

CONFERENCE DAY	SESSIONS	PAPER ID	PAPER TITLE	AUTHORS / PANELISTS	CORRESPONDING AUTHOR EMAIL	DATE	STARTING TIME (Central Time)	DURATION (min)	
DAY 1: MONDAY, OCTOBER 23, 2023	Session 1: AI and ML to support risk analysis and risk-informed decision-making (I)  Co-Chairs: 1. Nadezhda Gotcheva (nadezhda.gotcheva@vtt.fi) 2. Ha Bui (habui2@illinois.edu)	F58	Future-oriented AI risk management	Nadezhda Gotcheva and Nina Wessberg	<a href="mailto:Nadezhda.Gotcheva@vtt.fi">Nadezhda.Gotcheva@vtt.fi</a>	23-Oct	8:00	20 min presentation + 5-10 min Q&A	
		F04	Nuclear Systems Safety Analysis by Artificial Intelligence, Meta-Modeling and Adaptive Simulation	Francesco Di Maio, Nicola Pedroni, Enrico Zio	<a href="mailto:francesco.dimaio@polimi.it">francesco.dimaio@polimi.it</a>	23-Oct	8:30		
		F23	Context of Natural and Artificial Intelligence Misjudgment in Nuclear Technology	Gueorgui Petkov	<a href="mailto:petkovgi@yahoo.com">petkovgi@yahoo.com</a>	23-Oct	9:00		
		F12	Testing Generative Pre-trained Transformer for Knowledge Abstraction and Reasoning for Nuclear Reactor Design and Safety Applications	Paridhi Athe, Nam Dinh	<a href="mailto:pathe@ncsu.edu">pathe@ncsu.edu</a>	23-Oct	9:30		
		Break							
		F51	A New Approach to Identify and Characterize Low-Power Shutdown Initiating Events Using Machine Learning Techniques	Zhegang Ma, Fei Xu, Sai Zhang	<a href="mailto:Zhegang.Ma@inl.gov">Zhegang.Ma@inl.gov</a>	23-Oct	10:30		
		F09	AI support of Risk assessment and Management: Imperfect Information and Decision under Uncertainty	Elisabeth Pate-Cornell	<a href="mailto:mep@stanford.edu">mep@stanford.edu</a>	23-Oct	11:00		
	F37	Interpretable Machine Learning Approach for Reliability Analysis	Kalpesh More, Yogesh Mathpati, Tapas Tripura, Rajdip Nayek, Syed Alam, Souvik Chakraborty	<a href="mailto:souvik@am.iitd.ac.in">souvik@am.iitd.ac.in</a>	23-Oct	11:30			
	Session 2: AI and ML for safety measures optimization  Co-Chairs: 1. Jason Hou (jason.hou@ncsu.edu) 2. Istiaque Ahmed (miahmed2@illinois.edu)	F05	Development of Plant Reload Optimization Platform Capabilities for Core Design and Fuel Performance Analysis	Yong-Joon Choi, Mohammad Abdo, Congjian Wang, Jarrett Valeri, Cesare Frepoli, Khang Nguyen, Jason Hou	<a href="mailto:jason.hou@ncsu.edu">jason.hou@ncsu.edu</a>	23-Oct	15:00	20 min presentation + 5-10 min Q&A	
		F35	On Demand Explainable AI driven Optimization of Critical Nuclear Safety Parameters using "No Code" AI tool	Khairul Chowdhury, Syed Alam	<a href="mailto:alams@illinois.edu">alams@illinois.edu</a>	23-Oct	15:30		
	PANEL SESSION 1	P01	OPENING REMARKS: IAPSAM AND PRA OVER THE YEARS	<b>Panelists:</b> George Apostolakis, Todd Paulos, Enrico Zio, Luca Podofilini, Curtis Smith, Enrique Lopez, David Johnson. <b>Moderator:</b> Zahra Mohaghegh (zahra13@illinois.edu)		23-Oct	16:00	90 min	
	Session 3: AI and ML to support risk analysis and risk-informed decision-making (II)  Co-Chairs: 1. Tatsuya Sakurahara (sakurah2@illinois.edu) 2. Spencer Fargusson (smf5@illinois.edu)	F14	Survey on the Use of Artificial Intelligence in Nuclear Power Plants	Hyun Seok Noh, Jung Soo Kim, Woo Sik Jung	<a href="mailto:nezha2079@sju.ac.kr">nezha2079@sju.ac.kr</a>	23-Oct	17:30	20 min presentation + 5-10 min Q&A	
		F15	Application of Artificial Intelligence for Estimating Severe Accidents in Nuclear Power Plants Using Offsite Information	Hyun Seok Noh, Gee Man Lee, Jung Soo Kim, Woo Sik Jung	<a href="mailto:nezha2079@sju.ac.kr">nezha2079@sju.ac.kr</a>	23-Oct	18:00		
		F28	Adaptive Sampling for Accurate Surrogate Modeling of Level 3 PRA Code WinMACCS	Ryogo Kurokawa	<a href="mailto:kurokawa@criepi.denken.or.jp">kurokawa@criepi.denken.or.jp</a>	23-Oct	18:30		
F20		Success Criteria Analysis using Deep Neural Network and Monte Carlo Dropout for Dynamic Probabilistic Safety Assessment	Yunyeong Heo, Junyong Bae, Wooseok Jo, Seung Jun Lee	<a href="mailto:silee420@unist.ac.kr">silee420@unist.ac.kr</a>	23-Oct	19:00			
F03		A New Zero-suppressed Ternary Decision Diagram Algorithm	Woo Sik Jung	<a href="mailto:woosjung@sejong.ac.kr">woosjung@sejong.ac.kr</a>	23-Oct	19:30			
DAY 2: TUESDAY, OCTOBER 24, 2023	Session 4: AI and ML for condition-based risk assessment  Co-Chairs: 1. Francesco Di Maio (francesco.dimaio@polimi.it) 2. John Beal (jabeal2@illinois.edu)	F10	Engineering Applications of Artificial Intelligence and Machine Learning for Mechanical Systems and Component Performance	Matthew Homiack, John Matrachisia, Tristan Villareal, Aditya Savara, Stephen Verzi, Raj Iyengar	<a href="mailto:Matthew.Homiack@nrc.gov">Matthew.Homiack@nrc.gov</a>	24-Oct	8:00	20 min presentation + 5-10 min Q&A	
		F16	A Review on Reinforcement Learning in Condition-based Maintenance	Quang Khai TRAN, Khac Tuan HUYNH, Antoine GRALL, Yves LANGERON, Elham MOSAYEBI OMSHI	<a href="mailto:quang_khai.tran@utt.fr">quang_khai.tran@utt.fr</a>	24-Oct	8:30		
		F45	Predicting the Consequences of Hydrogen Releases: how a Machine Learning Approach May Improve Risk-Based Inspection Planning	Leonardo Giannini, Ernesto Salzano, Nicola Paltrinieri	<a href="mailto:leonardo.giannini@ntnu.no">leonardo.giannini@ntnu.no</a>	24-Oct	9:00		
		F06	Using Condition Monitoring Data for Severe Accidents Management	Giovanni Roma, Francesco Di Maio, Enrico Zio	<a href="mailto:francesco.dimaio@polimi.it">francesco.dimaio@polimi.it</a>	24-Oct	9:30		
		F01	An Adaptive Empirical Model for Real-time Condition Monitoring of Nuclear Power Plant Components	Ibrahim Ahmed, Enrico Zio	<a href="mailto:ibrahim.ahmed@polimi.it">ibrahim.ahmed@polimi.it</a>	24-Oct	10:00		
	PANEL SESSION 2	P02	AI/ML AND RISK ANALYSIS FOR THE NUCLEAR INDUSTRY	<b>Panelists:</b> Robert (Bob) J. Ledoux (ARPA-E), Matthew Dennis (NRC), Enrico Zio (Polimi), Fernando Ferrante (EPRI), Zahra Mohaghegh (UIUC), Bruce Hallbert (INL)		24-Oct	10:30	90 min	
	Virtual Booth Session (October 24, 2023)	VB	<b>Virtual Booth Session for organizations to directly engage with participants:</b> VB1. U.S. Nuclear Regulatory Commission (NRC) – Office of Regulatory Research VB2. Idaho National Lab. - "AI/ML to Support Risk-Informed Approaches and Applications Applied to the Nuclear Field"	U.S. NRC (Latonia Enos-Sylla and Erick Ball) Idaho National Lab. WR S (Lana Lawrence)		24-Oct	12:00	60 min	
	Session 5: Uncertainty quantification for AI and ML technologies  Co-Chairs: 1. Vicki Bier (vicki.bier@wisc.edu) 2. Ha Bui (habui2@illinois.edu) 3. Mohammad Albaty (malbaty2@illinois.edu)	F69	Risk, Uncertainty and AI: non-probabilistic methods for anticipating and preventing AI risks	Alexander Gutfraind, Vicki M. Bier	<a href="mailto:agutfraind.research@gmail.com">agutfraind.research@gmail.com</a>	24-Oct	15:00	20 min presentation + 5-10 min Q&A	
		F31	Uncertainty Quantification from Deep Hyperparameter Ensembles	Tanwi Mallick, Jane Macfarlane, Prasanna Balaprakash	<a href="mailto:tmallick@anl.gov">tmallick@anl.gov</a>	24-Oct	15:30		
		F43	Uncertainty Quantification and Sensitivity Analysis of a Machine Learning-Based Spill Fire Model for Nuclear Power Plants	Elvan Sahin, Peter Henkes, Brian Y. Lattimer, and Juliana P. Duarte	<a href="mailto:elvansahin@vt.edu">elvansahin@vt.edu</a>	24-Oct	16:00		
		F61	Automation Trustworthiness and Transparency in Nuclear Power Plants: A Literature Review	Muhammad Hammad Khalid, Ha Bui, Pegah Farshadmanesh, Zahra Mohaghegh	<a href="mailto:riskanalysis@illinois.edu">riskanalysis@illinois.edu</a>	24-Oct	16:30		
		F62	Evaluation of Automation Trustworthiness in Nuclear Power Plants: A Risk-Informed Approach using Probabilistic Validation and Integrated Probabilistic Risk Assessment	Muhammad Hammad Khalid, Md Istiaque Ahmed, Samrendra Roy, Ha Bui, Seyed Reihani, Zahra Mohaghegh	<a href="mailto:riskanalysis@illinois.edu">riskanalysis@illinois.edu</a>	24-Oct	17:00		
	Session 6: AI and ML to support risk analysis and risk-informed decision-making (III)  Co-Chairs: 1. Jinkyun Park (kshpj@kaeri.re.kr) 2. Tatsuya Sakurahara (sakurah2@illinois.edu)	F48	Functional requirements to enhance the traceability of a deep-learning based reduced order model in PSA applications	Jinkyun Park and Hyeonmin Kim	<a href="mailto:kshpj@kaeri.re.kr">kshpj@kaeri.re.kr</a>	24-Oct	17:30	20 min presentation + 5-10 min Q&A	
		F32	Development of Unknown Risk Scenario Identification System with the Reduced Order Model	Hyeonmin Kim and Jinkyun Park	<a href="mailto:hyeonmin@kaeri.re.kr">hyeonmin@kaeri.re.kr</a>	24-Oct	18:00		
F40		Development of Probabilistic Risk Assessment Methodology Using Artificial Intelligence Technology. 1. Automatic Fault Tree Creation	Satoshi FUTAGAMI, Hidemasa YAMANO, Kenichi KURISAKA, Hiroshi UJITA	<a href="mailto:futagami.satoshi@jaea.go.jp">futagami.satoshi@jaea.go.jp</a>	24-Oct	18:30			
F46		Development of Probabilistic Risk Assessment Methodology Using Artificial Intelligence Technology. 2. Automatic Fault Detection Method for Building Reliability Database	Hiroshi UJITA, Tatsuya MORIMOTO, Satoshi FUTAGAMI, Hidemasa YAMANO, Kenichi KURISAKA	<a href="mailto:ujita@advancesoft.jp">ujita@advancesoft.jp</a>	24-Oct	19:00			
F39		Fusion of Deep Learning Technology into Accident Diagnosis and Source Term Estimation	Sung-yeop Kim, Soo-Yong Park, Yun Young Choi	<a href="mailto:sungyeop@kaeri.re.kr">sungyeop@kaeri.re.kr</a>	24-Oct	19:30			
F41		Application of Artificial Intelligence to the Source Term Database: Clustering of Accident Scenarios and Prediction of Offsite Consequences	Kyungho Jin, Jaehyun Cho, Sung-yeop Kim, Wasin Vechgama	<a href="mailto:jcho@cau.ac.kr">jcho@cau.ac.kr</a>	24-Oct	20:00			

CONFERENCE DAY	SESSIONS	PAPER ID	PAPER TITLE	AUTHORS / PANELISTS	CORRESPONDING AUTHOR EMAIL	DATE	STARTING TIME (Central Time)	DURATION (min)
<b>DAY 3: WEDNESDAY, OCTOBER 25, 2023</b>	<b>Session 7: AI/ML in Human Reliability Analysis and Human-Machine Interactions</b>  Co-Chairs: 1. Luca Podofillini (luca.podofillini@psi.ch) 2. Mohammad Albat (malbati2@illinois.edu) 3. Jake Mitstifer (jakehm2@illinois.edu)	F67	A Survey of Parameterization Techniques for Bayesian Network Models for Human Reliability Analysis	Joseph O'Leary, Yunfei Zhao, Katrina Groth	<a href="mailto:joleary1@umd.edu">joleary1@umd.edu</a>	25-Oct	8:00	20 min presentation + 5-10 min Q&A
		F71	Bayesian Networks from scarce data and expert judgment: a human reliability analysis application	Luca Podofillini, Vinh Dang	<a href="mailto:luca.podofillini@psi.ch">luca.podofillini@psi.ch</a>	25-Oct	8:30	
		F70	Grey-Box Digital Twins of Nuclear Power Plants	Leonardo Miqueles, Ibrahim Ahmed, Francesco Di Maio, Enrico Zio	<a href="mailto:leonardoandres.miqueles@polimi.it">leonardoandres.miqueles@polimi.it</a>	25-Oct	9:00	
		F65	On Modeling Human-Digital Twin Interactions and their Safety Risk Impact in Nuclear Power Plants	Riley Fisher, Spencer Fergusson, Jake Mitstifer, John Beal, Ha Bui, Pegah Farshadmanesh, Tatsuya Sakurahara, Seyed Reihani, Ernie Kee, Zahra Mohaghegh	<a href="mailto:riskanalysis@illinois.edu">riskanalysis@illinois.edu</a>	25-Oct	9:30	
		F34	Implementation of Neural Operator Learning in Digital Twin Systems	Kazuma Kobayashi, James Daniell, Dinesh Kumar, Syed Bahauddin Alam	<a href="mailto:alams@illinois.edu">alams@illinois.edu</a>	25-Oct	10:00	
	<b>Session 8: Risk-informed design and regulation of AI and ML technologies</b>  Co-Chairs: 1. Latoria Enos-Sylla (latoria.enos-sylla@nrc.gov) 2. Hammad Khalid (mkhalid5@illinois.edu) 3. Riley Fisher (rileyf2@illinois.edu)	F21	Regulatory Viability of Nuclear Digital Twins	John Matrachisia, Doug Eskins, Jesse Carlson, Chris Ulmer, Bruce Lin, Raj Iyengar, Vaibhav Yadav	<a href="mailto:John.Matrachisia@nrc.gov">John.Matrachisia@nrc.gov</a>	25-Oct	10:30	20 min presentation + 5-10 min Q&A
		F47	A Regulatory Perspective on the Uses of Artificial Intelligence in Nuclear Applications	Matt Dennis, Alfred (Trey) Hathaway III, Jonathan Barr, Luis Betancourt	<a href="mailto:matthew.dennis@nrc.gov">matthew.dennis@nrc.gov</a>	25-Oct	11:00	
		F44	Risk Analysis Applied to Edge Artificial Intelligence Devices in Healthcare	David M. Johnson, Lydia Malen, Erik Clemens, Bryce Flor	<a href="mailto:dmjohnson@mayo.edu">dmjohnson@mayo.edu</a>	25-Oct	11:30	
		F33	Surrogate-Assisted Reliability-Based Design Optimization In A Composite Structure Under Constraints	Dinesh Kumar, Richa Verma, Kazuma Kobayashi, Syed Bahauddin Alam	<a href="mailto:alams@illinois.edu">alams@illinois.edu</a>	25-Oct	12:00	
	<b>Session 9: Prognostics and Health Management using AI and ML</b>  Co-Chairs: 1. Diego Mandelli (diego.mandelli@inl.gov) 2. John Beal (jabeal2@illinois.edu)	F17	Integration of Condition-based, Diagnostic, Prognostic, and Anomaly Detection Data into Reliability Models to Support a Predictive Maintenance Context	D. Mandelli, C. Wang, V. Agarwal and L. Lin	<a href="mailto:Diego.Mandelli@inl.gov">Diego.Mandelli@inl.gov</a>	25-Oct	15:00	20 min presentation + 5-10 min Q&A
		F38	Digital Condition Monitoring of Nuclear Piping-Equipment Systems using Artificial Intelligence Technology	Harleen Kaur Sandhu, Saran Srikanth Bodda, Abhinav Gupta	<a href="mailto:hksandhu@ncsu.edu">hksandhu@ncsu.edu</a>	25-Oct	15:30	
		F18	Data Fusion of Numerical and Textual Equipment Reliability Data: A Knowledge-Graph-based Approach	D. Mandelli, C. Wang, and J. Cogliati	<a href="mailto:Diego.Mandelli@inl.gov">Diego.Mandelli@inl.gov</a>	25-Oct	16:00	
		F42	Detecting Chloride Degradation in Concrete Structures by Developing a Physics-trained Artificial Intelligence Framework	Parth Patel, Abhinav Gupta, Saran Srikanth Bodda, Harleen Kaur Sandhu	<a href="mailto:parth.patel@powern.ai">parth.patel@powern.ai</a>	25-Oct	16:30	
		F36	Multi-Stage Neural Network Architecture For Improving Continuous Prediction Reliability	James Daniell, Kazuma Kobayashi, Dinesh Kumar, Souvik Chakraborty, Syed Bahauddin Alam	<a href="mailto:alams@illinois.edu">alams@illinois.edu</a>	25-Oct	17:00	
	F68	From Data to Knowledge: A Case for Textual Equipment Reliability Data	C. Wang, D. Mandelli, and J. Cogliati	<a href="mailto:Congjian.Wang@inl.gov">Congjian.Wang@inl.gov</a>	25-Oct	17:30		