

Ala A. Hussein, Ph.D.

Department of Electrical Engineering, College of Engineering,
United Arab Emirates University, Al Ain, United Arab Emirates, P.O. Box 15551.
Contact: +971-50-139-5733, ala.hussein@uaeu.ac.ae

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.

EXPERIENCE

- Aug. 2012 – present **Assistant Professor, Department of Electrical Engineering, United Arab Emirates University (UAEU), Al-Ain, UAE:** Since joining UAEU, I have taught undergraduate courses; have supervised and co-supervised ten undergraduate and graduate students; have won three research grants with total fund +\$166k.
- July 2011 – July 2012 **Battery Control Research Engineer, Coda Automotive Inc. (previously EnergyCS), Los Angeles, USA:** I led the company's research efforts in battery modeling and control for electric vehicles (EVs). I was the lead in developing advanced State-of-Charge and State-of-Health estimation techniques to improve the reliability of EVs batteries.
- Aug. 2006 – July 2011 **Graduate Research Assistant, University of Central Florida, Orlando, USA:** I was involved in various research projects funded by U.S. agencies such as the U.S. Department of Energy (DOE), Florida Energy Systems Consortium (FESC) and the U.S. National Science Foundation (NSF) that mainly focused on energy management of alternative energy systems.

COURSES TAUGHT (at UAEU)

- ELEC 320 (Electric Circuit II): Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014.
- ELEC 372 (Electromechanical Devices): Spring 2014.
- ELEC 472 (Power Systems): Spring 2013, Fall 2013, Fall 2014.
- ELEC 592 (Power Electronics): Fall 2012.
- ELEC 629 (Advanced Topics in Power Engineering-Smart Grids): Spring 2015.

REFEREED PUBLICATIONS

Journal Publications

1. **Ala A. Hussein** "Capacity Fade Estimation for Electric Vehicles Li-ion Batteries using Artificial Neural Networks", IEEE Transactions on Industry Applications, October, 2014. (*accepted*)
2. **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, December, 2014.
3. **Ala A. Hussein**, Abbas Fardoun "Design Considerations and Performance Evaluation of Outdoor PV Battery Chargers", Elsevier Journal on Renewable Energy, September, 2014.
4. 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,
5. **Ala A. Hussein**, Nasser Kutkut, John Shen, 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.
6. **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.

Conference Publications

1. Ala A. Hussein "Experimental Modeling and Analysis of Lithium-ion Battery Temperature Dependence", submitted to APEC'15, 2015.
2. 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", Proceedings of the International Conference of Renewable Energies and Power Quality (ICREPQ'14), Córdoba, Spain, April 7-10, 2014.
3. Alaa N. Hail, Boshra, Boshra A. Alshujaa, Waad K. Albeiey, **Ala A. Hussein**, 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, UAE, March 2-5, 2014.
4. **Ala A. Hussein**, 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, UAE, March 2-5, 2014.
5. **Ala A. Hussein** "Capacity Fade Estimation for Electric Vehicles Li-ion Batteries using Artificial Neural Networks", presented at the IEEE Energy Conversion Congress & Expo (ECCE), Denver, Colorado, pp. 677-681, September 15-19, 2013.
6. **Ala A. Hussein**, Issa Batarseh "Energy Management for a Grid-tied Photovoltaic-Wind-Storage System—Part II: Operation Strategy", presented at the IEEE Power and Energy Society (PES) General Meeting, Vancouver, British Columbia, Canada, July 21-25, 2013.
7. **Ala A. Hussein**, Issa Batarseh "An Overview of Generic Battery Models", IEEE Power and Energy Society (PES) General Meeting, Detroit, Michigan, July 24-28, 2011.
8. **Ala A. Hussein**, 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, July 24-28, 2011.

9. **Ala A. Hussein**, Nasser Kutkut, Issa Batarseh “A Hysteresis Model for a Lithium Battery Cell with Improved Transient Response”, 26th IEEE Applied Power Electronics Conference (APEC) Proceedings, pp. 1790-1794, Fort Worth, Texas, March 6-10, 2011.
10. **Ala A. Hussein**, Souhib Harb, Nasser Kutkut, John Shen, Issa Batarseh “Design Considerations for Micro Storage Systems in Residential Applications”, 32nd IEEE International Telecommunications Energy Conference Proceedings, pp. 1-6, Orlando, Florida, June, 6-10, 2010.
11. **Ala A. Hussein**, Michael Pepper, Issa Batarseh, Ahmad Harb “An Efficient Solar Charging Algorithm for Different Battery Chemistries”, 5th IEEE Vehicle Power and Propulsion Conference Proceedings, pp. 188-193, Dearborn, Michigan, September, 7-11, 2009.
12. **Ala A. Hussein**, Michael Pepper, Issa Batarseh, Ahmad Harb “Solar Charging Considerations for Common Battery Chemistries”, International Conference on Modeling, Simulation and Visualization Methods Proceedings, pp. 249-253, Las Vegas, Nevada, July 12-17, 2009.

RESEARCH GRANTS

1. (Co-PI) Internal Research Grant (UAEU Research Office): *Evaluation of Effect of Oil and Gas Industrial Environments on Efficiency and Life Span of PVs and Batteries*; **120,000 AED (equivalent to \$32,700)**, June 2014-June 2016.
2. (PI) Startup Research Grant (UAEU Research Office): *Improving the Cycle-life and Cost-efficiency of Backup Batteries in Stand-alone Photovoltaic Applications in UAE*; **460,000 AED (equivalent to \$124,200)**, January 2014-December 2015.
3. (PI) Seed Grant (UAEU Research Office): *Solar Battery Chargers with Effective State-of-Charge Estimation*; **30,000 AED (equivalent to \$8,100)**, January 2013-December 2013.

SUPERVISION EXPERIENCE

Research Assistants

1. Samantha Stephan (Fall 2014 - present).
Project: Improving the Cycle-life and Cost-efficiency of Backup Batteries in Stand-alone Photovoltaic Applications in UAE.

Master Students (2 students):

1. *Samah M. Ahmed* (Fall 2013-Fall 2014).
Thesis Topic: A Study of Discharging Techniques for High Capacity Gel and AGM Lead-acid Batteries
2. *Abdurrahman I. Uddin* (Fall 2012-Spring 2013).

Undergraduate Students (9 students):

1. *Alaa N. Hail, Waad K. Albeiey, Boshra A. Alshujaa*.
Graduation Project: Digitally Controlled Solar Battery Charger with an Advanced State-of-Charge Estimation Capability.
Spring 2013-Fall 2013.
2. *Abdullah M. Albdwawi, Hamed I. Ahbabi, Shehab A. Alshamesi*.
Graduation Project: Solar Charging Station for UAEU Golf Carts.
Spring 2014-Fall 2014.
3. *Zahi M. Omer, Ahmed M. Alameri, Najm Krknawi*.
Research Project: Improving the Cycle-life and Cost-efficiency of Backup Batteries in Stand-alone Photovoltaic Applications in UAE.
Performed battery testing and simulation tasks.
Fall 2013-present.

WORKSHOPS AND PRESENTATIONS

- ADRAC International R&D Academic Conference & Exhibition, Abu Dhabi, United Arab Emirates, February 23rd-27th, 2014.
- ADRAC Research and Academics Workshop, Abu Dhabi, United Arab Emirates, February 26th-28th, 2013.
- U.S. NSF-sponsored workshop on Energy Education and Research: Addressing the Need for Industry, Abu Dhabi, United Arab Emirates, November 25th-28th, 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: International Research between U.S. and Jordanian Students”, International Research Experience for Students (IRES) Program, Jordan University of Science and Technology, Jordan, March 6th, 2008.

PROFESSIONAL ACTIVITIES

- Member, Editorial Board of International Journal of Power and Renewable Energy Systems (IJPRES), 2013-present.
- Member, Organizing Committee, 3rd International Conference on Renewable Energy Generation and Applications (ICREGA’14), Al Ain, UAE, March 2-5, 2014.
- Member, Institute of Electrical and Electronics Engineers (IEEE).
- Member, Jordan Engineers Association (JEA).
- Reviewer, IEEE Transaction on Sustainable Energy (since 2012).
- Reviewer, IEEE Transaction on Vehicular Technology (since 2010).
- Reviewer, IEEE Transaction on Power Electronics (since 2010).
- Reviewer, IEEE Transaction on Industrial Electronics (since 2012).
- Reviewer, Energies Journal (since 2012).
- Reviewer, Elsevier Renewable Energy Journal (since 2012).
- Reviewer, International Journal of Power and Renewable Energy Systems (since 2014).
- 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, 3rd International Conference on Renewable Energy Generation and Application (ICREGA’14).
- Judge, Students’ Posters Competition, IEEE PES General Meeting, Vancouver, Canada, July, 2013.
- Volunteer, Florida Energy Systems Consortium Summit, Orlando, USA, Sept. 28-29, 2010.
- Volunteer, IEEE Power Electronics Specialist Conference, Orlando, USA, June 17-21, 2007.

DEPARTMENT / COLLEGE COMMITTEES (at UAEU)

- Head, UAEU Electrical Engineering Departmental Publicity Committee (2013-present).
- Member, UAEU College of Engineering Alumni Affairs Committee (2013-present).
- Member, UAEU Electrical Engineering Department Teaching Load Committee (2013-present).
- Member, UAEU 7th and 8th Electrical Engineering Students Activity Day Committee (2013 and 2014).
- Member, UAEU Electrical Engineering Departmental Curriculum Committee (2012-2014).
- Member, UAEU Electrical Engineering Departmental Research Committee (2014-present).
- Member, a number of Master’s thesis defense committees at UAEU.

HONORS AND CERTIFICATES

- Recipient of a full-time Master's scholarship from the School of Electrical Engineering and Computer Science at University of Central Florida (from Aug. 2006 to May 2008).
- Recipient of a full-time Doctorate scholarship from the School of Electrical Engineering and Computer Science at University of Central Florida (from May 2008 to July 2011).
- "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).