Ala A. Hussein, Ph.D.

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HIGHLIGHTS

- PhD in Electrical Engineering with global research, teaching, industry and consulting experience
- IEEE Senior Member
- Expert in energy systems, energy storage, battery charging, EVs, grid integration & solar energy
- Holder of 4 US patents and recipient of numerous research grants & excellence awards
- Author of 100+ journal & conference papers
- Ranked among Top 2% scientists worldwide (since 2019)
- Ranked among Top 1,000 Scholar Worldwide in EVs and Infrastructure (career-long)

EDUCATION

Ph.D.
- Electrical Engineering, University of Central Florida, Orlando, USA, August, 2011. Cumulative GPA: 3.94/4.00

M.S.
- Electrical Engineering, University of Central Florida, Orlando, USA, May, 2008. Cumulative GPA: 3.75/4.00

B.S.
- Electrical Engineering, Jordan University of Science and Technology, Irbid, Jordan, June, 2005

PROFESSIONAL EXPERIENCE

Jun. 2024 – present
Non-tenure Associate Professor
Electrical & Computer Engineering Dept., University of Central Florida, 4000 Central Florida Blvd, Orlando, FL 32816 USA
I write grant proposals, do research and (co)supervise graduate students.

Jan. 2020 – present
Associate Professor
Department of Electrical Engineering, Prince Mohammad Bin Fahd University, Al Khobar, Saudi Arabia
The Electrical Engineering program at Prince Mohammad Bin Fahd University is ABET-accredited. I teach undergraduate and graduate courses, supervise undergraduate and graduate students and serve in committees at the department, college and university levels.

Feb. 2018 – Jun. 2023
Research Associate
Florida Solar Energy Center, University of Central Florida, 4000 Central Florida Blvd, Orlando, FL 32816 USA
I wrote grant proposals, did research and (co)supervise graduate students.

Sep. 2016 – Dec. 2019
Assistant Professor (Sep. 2016 – Jun. 2019)
Associate Professor (Jun. 2019 – Dec. 2019)
Department of Electrical Power Engineering, Yarmouk University, Irbid, Jordan
I taught graduate/undergraduate courses, supervised undergraduate students and served in departmental committees.

Aug. 2012 – Aug. 2016 *Assistant Professor*
Department of Electrical Engineering, United Arab Emirates University, Al Ain, UAE
The Electrical Engineering program at United Arab Emirates University is ABET-accredited. During my employment, my responsibilities included writing grant proposals, teaching graduate/undergraduate courses, supervising graduate/undergraduate students and serving in departmental committees.

July 2014 – Aug. 2014 *Consultant*
Florida Power Electronics Center, University of Central Florida, 12201 Research Parkway, Orlando, FL 32826 USA
I developed interactive practical examples for Electrical Networks undergraduate course. I also helped in writing grant proposals and evaluating simulation tasks.

July 2011 – July 2012 *Battery Software Engineer*
Coda Automotive, 2340 S. Fairfax Ave, Los Angeles, CA 90016 USA
I led the development of advanced battery monitoring techniques for electric vehicles, focusing on improving battery performance, monitoring accuracy, and overall system reliability to support safe and efficient vehicle operation.

SCHOLARY WORK

U.S. Patents

1. **Ala A. Hussein**. "System and method for determining capacity of battery cell." U.S. Patent 12,038,482, July 16, 2024.
2. **Ala A. Hussein**, Abdulmajeed Al-Abdusalam, Hasan Ali Alseni, Meenhal Al-Najjar, Hani Quraish. "Method for recharging a vehicle battery." U.S. Patent 12,015,299, June 13, 2024.
3. **Ala A. Hussein**, Abdulmajeed Al-Abdusalam, Hasan Ali Alseni, Meenhal Al-Najjar, Hani Quraish. "Electric vehicle recharging circuit." U.S. Patent 12,003,131, June 4, 2024.
4. **Ala A. Hussein**, Abdulmajeed Al-Abdusalam, Hasan Ali Alseni, Meenhal Al-Najjar, Hani Quraish. "System and methods for battery recharging." U.S. Patent 11,996,724, May 28, 2024.

Book Chapters

1. **Ala A. Hussein** "Renewable Energy: Generation and Application", Materials Research Forum, Volume 43, print ISBN: 9781644903209, ePDF ISBN: 9781644903216, DOI: https://doi.or/10.21741/9781644903216, August, 2024.

Journal Publications

i) IEEE Transactions & Journals

1. Mostafa Aboelnaga, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "A Thermally-Aware, Uncertainty-Driven Kalman Filtering Framework for Li-ion Battery Capacity Measurement", IEEE Transactions on Instrumentation & Measurement, Volume 75, pp. 1-12, April, 2026.
2. Mohammad Rashwan, Karim Diab, Ahmed Elsergany, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "An Adaptive, Model-Robust, PV Maximum Power Point Tracking Algorithm", IEEE Access, Volume 13, pp. 76516-76527, May, 2025.
3. Ahmad Yasin, Mamoun F. Abdel-Hafez, Ali Wadi, **Ala A. Hussein** and Sherif Ismail "Improved Capacity Estimation Method for Li-ion Battery Cells Using a Modified Kalman Filter and a Cell Thermal Model", IEEE Transactions on Instrumentation and Measurement, Volume 74, March, 2025.
4. Sherif Ismail, Ali Wadi, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "A Noise-Resilient Observer for Enhanced Surface Temperature Estimation of Li-ion Battery Cells" IEEE Transactions on Transportation Electrification, Volume 11, Issue 1, pp. 2467-2476, February, 2025.

5. Mayuresh Savargaonkar, Isaiah Oyewole, Abdallah Chehade and **Ala A. Hussein** "Uncorrelated Sparse Autoencoder with Long Short-Term Memory for State-of-Charge Estimations in Lithium-ion Battery Cells", IEEE Transactions on Automation Science and Engineering, Volume 21, Issue 1, pp. 15-26, January, 2024.
6. Ali Wadi, Wasim Al-Masri, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "Probabilistic Voltage Fault Correction Method for Lithium-ion Batteries Using a Decentralized Cell Voltage Measurement Approach" IEEE Transactions on Vehicular Technology, Volume 72, Issue 11, pp. 14166-14178, November, 2023.
7. **Ala A. Hussein** "Sensorless Temperature Estimation for Li-ion Battery Cells: An Overview, Practical Considerations, Challenges and Future Trends", IEEE Transactions on Industry Applications, Volume 59, Issue 4, pp. 4598-4609, July/August, 2023.
8. Mahroo Sajid, **Ala A. Hussein**, Ali Wadi and Mamoun F. Abdel-Hafez "An Enhanced Fusion Algorithm with Empirical Thermoelectric Models for Sensorless Temperature Estimation of Li-ion Batteries", IEEE/ASME Transactions on Mechatronics, Volume 28, Issue 2, pp. 621-631, April 2023.
9. Ishaq Hafez, Ali Wadi, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "Variational Bayesian-Based Maximum Correntropy Cubature Kalman Filter Method for State-of-Charge Estimation of Li-ion Battery", IEEE Transactions on Vehicular Technology, Volume 72, Issue 3, pp. 3090-3104, March 2023.
10. Ali Wadi, Mamoun F. Abdel-Hafez, Hashim A. Hashim and **Ala A. Hussein** "An Invariant Method for Electric Vehicle Battery State-of-Charge Estimation Under Dynamic Drive Cycles", IEEE Access, Volume 11, p.p. 8663-8673, January 2023.
11. Mayuresh Savargaonkar, Abdallah A. Chehade and **Ala A. Hussein** "A Novel Neural Network with Gaussian Process Feedback for Modeling the State-of-Charge of Battery Cells", IEEE Transactions on Industry Applications, Volume 58, Issue 4, pp. 5340-5352, July/August 2022.
12. Ahmed M. Elsergany, **Ala A. Hussein**, Ali Wadi and Mamoun F. Abdel-Hafez "An Adaptive Autotuned Polynomial-Based Extended Kalman Filter for Sensorless Surface Temperature Estimation of Li-ion Battery Cells", IEEE Access, Volume 10, pp. 14038-14048, February 2022.
13. Abdallah A. Chehade and **Ala A. Hussein** "A Multi-Output Convolved Gaussian Process for Capacity Forecasting of Li-ion Battery Cells", IEEE Transactions on Power Electronics, Volume 37, Issue 1, pp. 896-909, January 2022.
14. Ali Wadi, Mamoun F. Abdel-Hafez, **Ala A. Hussein** and Fares Alkhawaja "Alleviating Dynamic Model Uncertainty Effects for Improved Battery SOC Estimation of EVs in Highly Dynamic Environments" IEEE Transactions on Vehicular Technology, Volume 70, Issue 7, pp. 6554-6566, July 2021.
15. **Ala A. Hussein** and Abdallah A. Chehade "Robust Artificial Neural Network-Based Models for Accurate Surface Temperature Estimation of Batteries", IEEE Transactions on Industry Applications, Volume 56, Issue 5, pp. 5269-5278, September/October 2020.
16. Abdallah A. Chehade and **Ala A. Hussein** "A Collaborative Gaussian Process Regression Model for Transfer Learning of Capacity Trends between Li-ion Battery Cells", IEEE Transactions on Vehicular Technology, Volume 69, Issue 9, pp. 9542-9552, September 2020.
17. **Ala A. Hussein** and Abbas A. Fardoun "An Adaptive Sensorless Measurement Technique for Internal Temperature of Li-ion Batteries Using Impedance Phase Spectroscopy", IEEE Transactions on Industry Applications, Volume 56, Issue 3, pp. 3043–3051, May/June 2020.
18. **Ala A. Hussein**, Xi Chen, Mahmood Alharbi, Anirudh Pise and Issa Batarseh "Design of a Grid-Tie Photovoltaic System with a Controlled Total Harmonic Distortion and Tri Maximum Power Point Tracking", IEEE Transactions on Power Electronics, Volume 35, Issue 5, pp. 4780-4790, May 2020.
19. Ali Wadi, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "Mitigating the Effect of Noise Uncertainty on the Online State-of-Charge Estimation of Li-Ion Battery Cells", IEEE Transactions on Vehicular Technology, Volume 68, Issue 9, pp. 8593-8600, September 2019.
20. **Ala A. Hussein** "Adaptive Artificial Neural Network Based Models for Instantaneous Power Estimation Enhancement in Electric Vehicles' Li-ion Batteries", IEEE Transactions on Industry Applications, Volume 55, Issue 1, pp. 840-849, January/February 2019.

21. Menatalla S. Eldin, **Ala A. Hussein** and Mamoun F. Abdel-Hafez "Improved Battery SOC Estimation Accuracy using a Modified UKF with an Adaptive Cell Model under Real EV Operating Conditions", IEEE Transactions on Transportation Electrification, Volume 4, Issue 2, pp. 408-417, June 2018.
22. **Ala A. Hussein**, Abbas A. Fardoun and Samantha S. Stephen "An Ultrafast Maximum Power Point Tracking Technique for Optimal Battery Charging", IEEE Transactions on Sustainable Energy, Volume 8, Issue 3, pp. 1321-1329, July 2017.
23. Menatalla S. Eldin, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "Enhancement in Li-ion Battery Cell State-of-Charge Estimation Under Uncertain Model Statistics", IEEE Transactions on Vehicular Technology, Volume 65, Issue 6, pp. 4608-4618, June 2016.
24. **Ala A. Hussein**, Abbas A. Fardoun and Samantha S. Stephen "An Online Frequency Tracking Algorithm using Terminal Voltage Spectroscopy for Battery Optimal Charging", IEEE Transactions on Sustainable Energy, Volume 7, Issue 1, pp. 32-40, January 2016.
25. **Ala A. Hussein** "Capacity Fade Estimation in Electric Vehicles Li-ion Batteries using Artificial Neural Networks", IEEE Transactions on Industry Applications, Volume 51, Issue 3, pp. 2321-2330, June 2015.
26. **Ala A. Hussein**, Nasser Kutkut, John Shen and Issa Batarseh "Distributed Battery Micro-storage Systems Design and Operation in a Deregulated Electricity Market", IEEE Transactions on Sustainable Energy, Volume 3, Issue 3, pp. 545-556, July 2012.
27. **Ala A. Hussein**, Issa Batarseh "A Review of Charging Algorithms for Nickel and Lithium Battery Chargers", IEEE Transactions on Vehicular Technology, Volume 60, Issue 3, pp. 830-838, March 2011.

ii) Other Journals

28. Nayeemuddin Mohammed, **Ala A. Hussein**, Hiren Mewada "Development of a Hybrid Approach for Real-Time SOC Estimation in Renewable Energy Systems", Journal of Engineering Research Express, June 2026.
29. Karim Diab, Ali Wadi, Mamoun F. Abdel-Hafez, **Ala A. Hussein** "Novel Gaussian Process Method for Photovoltaic Maximum Power Point Tracking", International Journal of Electrical Power & Energy Systems, Electrical Power and Energy Systems Volume 178, May, 2026.
30. Ali Wadi, Mamoun Abdel-Hafez, **Ala A. Hussein** "Computationally Efficient State-of-Charge Estimation in Li-ion Batteries Using Enhanced Dual-Kalman Filter", Energies 15, no. 10, p. 3717, May 2022.
31. **Ala A. Hussein**, Abbas Fardoun "Design Considerations and Performance Evaluation of Outdoor PV Battery Chargers", Elsevier Renewable Energy Journal, Volume 82, pp. 85-91, October, 2015.
32. **Ala A. Hussein** "Derivation and Comparison of Open-loop and Closed-loop Neural Network Battery State-of-Charge Estimators", Elsevier Energy Procedia Journal, 75 (2015), pp. 1856-1861.
33. **Ala A. Hussein** "Kalman Filters versus Neural Networks in Battery State-of-Charge Estimation: A Comparative Study", International Journal of Modern Nonlinear Theory and Applications, Volume 3, Issue 5, pp. 199-209, December, 2014.
34. Zahi M. Omer, Ahmed M. Alameri, Abbas A. Fardoun, **Ala A. Hussein** "Comparison of Discharge Performance of 12V/150Ah Gel and AGM Sealed Lead-acid Batteries in Stand-alone PV-based Systems in UAE" Renewable Energy & Power Quality Journal (RE&PQJ), ISSN: 2172-038 X, No. 12, April, 2014.

Conference Publications

i) IEEE Conferences

1. **Ala A. Hussein** "Data-Driven Capacity Estimation of Lithium-Ion Batteries via Temperature-Coupled Neural Network", 41st IEEE Applied Power Electronics Conference (APEC'26), San Antonio, Texas, USA, March 22-26, 2026.
2. **Ala A. Hussein**, Basil Alattar, Sherif Ismail, Ali Wadi and Mamoun F. Abdel-Hafez "Capacity Estimation of Li-ion Battery Cells Using Temperature-based Extended Kalman Filter", 2025 IEEE ECCE Conference, Philadelphia, Pennsylvania, USA, October 19-23, 2025.

3. **Ala A. Hussein** “Framework for Battery Depth-of-Discharge Optimization for Maximum Return in Electricity Markets”, 2024 IEEE ECCE Conference, Phoenix, Arizona, USA, October 20-24, 2024.
4. Meriam Chelbi, Wael Hassanieh, **Ala A. Hussein** and Abdallah Chehade “State-of-Health Forecasting for Battery Cells using Bayesian Inference and LSTM-based Change Point Detection”, 2023 IEEE ECCE Conference, Nashville, Tennessee, USA, October 29-November 2, 2023.
5. **Ala A. Hussein** “An Empirical Capacity Estimation Model for Lithium-ion Battery Cells Using Surface Temperature and Terminal Voltage Measurements”, 38th IEEE Applied Power Electronics Conference (APEC’23), Orlando, Florida, USA, March 19-23, 2023.
6. **Ala A. Hussein**, Abdullah Alhatlani, Sumana Ghosh and Issa Batarseh “A Neural Network Model for Maximum Power Estimation in Dual-Input Phase-Shifted LLC Converter”, 2023 IEEE Conference on Power Electronics and Renewable Energy (CPERE), Luxor, Egypt, February 19-21, 2023.
7. **Ala A. Hussein**, Abdullah Alhatlani, Sumana Ghosh and Issa Batarseh “Fit Model for Maximum Power Point Estimation in Dual-Input Phase-Shifted LLC Converter”, 2023 IEEE Conference on Power Electronics and Renewable Energy (CPERE), Luxor, Egypt, February 19-21, 2023.
8. Isaiah Oyewole, Abdallah A. Chehade and **Ala A. Hussein** “A Polynomial Regression Model with Bayesian Inference for State-of-Health Prediction of Li-ion Batteries”, 2022 IEEE/AIAA Transportation Electrification Conference and Electric Aircraft Technologies Symposium, Anaheim, CA, USA, June 14-17, 2022.
9. **Ala A. Hussein** “An Overview and Practical Considerations of Common Lithium-ion Battery Cell Models”, IEEE ISAECT Conference, Khobar, Saudi Arabia, December 6-8, 2021.
10. Ali Wadi, Mamoun F. Abdel-Hafez and **Ala A. Hussein** “Enhanced EKF Method for State-of-Charge Estimation of Electric Vehicles’ Li-ion Batteries under Highly Dynamic Power Profiles”, IEEE ISAECT Conference, Khobar, Saudi Arabia, December 6-8, 2021.
11. Mahroo Sajid, Ali Wadi, **Ala A. Hussein** and Mamoun F. Abdel-Hafez “An Extended Kalman Filter with Exponential Thermoelectric Measurement Model for Sensorless Surface Temperature Estimation of Li-ion Batteries”, 2021 IEEE ECCE Conference, Vancouver, BC, Canada, October 10-14, 2021.
12. **Ala A. Hussein** and Abbas A. Fardoun “An Effective Impedance-Phase Method for Sensorless Measurement of Li-ion Batteries’ Internal Temperature”, 2021 IEEE ECCE Conference, Vancouver, BC, Canada, October 10–14, 2021.
13. Abdallah A. Chehade and **Ala A. Hussein** “A Novel Neural Network with Gaussian Process Feedback (NNGP) for Modeling the State-of-Charge of Battery Cells”, 2020 IEEE ECCE Conference, Detroit, Michigan, USA, October 11-15, 2020.
14. **Ala A. Hussein**, Abdullah Alhatlani, Sumana Ghosh and Issa Batarseh “A Double-Loop Maximum Power Point Tracking Algorithm for Dual-Input Phase-Shifted LLC Converter”, 2020 IEEE ECCE Conference, Detroit, Michigan, USA, October 11-15, 2020.
15. Zunya Shi, Mayuresh Savargaonkar, **Ala A. Hussein** and Abdallah A. Chehade “A Novel Long Short-Term Memory Network for On-line State-of-Charge Estimation of Li-ion Battery Cells”, 2020 IEEE Transportation Electrification Conference & Expo, Chicago, Illinois, USA, June 24-26, 2020.
16. Mayuresh Savargaonkar, **Ala A. Hussein**, Abdallah Chehade and Zunya Shi “A Cycle-based Recurrent Neural Network for State-of-Charge Estimation”, 2020 IEEE Transportation Electrification Conference & Expo, Chicago, Illinois, USA, June 24-26, 2020.
17. Zakariya Dalala, Osama Saadeh and **Ala A. Hussein** “A Current Sensorless Coulomb-Counting Method for Enhanced Battery SOC Estimation Accuracy”, IEEE ECCE Conference, Baltimore, Maryland, USA, September 29-October 3, 2019.

18. Abdallah A. Chehade and **Ala A. Hussein** “A Multi-Output Convolved Gaussian Process Model for Capacity Estimation of Li-ion Battery Cells”, 2019 IEEE Transportation Electrification Conference & Expo, Novi, Michigan, USA, June 19-21, 2019.
19. Mahmood Alharbi, **Ala A. Hussein** and Issa Batarseh “Dual Optimization of an H-Bridge SPWM Microinverter by an Optimal Switching Frequency Tracking Technique”, IEEE IECON Conference, Washington, D.C., USA, October 21-23, 2018.
20. **Ala A. Hussein**, Anirudh Pise, Xi Chen and Issa Batarseh “Adaptive Dual Maximum Power Point Tracking Algorithm for PV DC-DC Conversion Stage”, IEEE ECCE Conference, pp. 7-11, Portland, Oregon, USA, September 23-27, 2018.
21. **Ala A. Hussein**, Anirudh Pise, Xi Chen and Issa Batarseh “Enhancement of Li-ion Battery Performance at Low Temperatures by DC-DC Converter Duty-cycle Autotuning”, IEEE ECCE Conference, pp. 2115-2119, Portland, Oregon, USA, September 23-27, 2018.
22. Xi Chen, Anirudh Pise, **Ala A. Hussein** and Issa Batarseh “Parameter Extraction of Ultracapacitor’s Equivalent Circuit Model Using a Genetic Algorithm Approach”, IEEE ECCE Conference, pp. 2493-2497, Portland, Oregon, USA, September 23-27, 2018.
23. **Ala A. Hussein** and Abbas A. Fardoun “An Adaptive Sensorless Measurement Technique for Internal Temperature of Li-ion Batteries Using Impedance Phase Spectroscopy”, IEEE ECCE Conference, Portland, Oregon, USA, pp. 3555-3559, September 23-27, 2018.
24. **Ala A. Hussein** “A Sensorless Surface Temperature Measurement Method for Batteries using Artificial Neural Networks”, IEEE ECCE Conference, pp. 3560-3564, Portland, Oregon, USA, September 23-27, 2018.
25. **Ala A. Hussein** “A Neural Network Based Method for Instantaneous Power Estimation in Electric Vehicles’ Li-Ion Batteries”, 32nd IEEE Applied Power Electronics Conference (APEC’17), Tampa, Florida, USA, March 26-30, 2017.
26. Hasna A. Seiari, **Ala A. Hussein** and H. H. Zeineldin "An Adaptive P-f Droop Approach for Micro-grid Transition Detection", IEEE Industrial Electronics Society's 18th International Conference on Industrial Technology (ICIT) , Toronto, Canada, March 22-25, 2017.
27. Samantha S. Stephen, Zahi M. Omer, Abbas A. Fardoun and **Ala A. Hussein** “Parameter Estimation of Valve Regulated Lead Acid Batteries Using Metaheuristic Evolutionary Algorithm”, 59th IEEE International Midwest Symposium on Circuits and Systems (MWSCAS), Abu Dhabi, United Arab Emirates, October 16-19, 2016.
28. **Ala A. Hussein** and Abbas A. Fardoun, Samantha S. Stephen “A Maximum Power Point Tracking Technique for Optimal Li-ion Battery Charging”, IEEE Power and Energy Society (PES) General Meeting, Boston, Massachusetts, USA, July 17-21, 2016.
29. Zahi M. Omer, Abbas A. Fardoun and **Ala A. Hussein** “Large Scale Photovoltaic Array Fault Diagnosis for Optimized Solar Cell Parameters Extracted by Heuristic Evolutionary Algorithm”, IEEE Power and Energy Society (PES) General Meeting, Boston, Massachusetts, USA, July 17-21, 2016.
30. **Ala A. Hussein**, Abbas A. Fardoun and Samantha S. Stephen “An On-line Tracking Algorithm for Li-ion Batteries’ Optimal Charging Frequency”, IEEE Power and Energy Society (PES) General Meeting, Denver, Colorado, USA, July 26-30, 2015.
31. **Ala A. Hussein** “Experimental Modeling and Analysis of Lithium-ion Battery Temperature Dependence”, 30th IEEE Applied Power Electronics Conference (APEC’15), pp. 1084-1088, Charlotte, North Carolina, USA, March 15-19, 2015.
32. **Ala A. Hussein** “Capacity Fade Estimation in Electric Vehicles Li-ion Batteries using Artificial Neural Networks”, IEEE Energy Conversion Congress & Expo (ECCE), Denver, Colorado, USA, pp. 677-681, September 15-19, 2013.
33. **Ala A. Hussein** and Issa Batarseh “Energy Management for a Grid-tied Photovoltaic-Wind-Storage System—Part II: Operation Strategy”, IEEE Power and Energy Society (PES) General Meeting, Vancouver, BC, Canada, July 21-25, 2013.

34. **Ala A. Hussein** and Issa Batarseh “An Overview of Generic Battery Models”, IEEE Power and Energy Society (PES) General Meeting, Detroit, Michigan, USA, July 24-28, 2011.
35. **Ala A. Hussein** and Issa Batarseh “State-of-Charge Estimation for a Single Lithium Battery Cell Using Extended Kalman Filter”, IEEE Power and Energy Society (PES) General Meeting, Detroit, Michigan, USA, July 24-28, 2011.
36. **Ala A. Hussein**, Nasser Kutkut and Issa Batarseh “A Hysteresis Model for a Lithium Battery Cell with Improved Transient Response”, 26th IEEE Applied Power Electronics Conference (APEC’11) Proceedings, pp. 1790-1794, Fort Worth, Texas, USA, March 6-10, 2011.
37. **Ala A. Hussein**, Souhib Harb, Nasser Kutkut, John Shen and Issa Batarseh “Design Considerations for Micro Storage Systems in Residential Applications”, 32nd IEEE International Telecommunications Energy Conference Proceedings, pp. 1-6, Orlando, Florida, USA, June, 6-10, 2010.
38. **Ala A. Hussein**, Michael Pepper, Issa Batarseh and Ahmad Harb “An Efficient Solar Charging Algorithm for Different Battery Chemistries”, 5th IEEE Vehicle Power and Propulsion Conference Proceedings, pp. 188-193, Dearborn, Michigan, USA, September, 7-11, 2009.

ii) Non-IEEE Conferences

39. **Ala A. Hussein**, Gaydaa Alzohbi “Unequally Distributed Pumped Micro-storage Hydropower System”, International Conference on Energy Futures, Ifrane, Morocco, February 6-5, 2026.
40. Nayeemuddin Mohammed, **Ala A. Hussein**, Hiren Mewada “Data Driven ExtraTrees-Based State-of-Charge Estimation for New and Aged Li-ion Battery Cells”, International Conference on Energy Futures, Ifrane, Morocco, February 6-5, 2026.
41. Mohammad Rashwan, Karim Diab, Ahmed Elsergany, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "Adaptive Choice of Process Noise Covariance in Extended Kalman Filter for Photovoltaic for Maximum Power Point Tracking", UAE Graduate Student Research Conference (UAEGSRC), American University of Sharjah, University City, Sharjah, United Arab Emirates, April 12th, 2025.
42. Karim Diab, Mohammad Rashwan, Ahmed Elsergany, Mamoun F. Abdel-Hafez and **Ala A. Hussein** "Photovoltaic Maximum Power Point Tracking Using Adaptive and Robust Kalman Filters", UAE Graduate Student Research Conference (UAEGSRC), American University of Sharjah, University City, Sharjah, United Arab Emirates, April 12th, 2025.
43. Ghaya Almoghira and **Ala A. Hussein** "A Review of Solar Energy Applications in Transportation Sector", The 6th International Symposium on Advanced Electrical & Communication Technologies, Khobar, Saudi Arabia, December 3-5, 2024.
44. Lamya Al Qahtani, Munirah Aldossary, Fadia El Hamami and **Ala A. Hussein** "Battery Depth-of-Discharge Optimization for Maximized Return in Electricity Markets", Proceedings of the 10th World Congress on New Technologies (NewTech'24), Barcelona, Spain, August 25-27, 2024.
45. Abdullah Altelmessani, Abdulqader Aljaber, Turki Altuwairqi and **Ala A. Hussein** "Multiport Universal Solar Power Bank", International Conference on Renewable Energy Generation and Application (ICREGA’24), Khobar, Saudi Arabia, April 21-24, 2024.
46. Ahmed Alturki, Yahya Almahzari, Majid Alblooshi, Faris Alghamdi, Ahmed A. Hussain and **Ala A. Hussein** "Solar Energy Powered Smart Water Heating System", International Conference on Renewable Energy Generation and Application (ICREGA’24), Khobar, Saudi Arabia, April 21-24, 2024.
47. Samantha S. Stephen, Zahi M. Omer, Abbas A. Fardoun, **Ala A. Hussein** and Hussain Shareef "Online Battery Parameters Estimation Using Two Metaheuristic Evolutionary Algorithms", Proceedings of the 5th International Conference on Emerging and Renewable Energy: Generation and Automation (ICREGA’17), Belfort, France, July 4-6, 2017.
48. Mumin Abu Hassan, Nayef Hailat, Noor Badawi and **Ala A. Hussein** "A Wireless Power Transfer System with Optimized Circuit Parameters using Genetic Algorithm", 8th International Renewable Energy Congress, Dead Sea, Jordan, March 21-23, 2017.

49. Ahmad Musamih, Ahmad Al-Bloushi, Ahmed Al-Shemeili, Abdulaziz Al-Fili and **Ala A. Hussien** "Design of a Universal Wireless Battery Charger", 18th International Conference on Power and Energy Systems Engineering, Dubai, United Arab Emirates, January 28-29, 2016.
50. Alia Al-Nuaimi, Ayesha Al-Aberi, Faiza Al-Marzouqi, Shaikha Al-Yahyaee and **Ala A. Hussein** "A Photovoltaic Micro-Storage System for Residential Applications", 18th International Conference on Power and Energy Systems Engineering, Dubai, United Arab Emirates, January 28-29, 2016.
51. Abdulla M. Al-Bdwawi, Hamed I. Al-Ahbabi, Shehab A. Al-Shamsi and **Ala A. Hussein** "Modular Photovoltaic Charging Station for UAE University Golf Carts", 7th International Conference on Applied Energy, Abu Dhabi, United Arab Emirates, March 28-31, 2015.
52. **Ala A. Hussein** "Derivation and Comparison of Open-loop and Closed-loop Neural Network Battery State-of-Charge Estimators", 7th International Conference on Applied Energy, Abu Dhabi, United Arab Emirates, March 28-31, 2015.
53. Zahi M. Omer, Ahmed M. Al-Ameri, Abbas A. Fardoun and **Ala A. Hussein** "An Experimental Study on Pulse Discharge of Gel and AGM Lead-acid Batteries by Varying the Frequency", UAE Graduate Student Research Conference (UAE GSRC'15), Abu Dhabi, United Arab Emirates, March 22-24, 2015.
54. Zahi M. Omer, Ahmed M. Al-Ameri, Abbas A. Fardoun and **Ala A. Hussein** "Comparison of Discharge Performance of 12V/150Ah Gel and AGM Sealed Lead-acid Batteries in Stand-alone PV-based Systems in UAE", Proceedings of the International Conference of Renewable Energies and Power Quality (ICREPQ'14), Córdoba, Spain, April 7-10, 2014.
55. Alaa N. Hail, Boshra, Boshra A. Al-Shujaa, Waad K. Al-Beiey, **Ala A. Hussein** and Abbas A. Fardoun "Design Considerations of Digitally Controlled PV Battery Chargers", Proceedings of the 3rd International Conference on Renewable Energy Generation and Application (ICREGA'14), pp. 655-665, Al Ain, United Arab Emirates, March 2-5, 2014.
56. **Ala A. Hussein** and Issa Batarseh "Energy Management for a Grid-tied Photovoltaic-Wind-Storage System—Part I: Forecasting Models", Proceedings of the 3rd International Conference on Renewable Energy Generation and Application (ICREGA'14), pp. 405-415, Al Ain, United Arab Emirates, March 2-5, 2014.
57. **Ala A. Hussein**, Michael Pepper, Issa Batarseh and Ahmad Harb "Solar Charging Considerations for Common Battery Chemistries", International Conference on Modeling, Simulation and Visualization Methods Proceedings, pp. 249-253, Las Vegas, Nevada, USA, July 12-17, 2009.

INVITED PRESENTATIONS AND WORKSHOPS

- "Role of Power Electronics in Energy Conversion Systems", Guest Speaker, PMU IEEE Student Branch, Al Khobar, KSA, July 5, 2021.
- "Role of Power Electronics in Energy Conversion Systems", Free Community Professional Webinar Series, College of Engineering, Prince Mohammad Bin Fahd University, Al Khobar, KSA, June 15, 2020.
- Invited Distinguished Speaker, IEEE International Conference & Exhibition on Energy Conservation and Efficiency (ICECE), University of Engineering and Technology, Lahore, Pakistan, Oct 16 – 17, 2018.
- Erasmus+ workshop (EU programme for education, training, youth and sport), Le Royal Hotel, Amman, Jordan, October 26th, 2016.
- ADRAC International R&D Academic Conference & Exhibition, Abu Dhabi, United Arab Emirates, February 23 – 27, 2014.
- ADRAC Research and Academics Workshop, Abu Dhabi, United Arab Emirates, February 26 – 28, 2013.
- U.S. NSF-sponsored workshop on Energy Education and Research: Addressing the Need for Industry, Abu Dhabi, United Arab Emirates, November 25 – 28, 2012.

- "Design Considerations for Micro-storage Systems in Residential Applications", 2nd FESC Summit, University of Central Florida, Orlando, Florida, September 28th, 2010.
- "Power Conversion Technologies for Photovoltaic Applications", U.S. NSF-sponsored International Research Experience for Students (IRES) Program, Jordan University of Science and Technology, Jordan, March 6th, 2008.

PROFESSIONAL ACTIVITIES

- Session Chair, 2024 IEEE Energy Conversion Congress & Exposition (ECCE) Conference, Phoenix, Arizona, October 20-24, 2024.
- Member, National Academy of Inventors, since June 2024.
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE), since August 2018.
- Technical Program Chair, 7th International Conference on Renewable Energy Generation and Application, Khobar, Saudi Arabia, April 21 – 24, 2024.
- IEEE Power Electronics Society Technical Committee on Energy Access and Off-Grid Systems, September 2023 – present.
- Technical Program Chair, 4th International Symposium on Advanced Electrical & Communication Technologies (ISAECT), Khobar, Saudi Arabia, December 6-8, 2021.
- Member, Local Organizing Committee, 2020 PMU International Conference on Industrial Revolution 4.0 in Computing, Mobility and Manufacturing, Al Khobar, KSA, December 8-10, 2020.
- Session Chair, International Symposium on Advanced Electrical and Communication Technologies (ISAECT2020), Kenitra, Morocco, November 25-27, 2020.
- Member, Technical Program Committee, International Symposium on Advanced Electrical and Communication Technologies (ISAECT2020), Kenitra, Morocco, November 25-27, 2020.
- Member, Editorial Board of International Journal of Power and Renewable Energy Systems (IJPRES), 2013-2016.
- Member, International Program Committee, the 9th International Renewable Energy Congress, Hammamet, Tunisia, March 20-22, 2018.
- Member, Steering Committee, the 8th International Renewable Energy Congress, Amman, Jordan, March 21-23, 2017.
- Member, Organizing Committee, 3rd International Conference on Renewable Energy Generation and Applications (ICREGA'14), Al Ain, UAE, March 2-5, 2014.
- Member, Technical Program Committee, 9th Jordan International Electrical and Electronics Engineering Conference (JIEEEC'15).
- Reviewer, Nature Journal (since 2023).
- Reviewer, IEEE Transactions on Power Electronics (since 2010).
- Reviewer, IEEE Transactions on Vehicular Technology (since 2010).
- Reviewer, IEEE Transactions on Industrial Electronics (since 2012).
- Reviewer, IEEE Transactions on Sustainable Energy (since 2012).
- Reviewer, IEEE Transactions on Energy Conversion (since 2015).
- Reviewer, IEEE Transactions on Transportation Electrification (since 2018).
- Reviewer, IEEE Transactions on Instrumentation and Measurements (since 2018).
- Reviewer, IEEE Transactions on Industrial Informatics (since 2018).
- Reviewer, IEEE Access (since 2019).
- Reviewer, Elsevier Applied Energy Journal (since 2016).
- Reviewer, Energies Journal (since 2012).
- Reviewer, Elsevier Renewable Energy Journal (since 2012).
- Reviewer, International Journal of Power and Renewable Energy Systems (since 2014).
- Reviewer, 2020 6th International Conference on Electric Power and Energy Conversion Systems (EPECS'20).

- Reviewer, IEEE 7th International Symposium on Power Electronics for Distributed Generation Systems (PEDG'16).
- Reviewer, 2021 IEEE Energy Conversion Congress and Exposition (ECCE'21).
- Reviewer, 2016 IEEE Energy Conversion Congress and Exposition (ECCE'16).
- Reviewer, 2016 IEEE Transportation Electrification Conference and Expo (ITEC'16).
- Reviewer, 2015 IEEE Power and Energy Society (PES) General Meeting (PES-GM'15).
- Reviewer, 6th International Renewable Energy Congress (IREC'15).
- Reviewer, 40th Annual Conference of the IEEE Industrial Electronics Society (IECON'2014).
- Reviewer, 3rd International Conference on Renewable Energy Generation and Application (ICREGA'14).
- Session Chair, 2015 UAEU Annual Research and Innovation Conference, Al Ain, United Arab Emirates, Nov. 24-25, 2015.
- Session Chair, 3rd International Conference on Renewable Energy Generation and Application (ICREGA'14), March 2-5, 2014.
- Judge, Students' Posters Competition, IEEE PES General Meeting, Vancouver, Canada, July 21-25, 2013.
- Volunteer, Florida Energy Systems Consortium Summit, Orlando, USA, Sep. 28-29, 2010.
- Volunteer, IEEE Power Electronics Specialist Conference, Orlando, USA, June 17-21, 2007.

SERVICE AND DEPARTMENT / COLLEGE COMMITTEES

- Edited a book on Renewable Energy: Generation and Application, Materials Research Forum, July 2024.
- Member, department ABET accreditation committee, Prince Mohammad Bin Fahd University (Jan. 2020-present).
- Member, department NCAAA accreditation committee, Prince Mohammad Bin Fahd University (Jan. 2020-present).
- Member, various department and college Promotion Committees, Prince Mohammad Bin Fahd University (May 2022-present).
- Member, Research and Innovation Committee, Prince Mohammad Bin Fahd University (Mar. 2021-present).
- Member, ABET Accreditation Committee, Yarmouk University College of Engineering (Sep. 2018-Dec. 2019).
- Member, Course Equivalency Committee, Yarmouk University Electrical Power Engineering Department (Sep. 2016-Dec. 2019)
- Head, UAEU Electrical Engineering Departmental Publicity Committee (2013-2016).
- Member, Search Committee, Power Systems Position (2014-2015)
- Member, UAEU College of Engineering Alumni Affairs Committee (2013-2014).
- Member, UAEU Electrical Engineering Departmental Research Committee (2014-2016).
- Member, UAEU 7th, 8th, and 9th Electrical Engineering Students Activity Day Committee (2013, 2014 and 2015).
- Member, UAEU Electrical Engineering Departmental Curriculum Committee (2012-2014).
- Member, UAEU Electrical Engineering Department Teaching Load Committee (2013-2014).
- Member, a number of Master's thesis defense committees at United Arab Emirates University, Yarmouk University, German Jordanian University and Princess Sumaya University for Technology.

HONORS AND CERTIFICATES

- ITEC+2022 Best Paper Award, 2022 IEEE/AIAA Transportation Electrification Conference, Anaheim, California, June 2022.
- Ranked among the Top 2% scientists worldwide (since 2019).

- Ranked among Top 1,000 Scholar Worldwide in EVs and Infrastructure (career-long).
- Several Research Excellence awards.
- IEEE Continuing Education Certificate for attending the webinar “Transformative Role of Photovoltaics in the Transportation Sector” (awarded in November 2017).
- Recipient of a full-time Doctorate scholarship from the School of Electrical Engineering and Computer Science at University of Central Florida (2008-2011).
- Recipient of a full-time Master’s scholarship from the School of Electrical Engineering and Computer Science at University of Central Florida (2007-2008).
- “Graduate Teaching Assistant (GTA) Certificate”: A certificate awarded after fulfilling the requirement of a 12-week training program at the Faculty Center at the University of Central Florida (awarded in May 2010).