



IEEE Transactions on Reliability

Special Section on Reliability, Resilience, and Prognostics Modeling of Complex Engineering Systems

Call for Papers

Background

Reliability, resilience, and prognostics modeling and assessment for complex engineering systems have become very challenging due to factors such as complex dependency/interfaces, functional interactions among mechanical, electrical, software, and control subsystems, as well as the interaction with external environments. The difficulties of modeling the reliability and resilience as well as system performance prognostics of complex engineering system have been observed from many perspectives, for example, 1) the schedule delays and cost overruns of major programs including NASA aerospace projects, DOD major programs, such as the F-35, Boeing 787, GM and the Chevy Volt projects, 2) challenges when planning and managing recovery of civil infrastructure from extreme events with resilience and sustainability. In addition, when diverse sources of disparate data and other physical performance data are available, how to monitor, model, and predict the system resilience and reliability over time of complex engineering systems becomes very critical for safe, reliable, resilient, and economic operations of most cyber-physical systems. This special section will focus on resilience and reliability modeling, assessment, and prognostics for a variety of complex engineering systems, new quantitative methods for reliability, resilience, and prognostics modeling in a variety of application areas are especially welcome.

Topics

The topics of interest include, but are not limited to:

- Fundamental and innovative methodologies for reliability, resilience, and prognostics modeling and analysis focusing on modeling functional dependency and failure propagations
- Design for resilience and reliability methods for engineering systems involving multidisciplinary functions and interactions/interfaces
- Resilience and reliability performance prognostics and failure diagnostics methods
- Innovative methods for reliability and resilience modeling, assessment, and prognostics with extreme data, e.g., limited data or big data such as large volume and disparate operating and performance data
- Resilience and sustainability in civil infrastructure redesign and recovery from natural disasters
- Reliability, Resilience, and prognostics performance in decision support process to cope with extreme events
- Case studies of successful reliable and resilient complex engineering design processes and methodologies

Submission Information

We welcome high quality submissions that are original and innovative research, not published or currently submitted elsewhere. We also encourage extensions of conference papers, unless prohibited by copyright agreements, if there is a significant difference in the technical content and does not involve self-plagiarism. Authors can find more information at <http://rs.ieee.org/transactions-on-reliability.html> on how to prepare and submit their manuscripts.

Important Dates

December 25, 2016	Paper submission deadline
May 1, 2017	All reviews back

May 15, 2017

First round notification

Guest Editors

Zhaojun (Steven) Li, PhD, Western New England University, USA

Elsayed A. Elsayed, PhD, Distinguished Professor, Rutgers University, USA

Ming J. Zuo, PhD, Professor, University of Alberta, Canada

About the Guest Editors

Dr. Zhaojun “Steven” Li is an Assistant Professor at the Department of Industrial Engineering and Engineering Management, Western New England University in Springfield, MA. Dr. Li’s research interests focus on Reliability, Quality, and Safety Engineering in Product Design, Systems Engineering and Its Applications in New Product Development, Diagnostics and Prognostics of Complex Engineered Systems, and Engineering Management. He earned his doctorate in Industrial Engineering from the University of Washington in 2011. He is an ASQ certified Reliability Engineer, and Caterpillar Six Sigma Black Belt. Dr. Li has publications in many journals including IIE Transactions on Quality and Reliability, Reliability Engineering and System Safety, Journal of Manufacturing Systems, IEEE Transactions on Reliability, and Quality Engineering. His most recent industry position was a reliability team lead with Caterpillar Rail Division to support the company’s Tier 4 Locomotive New Four Stroke Engine and Gas-Diesel Dual Fuel Engine Development.

Visit Dr. Li’s [homepage](#) for more details.

Dr. Elsayed A. Elsayed is Distinguished Professor in the Department of Industrial and Systems Engineering, Rutgers University. He is also the Director of the NSF/Industry/University Co-operative Research Center for Quality and Reliability Engineering. His research interests are in the areas of quality and reliability engineering and Production Planning and Control. He is a co-author of *Quality Engineering in Production*, McGraw Hill Book Company, 1989. He is also the author of *Reliability Engineering*, Addison-Wesley, 1996. These two books received the 1990 and 1997 IIE Joint Publishers Book-of-the-Year Award respectively. His recent book *Reliability Engineering 2nd Edition*, Wiley, 2012 received the 2013 *Outstanding IIE Publication*.

Visit Prof. Elsayed’s [homepage](#) for more details.

Dr. Ming J Zuo received the Bachelor of Science degree in Agricultural Engineering in 1982 from Shandong Institute of Technology, China, and the Master of Science degree in 1986 and the Ph.D. degree in 1989 both in Industrial Engineering from Iowa State University, Ames, Iowa, U.S.A. He is currently Full Professor in the Department of Mechanical Engineering at the University of Alberta, Canada. His research interests include system reliability analysis, maintenance modeling and optimization, signal processing, and fault diagnosis. He is Associate Editor of IEEE Transactions on Reliability, Department Editor of IIE Transactions (2005-2008, 2011-present), Regional Editor for North and South American region for International Journal of Strategic Engineering Asset Management, and Editorial Board Member of Reliability Engineering and System Safety, Journal of Traffic and Transportation Engineering, International Journal of Quality, Reliability and Safety Engineering, and International Journal of Performability Engineering. He is Fellow of the Institute of Industrial Engineers (IIE), Fellow of the Engineering Institute of Canada (EIC), Founding Fellow of the International Society of Engineering Asset Management (ISEAM), and Senior Member of IEEE.

Visit Prof. Zuo’s [homepage](#) for more details.

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