

# Jason Poon

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## Education

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

## Research Interests

Power electronics circuits and systems with applications in renewable energy, electrified transportation, miniaturized and on-chip power, wireless power transfer, and energy infrastructure and distribution. Theoretical interests include decentralized optimization, networked control systems, and statistical signal processing.

## Positions

<b>University of California, Berkeley</b> , Berkeley, California <i>Graduate Student Researcher</i> , Power Electronics Group	8/2013 – Present
<b>Dialog Semiconductor</b> , Chandler, Arizona <i>PMIC Design Engineering Intern</i> , Integrated Circuit Design Engineering Group	9/2018 – 12/2018
<b>National Renewable Energy Laboratory</b> , Golden, Colorado <i>Intern</i> , Integrated Devices and Systems Group	5/2017 – 12/2017
<b>National University of Singapore</b> , Singapore <i>Visiting Researcher</i> , Electrical Machines and Drives Laboratory	5/2016 – 8/2016 5/2015 – 8/2015
<b>ABB Corporate Research</b> , Baden-Dättwil, Switzerland <i>Intern</i> , Power Electronics Systems Group	1/2013 – 8/2013
<b>Massachusetts Institute of Technology</b> , Cambridge, Mass. <i>Research Assistant</i> , Institute for Soldier Nanotechnologies	5/2009 – 1/2013

## Fellowships and Awards

Best Paper Award, IEEE 17th Workshop on Control and Modeling for Power Electronics	2016
NSF Graduate Research Fellowship, National Science Foundation	2013 – 2016
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*

- J5. M. Sinha, **J. Poon**, B. B. Johnson, M. Rodriguez, S. V. Dhople, "Decentralized interleaving of parallel-connected buck converters," *IEEE Transactions on Power Electronics*, In Press.
- J4. **J. Poon**, P. Jain, C. Spanos, S. Panda, S. R. 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. R. 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*

- C17. **J. Poon**, B. B. Johnson, S. V. Dhople, S. R. Sanders, "Minimum Distortion Point Tracking: Optimal phase shifting for input- or output-parallel connected dc-dc converters," 2018 IEEE 19th Workshop on Control and Modeling for Power Electronics (COMPEL), Padova, Italy, 2018.
- C16. P. Jain, L. Jian, **J. Poon**, C. Spanos, S. R. Sanders, J. Xu, S. Panda, "An improved robust adaptive parameter identifier for dc-dc converters using H-infinity design," 2018 IEEE Applied Power Electronics Conference and Exposition (APEC), San Antonio, TX, 2018.
- 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.
- 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 (ECCE), 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. B. Johnson, M. Rodriguez, **J. Poon**, and S. V. 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 (ECCE), 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," 2013 IEEE 14th Workshop on Control and Modeling for Power Electronics (COMPEL), Salt Lake City, UT, 2013, pp. 1-5.
- C4. **J. Poon**, A. 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 (PCIM), Nuremburg, 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.

## Teaching Experience

### *University of California, Berkeley*

<b>EE 113/213 Power Electronics</b> , Graduate Student Instructor and Guest Lecturer Evaluation Score: 5.00/5.00 (Department Average: 4.15/5.00)	<b>Spring 2018</b>
<b>EE 113/213 Power Electronics</b> , Graduate Student Instructor Evaluation Score: 4.71/5.00 (Department Average: 3.96/5.00)	<b>Spring 2017</b>
<b>EE 113 Power Electronics</b> , Graduate Student Instructor	<b>Spring 2016</b>

## Service Activity

### *Professional Service*

<b>Organizing Committee Member</b> 2017 IEEE 18th Workshop on Control and Modeling for Power Electronics (COMPEL)	<b>2017</b>
<b>Student Branch Chapters Area Chair</b> IEEE Industrial Application Society, Region 4 and 6	<b>2016 – Present</b>
<b>Founding Chair</b> UC Berkeley Student Branch Chapter for the IEEE Industrial Applications Society	<b>2016 – Present</b>
<b>Founding Chair</b> UC Berkeley Student Branch Chapter for the IEEE Power Electronics Society	<b>2015 – Present</b>
<b>General Chair</b> UC Berkeley Power Electronics Seminar Series	<b>2015 – Present</b>

### *Editorial and Reviewer Service*

<b>Journal Reviewer</b> IEEE Transactions on Power Electronics, IEEE Journal of Emerging and Selected Topics in Power Electronics, IEEE Transactions on Energy Conversion, IEEE Transactions on Industrial Applications, IEEE Transactions on Industrial Electronics, IEEE Transactions on Control Systems Technology, Applied Energy, IEEE Transactions on Reliability, IEEE Transactions on Power Systems, IEEE Industry Applications Magazine, IEEE Access	<b>2009 – Present</b>
<b>Conference Reviewer</b> 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	<b>2009 – Present</b>

## Student Mentoring

<b>Palak Jain</b> , Ph.D. Dissertation Project Project Title: "Dependable Building Energy Systems using Power Electronics" Current Position: Ph.D. Candidate at National University of Singapore	<b>1/2014 – Present</b>
<b>Chuqiao Li</b> , Bachelors Dissertation Project Project Title: "Spectral Estimation Techniques for Minimum Distortion Point Tracking" Current Position: Bachelors Student at Harbin Institute of Technology	<b>1/2018 – Present</b>
<b>Zeyu Song</b> , Undergraduate Research Project Project Title: "Analysis and Implementation of Injection Locked Oscillators for PWM Carrier Generation" Current Position: Bachelors Student at Harbin Institute of Technology	<b>1/2018 – 8/2018</b>
<b>Jiao Hongsheng</b> , Masters Dissertation Project Project Title: "Fault Diagnosis in DC Bus Connected Module-level Power Electronics Type PV Systems" Current Position: Ph.D. Student at National University of Singapore	<b>1/2018 – 4/2018</b>
<b>Deru Song</b> , Masters Dissertation Project Project Title: "Model-Based Fault Diagnosis For Off-Shore Wind Turbine Converters" Current Position: Electrical Engineer at Porsche E-Mobility	<b>8/2014 – 12/2014</b>
<b>Erik Iverson</b> , Undergraduate Research Project Project Title: "Multifunction Fan-Out Node for DC Microgrid Applications" Current Position: Electrical Engineer at Amber Kinetics	<b>8/2013 – 5/2014</b>

## Invited Talks

- Dialog Semiconductor**, Chandler, Arizona 5/2018  
"Minimum Distortion Point Tracking: Principles and Applications"
- Linear Technologies**, Colorado Springs, Colorado 9/2017  
"Fault Diagnosis for Power Electronics Systems – From Theory to Practice"
- Analog Devices**, San Jose, California 4/2017  
"Fault Diagnosis for Power Electronics Systems – From Theory to Practice"
- IEEE Power Electronics Society Young Professionals Webinar** 7/2016  
"Estimation Techniques for Switching Power Converters – Applications for Fault Diagnosis, Condition Monitoring, and Control"
- CREATE Annual Symposium, National University of Singapore**, Singapore 1/2016  
"Dependable Power Distribution for Zero-Energy Buildings"

## References

### **Seth R. Sanders**

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### **Sairaj V. Dhople**

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### **Costas J. Spanos**

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### **Brian B. Johnson**

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