

Publications and Scholarly Contributions

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Coverage: Books, chapters, journal articles, conference papers, preprints, editorial work, dissertation, and research data

Guest Editorship

Guest Editor, "Risk Assessment and Management in Complex Marine Systems," Journal of Marine Science and Engineering, 2022.

Books

1. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications. Springer, ISBN 978-3-030-88098-9, 2022.

Book Chapters

1. **T. Parhizkar**, T. Stewart, L. Huang, and A. Mosleh, "Degradation and Failure Mechanisms of Complex Systems: Principles." In H. Garg (ed.), Advances in Reliability, Failure and Risk Analysis. Springer, Singapore, 2023.
2. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Dynamic Probabilistic Risk Assessment." In Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications, pp. 17–39. Springer, 2021.
3. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Data Sources and Development for Online Risk Quantification." In Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications, pp. 41–54. Springer, 2021.
4. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Human, Hardware, and Software Interactions in Risk Assessment." In Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications, pp. 55–74. Springer, 2021.
5. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Human Factor Analysis and Quantification." In Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications, pp. 75–102. Springer, 2021.
6. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Dynamic Risk Assessment to Assist Decision-Making in Emergency Situations." In Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications, pp. 103–116. Springer, 2021.
7. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Challenges of Online Dynamic Probabilistic Risk Assessment and Possible Solutions." In Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications, pp. 133–141. Springer, 2021.

8. **T. Parhizkar**, I. B. Utne, and J. E. Vinnem, "Attachment A—Fault Trees for Different Dynamic Positioning Systems." In *Online Probabilistic Risk Assessment of Complex Marine Systems: Principles, Modelling and Applications*, pp. 143–151. Springer, 2021.
9. **T. Parhizkar**, "Long-Term Degradation-Based Modeling and Optimization Framework." In *Handbook of Research on Predictive Modeling and Optimization Methods in Science and Engineering*, pp. 192–220. IGI Global, 2018.

Journal Articles

1. M. Bavandpour, D. Or, N. Elhami-Khorasani, **T. Parhizkar**, M. P. Thompson, and H. Ebrahimian, "Probabilistic Wildfire Risk Assessment: A Computationally Efficient Framework for Systematic Uncertainty Propagation—Hazard Analysis," *Reliability Engineering & System Safety*, vol. 277, 113203, 2026.
2. J. Tian, **T. Parhizkar**, A. Mosleh, and V. I. Manousiouthakis, "Parametric Studies for Constant Power Generation of Gas Turbine Systems Using Hydrogen/Methane Blend Combustion," *Fuel*, vol. 415, 138341, 2026.
3. F. J. Groen, C. Wang, A. Mosleh, and **T. Parhizkar**, "The Hybrid Causal Logic Methodology for Risk Assessment: Quantification Algorithm," *Reliability Engineering & System Safety*, vol. 265, 111519, 2025.
4. N. Tamascelli, A. Campari, **T. Parhizkar**, and N. Paltrinieri, "Artificial Intelligence for Safety and Reliability: A Descriptive, Bibliometric and Interpretative Review on Machine Learning," *Journal of Loss Prevention in the Process Industries*, vol. 90, 105343, 2024.
5. R. G. Maidana, **T. Parhizkar**, G. San Martin, and I. B. Utne, "Dynamic Probabilistic Risk Assessment with K-Shortest-Paths Planning for Generating Discrete Dynamic Event Trees," *Reliability Engineering & System Safety*, vol. 242, 109725, 2024.
6. P. Najafi, O. Kohnepooshi, A. Hedayatnasab, and **T. Parhizkar**, "Fire-Resistance Behavior of Concrete Columns Produced with Recycled Ceramic and Silica Aggregates: An Experimental and Numerical Approach," *Construction and Building Materials*, vol. 390, 131774, 2023.
7. H. Ashrafi and **T. Parhizkar**, "Electricity Sector Resilience in Response to Extreme Weather and Climate-Related Events: Tools and Datasets," *The Electricity Journal*, vol. 36, no. 6, 107290, 2023.
8. R. G. Maidana, **T. Parhizkar**, A. Gomola, I. B. Utne, and A. Mosleh, "Supervised Dynamic Probabilistic Risk Assessment: Review and Comparison of Methods," *Reliability Engineering & System Safety*, 108889, 2022.
9. H. Nejad, **T. Parhizkar**, and A. Mosleh, "Automatic Generation of Event Sequence Diagrams for Guiding Simulation-Based Dynamic Probabilistic Risk Assessment (SIMPRA) of Complex Systems," *Reliability Engineering & System Safety*, vol. 222, 108416, 2022.
10. Y. Hu, **T. Parhizkar**, and A. Mosleh, "Guided Simulation for Dynamic Probabilistic Risk Assessment of Complex Systems: Concept, Method, and Application," *Reliability Engineering & System Safety*, vol. 217, 108047, 2022.

11. **T. Parhizkar**, J. E. Vinnem, I. B. Utne, and A. Mosleh, "Dynamic Probabilistic Risk Assessment of Decision-Making in Emergencies for Complex Systems: Case Study of a Dynamic Positioning Drilling Unit," *Ocean Engineering*, vol. 237, 2021.
12. S. Hogenboom, **T. Parhizkar**, and J. E. Vinnem, "Temporal Decision-Making Factors in Risk Analyses of Dynamic Positioning Operations," *Reliability Engineering & System Safety*, vol. 207, 107347, 2021.
13. **T. Parhizkar**, E. Rafieapour, and A. Parhizkar, "Evaluation and Improvement of Energy Consumption Prediction Models Using Principal Component Analysis (PCA)-Based Feature Reduction," *Journal of Cleaner Production*, vol. 279, 123866, 2021.
14. **T. Parhizkar**, J. E. Vinnem, I. B. Utne, and A. Mosleh, "Supervised Dynamic Probabilistic Risk Assessment of Complex Systems, Part 1: General Overview," *Reliability Engineering & System Safety*, vol. 208, 107406, 2021.
15. **T. Parhizkar**, J. E. Vinnem, I. B. Utne, and A. Mosleh, "Supervised Probabilistic Risk Assessment of Complex Systems, Part 2: Application to Risk-Informed Decision Making, Practice and Results," *Reliability Engineering & System Safety*, vol. 208, 107392, 2020.
16. **T. Parhizkar**, S. Hogenboom, J. E. Vinnem, and I. B. Utne, "Data-Driven Approach to Risk Management and Decision Support for Dynamic Positioning Systems," *Reliability Engineering & System Safety*, vol. 201, 106964, 2020.
17. **T. Parhizkar**, F. Aramoun, and Y. Saboohi, "Efficient Health Monitoring of Buildings Using Failure Modes and Effects Analysis (FMEA): Case Study of an Air Handling Unit (AHU) System," *Journal of Building Engineering*, vol. 29, 101113, 2020.
18. **T. Parhizkar**, F. Aramoun, S. Esbati, and Y. Saboohi, "Efficient Performance Monitoring of Building Central Heating Systems Using a Bayesian Network Method," *Journal of Building Engineering*, vol. 26, 100835, 2019.
19. A. F. Sotoodeh, **T. Parhizkar**, M. Mehrgoo, M. Ghazi, and M. Amidpour, "Aging-Based Design and Operation Optimization of Organic Rankine Cycle Systems," *Energy Conversion and Management*, vol. 199, 111892, 2019.
20. **T. Parhizkar**, S. Balali, and A. Mosleh, "An Entropy-Based Bayesian Network Framework for System Health Monitoring," *Entropy*, vol. 20, no. 6, 416, 2018.
21. **T. Parhizkar** and S. Hafeznezami, "Degradation-Based Operational Optimization Model to Improve the Productivity of Energy Systems: Case Study of Solid Oxide Fuel Cell Stacks," *Energy Conversion and Management*, vol. 158, pp. 81–91, 2018.
22. S. Hafeznezami et al., including **T. Parhizkar** and J. Jay, "Remediation of Groundwater Contaminated with Arsenic Through Enhanced Natural Attenuation: Batch and Column Studies," *Water Research*, vol. 122, pp. 545–556, 2017.
23. **T. Parhizkar**, R. Roshandel, and A. Mosleh, "Aging-Based Optimal Scheduling Framework for Power Plants Using the Equivalent Operating Hour Approach," *Applied Energy*, vol. 205, pp. 1345–1363, 2017.
24. **T. Parhizkar** and R. Roshandel, "Long-Term Performance Degradation Analysis and Optimization of Anode-Supported Solid Oxide Fuel Cell Stacks," *Energy Conversion and Management*, vol. 133, pp. 20–30, 2017.

25. R. Roshandel and **T. Parhizkar**, "Degradation-Based Optimization Framework for Long-Term Applications of Energy Systems: Case Study of Solid Oxide Fuel Cell Stacks," *Energy*, vol. 107, pp. 172–181, 2016.
26. P. Hanafizadeh, **T. Parhizkar**, and A. Nouri Gheimasi, "Analysis of Micro Recuperators in Small-Sized Gas Turbines Regarding Manufacturing Potential in Iran," *Energy Equipment and Systems*, vol. 3, no. 1, pp. 1–12, 2015.
27. E. Ezzatneshan, M. Arami, **T. Parhizkar**, A. H. Kordkheili, and S. Sattari, "Evaluation of Optimum Performance and Economic Analysis of Micro-CHP Systems in Different Sectors in Iran," *International Journal of Energy & Technology*, vol. 6, no. 4, pp. 1–10, 2014.
28. **T. Parhizkar**, R. Roshandel, and A. Hosseini, "Degradation Impact on Optimal Conditions of PEM Fuel Cell," *Iranian Chemical Engineering Journal*, vol. 12, pp. 17–28, 2014.
29. R. Roshandel and **T. Parhizkar**, "A New Approach to Optimize the Operating Conditions of a Polymer Electrolyte Membrane Fuel Cell Based on Degradation Mechanisms," *Energy Systems*, vol. 4, no. 3, pp. 219–237, 2013.
30. **T. Parhizkar**, R. Roshandel, and A. Tahmasebi, "The Impact of Operational Conditions on Degradation Mechanisms in Polymer Electrolyte Membrane Fuel Cells," *Iranian Journal of Energy*, vol. 15, 2012.
31. **T. Parhizkar**, H. Jafarian, Y. Kialashaki, and Y. Saboohi, "The Optimum Design of a Motorized PV Shade and Its Impact on Energy Flow: A Case Study," *Iranian Journal of Energy*, vol. 15, 2012.

Conference Proceedings

1. F. Di Maio, V. Casucci, **T. Parhizkar**, and E. Zio, "Simulation-Based Probabilistic Risk Assessment (SIMPRA) of Integrated Road-Power Infrastructures Travelled by EVs and ICVs," 2024 8th International Conference on System Reliability and Safety (ICSRS), pp. 114–119, 2024.
2. M. Bavandpour, K. Shamsaei, H. Ebrahimian, **T. Parhizkar**, D. Or, and N. Elhami Khorasani, "A Probabilistic Framework for Uncertainty Propagation in Wildfire Risk Assessment," AGU Fall Meeting Abstracts, NH21C-2225, 2024.
3. J. B. Arnheim, T. Mortlock, H. Fathima, P. Pataranutaporn, N. Ahmed, A. Tbaileh, and **T. Parhizkar**, "Developing a Disaster-Ready Power Grid Agent Through Geophysically-Informed Fault Event Scenarios," 2023 IEEE Power & Energy Society General Meeting (PESGM), pp. 1–5, July 2023.
4. G. S. M. Silva, **T. Parhizkar**, H. T. Nguyen, and E. L. Droguett, "Quantum-Enhanced Reliability Assessment of Power Networks in Response to Wildfire Events," 2023 Annual Reliability and Maintainability Symposium (RAMS), pp. 1–7, January 2023.
5. **T. Parhizkar**, S. Nozhati, A. Mosleh, and J. E. Thalman, "Wildfire Risk Assessment and Management of Power Grids," 32nd European Safety and Reliability Conference (ESREL), pp. 2458–2466, 2022.
6. R. Shirvani and **T. Parhizkar**, "A Framework for Resilience Assessment of Electricity Systems," 32nd European Safety and Reliability Conference (ESREL), August 2022.
7. F. Fakour, **T. Parhizkar**, R. Ramezani, and A. Mosleh, "Machine Learning & Uncertainty Quantification: Application in Building Energy Consumption," 2022 Annual Reliability and Maintainability Symposium (RAMS), pp. 1–7, 2022.

8. **T. Parhizkar** and A. Mosleh, "Guided Probabilistic Simulation of Complex Systems Toward Rare and Extreme Events," 68th Annual Reliability and Maintainability Symposium (RAMS), January 2022.
9. R. Maidana, **T. Parhizkar**, I. B. Utne, and A. Mosleh, "Towards Risk-Based Autonomous Decision-Making with Accident Dynamic Simulation," 31st European Safety and Reliability Conference (ESREL), September 2021.
10. H. Hosseini, **T. Parhizkar**, and A. Mosleh, "Simulation-Based Probabilistic Risk Assessment (SIMPRA): Risk-Based Design," 31st European Safety and Reliability Conference (ESREL), September 2021.
11. **T. Parhizkar**, R. Roshandel, A. Mosleh, and M. Khoshtinat, "Operation Scheduling Optimization Framework for Gas Turbines Based on System Degradation," ASME Turbo Expo, Charlotte, North Carolina, 2017.
12. P. Hanafizadeh, **T. Parhizkar**, and K. Ghorbanian, "Thermoeconomic Approach for Optimal Design of a Gas Turbine Heat Recovery Steam Generator," 26th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS), 2013.
13. E. Ezzatneshan, **T. Parhizkar**, and M. Arami, "Techno-Economic Assessment of Micro-CHP in Residential and Commercial Buildings in Tehran," Iranian Society of Mechanical Engineers, 2013.

Edited Proceedings

1. **T. Parhizkar** and M. Brito, Proceedings of the 1st International Workshop on Energy Transition to Net Zero Energy Reliability, Risk, and Resilience (ETZE R3). University of Southampton, 2024.

Preprints and Working Papers

1. R. Shirvani, A. Bosisio, D. L. Donaldson, N. Anglani, and **T. Parhizkar**, "A Framework to Optimally Site, Size, and Schedule Microgrids to Increase Power System Resilience Against Severe Weather Events," SSRN Electronic Journal, 2024.
2. R. Shirvani and **T. Parhizkar**, "Resilience-Based Electric Sector Optimization in Response to Extreme Weather Conditions with Distributed Generation Systems," arXiv:2209.10050, 2022.
3. **T. Parhizkar**, "Simulation-Based Probabilistic Risk Assessment," arXiv:2207.12575, 2022.
4. G. San Martin Silva, **T. Parhizkar**, and E. López Droguett, "Quantum Fault Trees," arXiv:2204.10877, 2022.

Dissertation and Research Data

1. **T. Parhizkar**, Degradation-Based Framework for Long-Term Optimization of Energy Conversion Systems: Case Studies—Solid Oxide Fuel Cell and Gas Turbine. Ph.D. dissertation, Sharif University of Technology, 2016.
2. **T. Parhizkar**, I. Utne, and J. E. Vinnem, Dynamic Positioning Systems Incidents and Failure Dataset. Research dataset, 2021. DOI: 10.13140/RG.2.2.30197.09449.