

Exponent®
Engineering & Scientific Consulting

Shukri Souri, Ph.D.

Group Vice President, Practice Director and Principal | Computer, Data & Security Sciences
New York
+1-212-895-8126 | ssouri@exponent.com

Professional Profile

Shukri Souri, Ph.D., is a principal, group vice president, and director of the Computer, Data & Security Sciences practice at Exponent. He has over 20 years of experience in microelectronics, embedded systems, and computer communications. He specializes in intellectual property consulting, product reliability investigations, and failure analysis across the medical device, automotive, semiconductor, consumer electronics, and process controls industries.

Dr. Souri's experience in the area of microelectronics systems includes technical investigations into computer memories, device physics, integrated circuit (IC) fabrication processes, and esoteric semiconductor material systems for solid-state lighting. He also has broad experience with power electronic devices, circuit protection, IC packaging, and printed circuit board (PCB) assemblies and display technologies as used in various industries including consumer appliances.

In computing systems, Dr. Souri has worked extensively with embedded controls systems for automotive applications, computer hard disk drives, and drug delivery and implantable devices. He also has expertise in telephony, secure mobile and internet communications, and microprocessor architectures, particularly for mobile computing, and he has analyzed audio/video/image processing software and developed digital asset delivery technologies.

Dr. Souri earned his Ph.D. in electrical engineering at Stanford University on 3D integration of ICs and has taught several courses on IC fabrication, optical fiber communications, TCP/IP networking, and communications protocols and implementation of systems on 3D chips. He also read engineering science at Balliol College, Oxford, where he specialized in photoreflectance microscopy of semiconductor materials.

Intellectual Property Consulting and Expert Witness Support

Dr. Souri has testified as a technical expert in numerous patent litigation matters over the course of his tenure at Exponent. His work includes advising legal and industrial clients on issues related to claim construction, patent validity, and infringement. He has testified at jury trials in U.S. district courts and at hearings for investigations before the International Trade Commission, and he has given evidence in international courts and arbitration venues. His testimony has encompassed technologies in the electronics and computing space, including semiconductor device design and fabrication processes, display technologies, integrated circuits and microelectronics, computer networks, and telecommunications.

© 2026 Exponent, Inc. All Rights Reserved

Integrated Circuits and Semiconductor Fabrication

Dr. Souri has performed root-cause analysis investigating failures of various semiconductor devices, including memory, power ICs, ASICs, and flat panel displays, and he has advised industry clients on optimizing manufacturing processes to improve yield by evaluating the reliability of automation components in fabrication facilities. He has also testified as an expert in product liability, class action, anti-trust, and intellectual property disputes related to microelectronics and fabrication technologies.

Artificial Intelligence, Machine Learning, and Data Analytics

Dr. Souri's experience with artificial intelligence, machine learning, and data analytics supports investigations as well as his own ongoing research interests. He has testified on several matters involving machine learning and the use of AI for optimizing building energy management controls, including security and climate control. He has also investigated process control issues in manufacturing plants by application of data analytics for anomaly detection. His ongoing research interests include object recognition, robotics, and digital twins.

Transportation Electronics, Embedded Systems, Sensor, and Industrial Controls

Dr. Souri has investigated failures in automotive electronics including electronic throttle control, airbag supplemental restraint systems, in-vehicle infotainment systems, and cruise control electronics. He has directed teams in performing vehicle and component testing and data analysis to identify root causes of failures and performance issues. Beyond automotive, Dr. Souri's experience also includes reliability and performance analysis of industrial control systems for manufacturing facilities and power plants.

Communication Networks

Dr. Souri has experience with the design of computer communication networks and investigating performance of delivery of rich media content. This includes wireless networks such as cellular/3GPP and IEEE 802.11 based networks, as well as hybrid fiber-coax networks. Dr. Souri has testified as an expert in communications matters involving internet telephony, the quality of video programming transmission, satellite communications, and optimizing dynamic network environments.

Academic Credentials & Professional Honors

M.A., University of Oxford, UK, 2007

Ph.D., Electrical Engineering, Stanford University, 2003

M.S., Electrical Engineering, Stanford University, 1994

B.A., Engineering Science, University of Oxford, UK, 1992

Prior Experience

Founder, Merenga Inc., 2000-2002

Co-Founder and Engineering Manager, arcadiaOne, Inc., 1999-2000

Research Engineer, Circuit Protection Division, Raychem, 1996-1997

Research Scientist, Corporate Research & Development, Raychem, 1994-1996

Professional Affiliations

Institute of Electrical and Electronic Engineers (senior member)

Oxford University Society (life member)

Oxford Union (member)

Patents

Patent 6,188,556: Two-Terminal Transistor PTC Circuit Protection Devices, WO0024126, 2001 (with C. McCoy, H. Duffy, A. Cogan, and R. Bommakant).

Patent 6,181,541: Transistor-PTC Circuit Protection Devices, WO0024105, 2001 (with H. Duffy, A. Cogan, M. Munch, and N. Nickols).

Patent 6,153,948: Electronic Circuits with Wide Dynamic Range of On/Off Delay Time, WO001249, 2000 (with A. Cogan).

Patent 5,569,495: Method of Making Varistor Chip with Etching to Remove Damaged Surfaces, CA2220931, EP0826225, WO963978, JP11505375T, 1996 (with A. Evans, T. Tsukada, and R. Dupon).

Publications

H. K. Kytomaa, P. Boehm, J. Osteraas, B. Haddad, J. Hacker, L. Gilman, E. Jampole, P. Murphy, S. Souri. An integrated method for quantifying and managing extreme weather risks and liabilities for industrial infrastructure and operations. Process Safety Progress 2019, American Institute of Chemical Engineers. July 2019.

D'Andrade B, Kattamis AZ, Murphy PF, McNulty J, Souri S. Arcing enabled by tin whiskers. IEEE: Reliability Society 2010 Annual Technical Report, 2010.

Fu J, Souri S, Harris J. Temperature and humidity dependent reliability analysis of RGB LED chip. Proceedings, ISTFA 2006: Discretes, Passives, MEMS, and Optoelectronics, pp. 137-141, 2006.

Saraswat K, Kapur P, Souri S. Performance limitations of metal interconnects and possible alternatives. 203rd Meeting of the Electrochemical Society, Paris, France, April 2003.

Saraswat K, Kapur P, Chandra G, Chiang T-Y, Souri S. Scaling induced performance limitations of metal interconnects. IEEE ISSCC Microprocessor Design Workshop, San Francisco, CA, February 2002.

Chiang T, Souri S, Chui C, Saraswat K. Thermal analysis of heterogeneous 3-D ICs with various integration scenarios. IEEE IEDM, December 2001.

Banerjee K, Souri S, Kapur P, Saraswat K. 3-D Heterogeneous ICs: A technology for the next decade and beyond. 5th IEEE Workshop on Signal Propagation on Interconnects, Venice, Italy, May 2001.

Banerjee K, Souri S, Kapur P, Saraswat K. 3-D ICs: A novel chip design for improving deep-submicrometer interconnect performance and systems-on-chip integration. Proceedings, IEEE: Special Issue on Interconnections, Vol. 89, No. 5, pp. 602-633, May 2001.

Davis J, Venkatesan R, Kaloyeros A, Bylansky M, Souri S, Banerjee K, Saraswat K, Rahman A, Reif R, Meindl J. Integration limits on Gigascale Integration (GSI) in the 21st Century. Proceedings, IEEE: Special Issue of Limits to Semiconductor Technology, Vol. 89, No. 3, pp. 3-05-324, March 2001.

Saraswat K, Banerjee K, Joshi A, Kalvade P, Kapur P, Souri S. 3-D ICs: Motivation, performance analysis and technology. Proceedings, 26th European Solid-State Circuits Conference (ESSCIRC), Stockholm, Sweden, September 19-21, 2000.

Souri S, Banerjee K, Mehrotra A, Saraswat KC. Multiple Si layer ICs: Motivation, performance analysis, and design implications. 37th ACM Design Automation Conference (DAC), pp. 213-220, Los Angeles, CA, June 5-9, 2000.

Saraswat K, Banerjee K, Joshi A, Kalavade P, Souri S, Subramanian V. 3-D ICs with multiple Si Layers: Performance analysis, and technology. 5th International Symposium on Low and High Dielectric Constant Materials: Materials Science, Processing, and Reliability Issues, 197th Meeting of the Electrochemical Society, Toronto, Canada, May 14-19, 2000.

Saraswat K, Souri S, Subramanian V, Joshi A, Wang A. Novel 3-D structures. Proceedings, IEEE International SOI Conference, pp. 54-55, 1999.

Subramanian V, Toita M, Ibrahim N, Souri S, Saraswat K. Low-leakage germanium-seeded laterally-crystallized single-grain 100nm TFTs for vertical integration applications. IEEE Electron Device Letters, Vol. 20, pp. 341-343, 1999.

Souri S, Saraswat K. Interconnect performance modeling for 3D integrated circuits with multiple Si layers. IEEE International Interconnect Technology Conference, pp. 24-26, 1999.

Haskell B, Souri S, Helfand M. Varistor behavior at twin boundaries in ZnO. Journal of the American Ceramic Society, Vol. 82, No. 8, August 1999.

Chu A, Souri S, Melfand M, Kinsman K, Dupon R.Superior electrical performance of Raychem ZnO Varistor through advanced processing. Proceedings, 1st Asian Meeting on Ferroelectricty, Xian, China, October 5-8, 1995.

Books

A. Arora, S. Arun Lele, N. Medora, S. Souri. Lithium-Ion Battery Failures in Consumer Electronics. Artech House, 2019.

Souri S, Chiang T, Kapur P, Banerjee K, Saraswat KC. 3-D ICs deep submicron interconnect performance modeling and analysis. In: Interconnect Technology and Design for Gigascale Integration. Davis J and Meindl J (eds), Kluwer Academic Publishers, October 2003.

Project Experience

Representative Projects in Intellectual Property Consulting and Expert Witness Support

- Led technical teams analyzing high-speed backplane (HSBP) and high-speed input/output (HSIO) electrical connectors enabling bandwidths ranging from 400 Gb/s to 800 Gb/s and beyond in data center, networking, and AI computing systems. Authored expert reports and provided testimony at International Trade Commission (ITC) hearings including evaluating electrical characteristics of the high-density interconnection systems.
- Provided expert declarations in various post-grant proceedings such as Inter Partes Review (IPR) related to patent validity. One example set of matters involved foundational semiconductor-design technologies related to multi-domain power-distribution networks used in modern CPUs, GPUs, and SoCs. The asserted technologies lie within core power-management and analog/RF infrastructure systems that are pervasive across high-volume processor products.

- Investigated claims of infringement related to intelligent residential HVAC systems. Led Exponent's team to perform analysis and offered expert opinions on software-driven energy-management technologies for smart thermostats, including adaptive schedule learning, thermal-mass estimation, HVAC efficiency analytics, and dynamic compressor-delay control.

Representative Projects in Integrated Circuits and Semiconductor Fabrication

- Led teams analyzing design and manufacturing of liquid crystal display (LCD) panels and semiconductor manufacturing technologies, specifically as related to disputes regarding pixel electrode optimization, semiconductor protective circuitry, and yield.
- Researched technical issues related to a dispute over structural limitations for distributing clock signals across ICs. The engineering challenge focused on impact on clock skew and latency as a function of buffer placements for high-performance processor designs.
- Authored expert reports and offered expert opinions at trial based on analysis of transistor gate structures for power semiconductor ICs. In particular, analyzed power amplification while maintaining signal integrity and reliability. Applications for such ICs include providing wireless charging power in automotive vehicles.

Representative Projects in Artificial Intelligence, Machine Learning, and Data Analytics

- Investigated incident at a major steel manufacturer in the U.S. that disrupted manufacturing and operations. The incident immobilized approximately 2,400 metric tons of iron ore pellets within the reactor vessel and resulted in losses exceeding $14 million due to plant shutdown, remediation, and repair activities. Application of data analytics provided insight into root cause of incident enabling a more detailed analysis of implemented control systems.
- Analyzed application of artificial intelligence in building automation systems and control networks for adapting to changing environmental conditions. Such systems connect sensors, thermostats, HVAC equipment, and controllers across a building and can be implemented using various communication architectures.
- Led technical analysis of adaptive signal quality for signal transmission technologies, particularly systems that enable multiple receivers to share content delivered over coaxial cable. Authored expert reports and provided testimony proffering opinions related to learning plant operating conditions for adapting to changes and maintaining signal integrity.

Representative Projects in Transportation Electronics, Embedded Systems, Sensor, and Industrial Controls

- Led Exponent's electrical, electronics, and computer science teams in investigating allegations of sudden unintended acceleration in automotive vehicles. Technical assessment included analysis of electrical system for power distribution, switching circuits, on-board electronic computer modules for vehicular control, software and firmware analysis and testing, as well as fault injection testing. In one set of matters, approximately 9 million vehicles globally were recalled. Exponent's findings were confirmed by independent analysis performed by NASA and the National Highway Traffic Safety Administration.
- Authored multiple expert reports detailing root-cause analysis of electronic switches related to one of the largest automotive safety campaigns in U.S. history, ultimately affecting more than 12 million vehicles across multiple recall actions. Analysis uncovered a multitude of factors impacting

risk such as orientation of electronic components in a vehicle, circuit protection design, and potential aftermarket modifications.

- Analyzed and testified as an expert in matters involving Positive Train Control (PTC) for locomotive safety. PTC is a federally mandated railroad safety system designed to prevent some of the most serious types of train accidents. Some of the technologies assessed include On-Board Unit (OBU), Back Office Server (BOS), and End-of-Train (EOT) systems that are intended to improve safety by continuously monitoring train location, speed, movement authority, and track conditions and by automatically intervening when necessary to avoid unsafe operations.

Representative Projects in Communications Networks

- Technical analysis and expert witness testimony related to television programming delivered over an IP-based fiber and telecommunications network. Comparative analysis with traditional hybrid fiber-coaxial cable system for franchise and regulatory purposes. Evaluation included network architecture, video-delivery technology, signal transport methods, and the distinction between telecommunications and cable infrastructures.
- Led technical analysis concerning foundational DOCSIS cable-network technologies used in cable modems and set-top boxes, including service-group management, signal-quality optimization, modulation and forward-error-correction control, and broadband communications over cable infrastructure. Such technologies are deployed across carriers' broadband and video-access networks and affect large-scale subscriber communications systems.
- Testified as an expert in matters related to RF-spectrum management, signal-alignment, synchronization, and broadband-network optimization technologies used within large cable communications systems. The technical analysis included factors impacting signal integrity, timing alignment, and spectral efficiency within broadband communications infrastructure.