
CURRICULUM VITAE

JAE-DO PARK, PH.D.

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P.O. Box 173364, Denver, CO 80204
(303) 352-3743, jaedo.park@ucdenver.edu

EDUCATION

- Ph.D., Electrical Engineering, Pennsylvania State University, University Park, PA, 2007
 - Dissertation: Modeling and Control of a High-Speed Solid-Rotor Synchronous Reluctance Flywheel Motor/Generator
 - Advisor: Dr. Heath Hofmann (Currently with University of Michigan Ann Arbor)
- M.S., Electrical Engineering, Hanyang University, Seoul, Korea, 1994
 - Thesis: Design of a Feed Water Control System (FWCS) using Neural Networks for a Nuclear Power Plant Steam Generator
 - Advisor: Dr. Hae-Won Yang
- B.S., Electrical Engineering, Hanyang University, Seoul, Korea, 1992

ACADEMIC APPOINTMENTS AND EXPERIENCE

- Professor, University of Colorado Denver, Denver, CO, 2020 – present
- Associate Professor, University of Colorado Denver, Denver, CO, 2016 – 2020
- Associate Professor (visiting), Beijing Jiaotong University, Beijing, China, Fall 2018 – Spring 2019
- Assistant Professor, University of Colorado Denver, Denver, CO, 2009 – 2016
- Graduate Research Assistant, Pennsylvania State University, University Park, PA, 2001 – 2004
- Graduate Teaching Assistant, Pennsylvania State University, University Park, PA, Fall 2003

INDUSTRIAL EXPERIENCE

- Engineering Consultant, Rotonix USA, Newbury Park, CA, 2012 - 2018
- Engineering Consultant, Advanced Turbine Designs, El Segundo, CA 2009
- Controls Software Engineer/Manager, Pentadyne Power Corp., Chatsworth, CA, 2004 ~ 2009
- Engineering Consultant, Pentadyne Power Corp., Chatsworth, CA, Summer 2003
- Research Engineer/Manager, LG Industrial Systems, Anyang, Korea, 1994 – 2001

REFEREED JOURNAL PUBLICATIONS

Graduate student/post-doc/visiting scholar advised

1. Md Habib Ullah, **Jae-Do Park**, "Distributed Energy Trading in Smart Grid Over Directed Communication Network," *IEEE Transactions on Smart Grid*, Accepted, 2021.
2. Md Habib Ullah, **Jae-Do Park**, "A Two-Tier Distributed Market-Clearing Scheme for Peer-to-Peer Energy Sharing in Smart Grid," *IEEE Transactions on Industrial Informatics*, In press, 2021.
3. Bhanu Babaiahgari, Yeonho Jeong and **Jae-Do Park**, "Dynamic Control of Region of Attraction using Variable Inductor for Stabilizing DC Microgrids with Constant Power Loads," in *IEEE Transactions on Industrial Electronics*, In press, doi: 10.1109/TIE.2020.3026270.
4. Md Habib Ullah, Bhanu Babaiahgari, Anas Aloseyat and **Jae-Do Park**, "A Computationally Efficient Consensus-Based Multi-Agent Distributed EMS for DC Microgrids," *IEEE Transactions on Industrial Electronics*, Vol. 68, no. 6, pp 5425-5435, June 2021.

5. Yeonho Jeong, Min-Su Lee, **Jae-Do Park**, Jae-Kuk. Kim and Ronald Rorrer, "Hold-up Time Compensation Circuit of Half-Bridge LLC Resonant Converter for High Light-load Efficiency," in *IEEE Transactions on Power Electronics*, Vol. 35, No. 12, pp.13126-13135, Dec. 2020.
6. Yeonho Jeong, **Jae-Do Park**, Gun-Woo Moon, "An Interleaved Active-Clamp Forward Converter Modified for Reduced Primary Conduction Loss without Additional Components", *IEEE Transactions on Power Electronics*, Volume 35, No. 1, pp.121-130, April 2019
7. Bhanu Babaiahgari, Md Habib Ullah, and **Jae-Do Park**, "Coordinated Control and Dynamic Optimization in DC Microgrid Systems", *International Journal of Electric Power and Energy*, Volume 113, Pages 832-841, December 2019
8. **Jae-Do Park**, Songjun Lee, "Single-Transistor Sub-1-V Self-Startup Voltage Boost Energy Harvesting System for Microbial Fuel Cells", *Journal of Power Sources*, Vol.418, pp.90-97, 2019.
9. Muhannad Alaraj, **Jae-Do Park**, "Net Power Positive Maximum Power Point Tracking Energy Harvesting System for Microbial Fuel Cell", *Journal of Power Sources*, Vol.418, pp.225-232, 2019.
10. **Jae-Do Park**, Md Habib Ullah, Timberley M. Roane, Shuo Feng, "Optimal Operating Point for Energy Harvesting from Microbial Fuel Cell with Finite Initial Energy", *Journal of Power Sources*, Vol. 400, pp.183-189, 2018
11. Sungho Hwang, Yong-Soon Im, Hanchoon Song, **Jae-Do Park**, "Real Time Emulation of IEC 61850 SV, GOOSE and MMS using NS-3", *Journal of Engineering and Applied Sciences*, Vol. 13, No. 3, pp.634-638, 2018
12. Muhannad Alaraj, Shuo Feng, Timberley M. Roane, **Jae-Do Park**, "Effect of power shape on energy extraction from microbial fuel cell", *Journal of Power Sources*, Vol. 366, pp 86-92, 2017.
13. **Jae-Do Park**, Timberley M. Roane, Zhiyong Jason Ren, Muhannad Alaraj, "Dynamic modeling of a microbial fuel cell considering anodic electron flow and electrical charge storage", *Applied Energy*, Vol. 193, pp 507-514, 2017
14. Muhannad Alaraj, Miloje S. Radenkovic, **Jae-Do Park**, "Intelligent energy harvesting scheme for microbial fuel cells: Maximum power point tracking and voltage overshoot avoidance", *Journal of Power Sources*, Vol. 342, pp.726-732, 2017
15. Miloje S. Radenkovic, **Jae-Do Park**, "Almost sure convergence of extremum seeking algorithm using stochastic perturbation", *Systems & Control Letters*, Vol. 94, pp 133-141, Aug. 2016
16. Xin Wang, Lean Zhou, Lu Lu, Fernanda Leite Lobo, Nan Li, Heming Wang, **Jae-Do Park**, Zhiyong Jason Ren, "Alternating Current Influences Anaerobic Electroactive Biofilm Activity", *Environmental Science & Technology*, Vol.50, No.17, pp.9169-9176, 2016
17. Jaejin Yeo, Khurram Javed, Jaeseong Lee, Jeongjin Roh, **Jae-Do Park**, "A capacitorless low-dropout regulator with enhanced slew rate and 4.5-uA quiescent current", *Analog Integrated Circuits and Signal Processing*, pp. 1-9, doi:10.1007/s10470-016-0869-z, 2015
18. **Jae-Do Park**, "Ground Fault Detection and Location for Ungrounded DC Traction Power Systems", *IEEE Transactions on Vehicular Technology*, Vol.64, No.12, pp.5667-5676, Dec. 2015
19. Sungho Hwang, Kyuongwon Park, Jeongdo Park, Hanchoon Song, **Jae-Do Park**, "Traffic Generation Method of Sampled Values for Smart Grid", *Journal of the Institute of Internet, Broadcasting and Communication* (in Korean), Vol.15, No.6, pp. 2289-0238, 2015

20. Matthew Bond, **Jae-Do Park**, “Current Sensorless Power Estimation and MPPT Implementation for Thermoelectric Generators”, *IEEE Transactions on Industrial Electronics*, Vol.62, No.9, pp.5539-5548, Sept. 2015
21. Heming Wang, **Jae-Do Park**, Zhiyong Ren, “Practical Energy Harvesting for Microbial Fuel Cells: A Review”, *Environmental Science & Technology Letters*, Vol. 49, No. 6, pp.3267-3277, 2015
22. Bu-Il Kang, **Jae-Do Park**, “Application of Thyristor-Controlled Series Reactor for Fault Current Limitation and Power System Stability Enhancement”, *International Journal of Electrical Power and Energy Systems*, Vol. 63, pp.236-245, 2014
23. **Jae-Do Park**, Hohyun Lee, Matthew Bond, “Uninterrupted Thermoelectric Energy Harvesting using Temperature-Sensor-Based Maximum Power Point Tracking System”, *Energy Conversion and Management*, vol. 86C, pp. 233-240, 2014
24. Muhannad Alaraj, Jason Ren, **Jae-Do Park**, “Microbial Fuel Cell Energy Harvester using Flyback Converter”, *Journal of Power Sources*, Vol. 247, pp. 636-642, February 2014
25. **Jae-Do Park**, Jared Candelaria, Liuyan Ma, Kyle Dunn, “DC Ring-Bus Microgrid Fault Protection and Identification of Fault Location”, *IEEE Transactions on Power Delivery*, vol.28, no.4, pp.2574-2584, Oct. 2013
26. **Jae-Do Park**, Jared Candelaria, “Fault Detection and Isolation in Low-Voltage DC-Bus Microgrid System”, *IEEE Transactions on Power Delivery*, Vol. 28, No. 2, pp. 779-787, April 2013
27. **Jae-Do Park**, Zhiyong Ren, “Hysteresis-Controller-Based Energy Harvesting Scheme for Microbial Fuel Cells with Parallel Operation Capability”, *IEEE Transactions on Energy Conversion*, Vol. 27, No. 3, pp. 715-724, September 2012
28. Heming Wang, **Jae-Do Park**, Zhiyong Ren, “Active Energy Harvesting from Microbial Fuel Cells at the Maximum Power Point without Using Resistors”, *Environmental Science and Technology*, Vol. 46, No. 9, pp. 5247-5252, May 2012
29. Heming Wang, Zhiyong Ren, **Jae-Do Park**, “Power Electronics Converters for Microbial Fuel Cell Energy Extraction: Effect of Inductance, Duty Ratio, and Switching Frequency”, *Journal of Power Sources*, Vol. 220, pp. 89-94, 2012
30. **Jae-Do Park**, Zhiyong Ren, “High Efficiency Energy Harvesting from Microbial Fuel Cells using a Synchronous Boost Converter”, *Journal of Power Sources*, Vol. 208, pp. 322-327, 2012
31. **Jae-Do Park**, Zhiyong Ren, “Hysteresis Controller Based Maximum Power Point Tracking Energy Harvesting System for Microbial Fuel Cells”, *Journal of Power Sources*, Vol. 205, pp. 151 – 156, 2012
32. **Jae-Do Park**, Claude Kalev, Heath Hofmann, “Modeling and Control of Solid-Rotor Synchronous Reluctance Machine Considering Rotor Flux Dynamics”, *IEEE Transactions on Magnetics*, Vol.44, No.12, pp.4639-4647, December 2008
33. **Jae-Do Park**, Claude Kalev, Heath Hofmann, “Control of High-Speed Solid-Rotor Synchronous Reluctance Motor/Generator for Flywheel-Based Uninterruptible Power Supplies”, *IEEE Transactions on Industrial Electronics*, Vol.55, No.8, pp.3038-3046, August 2008
34. **Jae-Do Park**, Claude Kalev, Heath Hofmann, “Analysis and Reduction of Time Harmonic Rotor Loss in Solid-Rotor Synchronous Reluctance Drive”, *IEEE Transactions on Power Electronics*, Vol.23, No.2, pp. 985-992, March 2008

35. **Jae-Do Park**, Gyu-Shik Che, Hai-Won Yang, "A Study on the Water Level Control of Nuclear Power Plant Steam Generator using Adjustable Level Setting at Low Power", *Transactions of Korean Institute of Electrical Engineering* (in Korean), Vol.41, No.11, pp. 1305~1315, 1992

REFEREED CONFERENCE PUBLICATIONS

Undergraduate/Graduate student advised

1. Md Habib Ullah, **Jae-Do Park**, "P2P2G Coordinated Energy Sharing in Grid-Interactive Transactive Systems", *IEEE Power and Energy Society General meeting (PESGM) 2021*, Aug. 2-7, 2021.
2. Md Habib Ullah, Anas Alseyat, **Jae-Do Park**, "Distributed Dynamic Pricing in Peer-to-Peer Transactive Energy Systems in Smart Grid", *IEEE Power and Energy Society General meeting (PESGM) 2020*, Aug. 2-7, 2020.
3. Yeonho Jeong, **Jae-Do Park**, Ronald Rorrer, Keon-Woo Kim, and Byoung-Hee Lee, "A Novel Multi-input and Single-output DC/DC Converter for Small Unmanned Aerial Vehicle." *2020 IEEE Applied Power Electronics Conference and Exposition (APEC)*, pp. 1302-1308, Mar. 15, 2020.
4. Seungwhan. Ko, Yeonho Jeong, Ronald Rorrer and **Jae-Do Park**, "High Efficiency Asymmetric Dual Active Clamp Forward Converter with Phase-Shift Control for Small Conduction Loss," *2020 IEEE Applied Power Electronics Conference and Exposition (APEC)*, pp. 1866-1871, Mar. 15, 2020.
5. Bhanu Babaiahgari, Yeonho Jeong, **Jae-Do Park**, "Stability Enhancement Method for DC Microgrids with Constant Power Loads using Variable Inductor", *2020 IEEE Applied Power Electronics Conference and Exposition (APEC)*, pp. 2236-2240, Mar. 15, 2020.
6. Md Habib Ullah, Anas Alseyat, **Jae-Do Park**, "Multi Agent System-based Distributed Energy Management in Smart Grid Under Uncertainty", *IEEE Energy Conversion Congress and Exposition (ECCE) 2019*, Sept. 28-Oct. 3, 2019.
7. Bhanu Babaiahgari, Yeonho Jeong, and **Jae-Do Park**, "Stability Analysis for Power Management Between Standalone DC Microgrids with Constant Power Loads", *IEEE Energy Conversion Congress and Exposition (ECCE) 2019*, Sept. 28-Oct. 3, 2019.
8. Md Habib Ullah, **Jae-Do Park**, "Peer-to-Peer Energy Arbitrage in Prosumer-based Smart Residential Distribution System", *IEEE Energy Conversion Congress and Exposition (ECCE) 2019*, Sept. 28-Oct. 3, 2019.
9. Yeonho Jeong, **Jae-Do Park**, Ronald Rorrer, Jae-Sang Kim, "A Novel Control Scheme for High Efficiency Fuel Cell Power Systems in Parallel Structure", *IEEE Energy Conversion Congress and Exposition (ECCE) 2019*, Sept. 28-Oct. 3, 2019.
10. Md Habib Ullah, **Jae-Do Park**, "Multi Agent-based Distributed Energy Arbitrage in Residential Distribution System", *IEEE Power and Energy Systems Society General Meeting 2019*, August 4-8, 2019
11. Anas Alseyat and **Jae-Do Park**, "Multi-Agent System using JADE for Distributed DC Microgrid System Control." *2019 North American Power Symposium (NAPS)*. IEEE, 2019.
12. Bhanu Babaiahgari, **Jae-Do Park**, "WIP: Development of Advanced Electric Drive Systems Laboratory", *American Society of Engineering Education (ASEE) Annual Conference 2019*, June 16-19, 2019.

13. Md Habib Ullah, **Jae-Do Park**, “Distributed Energy Optimization in MAS based Microgrids using Asynchronous ADMM”, *2019 IEEE PES Innovative Smart Grid Technologies Conference*, Feb. 217-20, 2019.
14. Md Habib Ullah, **Jae-Do Park**, “Real Time Electricity Price Forecasting for Energy Management in Grid-Tied MTDC Microgrids”, *IEEE Energy Conversion Congress and Exposition (ECCE) 2018*, Sept. 23-28, 2018.
15. Mark Golkowski, **Jae-Do Park**, James Bittle, Bhanu Babaiahgari, Ronald Rorrer, Zbigniew Celinski, “Novel Mechanical Magnetic Shutter Antenna for ELF/VLF Radiation”, *IEEE Antennas and Propagation Conference 2018*, July 8-13, 2018.
16. Bhanu Babaiahgari, Zizhuo Chen, **Jae-Do Park**, “Development of Electric Drive Systems Laboratory”, *American Society of Engineering Education (ASEE) Annual Conference 2018*, Jun. 24-27, 2018.
17. Jessica Romero, Timberley Roane, **Jae-Do Park**, “Enhancing the Electrogenic Conditions in a Wastewater Microbial Fuel Cell”, *American Society of Microbiology (ASM) Annual Conference 2018*, Jun. 6, 2018
18. Bhanu Babaiahgari, Md Habib Ullah, **Jae-Do Park**, “Coordinated Control and Optimization of DC Power Systems”, *IEEE Energy Conversion Congress and Exposition (ECCE) 2017*, pp.2618-2624, Oct. 2017
19. Jessica Romero, Timberley Roane, **Jae-Do Park**, “Microbial Fuel Cell Design to Increase Power Production by Microbial Electrogens in Wastewater”, *Society for Industrial Microbiology and Biotechnology (SIMB) Annual Meeting 2017*, July 30-Aug. 3, 2017
20. Jessica Romero, Timberley Roane, **Jae-Do Park**, “Enhancement of Power Production By Microbial Electrogens from Wastewater”, *Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) 2016 The National Diversity in STEM Conference*, Long Beach, CA, October 13-15, 2016
21. Mustafa Sen, Muhannad Alaraj, **Jae-Do Park**, “Open Circuit Fault Detection and Localization in Modular Multilevel Converter”, *North American Power Symposium (NAPS) 2016*, pp. 1-6, Sept. 2016
22. Keoni Hutton, Bhanu Babaiahgari, **Jae-Do Park**, “A Comparative Study on Electrical Distribution Systems for the U.S. Coast Guard’s 270-ft Medium Endurance”, *North American Power Symposium (NAPS) 2016*, pp. 1-6, Sept. 2016
23. Bu-Il Kang, **Jae-Do Park**, “Wind Power Technologies from the Perspective of System Operator”, *IEEE Symposium on Power Electronics and Machines in Wind Applications (PEMWA) 2012*, pp. 1-7, July 2012
24. **Jae-Do Park**, “Design and Implementation of a Fundamental Electric Machine Laboratory using Industrial Devices”, *American Society of Engineering Education (ASEE) Annual Conference 2012*, pp. 25.391.1 - 25.391.18, June 2012
25. **Jae-Do Park**, Zhiyong Ren, “Efficient Energy Harvester for Microbial Fuel Cells using DC/DC Converters”, *IEEE Energy Conversion Congress and Exposition (ECCE) 2011*, pp. 3852-3858, Sep. 2011
26. Jared Candelaria, **Jae-Do Park**, “VSC-HVDC System Protection: A Review of Current Methods”, *IEEE Power Systems Conference and Exposition (PSCE) 2011*, pp. 1-7, March 2011

27. **Jae-Do Park**, “Simple Flywheel Energy Storage using Squirrel-Cage Induction Machine for DC Bus Microgrid Systems”, *IEEE Industrial Electronics Society Annual Conference (IECON) 2010*, pp. 3040-3045, Nov. 2010
28. **Jae-Do Park**, Claude Khalizadeh, Heath Hofmann, “Design and control of high-speed solid-rotor synchronous reluctance drive with three-phase LC filter”, *IEEE Industry Applications Conference 2005*, 40th IAS Annual Meeting. Vol.1, pp. 715-722, 2-6 Oct. 2005
29. **Jae-Do Park**, Heath Hofmann, Claude Khalizadeh, “Feedforward Control of High-Speed Solid-Rotor Synchronous Reluctance Machines With Rotor Dynamics Model”, *IEEE Industry Applications Conference 2004*, 39th IAS Annual Meeting. Vol.1 , 3-7 pp. 298~306, Oct. 2004
30. **Jae-Do Park**, Gyu-Shik Che, Hai-Won Yang, “Design of a Feed Water Control System (FWCS) using Neural Networks for a Nuclear Power Plant Steam Generator”, *KIEE Fall Annual Conference* (in Korean), pp. 400~402, 1992

BOOK CHAPTERS

Undergraduate/Graduate student advised

1. **Jae-Do Park**, Bhanu Babaiahgari, Md Habib Ullah, “Coordinated Protection of DC Microgrids” in *DC Distribution Systems and Microgrids*, The Institute of Engineering and Technology (IET), ISBN 978-1-78561-382-1, 2018

PATENTS

U.S. Patent

1. Mark Golkowski, **Jae-Do Park**, Ronald Rorrer, Zbignew Celinski, “Magnetic Shutter Antenna”, Patent pending, 2019
2. Mark Golkowski, **Jae-Do Park**, Ronald Rorrer, Zbignew Celinski, “Apparatus and Method for the Generation of Transmission Signals”, Provisional patent, 2017
3. **Jae-Do Park**, “Fault Detection, Isolation, Location and Reconnection Systems and Method”, US 9,007,735, April 14, 2015

Korean Patents

1. **Jae-Do Park**, “Current Control Apparatus for Three Phase AC Motor”, 1004469620000, 2006
2. **Jae-Do Park**, “Current Control method for Three Phase AC Motor”, 1004594710000, 2004
3. **Jae-Do Park**, “Operation Control Equipment of Multi-Inverter Type Elevator”, 1001863730000, 1998

GRANTS

1. Research Experience for Undergraduate (REU) supplement for “CAREER: Smart Protection for DC Power Systems-Distributed and Proactive Approach for Integration of Fast Responses and Compound Decisions”, National Science Foundation (NSF), \$15,000, PI, New, 09/01/20 – 02/28/21
2. “MARBLE: Multi-agent Autonomy with RADAR-based Localization for Exploration”, Defense Advanced Research Project Agency (DARPA) Subterranean (SubT) Challenge, \$4.5M (Collaboration with CU Boulder and SSCI, UCD portion \$1.35M), Co-PI, New, 09/01/18 – 08/30/21
3. Research Experience for Undergraduate (REU) supplement for “Collaborative Research: Systematical Modeling and Control of Microbial Electrochemical Activities towards Efficient Electrical Energy Harvesting”, National Science Foundation (NSF), 1511568, \$7,000, PI, New, 06/01/17 – 05/31/18

4. "CAREER: Smart Protection for DC Power Systems-Distributed and Proactive Approach for Integration of Fast Responses and Compound Decisions", NSF, \$500,000, PI, New, 03/01/16 – 02/28/21
5. "Electrical Modeling and Control for Microbial Electrochemical Systems", Office of Naval Research (ONR), N00014-15-1-2570, \$250,000, PI, New, 04/01/15 – 03/31/17
6. "Collaborative Research: Systematical Modeling and Control of Microbial Electrochemical Activities towards Efficient Electrical Energy Harvesting", National Science Foundation (NSF), 1511568, \$164,712, PI, New, 09/15/15 – 08/31/18
7. Industry Project, "Rotonix OmniFly Drive Control System Development", \$124,953, Rotonix USA, PI, 04/01/12 – 12/31/13
8. Faculty Development Grant, \$2,000, PI, "Development of Experimental Testbed for Thermoelectric Energy Harvesting System Research", Center of Faculty Development, University of Colorado Denver, Jun. 2013
9. Faculty Development Grant, \$2,000, PI, "Development of Simulation Platform for Energy System Research", Center of Faculty Development, University of Colorado Denver, Jun. 2011
10. Young Upwardly Mobile Professors (YUMP) travel grant, \$500, Center of Faculty Development, University of Colorado Denver, 2015, 2014, 2011, 2010
11. Grid Engineering Education (GRIDED) Undergraduate Design Project, Electric Power Research Institute (EPRI), "Power Potty", \$5,000, Faculty advisor, University of Colorado Denver, Oct. 2016
12. Undergraduate Research Opportunity Program (UROP) grant, \$300, "Power Potty", Faculty advisor, University of Colorado Denver, Oct. 2016
13. Undergraduate Research Opportunity Program (UROP) grant, \$3600, "Solar Power Recharging for Campus Electric Utility Vehicles", Faculty advisor, University of Colorado Denver, Mar. 2011

INVITED TALKS/PRESENTATIONS

1. "Microbial energy: system modeling and low-voltage harvesting circuitry", Hanyang University, Ansan, Korea, 12/01/20
2. "Overview: Global Energy Status and Renewable Energy", Beijing Jiaotong University, Beijing, China, 12/27/2018
3. "Modeling and Control of Microbial Energy Harvesting Systems", University of Denver, Denver, 06/29/18
4. "Enhancing Electrogenic Conditions and Power Production in A Wastewater Microbial Fuel Cell", Undergraduate research, Research and Creative Activities Symposium (RaCas) 2018, Jessica Romero, Hunter Sauerland, and Walter Energy, Faculty mentor: Timberley Roane, Jae-Do Park, Jungjae Lee, 04/27/18, University of Colorado, Denver
5. "Microbiologists, Chemists, and Engineers: They Don't Work Together, Do They? The Potential of Microbial Fuel Cells as a Renewable Energy Source and Much More", Creative Research Collaborative (CRC) Fellows' Talk with Dr. Timberley Roane, University of Colorado Denver, 04/11/18
6. "Modeling and Control of Microbial Energy Harvesting Systems", Yonsei University, Seoul, Korea, 11/23/17

7. "Modeling and Control of Microbial Energy Harvesting Systems", Seoul National University, Seoul, Korea, 11/21/17
8. "Protection of Voltage Source Converter (VSC) based DC Power Systems", Kangwon National University, Samcheok, Korea, 11/20/17
9. "Modeling and Control of Microbial Energy Harvesting Systems", 2017 International Electrical and Energy Conference (CIEEC 2017), Beijing, China, 10/27/17
10. "Protection of Voltage Source Converter (VSC) based DC Power Systems", Beijing Jiaotong University, Beijing, China, 10/26/17
11. "Modeling and Control of Microbial Energy Harvesting Systems", University of Colorado Colorado Springs (UCCS) Biofrontiers Seminar Series, Colorado Springs, CO, 10/20/17
12. "A Sustainable Solution for Lighting and Ventilation of Portable Restrooms Using Renewable Energy Sources", Undergraduate research, Research and Creative Activities Symposium (RaCas) 2017, Jackson Osborn, Carolina Guerreros-Rocha, Faculty mentor: Jae-Do Park, 04/28/17, University of Colorado, Denver
13. "Optimization of Energy Harvesters for Commercial Use", University of Colorado Boulder's New Venture Challenge (CU-NVC), Boulder, CO, 11/05/14
14. "Power Electronics Converters for Thermoelectric Energy Harvesting Applications", Korea Electrotechnology Research Institute (KERI), Korea, 12/12/13
15. "Microbial Fuel Cell Energy Harvester using Flyback Converter", IdTechEx Energy Harvesting & Storage USA, Santa Clara, CA, 11/20-21/13
16. "Fault Detection and Isolation in Microgrid Systems", CU Cleantech Market Analysis Program Competition, Boulder, CO, 04/11/13
17. "Energy Harvesting Technology for Microbial Fuel Cells", Hanyang University, Ansan, Korea, 03/28/13
18. "Energy Harvesting Technology for Microbial Fuel Cells", Hankyong National University, Ansong, Korea, 03/27/13
19. "Protection of Voltage Source Converter (VSC) based DC Power Systems", Korea Electric Power Research Institute (KEPRI), Yusung, Korea, 03/26/13
20. "Energy Harvesting Technology for Microbial Fuel Cells", Korea Institute of Energy Research (KIER), Yusung, Korea, 03/26/13
21. "Protection of Voltage Source Converter (VSC) based DC Power Systems", LS Industrial Systems, Co., Ltd., Anyang, Korea, 03/25/13
22. "Active Harvesting from Microbial Fuel Cells", IdTechEx Energy Harvesting & Storage USA, Washington DC, 11/7-8/12
23. "Energy Harvesting Technology for Microbial Fuel Cells", Baylor University, Waco, TX, 06/08/12
24. "Efficient Energy Harvester for Microbial Fuel Cells using DC/DC Converters", University of Denver, Denver, CO, 03/08/12
25. "Protection of Voltage Source Converter (VSC) based HVDC Systems", Rensselaer Polytechnic Institute (RPI), Troy, NY, 02/15/12
26. "Modeling and Control of a High-Speed Solid-Rotor Synchronous Reluctance Flywheel Motor/Generator", ECE Seminar, Colorado State University, Fort Collins, CO, 08/11

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27. “High-Speed Solid-Rotor Synchronous Reluctance Machine based Flywheel Motor/Generator System: Controller Implementation”, PowerThru Inc., Livonia, MI, 08/11

SEMINARS

1. “NSF CAREER Seminar”, Office of Research Development and Education, University of Colorado Denver, Denver, CO, 03/07/17
2. “Protection of Voltage Source Converter based DC Power Systems: Fault Detection and Location”, College of Engineering and Applied Science Seminar, University of Colorado Denver, Denver, CO, 12/03/13
3. “Protection of Voltage Source Converter (VSC) based HVDC Systems”, College of Engineering and Applied Science Seminar, University of Colorado Denver, Denver, CO, 03/01/12
4. “Efficient Energy Harvester for Microbial Fuel Cells using DC/DC Converters”, College of Engineering and Applied Science Seminar, University of Colorado Denver, Denver, CO, Oct. 2011
5. “Electric Machines and Drives: An overview”, EE1201 Introduction to Electrical Engineering, Dept. of Electrical Engineering, University of Colorado Denver, Denver, CO, Oct. 2011
6. “Electric Machines and Drives in Renewable Energy Applications”, EE1201 Introduction to Electrical Engineering, Dept. of Electrical Engineering, University of Colorado Denver, Denver, CO, Oct. 2010
7. “Electric Machines and Drives in Renewable Energy Applications”, Electrical Engineering Renewable Energy Club, University of Colorado Denver, Denver, CO, Oct. 2010
8. “Modeling and Control of a High-Speed Solid-Rotor Synchronous Reluctance Flywheel Motor / Generator”, Electrical Engineering Seminar, University of Colorado Denver, Denver, CO, Sep. 2009

COURSES TAUGHT

UNIVERSITY OF COLORADO DENVER

Undergraduate

- ELEC4170 *Electric Drive Systems Laboratory*, Senior Laboratory, New course developed.
- ELEC4164 *Electric Drive Systems*, Senior/Graduate Lecture, New course developed.
- ELEC3274 *Energy Conversion laboratory*, Junior Laboratory, Completely renovated.
- ELEC3164 *Energy Conversion*, Junior Lecture

Graduate

- ELEC5725 *Advanced Electric Machinery*, Graduate Lecture, New course developed.
- ELEC5710 *Advanced Electric Drive Systems*, Graduate Lecture, New course developed.
- NCES8051 *Professional Engineer Examination Refresher Course for Power*

BEIJING JIAOTONG UNIVERSITY

Undergraduate

- 90L120Q *Electric Machines*, Junior Lecture.
- 90L771Q *Wind Power Technology*, Junior Lecture, New course developed
- 90L768Q *Electricity Markets and Pricing Theory*, Junior Lecture, New course developed

STUDENT MENTORING

- Ph.D. Students (Current)
 - Bhanu Babaihgari: Won Outstanding Graduate Student Award 2018
 - Md Habib Ullah

- Anas Alseyat
- Shuo Feng
- Master Student (Current)
 - Nicholas Autobee
- Ph.D. Student (Graduated)
 - Muhannad Alaraj, May 2018, Won Outstanding Graduate Student Award 2017
Current Employment: Assistant Professor, Qassim University, Saudi Arabia
- Master Students (Graduated)
 - Changhyun Jung, May 2019
 - Hwanmin Jeong, Aug. 2018, "A Control Algorithm for the Stable Operation Of Islanded Microgrid with Dynamic Power Loads"
 - Feng Shuo, Dec. 2017, "Bioelectricity Energy Harvesting"
 - Keoni Hutton, "Shipboard Power Systems"
 - Mustafa Sen, "Fault Detection and Location for MMC System"
 - Bhanu Babaiahgari, "Motor Control System Implementation using Matlab Code Generator"
 - Matthew Bond, "Current Sensorless Energy Harvesting System for Thermoelectric Generator"
 - Liyuan Ma, "Fault Protection System for Data Center"
 - Bu-Il Kang, "Application of Thyristor-Controlled Series Reactor for Fault Current Limitation and Power System Stability Enhancement", Won Outstanding Graduate Student Award 2013.
 - Abdulaziz Alateeq, "Active Disturbance Rejection Control"
 - Abdela Esmeail, "Induction Machine Torque Control"
 - Jiannin Song, "Wind Turbine Related Grid Fault Analysis"
 - Casey Clark, "Induction Machine Driven Pump Station Design and Implementation"
 - Ayman Saed, "PV-driven` Water Pumping System with MPPT Technique"
 - Sejal Metha, "Control of Grid-Tied PWM Converter"
 - Subesh Aryal, "Grid-connected PV Control System"
 - Jared Candelaria, "Protection of VSC-based Low-Voltage DC Systems", Won Outstanding Graduate Student Award 2012.
 - Manasa Ramaraju, "Interpretation of Operational Faults in an Inverter fed Induction machine"
 - Abdulsalam Benaissa, "Comparative Study of Induction Motor and Permanent Magnet Synchronous Motor"

SIGNIFICANT INDUSTRIAL PROJECTS

- Energy storage control system development, Rotonix USA (2012-2017)
- Prototype microturbine motor/generator controller, Advanced Turbine Designs (2009)
- Digital magnetic bearing controller using TI TMS320F28355, Pentadyne Power Corp. (2008)
- Control system for synchronous reluctance motor using TMS320C6711, TMS320F2812, and Matlab/Simulink, Pentadyne Power Corp. (2005)
- Energy storage system analysis tool for Sales/Marketing, Pentadyne Power Corp. (2003)
- MATLAB/Simulink simulator for flywheel energy storage system, Pentadyne Power Corp. (2003)
- Low-cost inverter system development using Motorola DSP56F803, LG Industrial Systems (2000)
- Fieldbus communication controller using Intel 80186 and 8051, LG Industrial Systems (1999)
- High-performance vector control inverter using TI TMS320F240, LG Industrial Systems (1998)
- Graphic user interface (GUI) for multiple inverter systems using NI LabWindows/CVI, LG Industrial Systems (1997)

HONORS, AWARDS, AND RECOGNITION

- 2016 NSF CAREER Award
- Senior member, IEEE
- Outstanding Faculty in Research Award in College of Engineering and Applied Science, 2016
- Departmental nominee for Outstanding Faculty in Teaching Award in College of Engineering and Applied Science, 2011, 2013, 2020
- “Christmas Lights Powered By Poop, Research at UC Denver Proves Viability of Waste as Energy Source”, ABC 7 News, December 21, 2010

PROFESSIONAL SERVICE

- International Advisory Committee, Hanergy School of Renewable Energy, Beijing Jiaotong University, 2018, 2019
- Founding President, North American Chapter of Korean Institution of Power Electronics (KIPE), 2018
- Associate Editor, *Journal of Power Electronics*, 2014 – 2016
- Associate Editor, *Journal of Electrical Eng. & Technology*, 2015 – present
- Steering committee, Poster Session Chair: IEEE North American Power Symposium (NAPS) 2016
- Session/Topic Chair: IEEE Energy Conversion Congress and Exposition (ECCE), 2018, 2017, 2015, 2014
- Technical Program Committee/Topic Chair: IEEE International Conference of Power Electronics (ICPE)-ECCE ASIA, 2019, 2018, 2015
- Steering Committee: IEEE Power Electronics and Machines for Wind Applications (PEMWA), 2014
- Session Chair: IEEE Power Electronics and Machines for Wind Applications (PEMWA), 2012
- Student poster judge: IEEE Power Systems Conference and Exposition (PSCE), 2011
- Grant reviewer: NSF Partnerships for International Research and Education (PIRE) program, 2012
- Paper reviewer
 - *IEEE Transactions of Industry Applications, Industrial Electronics, Power Electronics, Sustainable Energy, Energy Conversion, Power Delivery, Smart Grid, Vehicular Technology, Education*
 - *Journal of Power Sources*
 - *International Journal of Energy Research*
 - *Journal of Power Electronics*
 - *Journal of Low Power Electronics*
 - IEEE ECCE 2019, 2018, 2015, 2014, 2013, 2012, 2011
 - American Society of Engineering Education (ASEE) Conference 2018, 2017, 2014, 2013, 2012, 2011, 2010
 - IEEE GreenTech 2017, IEEE NAPS 2016, IEEE PEMWA 2014
 - IEEE PEDS 2011, IEEE IECON 2010, IEEE ISIE 2010, IEEE MAGCON 2009

DEPARTMENT/COLLEGE/CAMPUS SERVICE

- Primary Unit RTP Review Committee, chair, 2020
- Faculty Advisory Committee to the Auraria Board (FACAB), member, 2020-present
- Undergraduate Research Opportunity Program (UROP) grant review committee, 2018, 2017
- Master program admission committee chair, 2013-2018
- Electrical Engineering department core curriculum committee, 2015-present
- Grant and Contract Manager search committee chair, 2017

- Dept. of Electrical Engineering faculty search committee, 2016
- Faculty marshal, Commencement Ceremony, University of Colorado Denver, 2014 Spring
- Grant review committee, Faculty Development Grant, Center for Faculty Development, University of Colorado Denver, 2014
- Electrical Engineering department chair search committee, 2013
- Ph.D. preliminary examination committee, 2013-present
- Master program admission committee, 2013
- Online graduate application handling procedure development, 2013
- Application file server implementation task force, 2012
- Department graduate program text committee, 2011
- Master thesis/project committee, 2009- present
- Graduate admission committee, 2009-2012
- Recruiting and supervising ELEC 3724 Energy Conversion Laboratory instructors, 2010- present
- College student club (UCD Sustainability Club) faculty advisor, 2010
- Department space plan committee, 2010
- Energy conversion undergraduate laboratory renovation project, Project lead, 2009