Exponent®
Engineering & Scientific Consulting

Scott Gu, Ph.D., P.E.

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Professional Profile

Dr. Lee is a licensed electrical engineer with a specialization in power systems and power electronics. He advises on matters surrounding power systems failures including residential and commercial electrical incidents, transformer, switchgear, and generator failures and routinely conducts site inspections, issues expert reports and provides expert witness testimony.

Prior to joining Exponent, Dr. Lee worked in the utility scale solar+storage field and has considerable knowledge pertaining to microgrids, photovoltaic modules, central inverters, SCADA systems and lithium ion and vanadium flow energy storage systems and their failure modes and holds several patents relating to the control of solar trackers and battery storage systems. Dr. Lee also provides technical consulting services including electric utility substation modeling, power quality studies and conducts electrical outage analysis and electrical fire investigations.

His power electronics experience includes failure analysis of DC-DC converters, portable battery packs, variable frequency drives, battery management systems and power electronic devices for the automotive, consumer electronics and datacenter sectors. At Exponent, he performs device testing, PCB fault inspection, failure mode and effects analysis and safety reviews. Dr. Lee also has professional experience in industrial automation.

Dr. Lee teaches courses on power systems and power electronics at San José State University and was an instructor for the power electronics laboratory at University of California, Irvine. Prior to joining Exponent, Dr. Lee's academic research at UC Irvine focused on the control and integration of community-scale microgrid systems.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering, University of California, Irvine, 2018

M.S., Electrical Engineering, University of California, Irvine, 2013

B.S., Electrical Engineering, California State University, Fresno, 2008

Academic Appointments

Lecturer, San Jose State University, 2021 - Current

Course Instructor, Power Systems Laboratory, University of California, Irvine, 2018

Prior Experience

Senior Power Systems Engineer, NEXTracker, 2019 - 2020

Research Assistant, UCI Advanced Power and Energy Program, 2013 - 2018

Research Assistant, UCI Power Electronics Laboratory, 2010 - 2013

Electrical Engineer, DST Controls, 2008 - 2009

Professional Affiliations

Institute of Electrical and Electronics Engineers

National Electrical Engineering and Computer Engineering Honor Society, Eta Kappa Nu

Patents

US2020031303: SYSTEMS AND METHODS FOR PHOTOVOLTAIC DIRECT CURRENT (DC) BUS CONTROL, November 2020 (Yang Liu, Au Alexander W., Gu, Fei)

US2021020250: SYSTEMS AND METHODS FOR SPLIT-CELL AND MULTI-PANEL PHOTOVOLTAIC TRACKING CONTROL, September 2021(Gu Fei, Liu Yang, Abbaraju Venkata Rahul, Martinez Eric)

Publications

Payne, J., Gu, F., Razeghi, G., Brouwer, J., & Samuelsen, S. Dynamics of high penetration photovoltaic systems in distribution circuits with legacy voltage regulation devices. International Journal of Electrical Power & Energy Systems, 124, 106388.

Razeghi, G., Gu, F., Neal, R., & Samuelsen, S. (2018). A generic microgrid controller: Concept, testing, and insights. Applied Energy, 229, 660-671.

Gu, F., Brouwer, J., & Samuelsen, S. (2013, September). A study on the impact of high penetration distributed generation inverters on grid operation and stability. In AIP Conference Proceedings (Vol. 1556, No. 1, pp. 270-273). American Institute of Physics.

Presentations

F. Gu. The Role of Smart Inverters in Renewable Microgrids. International Colloquium on Energy Preferred Advanced Power Generation, Irvine CA, 2015.

F. Gu. Microgrid Global Summit: UCI Microgrid. World Microgrid Forum, Irvine CA, 2014.

F. Gu. UCI Microgrid: Dynamic Control and Modeling. International Colloquium on Energy Preferred Advanced Power Generation, Irvine, 2014.

F. Gu. A Study on the Impact of High Penetration Distributed Generation Inverters on Grid Operation and Stability. International Conference on Concentrator Photovoltaic Systems, Miyazaki Japan, 2013.

F. Gu. Evaluation of High Penetration Photovoltaics on Distribution Circuits. High Penetration Solar Forum, San Diego CA, 2013.

F. Gu. The Impact of High Penetration Distributed Generation Inverters on Grid Operation and Stability. International Colloquium on Energy Preferred Advanced Power Generation, Irvine CA, 2013.

Additional Education & Training

Minor, Business, California State University, Fresno, 2008

Minor, Mathematics, California State University, Fresno, 2008