

Jason Poon

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Education

University of California, Berkeley Ph.D. Candidate, Electrical Engineering and Computer Sciences Advisor: Professor Seth R. Sanders	Expected 2019
University of California, Berkeley M.S., Electrical Engineering and Computer Sciences Thesis: Model-Based Fault Detection and Identification for Power Electronics Systems Advisor: Professor Seth R. Sanders	2015
Franklin W. Olin College of Engineering B.S., Electrical and Computer Engineering	2012

Research Interests

Power electronics circuits and systems; high performance power converters; control of distributed and decentralized renewable energy resources; fault diagnostics and dependability; nonlinear control and estimation.

Positions

University of California, Berkeley <i>Graduate Research Assistant</i> , Power Electronics Group	8/2013 – Present
National Renewable Energy Laboratory , Golden, Colorado <i>Intern</i> , Integrated Devices and Systems Group	5/2017 – 12/2017
National University of Singapore <i>Visiting Researcher</i> , Electrical Machines and Drives Laboratory	1/2015 – 8/2016
ABB Corporate Research , Baden-Dättwil, Switzerland <i>Intern</i> , Power Electronics Systems Group	1/2013 – 8/2013
Massachusetts Institute of Technology <i>Research Assistant</i> , Institute for Soldier Nanotechnologies	5/2009 – 1/2013

Fellowships and Awards

Best Paper Award, IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)	2016
NSF Graduate Research Fellowship, National Science Foundation	2013 – 2018
National Defense Science & Engineering Graduate Fellowship, Department of Defense (awarded)	2013
UC Berkeley EECS Departmental Excellence Award, University of California, Berkeley	2013
Full-Tuition Merit Scholarship, Franklin W. Olin College of Engineering	2008 – 2012

Publications

Papers in Refereed Journals

- J4. **J. Poon**, P. Jain, C. Spanos, S. Panda, S. Sanders, "Fault Prognosis for Power Electronics Systems Using Adaptive Parameter Identification," *IEEE Transactions on Industry Applications*, vol. 53, no. 3, pp. 2862-2870, May-June 2017.
- J3. **J. Poon**, P. Jain, I. Konstantakopoulos, C. Spanos, S. Panda, S. Sanders, "Model-Based Fault Detection and Identification for Switching Power Converters," *IEEE Transactions on Power Electronics*, vol. 32, no. 2, pp. 1419-1430, Feb. 2017.
- J2. P. A. Madduri, **J. Poon**, J. Rosa, M. Podolsky, E. Brewer, S. R. Sanders, "Scalable DC Microgrids for Rural Electrification in Emerging Regions," *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 4, no. 4, pp. 1195-1205, Dec. 2016.
- J1. X. Ding, **J. Poon**, I. Čelanović, A.D. Domínguez-García, "Fault Detection and Isolation Filters for Three-Phase AC-DC Power Electronics Systems," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 60, no. 4, pp. 1038-1051, April 2013.

Papers in Refereed Conference Proceedings

- C16. P. Jain, L. Jian, **J. Poon**, C. Spanos, S. R. Sanders, J. Xu, S. Panda, "A real-time fault diagnosis scheme for power electronic converters using robust adaptive filters," 2018 IEEE Applied Power Electronics Conference and Exposition (APEC), San Antonio, TX, 2018, *to appear*.
- C15. P. Jain, L. Jian, **J. Poon**, C. Spanos, S. R. Sanders, J. Xu, S. Panda, "A Luenberger observer-based fault detection and identification scheme for photovoltaic dc-dc converters," 2017 43rd Annual Conference of the IEEE Industrial Electronics Society, Beijing, China, 2017, *to appear*.
- C14. **J. Poon**, P. Jain, C. Spanos, S. Panda, S. R. Sanders, "Photovoltaic condition monitoring using real-time adaptive parameter identification," 2017 IEEE Energy Conversion Congress and Exposition, Cincinnati, OH, 2017.
- C13. **J. Poon**, S. R. Sanders, "Analysis and design of an adaptive parameter estimator for power electronics circuits," 2017 IEEE 18th Workshop on Control and Modeling for Power Electronics (COMPEL), Stanford, CA, 2017.
- C12. M. Sinha, B. Johnson, M. Rodriguez, **J. Poon**, and S. Dhople, "Decentralized interleaving of paralleled dc-dc buck converters," 2017 IEEE 18th Workshop on Control and Modeling for Power Electronics (COMPEL), Stanford, CA, 2017.
- C11. P. Jain, **J. Poon**, J. Xu, C. Spanos, S. R. Sanders, S. Panda, "Fault diagnosis via PV panel-integrated power electronics," 2016 IEEE 17th Workshop on Control and Modeling for Power Electronics (COMPEL), Trondheim, Norway, 2016. **Best Paper Award**
- C10. **J. Poon** et al., "FailSafe: A generalized methodology for converter fault detection, identification, and remediation in nanogrids," 2015 IEEE International Conference on Building Efficiency and Sustainable Technologies, Singapore, 2015, pp. 73-78.
- C9. Y. Li, M. John, **J. Poon**, J. Chen and S. R. Sanders, "Lossless voltage regulation and control of the resonant switched-capacitor DC-DC converter," 2015 IEEE 16th Workshop on Control and Modeling for Power Electronics (COMPEL), Vancouver, BC, 2015, pp. 1-7.
- C8. **J. Poon**, I. C. Konstantakopoulos, C. Spanos and S. R. Sanders, "Real-time model-based fault diagnosis for switching power converters," 2015 IEEE Applied Power Electronics Conference and Exposition (APEC), Charlotte, NC, 2015, pp. 358-364.
- C7. P. A. Madduri, **J. Poon**, J. Rosa, M. Podolsky, E. Brewer and S. R. Sanders, "A scalable dc microgrid architecture for rural electrification in emerging regions," 2015 IEEE Applied Power Electronics Conference and Exposition (APEC), Charlotte, NC, 2015, pp. 703-708.

- C6. **J. Poon**, E. Chai, I. Čelanović, A. Adrien Genić and E. Adzic, "High-fidelity real-time hardware-in-the-loop emulation of PMSM inverter drives," 2013 IEEE Energy Conversion Congress and Exposition, Denver, CO, 2013, pp. 1754-1758.
- C5. E. Chai, **J. Poon** and I. Čelanović, "Validation of Frequency- and Time-domain Fidelity of an Ultra-low Latency Hardware-in-the-Loop (HIL) Emulator," Control and Modeling for Power Electronics (COMPEL), 2013 IEEE 14th Workshop on, Salt Lake City, UT, 2013, pp. 1-5.
- C4. **J. Poon**, A. Adrien Genić, X. Ding, A. Domínguez-García and I. Čelanović, "A linear-switched observer for large-signal state estimation in power electronics," Power Electronics and Motion Control Conference (EPE/PEMC), 2012 15th International, Novi Sad, 2012, pp. LS3b.3-1-LS3b.3-5.
- C3. **J. Poon**, M. A. Kinsy, N. A. Pallo, S. Devadas and I. L. Čelanović, "Hardware-in-the-loop testing for electric vehicle drive applications," 2012 Twenty-Seventh Annual IEEE Applied Power Electronics Conference and Exposition (APEC), Orlando, FL, 2012, pp. 2576-2582.
- C2. M. Kinsy, D. Majstorovic, **J. Poon**, N. Čelanović, I. Čelanović, S. Devadas, "High-Speed Real-Time Digital Emulation for Hardware-in-the-Loop Testing of Power Electronics," Power Electronics/Intelligent Motion/Power Quality Conference, Nuremberg, Germany, May 2011.
- C1. **J. Poon**, P. Haessig, J. G. Hwang and I. Čelanović, "High-speed hardware-in-the loop platform for rapid prototyping of power electronics systems," Innovative Technologies for an Efficient and Reliable Electricity Supply (CITRES), 2010 IEEE Conference on, Waltham, MA, 2010, pp. 420-424.

Technical Reports

- R1. M. Kinsy, **J. Poon**, I. Čelanović, O. Khan, S. Devadas, "A Multicore Architecture for Control and Emulation of Power Electronics and Smart Grid Systems Under Hard Real-Time Constraints," Work-in-Progress Presentation at 49th Design Automation Conference, San Francisco, June 2012.

Theses

- T1. **J. Poon**, "Fault Detection and Identification for Distributed Power Electronics Systems," M.S. Thesis, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley, 2015.

Service Activity

Editorial and Reviewer Service

Conference Referee	2009 – Present
IEEE Applied Power Electronics Conference, IEEE Energy Conversion Conversion Congress and Exposition, IEEE Workshop on Control and Modeling for Power Electronics, Annual Conference of the IEEE Industrial Electronics Society, IEEE International Symposium on Circuits and Systems	
Journal Referee	2009 – Present
IEEE Transactions on Power Electronics, IEEE Journal of Emerging and Selected Topics in Power Electronics, IEEE Transactions on Energy Conversion, IEEE Transactions on Control Systems Technology	

Professional Service

Organizing Committee Member	2017
2017 IEEE 18th Workshop on Control and Modeling for Power Electronics (COMPEL)	
Student Branch Chapters Area Chair	2016 – Present
IEEE Industrial Application Society, Region 6	
Founding Chair	2016 – Present
UC Berkeley Student Branch Chapter for the IEEE Industrial Applications Society	

Founding Chair UC Berkeley Student Branch Chapter for the IEEE Power Electronics Society	2015 – Present
General Chair UC Berkeley Power Electronics Seminar Series	2015 – Present

Teaching Experience

University of California, Berkeley

EE 113/213 Power Electronics , Graduate Student Instructor	Spring 2018
EE 113/213 Power Electronics , Graduate Student Instructor Evaluation Score: 4.71/5 (Department Average: 3.96/5)	Spring 2017
EE 113 Power Electronics , Graduate Student Instructor	Spring 2016

Invited Talks

Linear Technologies, Colorado Springs, CO "Fault Diagnosis for Power Electronics Systems – From Theory to Practice"	2017
Analog Devices, San Jose, CA "Fault Diagnosis for Power Electronics Systems – From Theory to Practice"	2017
CREATE Annual Symposium, National University of Singapore "Dependable Power Distribution for Zero-Energy Buildings"	2016
IEEE Power Electronics Society Young Professionals Webinar "Estimation Techniques for Switching Power Converters – Applications for Fault Diagnosis, Condition Monitoring, and Control"	2016