Exponent®
Engineering & Scientific Consulting

Sneha Lele, Ph.D., P.E.

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Professional Profile

Dr. Lele is a staff member of the Electrical and Computer Engineering practice at Exponent specializing in failure analysis and safety design reviews of electrical and electronic systems. She has expertise in design and quality review of household and commercial products, automotive electronics and industrial systems with a focus on system safety and redundancy.

Dr. Lele's work at Exponent involves extensive battery related research and analyses, root cause investigations and testing of products for accelerated ageing of batteries and other electronic components. Her work also involves hardware and software testing of automotive advanced driver-assistance systems (ADAS) for conventional, electric and autonomous vehicles such as electronic braking, cruise control, hybrid control and throttle control. She routinely performs field failure analysis, recall-related investigations and is involved in technical consultation for matters related to product liability, trade secrets and class-action lawsuits. On account of her past work experience, she specializes in circuit design, use of electrical laboratory equipment and simulation tools for PCB/IC design, and numerical modelling.

Prior to joining Exponent, Dr. Lele was involved in board level and component level functional testing & verification of WDM telecom devices (Erbium Doped Fiber Amplifiers) using NI TestStand and LabVIEW at ADVA Optical Networking. As part of the design team at AMD, Inc. (Advanced Micro Devices, Canada), Dr. Lele designed analog sub-circuits for the DisplayPort AUX/I2C interface with GF's 20nm and 14nm technology and is proficient in Cadence, Synopsys, Apache tools.

Dr. Lele has worked on integration of control circuits for power relays with GE Multilin during her Ph.D. The prototype system she developed for detecting voltage and current disturbances in high-voltage power distribution lines employed piezoelectric transformer in combination with Hall-effect sensor with an integrated signal processing unit. Prior to graduate studies, at Siemens (India), Dr. Lele's work included design improvisation of '25kVA underslung type coach converter' typically used in air conditioning systems in Indian Railway coaches and development of the 500kVA converter for power car of super-fast trains.

Academic Credentials & Professional Honors

Ph.D., Electrical and Computer Engineering, The University of Western Ontario, Canada, 2014

B.E., Electronics Engineering, University of Mumbai, India, 2006

Licenses and Certifications

Professional Engineer Electrical, Arizona, #70442

exida Functional Safety Practitioner (FSP)

Prior Experience

New Product Introduction Test Engineer, ADVA Optical Networking, 2015-2016

Analog Design Engineer, Advanced Micro Devices, Inc. (Canada), 2013-2014

Graduate Research/Teaching Assistant, Western University (Canada), 2009-2013

Executive Engineer, Siemens Ltd. (India), 2006-2008

Professional Affiliations

Institute of Electrical and Electronics Engineers—IEEE (senior member)

Society of Automotive Engineers - SAE (member)

Languages

Hindi

Marathi

Publications

Books

Arora A, Lele S, Medora N, Souri S, "Lithium-Ion Battery Failures in Consumer Electronics," Artech House Publishing, Norwood, MA, 238 pp., May 2019.

Publications

Lele S, Battery Energy Storage Systems – Failure Modes & Safety Mechanisms. Battcon Miami, FL, 2024

Lele S, Safety & Risk Considerations for Li-ion Batteries in Grid Energy Storage Applications. Battcon Orlando, FL, 2023

Murray, K. and Lele, S., "Electric Vehicle Battery Safety and Compliance," SAE Technical Paper 2023-01-0597, 2023

Lele S, Thermal Runaway in Li-ion Batteries – Initiation & Safety Strategies. Battcon Hollywood, FL, 2021

Mendias, M., Lele, S., and Arora, A., Functional Safety & Safety Critical Systems - An Overview, SAE Technical Paper 2021-01-0157, 2021

Lele S, Kuykendal M, A Hazard-Based Approach to Product Safety Assessment, IEEE Symposium on Product Compliance Engineering (SPCE), Austin, TX, 2019

Lele S, Arora A, A Methodology for Evaluating the Root Cause of a Li-ion Battery's Failure. Battcon Orlanda, FL, 2019.

Arora A, Lele S, Functional Safety & Li-ion Batteries. Battcon Orlando, FL, 2019

Lele S, Arora A, Benson K. Predicting the life of Li-ion batteries using the Arrhenius Model. Battcon Nashville, TN, 2018.

Lele S, Arora A. Supercapacitors: A comparative analysis. Exponent 2018 V7 Electrical Engineering & Computer Science (EECS) Newsletter.

Lele S, Sobot R, Sidhu T. Piezoelectric transformer based disturbance monitoring methodology for high-voltage power supply lines. IEEE Sensors Journal (DOI 10.1109/JSEN.2013.2296504).

Lele S, Sobot R, Sidhu T. Numerical modelling of piezoelectric transformers for low frequency measurement and disturbance monitoring in power systems. Electrical Power and Energy Conference (EPEC 2012), London, Ontario, Canada, October 10-12, 2012.

Lele S, Sobot R, Sidhu T. Piezoelectric transformers for low frequency measurement in power systems. IEEE International Conference for Upcoming Engineers (ICUE 2012), Toronto, Ontario, Canada (3rd place Student Paper award), August 2, 2012.

Lele S, Sobot R, Sidhu T. Frequency measurement and disturbance monitoring using piezoelectric transformers. Power and Energy Conference at Illinois (PECI 2012), Illinois, U.S.A., February 24-25, 2012.

Najmaei N, Lele S, Kermani MR, Sobot R. Human factors for robot safety assessment. IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2010), Montréal, Canada, July 6-9, 2010.

Lele S, Sobot R, Waxer M, Morton JB. Steady-state visually evoked EEG signal processing with tuneable continuous-time bandpass sigma-delta modulators. 19th European Conference on Circuit Theory & Design (ECCTD 2009), Antalya, Turkey, August 23-27, 2009.

Co-authored an article "Network of Keypads" published in Circuit Cellar Issue 203 June 2007.

Presentations & Panels

Arora A, Lele S. Emerging issues in automotive product liability cases: electronic/software defects. Presented at SEMI FOA (Fab Owners Alliance), Scottsdale, AZ, February 2018.

Arora A, Lele S. Design Considerations for Large Format Lithium-ion Battery Systems. Online Tutorial Presentation at IEEE Energy Conversion Congress & Expo (ECCE), Detroit, MI, October 2020.

Lele S., Software System & Safety Analysis, ASU Failure Analysis & Prevention Course. Arizona State University, November 2021.

Lele S., Product Liability & Safety: An Electrical Engineering Perspective. CLE Webinar, Arizona Association of Defense Counsel, October 2022

Lele S., Safety Management in Electric & Hybrid Industrial Vehicles. iVT Expo (Off-Highway Vehicle Technology), Chicago USA, August 2023

Lele S., Kuykendal M., Rapid EV Deployment in the Marketplace: Risks, Hazards, Secondary Injury… and the Claims that will Certainly Follow. Panel Discussion, American Bar Association (ABA) 2024 Motor Vehicle Product Liability Litigation Conference, Scottsdale, AZ, April 2024

Lele S., Electric Vehicles & Lithium-ion Battery Safety. CLE Webinar, Arizona Association of Defense

Counsel, August 2024

Lele S., Electrification of OHVs – Challenges, Failure Modes and Mitigation Strategies. iVT Expo (Off-Highway Vehicle Technology), Chicago USA, August 2024