposium (NAPS) 2025 (pp. 1-6). IEEE.

(C33)Mikaela Woodard, Md Khairul Islam, Farzad Ferdowsi, Marc carbone, Entropy-Based Feature Enhancement for Autonomous Fault Recognition in Space-Based Power Systems, North American Power Symposium (NAPS) 2025 (pp. 1-6). IEEE.

(C32)Ferdowsi, F., Mehraeen, S., Moghbeli, M. and Field, T., 2025, February. Efficient Battery Deployment in Power Distribution with Solar-Integrated Networks. In 2025 IEEE Texas Power and Energy Conference (TPEC) (pp. 1-6). IEEE.

(C31)Yankson, Samuel, Mohammad Seyedi, and Farzad Ferdowsi. "Impact of Grid Partitioning Into Microgrids on System's Criticality." In 2024 56th North American Power Symposium (NAPS), pp. 1-5. IEEE, 2024.

(C30)Sheida, Kouhyar, Mohammad Seyedi, Muhammad Ali Afridi, Farzad Ferdowsi, and Mohammad J. Khattak. "Resilient Control for Islanded Hybrid DC Microgrid Integrating Piezoelectric, Solar and Battery." In 2024 56th North American Power Symposium (NAPS), pp. 1-6. IEEE, 2024.

(C29)Seyedi, Mohammad, Kouhyar Sheida, Shayan Ebrahimi, and Farzad Ferdowsi. "Can DC Converters Achieve Resilient Voltage Regulation with Reinforcement Learning?." In 2024 56th North American Power Symposium (NAPS), pp. 1-6. IEEE, 2024.

(C28) Kouhyar Sheida , Mohammad Seyedi, Farzad Ferdowsi. "Adaptive Voltage and Frequency Regulation for Secondary Control via Reinforcement Learning for Islanded Microgrids." In 2024 IEEE Texas Power and Energy Conference (TPEC), pp. 1-6. IEEE, 2024.

(C27) Shayan Ebrahimi , S M Safayet Ullah, Samuel Yankson, Farzad Ferdowsi. "Advancing Fault Detection and Classification through High-Fidelity Digital Twin Simulation and AI." In 2024 IEEE Texas Power and Energy Conference (TPEC), pp. 1-6. IEEE, 2024.

(C26) Yankson, Samuel, SM Safayet Ullah, Shayan Ebrahimi, Farzad Ferdowsi, Kenneth A. Ritter, and Terrence Chambers. "Resilience-Enabling Load Flexibility and Resource Adequacy Investment in Microgrids." In 2023 IEEE Texas Power and Energy Conference (TPEC), pp. 1-6. IEEE, 2023.

(C25) Ebrahimi, Shayan, SM Safayet Ullah, and Farzad Ferdowsi. "Adaptable Low-Cost Volt-VAR Control for Smart PV Inverters." In 2022 North American Power Symposium (NAPS), pp. 1-5. IEEE, 2022.

- (C24) Mahazabeen, Maliha, Ali Jafarian Abianeh, Shayan Ebrahimi, and Farzad Ferdowsi. "Performance Evaluation of an RL-Aided DAB-Based EV Charger Control." In 2022 North American Power Symposium (NAPS), pp. 1-5. IEEE, 2022.
- (C23) Ferdowsi, Farzad, Heather Stone, G. H. Massiha, Terrence Chambers, Mehdi Mokhtari, and Afef Fekih. "Current Status of the Affirmative Sustainable Support for Scholars in Energy Technologies (ASSSET) and its Impact of Engineering Education." In 2022 ASEE Annual Conference & Exposition. 2022.
- (C22) Ebrahimi, Shayan, SM Safayet Ullah, Farzad Ferdowsi, and Masoud Barati. "Machine learning-aided anomaly detection for secure smartification of solar inverters." In 2022 IEEE Kansas Power and Energy Conference (KPEC), pp. 1-6. IEEE, 2022.
- (C21) Osunwoke, Ebuka B., SM Safayet Ullah, Ali Jafarian Abianeh, Farzad Ferdowsi, and Terrence L. Chambers. "A machine learning-enabled clustering approach for large-scale classification of solar data." In 2021 North American Power Symposium (NAPS), pp. 01-06. IEEE, 2021.
- (C20) Ullah, SM Safayet, Ali Jafarian Abianeh, Ebuka B. Osunwoke, and Farzad Ferdowsi. "Comparative analysis of volt-var control parameter settings of smart pv inverters: A case study." In 2021 North American Power Symposium (NAPS), pp. 01-06. IEEE, 2021.
- (C19) Moghassemi, Ali, Shayan Ebrahimi, and Farzad Ferdowsi. "A novel control scheme for transzsi-dvr to enhance power quality in solar integrated networks." In 2021 North American Power Symposium (NAPS), pp. 1-6. IEEE, 2021.
- (C18) Davis, Michael S., A. Jafarian, F. Ferdowsi, and Mohammad R. Madani. "Wind energy harvesting capability of a novel cascaded dual-rotor horizontal-axis wind turbine." In 2021 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME), pp. 01-05. IEEE, 2021.
- (C17) Ullah, SM Safayet, Ali Jafarian Abianeh, Farzad Ferdowsi, Kamal Basulaiman, and Masoud Barati. "Measurable challenges in smart grid cybersecurity enhancement: A brief review." In 2021 IEEE Green Technologies Conference (GreenTech), pp. 331-338. IEEE, 2021.
- (C16) Mohammadi, Saeed, Mohammad Reza Hesamzadeh, Ali Vafamehr, and Farzad Ferdowsi. "A review of machine learning applications in electricity market studies." In 2020 3rd International Colloquium on Intelligent Grid Metrology (SMAGRIMET), pp. 1-8. IEEE, 2020.
- (C15) Abianeh, Ali Jafarian, and Farzad Ferdowsi. "Real time analysis of a multi-agent based distributed control strategy for islanded ac microgrids." In 2020 clemson university power systems conference (PSC), pp. 1-6. IEEE, 2020.
- (C14) Abianeh, Ali Jafarian, Majid Hosseini, Matin Hosseini, Masoud Barati, and Farzad Ferdowsi. "Identification of small-signal dynamic faults in distribution systems utilizing intelligent classifiers." In 2020 IEEE Power Energy Society Innovative Smart Grid Technologies Conference (ISGT), pp. 1-5. IEEE, 2020.
- (C13) Ferdowsi, Farzad, Morteza Dabbaghjamesh, Shahab Mehraeen, and Mohammad Rastegar. "Optimal scheduling of reconfigurable hybrid AC/DC microgrid under DLR security constraint." In 2019 IEEE Green Technologies Conference (GreenTech), pp. 1-5. IEEE, 2019.
- (C12) Ferdowsi, Farzad, Masoud Barati, and Chris S. Edrington. "Real-time resiliency assessment of control systems in microgrids using the complexity metric." In 2019 IEEE Green Technologies Conference (GreenTech), pp. 1-5. IEEE, 2019.
- (C11) Ferdowsi, Farzad, Shahab Mehraeen, and Gregory B. Upton. "Integration of behind-the-meter solar into distribution feeders: The importance of time resolution on model results." In 2019 IEEE Green Technologies Conference (GreenTech), pp. 1-5. IEEE, 2019.

(C10) Afrasiabi, Shahabodin, Mousa Afrasiabi, Mohammad Rastegar, Mohammad Mohammadi, Benyamin Parang, and Farzad Ferdowsi. "Ensemble kalman filter based dynamic state estimation of PMSG-based wind turbine." In 2019 IEEE Texas Power and Energy Conference (TPEC), pp. 1-4. IEEE, 2019.

(C9) Sen, Sudipta, Shahab Mehraeen, and Farzad Ferdowsi. "Improving DC circuit breaker performance through an alternate commutating circuit." In 2018 IEEE Energy Conversion Congress and Exposition (ECCE), pp. 7135-7141. IEEE, 2018.

(C8) Dabbaghjamanesh, Morteza, Shahab Mehraeen, Abdollah Kavousi-Fard, and Farzad Ferdowsi. "A new efficient stochastic energy management technique for interconnected AC microgrids." In 2018 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5. IEEE, 2018.

(C7) Upton Jr, Gregory B., Farzad Ferdowsi, Amin Kargarian, and Shahab Mehraeen. "Integrating Storage into Rooftop Solar: An Economics and Engineering Approach." In Transforming Energy Markets, 41st IAAEE International Conference, Jun 10-13, 2018. International Association for Energy Economics, 2018.

(C6) Ferdowsi, Farzad, Hesam Vahedi, and Chris S. Edrington. "High impedance fault detection utilizing real-time complexity measurement." In 2017 IEEE Texas Power and Energy Conference (TPEC), pp. 1-5. IEEE, 2017.

(C5) Ferdowsi, Farzad, Chris S. Edrington, and Touria El-mezyani. "Real-time stability assessment utilizing non-linear time series analysis." In 2015 North American Power Symposium (NAPS), pp. 1-6. IEEE, 2015.

(C4) Ferdowsi, F., C. S. Edrington, and T. El-Mezyani. "Small signal stability assessment in power electronic-based components." In 2015 FREEDM Systems Center Annual Industry Review and Conference, Raleigh, NC. 2015.

(C3) Ferdowsi, F., C. S. Edrington, and T. El-Mezyani. "Small signal stability assessment in power electronic-based components." In 2015 FREEDM Systems Center Annual Industry Review and Conference, Raleigh, NC. 2015.

(C2) Ferdowsi, Farzad, Ahmad Sadeghi Yazdankhah, and Homayoon Rohani. "A combinative method to control output power fluctuations of large grid-connected photovoltaic systems." In 2014 14th International Conference on Environment and Electrical Engineering, pp. 260-264. IEEE, 2014.

(C1) Ferdowsi, Farzad, Ahmad Sadeghi Yazdankhah, and Bahareh Abbasi. "Declining power fluctuation velocity in large PV systems by optimal battery selection." In 2012 11th International Conference on Environment and Electrical Engineering, pp. 983-988. IEEE, 2012.

BOOK CHAPTERS

(B1) Mezyani, Touria El, Farzad Ferdowsi, Mohammad Seyedi, and Chris S. Edrington. "Quantifying Transient Dynamics for Microgrid's Inverter-Based Resources." In Microgrids and Virtual Power Plants, pp. 191-212. Singapore: Springer Nature Singapore, 2024.

WHITE PAPERS

(WP3) Ferdowsi, Farzad, Mohammad J. Khattak, Kouhyar Sheida, Mohammad Seyedi, Muhammad A. Afridi, and Vijaya Gopu. Smart Nanogrids for Safer Roads. No. FHWA/LA. 24/24-5TIRE. 2024.

(WP2) Upton Jr, Gregory B., Farzad Ferdowsi, Amin Kargarian, and Shahab Mehraeen. "The future of solar in louisiana." (2019).

(WP1) Ferdowsi, Farzad, Ahmad Sadeghi Yazdankhah, and Hossein Madadi Kojabadi. "An optimized combination of a large grid connected PV system along with battery cells and a diesel generator." arXiv preprint arXiv:1604.06691 (2016).

INVITED TALKS

- (T25) Power System Digital Twins in Practice: Key Takeaways and Upcoming Trends, Southeast Symposium on Contemporary Engineering Topics (SSCET), Oct 2025- Baton Rouge, LA
- (T24) Louisiana's Power Grid Transformation with Live Digital Twins, Louisiana Energy Research Symposium (LERS), Oct 2025- Baton Rouge, LA
- (T23) Smart Nanogrids for Safer Roads, 2025 Louisiana Transportation Conference, March 2025
- (T22) Mirroring the Power, Physics Dept. Seminar, Feb 2025
- (T21) Research (101): Intro to UG Research in Engineering, UL Lafayette's College of Engineering URAP- Oct 2024
- (T20) The Power of Power, Sep 2024, LS-LAMP General Meeting
- (T19) Understanding the NSF GRFP, Your Path to Research Excellence, Sep 2024, URAP- UL's College of Engineering
- (T18) Grid of the Future, March 2024, LS-LAMP General Meeting
- (T17) Digital Twinning in Energy Systems, Nov 2023, IEEE Lafayette Section
- (T16) Intro to Undergraduate Research in Engineering- Research 101 Workshop, UL Lafayette, Oct 2023.
- (T15) From Classroom to Innovation: The Role of UG Research in Shaping the Power and Energy Landscape, ADVANCE Faculty Summit, UL Lafayette Chapter, Aug 2023.
- (T14) New Trends in Power and Energy Systems, National Society of Black Engineers, Lafayette Chapter, Feb 2023.
- (T13) New Trends in Power and Energy Systems, EE Undergraduates Seminar, UL Lafayette, Feb 2023.
- (T12) Energy Resilience and Grid Modernization, Chemical Engineering Graduates Seminar, UL Lafayette, Feb 2023.
- (T11) Energy Resilience and Grid Modernization, EE Undergraduates Seminar, UL Lafayette, Oct 2022.
- (T10) Smart Grids Operation and Control, EE Undergraduates Seminar, UL Lafayette, March 2022.
- (T9) Power System Resilience- Current State and Future Challenges, EE Undergraduates Seminar, UL Lafayette, Spring 2022.
- (T8) Improving Accessibility, Diversity, Equity, and Inclusion through Open Educational Resources (OER), UL Lafayette, April 2022.
- (T7) Real-Time Stability Assessment in Modern Power Systems, IEEE Lafayette Section, Oct 2021.
- (T6) Microgrids Operation and Control, EE Undergraduates Seminar, UL Lafayette, Aug 2021.
- (T5) Best Practices for Obtaining SRE Funding and Implementing SRE Action, UL Lafayette, Aug 2021.
- (T4) Microgrids Operation and Control, EE Undergraduates Seminar, UL Lafayette, April 2021.
- (T3) Microgrids Operation and Control, EE Undergraduates Seminar, UL Lafayette, Sep 2020.
- (T2) Power System Resilience- Current State and Future Challenges, EE Undergraduates Seminar, UL Lafayette, Spring 2019.

(T1) Efficient Battery Deployment in Power Distribution Systems, Southeast Symposium on Contemporary Engineering Topics, Aug 2018, Huntsville, AL

SKILLS

Hardware: Real-time simulators (RIO boards, PXIe, Typhoon HIL), dSPACE control prototype module.

Software: MATLAB, OpenDSS, PLECS, PSCAD, RSCAD, LabVIEW, Typhoon.

technology: Digital twining, Power electronic-based components design, Applications of AI in power & energy systems, Programmable AC/DC sources/loads.

Misc: Academic research, teaching, training, consultation, LATEX typesetting, and publishing.

AWARDS AND ACHIEVEMENTS

A15 Mr. Mentor Award- UL Lafayette Electrical & Computer Engineering, Spring 2025

A14 UL Lafayette ADVANCE Challenge Coin Award, spring 2025

A13 UL Lafayette Outstanding Master's Mentor Award, spring 2025

A12 Student Technology Enhancement Program (STEP) Award (\$47,149)– Shared HPC Resources for Enhanced Research and Education – December 2024

A11 Leaf Award, UL Lafayette ADVANCE Office, Spring 2024 for excellence in mentoring undergraduate research

A10 Outstanding Undergraduate Research Mentor Award for the College of Engineering, Spring 2023

A9 Leaf Award, UL Lafayette ADVANCE Office, Spring 2023

A8 Rising Start Award, 2022– Intended to recognize junior faculty members showing great promise in scholarship in their respective colleges, the University of Louisiana at Lafayette

A7 STEP Award, UL Lafayette, 2022

A6 Certificate of Achievement in Sponsored Research, University of Louisiana at Lafayette, Intended to recognize those who have been awarded externally sponsored projects in an amount between \$500,000 and \$1,000,000 during the Fiscal Year 2021

A5 Certificate of appreciation and recognition, University of Louisiana at Lafayette, Student Center for Research, Creativity and Scholarship, 2021

A4 Educational Development Award, UL Lafayette's Academic Affairs 2020 & 2021

A3 Travel Award, UL Lafayette's Academic Affairs 2018, 2019, 2022, and 2023

A2 Best Reviewers Award, Journal of Modern Power Systems and Clean Energy, 2018 & 2019

A1 Certificate of service excellence, NSF FREEDM Program, Center for Advanced Power Systems, Florida State University, 2015

FACULTY LEARNING & WORKSHOP

L6 Pursuing "Jump Start Your Brain" program in Innovation Engineering to earn professional badges, enhancing skills in creative problem-solving and innovation methodologies- Fall 2025

L5 AI in Today's Classroom, Fall 2023 and Spring 2024, UL Lafayette, Faculty Learning Community (FLC)

L4 NATIONAL EFFECTIVE TEACHING INSTITUTE Workshop, summer 2023, Purdue University

L3 Course-based undergraduate research practices, UL Lafayette FLC 2023

L2 Educating for Equity, 2022, UL Lafayette FLC

L1 Improving Accessibility, Diversity, Equity, and Inclusion through Open Educational Resources (OER), UL Lafayette FLC

SYNERGISTIC ACTIVITIES

Professional Organization

- IEEE Senior Member since 2020, IEEE PES Chapter Chair, Lafayette Section since 2021
- Faculty Mentor, Cajun Advanced Picosatellite Experiment (CAPE), UL Lafayette, 2021-Present

Search Committee

- Faculty Search Committee, UL Lafayette’s Electrical & Computer Engineering Dept., Fall 2024
- Faculty Search Committee, UL Lafayette’s Electrical & Computer Engineering Dept., Fall 2023
- Faculty Search Committee, UL Lafayette’s Electrical & Computer Engineering Dept., Fall 2022

Professional Committee

- UL Lafayette’s College of Engineering representative on the LaCOEUR, 2023- present
- College of Engineering representative on Graduate Council, 2023-present
- Conference Co-organizer, Louisiana Energy Transition Research Symposium, Oct 2023

Review Panel

- Leaf Award Review Panel, UL Lafayette, Feb 2024
- National Science Foundation, April 2023, Jan 2024, May 2024, Jan 2025, Apr 2025 (GEO/RISE)
- Department of Energy, July 2024
- Oak Ridge Associated Universities– Fall 2023, and Spring 2025
- UL Lafayette’s ADVANCE office, Mini Research Grants, Dec 2023

Workshop Panel

- Distributed Control Techniques, IEEE Power Systems Conference, Clemson, SC, March 2020
- Best Practices for Obtaining SRE Funding and Implementing SRE Action, Fall 2021

Session Chair

- Smart Grid Committee, IEEE Green Technologies Conference, Lafayette, LA, April 2019
- Energy Storage Element and Electric Vehicles session, FREEDMannual industry review and conference, Jan 2015, North Carolina State University, Raleigh, NC.
- Load Analysis, Texas Power and Energy Conference, Feb 2019, College Station, TX.
- Best Practices for Obtaining SRE Funding and Implementing SRE Action, Fall 2021

Editor

- Associate Editor, Wiley Journal of Digital Twins and Application, 2024-present
- Associate Editor, Elsevier Journal of e-Prime - Advances in Electrical Engineering, Electronics and Energy , 2024-present
- Guest Editor, Special Issue, Machines, Applications of AI and Digital Twinning in Electric Machines, 2023-24

Peer-Review

- IEEE Transactions on Network Science and Engineering, –IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, Journal of Modern Power Systems and Clean Energy, IEEE Systems Journal, Applied Energy, MDPI Clean Technologies, MDPI Energies
- IEEE TPEC 2025, IEEE PESGM 2025
- IET International Conference on Digital Twins and Applications (DTA APAC 2026)

Academic Services

- College of Engineering Representative, University of Louisiana at Lafayette’s Faculty Senate
- Graduate Faculty, Full membership, UL Lafayette
- College of Engineering’s Representative, Appeal Committee, Graduate Council, UL Lafayette, Fall 2025- Fall 2026

MASTER’S AND PHD COMMITTEE

Chair

- (15) PhD Dissertation, Md Khairul Islam , Fall 2027 “Improving Energy Resilience through Improving Autonomy”
- (14) Master’s thesis, Savion Siner, Fall 2026 “Digital Twin Development of CubeSats”
- (13) Master’s thesis, Usama Aslam , Fall 2026, Post-Disaster Resilience-Oriented Planning for Micro-grids
- (12) Master’s thesis, Ali Khan, Summer 2025, Solar-Aided UAVs for Enhanced Flight Duration
- (11) Master’s thesis, Md Zahirul Islam Khan, Fall 2026, Resilience-Oriented Grid Partitioning
- (10) PhD Dissertation defense, Samuel Yankson, summer 2026 “, TBD”
- (9) PhD Dissertation defense, SM Safayet Ullah, April 2024 “, Cost-Aware Solar-Storage Integration for Enhanced Stability and Energy Resilience”
- (8) Master’s thesis defense, Kouhyar Sheida, Spring 2025 “, TBD”
- (7) Master’s thesis defense, Mohammad (Arvin) Seyedi, Fall 2024 “, AI-Driven Battery Control Enhancement”
- (6) PhD Dissertation defense, Shayan Ebrahimi, Fall 2024 “, High Fidelity Digital Twinning for Energy Resilience in Smart Grids”
- (5) Master’s thesis defense, Shayan Ebrahimi, Feb 2023 “, Novel Delta-Q Approach for Smart Solar Inverters”
- (4) Master’s thesis defense, Daniel Adeleye, Jan 2023 “, Piezoelectric-Driven Defect Detection in Additive Manufacturing”
- (3) PhD Dissertation defense, Ali Jafarian Abianeh, May 2022 “, Advanced Control Algorithms and Machine Learning Techniques to Enhance the Resilience of DC/AC Microgrids”
- (2) Master’s thesis defense, Maliha Mahazabeen, Dec 2022 “, leveraging Reinforcement Learning to Enhance E-Mobility”
- (1) Master’s thesis defense, S.M. Safayet Ullah, Nov 2021 “, Volt/Var Control Enhancement for Smart Solar Inverters”

Committee Member

- (9) Doctor of Education (EdD) dissertation, Sharon LaHood, 2025 , ”A Quantitative Approach to Examine Factors Influencing & Impacting U.S. Higher Education Safety”
- (8) PhD dissertation, Deepak Jain, 2025 , ”Estimation of Photovoltaic Soiling Losses in Louisiana”
- (7) PhD dissertation, Lelia Deville, 2024 , ”putting the heat on bypass diodes and solar cells”
- (6) PhD dissertation, Atiqur Rahaman, 2024 , ”Solar Plant Health Monitoring through DT”
- (5) PhD dissertation, Pablo Rojas, 2024 , ”Security in Smart Grids”
- (4) Master’s thesis defense, Sajid Hossain, Nov 2022 “, Energy Interacting Building.”
- (3) Master’s thesis defense, Ebuka B Osunwoke, Apr 2022 “, Automatic Building Energy Model Cali-

bration Using Metamodeling and Machine Learning”

(2) Master’s thesis defense, Grant Melancon, May 2022 “, Using Object Detection to Create an Image Filter for Utility Pole Inspections”

(1) Master’s thesis defense, Farhood Rasouli, Apr 2021 “, Analysis of CIGS-based Thin film Tandem Solar Cell with ZnS Buffer Layers”

COURSES TAUGHT

Louisiana State University

- Power System Analysis (UG/Graduate)
- AC/DC Microgrid Lab (UG)

University of Louisiana at Lafayette

- EECE570- Advanced Power Systems (Graduate)
- EECE447- Electric Machines and Power (UG)
- EECE450- Power Systems (UG/Graduate)
- EECE590- Special Topics in Power Systems (Graduate)
- EECE690- Advanced Topics in Energy Systems (Graduate)
- EECE 670- Special Topics in Power Systems (Graduate)
- ACSK120- Fundamentals of Energy Tech (UG)
- ACSK 120- Advancements in Energy Tech (UG)
- Senior Design Mentor (Distributed Control for DC Nanogrids– 2022-23)
- Senior Design Mentor (Wave2Power– 2023-24)
- Senior Design Mentor (Microgrid– 2023-24)
- Senior Design Mentor (Cajun Energy 4.0– 2024)
- Senior Design Mentor (Solar-Aided UAV– 2024-2025)
- Senior Design Mentor (Autonomy Enhancement for Space-Based Power Systems-2025-2026)