ASME
SETTING THE STANDARD

SAFETY ENGINEERING
& RISK ANALYSIS
DIVISION

Division Newsletter
Volume 17, Second Quarter

Highlights

Journal News

Updates on the most recent contents and award-winning articles in the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems

Call for Papers

Submit your new research and findings to Part A and Part B journal sections

Editorial Page

Thoughts on risk and energy policy as we move away from fossil fuels.

Save The Date

Student Safety Innovation Challenge

• Student paper submission by July 31, 2023.

• SERAD announces winners in the respective undergraduate and graduate groups Aug. 31, 2023.

• SERAD special session for student contest, and awards banquet during IMECE Conference.

IMECE Conference

• Oct. 29-Nov. 2, 2023 - New Orleans, LA, USA

Chair's Message

Dear SERAD Members,

The ASME Fiscal Year 2023 ended on June 30, 2023. The focus of our last Executive Committee shifted towards reflecting upon the year that flashed by and the leadership succession plan for the year ahead. Looking back, it has been a tremendous year filled with strengthening the division and reaching out to the community. The division prepared an elevator pitch, a strategic plan, a division budget plan, SWOT analysis, and multiple operating guides. IMECE 2022 was held in-person as the pandemic started to wane away. This opened the opportunity for SERAD to host the student award dinner at the IMECE venue. The division delivered a TEC talk on anomaly detection, led the safety section of robotics workshop, co-sponsored the Joint Rail Conference, and setup a planning committee to organize a new conference on hydrogen risk and reliability. The division setup an endowment fund towards the Bilal Ayyub-John Weichel Safety Award. Best papers from the Journal of Risk and Uncertainty in Engineering were awarded at the IMECE. The division's future is looking bright with a successful leadership being transitioned to Stephen Ekwaro-Osire as the SERAD's Chair for FY 2024. Bill Munsell, Joao Dias, Stephanie Scholte, and Nazir Gandur have kindly accepted to support SERAD as the 4th Vice Chair, IMECE Chair, newsletter Editor, and newsletter co-Editor respectively. We are excited for the next generation of leadership and wish them all the best in their endeavors!

Sincerely,

Arun Veeramany Chair for FY23, ASME SERAD

Links to SERAD Activities

 LinkedIn: ASME Safety Engineering and Risk Analysis Division

The ASME SERAD Home page

ASME Safety Engineering & Risk Analysis Division Home Page

The Joint Rail Conference 2023 Track 5 Sponsored by SERAD

Joint Rail Conference 2023 Track 5

ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems. Part B: Mechanical Engineering

Mechanical Engineering

2023 IMECE International Mechanical Engineering Trade & Expo

2023 IMECE Conference Details

Journal News

ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering, Part B: Mechanical Engineering

Alba Sofi, PhD

University "Mediterranea" of Reggio Calabria, Italy, e-mail: alba.sofi@unirc.it

Established in 2014 by Professor Bilal M. Ayyub from the University of Maryland College Park, the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering and Part B: Mechanical Engineering serves as a medium for dissemination of research findings, best practices and concerns, and for discussion and debate on risk and uncertainty-related issues in the areas of civil and mechanical engineering and other related fields. The journal addresses risk and uncertainty issues in planning, design, analysis, construction/ manufacturing, operation, utilization, and life-cycle management of existing and new engineering systems.

The current Editor-in-Chief is the Founding Associate Editor, Professor Michael Beer, from Leibniz Universität Hannover. Professor Michael Beer, from Leibniz Universität Hannover.

Both Part A and Part B are listed in the Emerging Citation Sources by Clarivate Analytics, formerly Thomson Reuters, and are eligible for indexing in 2018. From 2016 onward, all articles will be included in Web of Science. They are also included in Scopus.

Based on the latest Journal Citation Reports by Clarivate Analytics, Part A has an impact factor for 2022 of 2.5 and Part B has successfully secured an impact factor for 2022 of 2.2.

Contents

Latest State of the Art Reviews: Part A

"What Geotechnical Engineers Want to Know about Reliability" by Kok-Kwang Phoon

"Resilience-Based Design of Infrastructure: Review of Models, Methodologies, and Computational Tools Resilience-Based Design of Infrastructure: Review of Models, Methodologies, and Computational Tools" by Mahdi Shadabfar, Mojtaba Mahsuli, Yi Zhang, Yadong Xue, Bilal M. Ayyub, Hongwei Huang and Ricardo A. Medina

"Time-Dependent Reliability of Aging Structures: Overview of Assessment Methods" by Cao Wang, Michael Beer, and Bilal M. Ayyub

"Structural System Reliability: Overview of Theories and Applications to Optimization" by Junho Song, Won-Hee Kang, Young-Joo Lee, and Junho Chun

"Emerging Technologies for Resilient Infrastructure: Conspectus and Roadmap" by Mahmoud Reda Taha, Bilal M. Ayyub, Kenichi Soga, and Sherif Daghash

"Probabilistic Inference for Structural Health Monitoring: New Modes of Learning from Data" by Lawrence A. Bull, Paul Gardner, Timothy J. Rogers, and Elizabeth J. Cross

Latest Review Articles: Part B

"A Recent Review of Risk-Based Inspection Development to Support Service Excellence in the Oil and Gas Industry: An Artificial Intelligence Perspective", by Taufik Aditiyawarman, Agus Paul Setiawan Kaban, Johny Wahyuadi Soedarsono

"Prognostics and Health Management of Wind Energy Infrastructure Systems", by Celalettin Yüce, Ozhan Gecgel, Oğuz Doğan, Shweta Dabetwar, Yasar Yanik, Onur Can Kalay, Esin Karpat, Fatih Karpat, Stephen Ekwaro-Osire

"Uncertainty Quantification for Additive Manufacturing Process Improvement: Recent Advances", by Sankaran Mahadevan, Paromita Nath, Zhen Hu

"Optimizing Predictive Maintenance With Machine Learning for Reliability Improvement", by Yali Ren

"Path Integral Methods for the Probabilistic Analysis of Nonlinear Systems Under a White-Noise Process", by Mario Di Paola and Gioacchino Alotta

"Sensemaking in Critical Situations and in Relation to Resilience - A Review" by Stine S. Kilskar, Brit-Eli Danielsen, and Stig O. Johnsen

Latest Special Collections: Part A

"Special Collection on Benchmarking Data-Driven Site Characterization", Kok-Kwang Phoon, Takayuki Shuku, Jianye Ching, Ikumasa Yoshida

"Special Collection on Structural Time-Dependent Reliability Assessment: Advanced Approaches for Engineered Structures", Cao Wang, Hao Zhang, Michael Beer

"Special Collection on Bayesian Learning Methods for Geotechnical Data", Ka-Veng Yuen, Jianye Ching, and Kok Kwang Phoon

"Special Collection on Resilience Quantification and Modeling for Decision Making", Gian Paolo Cimellaro, and Nii O. Attoh-Okine

Latest Special Issues And Special Sections: Part B

"Special Section on Decommissioning and Life Extension of Complex Industrial Assets", Raphael Moura, Michael Beer, Gilberto Francisco Martha de Souza, and Edoardo Patelli

"Special Section on Risk, Resilience, and Reliability for Autonomous Vehicle Technologies: Trend, Techniques, and Challenges", Mohammad Pourgol-Mohammad, Arun Veeramany, and Bilal Ayyub

"Special Section on Probabilistic Approaches for Robust Structural Health Monitoring of Wind Energy Infrastructure", Imad Abdallah and Eleni Chatzi

"Special Issue on Uncertainty Quantification and Management in Additive Manufacturing", Zhen Hu, Saideep Nannapaneni, and Sankaran Mahadevan

"Special Section on Risk and Uncertainties in Offshore Wind and Wave Energy Systems", Vikram Pakrashi, Jimmy Murphy, and Budhaditya Hazra

"Special Section: Nonprobabilistic and Hybrid Approaches for Uncertainty Quantification and Reliability Analysis", by Matthias G. R. Faes, David Moens, Michael Beer, Hao Zhang, and Kok-Kwang Phoon

"Special Section on Response Analysis and Optimization of Dynamic Energy Harvesting Systems in Presence of Uncertainties", Agathoklis Giaralis, Ioannis A. Kougioumtzoglou, and Pol D. Spanos

Recognitions & Awards

Recognitions for Papers

Part A	
Editor's Choice Paper	"What Geotechnical Engineers Want to Know about Reliability" by Kok-Kwang Phoon
Most Read Paper	"Structural System Reliability: Overview of Theories and Applications to Optimization" by Junho Song, Won-Hee Kang; Young-Joo Lee, and Junho Chun
Most Cited Paper	"Scale of Fluctuation for Spatially Varying Soils: Estimation Methods and Values" by Brigid Cami, Sina Javankhoshdel, Kok-Kwang Phoon, and Jianye Ching
Editor's Choice Collection	For each issue of the journal, the Chief Editor may select a paper to be featured on the journal homepage in the ASCE Library. The paper is available for free to registered users for 1 to 4 months, depending on how frequently the journal is published. A list of Editor's Choice selections is available here.

Part B	
Most Read Paper	"System-Reliability-Based Disaster Resislience Analysis of Infrastructure Networks and Casuality-Based Importance Measure" by Youngjun Kwon, Junho Song
Most Cited Paper	"Digital Twins: State-of-the-Art and Future Directions for Modeling and Simulation in Engineering Dynamics Applications"" by D. J. Wagg, K. Worden, R. J. Barthorpe, P. Gardner
Featured Article	"Resilience Decision-Making for Complex Systems", by Julian Salomon, Matteo Broggi, Sebastian Kruse, Stefan Weber, Michael Beer

Outstanding Reviewers

Part A 2022 Outstanding Reviewers	Part B 2021 Reviewers of the Year
Babatunde Oluwaseun Ajayi	Chen Jiang, *Huazhong University of Science and Technology, China*
Nicholas Chileshe	Imad Abdallah, *Eidgenössische Technische Hochschule Zürich, Switzerland*
You Dong	
Ketson Roberto Maximiano dos Santos	
Ao Du	
De-Cheng Feng	
Kun Gao	
Ying Lu	
Cao Wang	
Hexiang Wang	
Jie Zhang	

Bilal M. Ayyub Research Award for Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering

Bilal M. Ayyub Research Prize for Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering

Established in 2019, the Editor's Award is given annually to one paper in Part A and one paper in Part B appearing in the preceding volume year. Papers are evaluated based on the following criteria:

- fundamental contributions
- potential impact
- practical relevance to industry
- intellectual depth
- presentation quality

Starting from 2022, the Editor's Award for Part A and Part B was named "Bilal M. Ayyub Research Award" and "Bilal M. Ayyub Research Prize", respectively, in recognition of the outstanding professional leadership of the founding Editor-in-Chief, Professor Bilal M. Ayyub, Dist. M. ASCE and Hon. M.ASME.

2022 Part A Bilal M. Ayyub Research Prize
Authors: Heye Hyang, Jinxin Liu, Yibin Yang, Jianqiang Wang Title: "Risk Generation and Identification of Driver-Vehicle-Road Microtraffic System"

2022 Part B Bilal M. Ayyub Research Prize
Author: Andrey Morozov, Thomas Mutzke, Kai Ding
Title: "Automated Transformation of uml/sysml Behavioral Diagrams for Stochastic Error Propagation Analysis of Autonomous Systems"

The awards will be presented to the authors in attendance at the ASCE INSPIRE Conference on Infrastructure Innovation and Adaption for Sustainable and Resilient World during the period of November 16 - 18, 2023, .

ASCE and ASME will post the winning papers' information on the journal website as well as on social media. The awarded papers will be made freely available from the ASCE Library (Part A) and from the ASME Digital Collection (Part B) for one year to anyone interested once registered and logged in to download. Moreover, ASME offers the authors a one-year free subscription to Part B.

EARLY CAREER EDITORIAL BOARD

Starting in 2020, the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems in its two parts has implemented the Early Career Editorial Board (ECEB) program to bring onboard young members to its editorial board under the mentorship of the journal leadership. The ideal ECEB member is within 1–3 years of having earned a doctorate degree. The term of an ECEB member is 2 years with the possibility of renewal for a second term. After a selection procedure, eight new ECEB members have been appointed for the next two years.

Call for Papers

Part A: active Calls for Special Collections

Special Collection on "Resilience of Power Infrastructure System". Paper submission deadline: September 30, 2023.

Special Collection on "New Technologies in Risk Assessment of Maritime Transport". Paper submission deadline: July 31, 2023.

Special Collection on "Non-Deterministic Model Updating and Structural Health Monitoring for Existing Structures". Paper submission deadline: August 31, 2023.

Part B: active Calls for Special Issues

Special Issue on "Special Issue on Uncertainty-Aware Diagnostics and Prognostics for Health Monitoring and Risk Management of Engineered Systems" (SI059B). Paper submission deadline: April 1, 2024.

Special Issue on "Special Issue on "Modeling and Analysis of Inspection Uncertainties in Structural Health Monitoring" (SI059B). ". Paper submission deadline: July 31, 2023

Special Issue on "Probabilistic Digital Twins in Additive Manufacturing". Paper submission deadline: September 30, 2023.

Social media (Twitter and LinkedIn)

The ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems in its two parts is now also active on Social Media. Follow our pages on Twitter and LinkedIn:

Twitter: ASCE-ASME Journal of Risk and Uncertainty

LinkedIn: ASCE-ASME Journal of Risk and Uncertainty

https://chinahow.guide/wechat-registration-sign-up/

to stay up-to-date on latest issues, highlighted journal content, active calls for special issues and special collections, recognitions and awards.

Calls for Papers

Submission

Part A: Submit to Part A here

Part B: Submit to Part B here

State-of-the-Art Reviews (Part A) and Review Articles (Part B) on topics of current interest in the field of risk and uncertainty are especially welcome.

Please contact the Editor or Managing Editors by email if you are interested in guest editing a Special Collection (Part A) or a Special Issue (Part B).

Editoral Column

Interview with Ernie Kee

On behalf of SERAD, I would like to extend a huge thank you to Ernie Kee for his dedication and service as our ASME SERAD Newsletter Editor.

1. **Why did you choose a career in Research Engineering?**
   Ernie was given an opportunity to work at the Idaho National Laboratory (INL) on the Loss Of Fluid Test reactor experiment which started his interest in research. There, he worked closely with V. Ransom on the RELAP5 reactor safety code series. They put together the first full system simulation of a nuclear reactor with RELAP5 to simulate the Three Mile Island Unit II core melt accident. His role was bringing challenging problems with reactor simulation to Vic who would either improve or develop a new module to model the phenomena for experimentation. One such problem is the simulation of a manometer for which the natural frequency can be derived analytically.[1]

   Ernie then worked with innovative researchers such as C. Broadus & J. Spore on the first Counter Current Flow Model for simulating Upper Head Injection in a German Reactor. He then joined the South Texas Project where he collaborated with E. Popova, J. Hasenbein, D. Morton & J. Howell at UT Austin and Y. Hassan, P. Nelson & R. Vaghetto at Texas A&M. He is currently collaborating with Z. Mohaghegh at the University of Illinois, K. Howe & J. Leavitt at University of New Mexico and in industry with D. H. Johnson, D. Wakefield, "Woody" Epstein (dec.), J. Liming at ABS Consulting, B. Letellier at Alion Science.

2. **How did you get started?**
   As a teenager, Ernie worked as a landscape architect and on a dairy farm, planting trees, milking Holsteins, bringing in hay, picking rocks out of the fields, putting up hay in the barn, storing corn silage, and other general dairy farm tasks. Ernie attended University of Idaho studying Mechanical Engineering. In the summers he worked for the US Forest Service in surveying and fighting forest fires. He performed grade survey for a road into a fire camp, that road was finished the day he surveyed it! Ernie joined the US Navy in 1970 and served in the submarine service as a Machinist's Mate on the Seahorse, SSN 669. He was trained to operate, maintain, and overhaul propulsion, air conditioning, oxygen generating, CO_2 scrubbing, turbine-electric generating equipment, valves, pumps and heat exchangers and in health physics and reactor chemistry as an Engineering Laboratory Technician. He performed radiation surveys and sampled fluids, adding or removing chemicals to reduce corrosion and foaming (in steam generators). He left the US Navy in 1976 to complete his university education. After graduation, Ernie began working with the INL on the LOFT project!

3. **How did you get involved with ASME SERAD and become Editor?**
   Ernie answered a solicitation for volunteers! The Newsletter Editor position has given him an opportunity to meet and develop relationships with interesting and knowledgeable professionals.

4. Outside of your job, what are your hobbies?
   Ernie is musical, a self taught guitarist and sings tenor in a choir. He loves nature and enjoys gardening, woodworking and carpentry.

5. **Tell us about your family!**
   Ernie and Linda had been married for 45 years and are both Mechanical Engineers. The strength of their love provides support, happiness and improves productivity! Linda is a consultant working Hazardous Waste Management. Their daughter, Sara earned her PhD in Neuroscience at Baylor College of Medicine in 2017 and is expecting their second granddaughter! Ernie grew up in a big family with 3 brothers and 3 sisters. Many live in the Northwest and get together in the summers an ancestral home in North Idaho.

6. **What is your biggest achievement?**
   In Ernie's life, his marriage. In industry, developing teams, then working with the team, learning from collaborators all incredibly talented and gifted people who I have been privileged to team with.

7. **What advice would you give to someone who is trying to pursue a career in the field of SERAD and / or academia?**
   Find good teammates then form relationships keeping in mind that all on the team are equal contributors with unique talents and abilities.

Stephanie Scholte

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[1] See for example, *RELAP5 Mod3 Manual* pg. 2.1-9; Kee, Ernest J., Martin S. Shinko, W. H. Grush, and Keith G. Condie. Best estimate prediction for LOFT nuclear experiment L3-2. No. EGG-LOFT-5089. EG and G Idaho, Inc., Idaho Falls, ID (United States), 1980.; Kee, E. J., P. J. Schally, and L. Winters. Base input for LOFT RELAP5 calculations. No. EGG-LOFT-5199. EG and G Idaho, Inc., Idaho Falls (USA), 1980.

Editoral Column

Building a Cleaner Economy

The US Inflation Reduction Act has created opportunities to innovate and modernize. The US has committed 370 billion to lowering energy costs for working families by developing a clean energy solutions sector and strengthening supply chains. The Act focus's on providing opportunities to marginalized communities, communities overburdened with pollution or communities underserved by infrastructure. The incentives present transformational opportunities; have you considered building a clean energy solution at or near a former coal mine site?

Tax credits, provisions, grants, loans and additional bonuses are also available to reduce pollution from port operations, heavy duty trucks and develop our transportation infrastructure. Now is an opportune time to modernize the grid, build nationwide electric vehicle chargers, strengthen our domestic battery supply chain, expand public transit and passenger rail, develop clean energy, develop emission reduction technologies and storage systems.

We have focused on reducing green house gases, improving safety and reliability engineering by advancing technology in vehicles for many years. For instance, the advancements in automotive technologies have created job opportunities for innovation and investment, improved highway safety and have delivered environmental benefits. Vehicle control systems that automatically accelerate and brake with the flow of traffic can conserve fuel. Vehicle crash avoidance technologies such as lane departure warning and forward collision warning eliminate a large number of accidents. These technologies contribute to reducing congestion and reduce fuel consumption. Greater economic, environmental, mobility and safety benefits will likely to emerge as great number of vehicles adopt safety and reliability technology.

Stephanie Scholte, SERAD Editor

References 1. US Federal Government - Inflation Reduction Act 2. Building a Clean Energy Economy - A Guidebook to Inflation Reduction Act's Investments in Clean Energy and Climate Action, January 2023, Version 2 3. National Highway Traffic Safety Administration - Preliminary Statement of Policy Concerning Automated Vehicles

Thoughts from the Coeditor

Engineering Excellence, Safety Lessons, and the Pursuit of Progress: Reflecting on the Titanic and Looking Towards the Future

The Titanic, a magnificent and impressive ship, set sail from Southampton, England on April 10, 1912, with its sights set on New York. At that time, it was considered the largest and most luxurious ship ever built, and its designers believed that it was unsinkable (Eaton and Haas, 1995). However, tragedy struck on April 14, 1912, when the Titanic collided with an iceberg in the North Atlantic Ocean, causing significant damage to its hull. This devastating event served as a poignant reminder that even the most advanced engineering marvels can be fallible.

The sinking of the Titanic taught a important lesson about the significance of dependable and durable ship design. Despite featuring advanced technologies during its time, the vessel had certain weaknesses that became apparent. The absence of ample watertight compartments and insufficient availability of lifeboats played a major role in the heartbreaking loss of lives (Lynch, 1998). As a result, engineers and naval architects learned the importance of incorporating redundancy and fail-safe mechanisms into their designs to reduce risks and promote safety.

Following the tragedy of the Titanic, safety regulations related to maritime operations underwent a significant overhaul. International standards were put in place to ensure the safety of such operations, with the International Convention for the Safety of Life at Sea (SOLAS), 1914, being one of the most notable outcomes (International Maritime Organization (IMO), 2020). This historic agreement mandated the implementation of improved safety measures, such as providing adequate lifeboats, enhancing watertight compartments, and enforcing stricter operating procedures. The impact of this has had a lasting effect on the fields of engineering, reliability, safety, and risk.

Fast forward to the year 2023, during an ambitious expedition to explore the depths and remaining pieces of the "unsinkable" Titanic, the Titan expedition accident occurred. This modern-day maritime tragedy once again highlighted the complex interplay between engineering, reliability, safety, and risk. Unfortunately, another tragic event has taken place resulting in the loss of the crew members aboard. This serves as a harsh reminder that despite technological advancements and engineering progress, there are still inherent risks, and achieving complete reliability remains a challenging feat.

Friedrich Nietzsche once pondered, "How could anything come from its opposite?" (Nietzsche, 1888). This idea can be applied to the Titanic disaster, which acted as a catalyst for positive change in the maritime industry. The tragedy led to a collective acknowledgment of the need for improved safety measures and a steadfast commitment to preventing similar incidents in the future. Although the Titan expedition accident is a stark reminder that risks are still present, it is anticipated to inspire advancements and enhancements in maritime safety, resulting in a continual improvement of standards and protocols.

It is crucial to prioritize fundamental principles that form the foundation of any successful endeavor. These principles include engineering excellence, reliability, safety, and risk management strategies. Engineering excellence ensures precision, innovation, and durability in creations, ensuring optimal performance and longevity. Reliability guarantees consistent and dependable results from systems, structures, and technologies, instilling trust. Safety is of utmost importance, protecting individuals and the environment while minimizing potential hazards and risks. Effective risk management enables proactive identification and addressing of potential challenges, providing informed decision-making and reducing uncertainties. By adhering to these commitments, one can confidently pursue new horizons, knowing that endeavors are rooted in excellence, reliability, safety, and risk management.

Let's talk!

Nazir Gandur, EIT, SERAD co-editor

Ph.D. Candidate

In memory of Trinidad Laureano, my grandma.

References

Eaton, J. P. and C. Haas (1995). *Titanic: Triumph and tragedy*. WW Norton & Company.

Lynch, D. (1998). *Titanic: An Illustrated History*. Hyperion.

International Maritime Organization (IMO). (2020). *SOLAS - International Convention for the Safety of Life at Sea*.

Nietzsche, F. (1888). *Twilight of the Idols*.

SERAD Executive Committee

Table 1. 2022–2023 SERAD Committee Membership

Executive Committee		Appointments	
Position	Person	Position	Person
Chair	Arun Veeramany	**Chair: Awards and Fellow Nomination Committe**	Mohammad Pourgol-Mohammad
1ˢᵗ Vice-Chair	Stephen Ekwaro-Osire	**Newsletter Editor**	Ernie Kee
2ⁿᵈ Vice-Chair-Treasurer	Mihai Diaconeasa	**Webinars / Outreach Chair**	Open
3ʳᵈ Vice Chair-Membership	Andrey Morozov	**Student Program Coordinator**	Deivi Garcia
4ᵗʰ Vice-Chair-Secretary	Dr. Alba Sofi	**Track Co-Chairs**	Mihai Diaconeasa Ernie Kee John Wiechel Alice Sun
Past Chair	Xiaobin Le, Ph.D., PE	**Technical Content Coordinator**	Giulio Malinverno
IMECE 2023 Track Chair	Bill Munsell		

Executive Autobiographies

Dr. Arun Veeramany
Scientist at Pacific Northwest National Laboratory - PNNL

Dr. Veeramany our Chair specializes in risk, reliability and resilience of complex engineered systems. He has supported various U.S. Department of Energy Offices, international nuclear and public safety organizations and multi-national corporations. Dr. Veeramany is currently the Project Manager (PM) and Principal Investigator (PI) for the large-scale hydrogen storage risk assessment projects for the Port of Seattle and Seattle City Light and was the PI for development of risk framework for modeling high-impact, low-frequency (HILF) events which affect the power grid as well as the PI for development of a framework for risk-informed autonomous adaptive cyber controllers. Dr. Veeramany managed systems and platforms for the multi-year ARPA-E Grid Optimization Competition and the led the development of a concurrent optimization algorithm for the APRA-E high performance power grid optimization (HIPPO) project. Dr. Veeramany holds a Ph.D. in reliability of nuclear power plant systems from University of Waterloo, Canada with prior experience involving development of models for risk-informing regulatory initiatives leading to operationalization and optimization of key decision support systems for nuclear and public safety regulators.

Dr. Alba Sofi
University "Mediterranea" of Reggio Calabria, Italy

Alba Sofi is currently an Associate Professor of Mechanics of Solids and Structures at the University "Mediterranea" of Reggio Calabria (Italy) and an Adjunct Professor at Guangzhou University (China). In 2017, she earned the National Scientific Qualification as a Full Professor of Mechanics of Solids and Structures. Dr. Sofi received her Ph.D degree in Structural Engineering from the University of Palermo (Italy). She was a Visiting Professor at Xidian University (2019, 2021) and Guangzhou University (2018 in China. She held Visiting Fellow positions at Oxford University (2016-2019) and at the University of New South Wales in Australia (Aug-Nov 2017). In 2004, she was appointed as a Visiting Scholar at Rice University (USA). Dr. Sofi serves as an Associate Managing Editor of the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems. She is a member of several Editorial Boards including the International Journal of Non-Linear Mechanics, Advances in Engineering Software, and the Journal of Infrastructure Preservation and Resilience. Dr. Sofi received the Editor's Award for the Best Paper published in 2020 in the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering. She was an Early Career Keynote speaker at ICOSSAR 2021-2022 and a Keynote speaker at UNCECOMP 2023. She chaired the 9th International Workshop on Reliable Engineering Computing (REC 2021) and has served on the scientific committees of many international conferences. She is a member both of the American Society of Civil Engineers (M.ASCE) and the American Society of Mechanical Engineers (M.ASME) as well as of the Committee on Probability and Statistics in the Physical Sciences of the Bernoulli Society. She serves as the 3th vice-Chair of the ASME Safety Engineering; Risk Analysis Division (SERAD). Dr. Sofi's primary research interests focus on: stochastic dynamics; probabilistic and non probabilistic approaches for uncertainty quantification with specific expertise in interval analysis; fractional calculus; computational mechanics; bridge-vehicle dynamic interaction; cable dynamics; and non-local elasticity theory. She has published over 100 technical papers in peer-reviewed journals and conference proceedings. She has been involved in several research projects supported by the Italian Ministry of University and Research.

Dr. Mihai Diaconeasa

North Carolina State University - Department of Nuclear Engineering

Dr. Mihai Diaconeasa obtained his B.S. degree from University College Utrecht, the international undergraduate honors college of Utrecht University, the Netherlands, his M.S. in Nuclear Science and Engineering from Massachusetts Institute of Technology (MIT), and Ph.D. in Mechanical Engineering from University of California, Los Angeles (UCLA). After his graduation, Dr. Diaconeasa held the postdoctoral research scholar position at the B. John Garrick Institute for the Risk Sciences from the School of Engineering at UCLA. Over the past years, Dr. Diaconeasa has developed the methodologies needed to design and implement a suite of computer codes in the probabilistic risk, reliability, and resilience assessment (PRA) fields for nuclear, aerospace, and maritime industries. He has served as the Associate General Chair for the International Conference on Probabilistic Safety Assessment and Management (PSAM-14) hosted by UCLA in 2018, as the Track Chair/Co-Chair of the American Society of Mechanical Engineers (ASME) Design, Reliability, Safety, and Risk at the International Mechanical Engineering Congress and Exposition (IMECE) since 2020, and Publications Chair of the American Nuclear Society (ANS) International Probabilistic Safety Assessment and Analysis Conference in 2023 (PSA 2023) and upcoming Advanced Reactor Safety (ARS) Embedded Topical in the 2024 ANS Annual Meeting. Dr. Diaconeasa is our Vice Chair and is also the Vice Chair of the American Nuclear Society (ANS) Nuclear Installations Safety Division (NISD) Executive Committee and the Vice Chair of the ANS Advanced Reactor Working Group (ARWG). Also, he serves as the Chair of the ANS Standards Committee ANS-30.2 and member of ANS-30.1 Working Groups under the Research and Advanced Reactors Consensus Committee and is the Vice Chair of the "Probabilistic Design Methods" Subcommittee, "Plant Systems Design" ASME Standards Committee. Dr. Diaconeasa leads the design and development of ADS-IDAC, a dynamic probabilistic risk assessment methodology and software platform for nuclear power plants and is the founder of the OpenPRA Initiative dedicated to designing and developing a wide range of traditional probabilistic risk assessment methods and open source software. Dr. Diaconeasa received the ANS David Okrent Award for Nuclear Safety. During his tenure at the UCLA's B. John Garrick Institute for the Risk Sciences, he has led the development of the Hybrid Causal Logic Analyzer system risk and reliability software used to enhance the design process and assess the commercial off-the-shelf (COTS) parts usage in space systems for extended deep space missions at NASA's Jet Propulsion Laboratory (JPL) and the Phoenix human reliability analysis (HRA) methodology and software adopted by the Japan's Nuclear Regulation Authority (JNRA).

Dr. Stephen Ekwaro-Osire
Interim Associate Dean for Undergraduate Studies and Professor

Professor Stephen Ekwaro-Osire is the interim associate dean for undergraduate studies in the Whitacre College of Engineering at Texas Tech University (TTU). He is a full professor of mechanical engineering and a licensed professional engineer in the State of Texas. He is a Fellow of the American Society of Mechanical Engineers. He is also a Fellow of the Society of Design and Process Science. He is a Fulbright Scholar alumnus. He has over ten years of experience in educational leadership at TTU. Among others, he has served as the interim chair of the Department of Mechanical Engineering, the interim chair of the Department of Industrial, Manufacturing and Systems Engineering, and the associate dean of research and graduate programs in the Whitacre College of Engineering. While at TTU, he has held honorary professorships at four universities in four countries. He has published 75 refereed archival papers in scientific journals, 136 refereed papers in conference proceedings, 14 book chapters, and two books. He has also delivered 40 invited talks in seven countries. As a primary advisor, he has supervised and graduated 16 PhD students and 27 MS students, and he is currently supervising four PhD students. Besides serving as a primary advisor, he has additionally served on 81 PhD committees and 58 MS committees. He has mentored and trained seven post-doctoral research associates. Also, as the director of the Product Design and Development Laboratory, he has supervised and mentored 248 undergraduate students. Professor Ekwaro-Osire and his collaborators have secured 8.1 million for their research from state agencies, federal agencies, international funding agencies, and industry. Professor Ekwaro-Osire has 18 years of experience in higher education quality enhancement. Of which, for the last nine years he has served as a program evaluator visitor (PEV) and visit co-team chair for ABET (a global accreditor of college and university programs in applied and natural science, computing, engineering, and engineering technology). His research interests are uncertainty

quantification, structural health diagnosis and prognosis, engineering design, and orthopedic biomechanics. He is a founding member of the Society for Design and Process Science, and an active member of the American Society for Engineering Education, the American Society of Biomechanics, the Society for Experimental Mechanics, and the American Association for Wind Engineering.

Andrey Morozov

Junior Professor - Institute of Industrial Automation and Software Engineering

Dr. Andrey Morozov started at IAS in 2020 and holds a six year tenure-track position in Networked Automation Systems. His research interests are in: Networked Automation Systems (NAS), Dependability, and Artificial Intelligence (AI). Dr. Morozov received his diploma in Computer Science and Mathematics from Ufa State Aviation Technical University in 2007 in Ufa, Russia. In 2012, got a doctoral degree in the Institute of Automation (IfA), Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany. After that, being a postdoc researcher, he worked on Research and Development projects funded by DLR, ESA, NASA, and DFG. In 2014, he built a new research group at IfA with the main focus on the model-based analysis of safety-critical mechatronic systems. Dr. Morozov has published 40 research papers and made more than 20 scientific talks, including the presentations in research centers of ESA, DLR, Bosch, MathWorks, Sandford Research Institute, and the University of California Los Angeles. Accurate assessment of reliability, safety, and resilience is essential due to the high cost of downtime and strict safety requirements. However, the analytical capabilities of dependability evaluation methods, which are currently applied in the industry, are far behind the technical level of the systems in question. These methods cannot adequately describe sophisticated failure scenarios of highly dynamic and intelligent NAS. The future NAS will include more and more AI components. Dr. Andrey Morozov is building a strong research team capable of leading the development of the next generation, dependability analysis methods for modern and future NAS.

American Society of Mechanical Engineers
Safety Engineering, Risk, and Reliability Analysis Division

2023 Student Paper on Safety Innovation Challenge Contest

Annually, Safety Engineering, Risk, and Reliability Analysis Division (SERAD) hosts a challenge to undergraduate and graduate students to submit papers on Safety Engineering, Risk, and Reliability Analysis topics, including papers already submitted to the ASME International Mechanical Engineering Congress & Exposition (IMECE) 2023. The papers are peer-reviewed by experts in these areas. The top winning papers in each of the undergraduate and graduate groups will be presented in a SERAD session co-located with IMECE and honored at a SERAD awards banquet during the conference. Recognitions also include cash honorariums for first-place winning authors, and reimbursement with a limit for the conference-related expense (registration) for all students presenting their paper at the special session.

Submitting Papers to the Contest

Participants
- Undergraduate and graduate students.
- An academic sponsor/advisor is required.

Important Dates
- Student paper submission by **July 31, 2023**.
- SERAD announces 1st and 2nd place winners in the respective undergraduate and graduate groups on **August 31, 2023**.
- SERAD special session for student contest, and awards banquet in **October 29 – November 2, 2023**, during IMECE 2023.

Submittals
- Initial submittals must be previously unpublished work but can be papers used for academic credits.
- Submittals are not required to follow ASME's conference paper format, although it is encouraged. The suggested paper size is 4-6 pages including figures.
- Recommendation and statement of student status from the academic sponsor is required with submission.
- Submittals and questions regarding the 2023 student contest: Prof. Stephen Ekwaro-Osire (stephen.ekwaro-osire@ttu.edu).

Sponsor: FM Global