ESREL2020 PSAM15 NOVEMBER 2 – 5, 2020 DETAILED PROGRAMME

Monday, 2 November 2020

10:00 – 11:15 (Rome Time)
Opening Cerimony at the presence of Institutional Representatives

11:15 – 13:00 (Rome Time)
Panel: Risk in Practice: Smart Solutions for a Sustainable Global World
Moderator: Martino Loiacono (Journalist for ItaliaOggi)
Panellists: Giuseppe Bono (Fincantieri), Stefano Cao (Saipem), Luigi De Vecchis (Huawei)
Fabrizio Palermo (Cassa Depositi e Prestiti)

13:45 – 15:15 (Rome Time)
Panel:Global Risk in the Post Covid-19 world
Moderator: Tiziano Treu (President CNEL, Italy)
Panellists: Terje Aven (University of Stavanger, Norway), Michael Beer (Leibniz Universität Hannover, Germany)
Fabrizio Curcio (Casa Italia, Italia), Way Kuo (City University of Hong Kong, Hong Kong - China)
Ahti Salo (Aalto University, Finalnd), Enrico Zio (MINES ParisTech, France, and Politecnico di Milano, Italy)

15:15 – 17:15 (Rome Time)
Special Session: Reinforcement Learning for Industry 4.0
Chair:Michele Compare (Aramis S.r.l., Italy)

S12 – 01: Optimal part flow in maintenance service contracts of gas turbines	S12 – 02: Circuit breaker data analysis using copula correlation	S12 – 03: Agent-based modeling and reinforcement learning for optimizing energy systems operation and maintenance: the Pathmind solution	S12 – 04: Development of two-level autonomous system for startup and shutdown operation of nuclear power	S12 – 05: Autonomous algorithm for bubble creation operation in pressurizer by using deep reinforcement learning
Luca Bellani, Michele Compare, Enrico Zio, Marzia Sepe, Francesco Annunziata, Fausto Carlevaro	Michy Alice, Loredana Cristaldi, Enrico Ragaini	Luca Pinciroli, Piero Baraldi, Michele Compare, Sahar Esmaeilzadeh, Mohammed Farhan, Brett Göhre, Roberto Grugni, Luigi Manca, Enrico Zio	Jae Min Kim, Seung Jun Lee	Daeil Lee, Jonghyun Kim

17:30 – 18:15 (Rome Time)
Plenary Lecture: Hybrid Threats and Disaster Risk Management: Changing Paradigm in Security
Chair: Marina Rowenkamp (GRS, Germany)
Lecturer: Georg Peter (European Commission)

Tuesday, 3 November 2020

Time/Venue

9:00 – 10:30 (Rome Time)
Special Session: Advanced Diagnosis and Prognosis in Bio-medical Engineering
Chair: Shaoping Wang (Beihang University, China)

S08 – 01: Bayesian filter observers based estimation of glucose and insulin concentration in plasma	S08 – 02: Transfer learning from grid-structured data to graph-structured data: application to diagnosis of depression	S08 – 03: IMU-Based online load spectrum estimation for human knee-joint	S08 – 04: Blood coagulation monitoring and thrombus formulation assessment based on bioimpedance spectroscopy	S08 – 05: Video-based automatic early parkinson's disease detection system using biomechanical features
Weijie Wang, Shaoping Wang, Xingjian Wang, Yixuan Geng	Jiawei Yang, Shaoping Wang, Xingjian Wang, Rui Liu, Yun Wang, Jian Cui, Yuan Zhou, Jingjing Zhou, Yuan Feng, Lei Feng, Gang Wang	Zhangtao Wang, Xingjian Wang, Shaoping Wang	Xuesong Luo, Shaoping Wang, Jian Shi	Changhong Lin, Shaoping Wang

10:45 – 11:30 (Rome Time)
Plenary Lecture: Risk Mitigation – A Shared Responsibility in the 5G Ecosystem
Chair: Mariagrazia Fugini (Politecnico di Milano, Italy)
Lecturer: Bob Xie (Huawei)

11:30 – 12:15 (Rome Time)
Plenary Lecture: Living out zero harm under the new normal
Chair: Patrizia Agnello (INAIL, Italy)
Lecturer: Vincent Ho (Immediate Past President IOSH)

14:00 – 15:30 (Rome Time)
Panel: System of Systems: Reliability Challenges
Moderator: Pierre Dersin (ALSTOM, France)
Panellists: Olivier Blancke (Hydro-Québec, Canada), Pierre Dersin (ALSTOM, France)
Witold Krasny (Cosmo Tech, France)

14:00 – 15:30 (Rome Time)
Special Session:Human Reliability Analysis today: data and other challenges
Chair: Luca Podofillini (PSI, Switzerland)

S03 – 01: Comparisons of human reliability data between analog and digital environment	S03 – 04: A framework to analyze human performance outside the control room	S03 – 03: FLEX and HRA challenges in common backbone models	S03 – 05: Unified definitions for dependency in quantitative human reliability analysis
Jinkyun Park and Yochan Kim	Rossella Bisio, Alexandra Fernandes, Claire Blackett	Jeffery Julius, Kaydee Gunter, Michael Hirt	Vincent P. Paglioni, Katrina M. Groth

15:45 – 17:15 (Rome Time)
Special Session:Text Mining applied to Risk Analysis, Maintenance and Safety
Chair: Márcio das Chagas Moura (Universidade Federal de Pernambuco, Brazil)

S05 – 01: Verification of safety rules using NLP	S05 – 02: Extracting knowledge from near miss reports using machine-learning techniques	S05 – 03: A text mining and NLP approach for identifying potential consequences of accidents in an oil refinery	S05 – 04: Automated classification of events based on text mining from unstructured descriptive texts	S05 – 05: An NLP and text mining–based approach to categorize occupational accidents	S05 – 06: Text mining for the automatic classification of road accident reports
Coen van Gulijk, Violeta Holmes	Silvia M. Ansaldi, Carla Simeoni, Alessandro Di Francesco, Roberto Martini, Luca Di Piramo, Flavia Fattori	July Macêdo, Diego Aichele, Márcio das Chagas Moura, Isis Lins	João Mateus Marques de Santana, Caio Souto Maior, Márcio Moura, Isis Didier Lins	Marcela Silva Guimarães, Hiago Henrique Gomes de Araújo, Thais Campos Lucas, Márcio das Chagas Moura, Isis Didier Lins, Rômulo Fernando Teixeira Vilela	Dario Valcamonico, Piero Baraldi, Francesco Amigoni, Enrico Zio

15:45 – 17:15 (Rome Time)
Special Session:Reliability of Passive Systems in Nuclear Power Plants - Perspectives and Challenges
Chair: Andrea Bersano (POLITO, Italy), Jose Villanueva (UPV, Spain)

S01 – 01: Assessment of RELAP5-3D for application on in-pool passive power removal systems	S01 – 02: Assessing the impact of passive autocatalytic recombiners on the accident progression in a VVER 1000	S01 – 03: Qualification of RELAP5-3D code against the in-pool passive energy removal system PERSEO data	S01 – 04: The passive safety concept of KERENA: from design to experimental verification	S01 – 05: Risk assessment of operation strategy using high pressure emergency makeup system during SBO
Vincenzo Narcisi, Lorenzo Melchiorri, Fabio Giannetti, Gianfranco Caruso	P. Groudev, P. Petrova, A. Stefanova, R. Gencheva, P. Viyashkova	Andrea Bersano, Cristina Bertani, Nicolò Falcone, Mario De Salve, Fulvio Mascari, Paride Meloni	Thomas Wagner, Thomas Mull	Sang Hee Kang , Ho Rim Moon, Sang Won Lee

17:15 – 18:00 (Rome Time)
Plenary Lecture: Decision Programming for Optimizing Multi-Stage Decision Problems under Uncertainty
Chair: Anne Barros (CentraleSupelec, France)
Lecturer: Ahti Salo (Aalto University, Finalnd)

18:30 – 20:00 (Rome Time)
ESRA General Assembly Meeting

Wednesday, 4 November 2020

9:00 – 10:45 (Rome Time)
Special Session:Human Performance in Resilience, Risk and Safety Assessment
Chair: Maria Nogal (Delft University of Technology, Netherlands)

S11 – 01: Assessing human performance in the era of resilience engineering – a paradigm shift?	S11 – 02: Role independency in nuclear power plant control room teams – background for an empirical simulator study	S11 – 03: A bayesian network approach for the quantitative assessment of resilience of critical systems	S11 – 04: Transfer learning-based driving style recognition	S11 – 05: Crowd sensitive indicators for proactive safety management: a theoretical framework	S11 – 06: The relation between behavioral factors and humans' reactions during catastrophic events	T12-02: Enhancing Disaster Response with Architectonic Capabilities by Leveraging Machine and Human Intelligence Interplay
Miltos Kyriakidis	Magnhild Kaarstad and Espen Nystad	T.V. Santhosh, Edoardo Patelli	Shi Yuchen, Wang Yi, Chen Nan	Francesco Costantino, Antonio De Nicola, Giulio Di Gravio, Andrea Falegnami, Riccardo Patriarca, Giordano Vicoli, Maria Luisa Villani, Massimo Tronci	Georgia Kaltsidi, Yiannis Xenidis	Karla Saldana Ochoa

9:00 – 11:00 (Rome Time)
Special Session:NLP, Knowledge Graphs and Ontologies
Chair: Melinda Hodkiewicz (University of Western Australia, Australia)

S09 – 01: Pipeline for machine reading of unstructured maintenance work order records	S09 – 02: Standardised failure reporting and classification of failures of safety instrumented systems	S09 – 03: Cleaning and visualization of unstructured text in safety records	S09 – 04: An ontology for the management of equipment ageing	S09 – 05: Research on named entity recognition in chinese airworthiness regulation texts based on deep learning method	S09 – 06: Technical language processing for maintenance work order texts	S09 – 07: Semantic knowledge kernels for service chat bots
Yiyang Gao, Caitlin Woods, Wei Liu, Tim French, Melinda Hodkiewicz	Stein Hauge, Solfrid Håbrekke, Mary Ann Lundteigen, Lars Bodsberg	Michael Stewart, Wei Liu, Rachel Cardell-Oliver, and Mark Griffin	Silvia M. Ansaldi, Paolo Bragatto, Patrizia Agnello, Maria Francesca Milazzo	Haotian Niu, Cunbao Ma, Yihan Guo, Pei Han, Siyuan Li	Michael P. Brundage, Melinda Hodkiewicz, and Thurston Sexton	Mikkel Haggren Brynildsen

11:00 – 11:30 (Rome Time)
Plenary Lecture: People, infrastructure, stakeholders: sustainable risk mitigation in power grids
Chair: Michael Beer (Leibniz Universität Hannover, Germany)
Lecturer: Antonio Cammisecra (ENEL)

11:30 – 13:00 (Rome Time)
Special Session:Artificial Intelligence for Maintenance Decision Support
Chair: Christophe Bérenguer (University of Grenoble Alpes, France)
Pierre Dersin (Alstom Digital Mobility, France)

S04 – 06: 4R innovative resilience strategy for power distribution networks	S04 – 01: An unsupervised machine learning approach to extract wheel and track health status indicators from train-borne accelerometer data	S04 – 02: Predicting state of health and end of life for batteries in hybrid energy buses	S04 – 03: Agent-based maintenance decision support system for power grids operating in electricity markets	S04 – 04: Impact of the decision horizon on railway systems maintenance and service scheduling	S04 – 05: Anomaly detection and classification in time series with kervolutional neural networks	S04 – 07: Deep reinforcement learning for optimizing operation and maintenance of energy systems equipped with PHM capabilities
Representative of ENEL	Benjamin Baasch, Michael Roth, Sebastian Schulz, Jörn C. Groos	Mohammed Ghaith Altarabichi, Yuantao Fan, Sepideh Pashami, Slawomir Nowaczyk, Thorsteinn Rögnvaldsson	Pegah Rokhforoz, Blazhe Gjorgiev, Giovanni Sansavini, and Olga Fink	Omar Bougacha, Christophe Varnier, Noureddine Zerhouni, and Pierre Dersin	Oliver Ammann, Gabriel Michau and Olga Fink	Luca Pinciroli, Piero Baraldi, Guido Ballabio, Michele Compare, Enrico Zio

11:30 – 13:00 (Rome Time)
Special Session:Bayesian Network Modelling for Risk Assessment in the Oil&Gas Industry
Chair: Luca Decarli (Eni, Italy)

S06 – 02: A multistate bayesian network for accounting the degradation of safety barriers in the living risk assessment of oil and gas plants	S06 – 03: A novel kpi for continuously monitored safety barriers based on probabilistic safety margins	S06 – 04: Analytic hierarchy process for the estimation of the probability of failures of safety barriers in oil and gas installations	S06 – 05: The risk assessment and management of premature screen-out during hydraulic fracturing based on the bayesian belief network model	S06 – 01: A safety-barrier-based risk analysis model for offshore oil and gas leakage incidents
Francesco Di Maio, Oscar Scapinello, Enrico Zio, Costanza Ciarapica Alunni, Luca Decarli, Laura La Rosa	Francesco Di Maio, Oscar Scapinello, Enrico Zio, Costanza Ciarapica Alunni, Luca Decarli, Laura La Rosa	Francesco Di Maio, Oscar Scapinello, Enrico Zio, Costanza Ciarapica Alunni, Luca Decarli, Laura La Rosa	Enrico Zio, Maryam Mustafayeva and Andrea Montanaro	Yangfan Zhou

14:00 – 15:30 (Rome Time)
Panel: Human reliability and performance in digital I&C and modern, automated systems
Moderator: Andreas Bye (IFE, OECD Halden Reactor Project, Norway)
Panellists: Chiara Leva (Technological University Dublin, Ireland), Vinh Dang (PSI, Switzerland) Yochan Kim (KAERI, South Korea)
Ali Mosleh (University of California, Los Angeles , USA)

15:45 – 16:30 (Rome Time)
Plenary Lecture: Risk management in the Covid-19 Era
Chair:Enrico Zio (MINES ParisTech, France and Politecnico di Milano, Italy)
Lecturer: Andrea Glacchero (Cassa Deposti e Prestiti, Italy)

16:30 – 18:00 (Rome Time)
Special Session:Fault-Tolerant and Attack-Resilient Cyber-Physical Systems (CPS)
Chair: Roozbeh Razavi-Far (University of Windsor, Canada)

S07 – 03: Model-based fault injection experiments for the safety analysis of exoskeleton system	S07 – 01: Fault diagnosis in smart grids using a deep long short-term memory-based feature learning architecture	S07 – 04: Enhancing detection accuracy of cyber attacks through dimensionality reduction	S07 – 05: Anomaly and attack detection in supervisory control networks for cyber-physicalsystems	S07 – 06: Is smartness risky? A framework to evaluate smartness in cyber-physical systems	S07 – 02: Optimal allocation of defense resources against cyber attacks to cyber-physical systems
Tagir Fabarisov, Ilshat Mamaev, Andrey Morozov, Klaus Janschek	Hossein Hassani, Roozbeh Razavi-Far, and Mehrdad Saif	Ehsan Hallaji, Roozbeh-Razavi-Far, and Mehrdad Saif	Ernesto Del Prete, Fabio Pera, Luca Faramondi, Camilla Fioravanti, Simone Guarino, Gabriele Oliva, and Roberto Setola	Christos Chronopoulos, Nelson Humberto Carreras Guzman	Wei Wang, Francesco Di Maio, Enrico Zio

16:30 – 18:00 (Rome Time)
Special Session:Life Cycle-Based Resilience Assessment and Management of Structural and Infrastructural Assets
Chair: Omar Kammouh (Delft University of Technology, Netherlands)

S02 – 01: Improving uncertainty representation of offshore wind farms reliability using expert judgments	S02 – 02: Interdependent infrastructure interventions optimization: an integrative systems thinking approach	S02 – 03: Resilience quantification of large-scale water distribution networks: a probabilistic approach	S02 – 04: Security and resilience for airport infrastructure	S02 – 05: Resilience assessment of safety-critical systems with credal networks
Georgios Leontaris, Georgios Katsouris	Omar Kammouh, Maria Nogal, Mark de Bruijne, Ruud Binnekamp, A. Rogier M. Wolfert	Omar Kammouh, Maria Nogal, Gian Paolo Cimellaro, A. Rogier M. Wolfert	Corinna Köpke, Louis König, Katja Faist, Mirjam Fehling-Kaschek, Jörg Finger, Alexander Stolz, Kelly Burke, Eftichia Georgiou, Vasiliki Mantzana, Ioannis Chasiotis, Isabel Praça, Eva Maia, Nikolaos Papagiannopoulos, Filipe Apolinário, Nelson Escravana	Hector Diego Estrada-Lugo; T.V. Santhosh; Marco de Angelis; Edoardo Patelli

Thursday, 5 November 2020

9:00 – 9:45 (Rome Time)
Plenary Lecture: Realtime Damage Decision Support System for ship recovery
Chair:Sylwia Werbinska-Wojciechowska (Wroclaw University of Science and Technology, Poland)
Lecturer: Alessandro Bonvicini (Fincantieri, Italy)

9:45 – 10:30 (Rome Time)
Plenary Lecture: Maintenance in an Industry 4.0 World - Transforming Maintenance through Data Science
Chair:Marko Cepin
Lecturer: Melinda Hodkiewicz (University of Western Australia, Australia)

10:45 – 12:00 (Rome Time)
Innovation Challenge:Prognostic and Health Management in Evolving Environments
Chair: Piero Baraldi (Politecnico di Milano, Italy), Michele Compare (Aramis Srl, Italy)

C01 – 01: Stacking ensembles of heterogenous classifiers for fault detection in evolving environments	C01 – 02: Scenario-based generalization bound for anomaly detection support vector machine ensembles	C01 – 03: A deep learning framework for health anomaly detection of multi-component systems in evolving environments: a case study in PHM	C01 – 04: The aramis data challenge: prognostics and health management in evolving environments
Mohammed Ghaith Altarabichi, Peyman Mashhadi, Yuantao Fan, Sepideh Pashami, Slawomir Nowaczyk, Pablo Del Moral, Mahmoud Rahat and Thorsteinn Rögnvaldsson	Roberto Rocchetta, Milan Petkovic, Qi Gao	Shahin Siahpour, Abhijeet Narhar Ainapure, Xiang Li, Jay Lee	Francesco Cannarile, Michele Compare, Piero Baraldi, Zhe Yang, Enrico Zio

12:00 – 12:45 (Rome Time)
Plenary Lecture: Industrial risk management in oil and gas construction and drilling projects – Saipem experience
Chair:Terje Aven (University of Stavanger, Norway)
Lecturer: Abrate Silvia (Saipem)

13:15 – 15:15 (Rome Time)
Innovation Challenge:The NASA Langley UQ Challenge on Optimization under Uncertainty
Chair: Luis G. Crespo (NASA Langley Research Center, USA)

C02 – 02: The NASA langley challenge on optimization under uncertainty	C02 – 01: Reliability optimization of black box uncertain control system in NASA uncertainty quantification challenge	C02 – 03: Contribution to the NASA langley UQ challenge on optimization under uncertainty	C02 – 04: Bayesian calibration and probability bounds solution to the Nasa 2020 UQ challenge on optimization under uncertainty	C02 – 05: Computational methods for system optimization under uncertainty	C01 – 06: A Distributionally robust optimization approach to the NASA langley uncertainty quantification challenge
Luis Crespo, Sean Kenny	Mu-Xia Sun, Chuan-Zhou Jia, Chen Zhang, Han-Xiao Zhang, Yan-Fu Li	Christian Agrell, Simen Eldevik, Odin Gramstad, Andreas Hafver	Ander Gray, Alexander Wimbush, Marco De Angelis, Roberto Rocchetta, Peter O. Hristov, Enrique Miralles-Dolz, Dominic Calleja	Nicola Pedroni	Yuanlu Bai, Zhiyuan Huang, Henry Lam

15:15 – 16:30 (Rome Time)
Panel: How Can Risk Science Improve the Understanding, Communication and Handling of Risks in Society?
Moderator: Terje Aven (University of Stavanger, Norway), Enrico Zio (MINES ParisTech, France, and Politecnico di Milano, Italy)
Panellists: Terje Aven (University of Stavanger, Norway); Frederic Bouder (University of Stavanger, Norway), Scira Menoni (Politecnico di Milano, Italy),
Marja Ylönen (Technical Research Centre of Finland, Finland), Enrico Zio (MINES ParisTech, France, and Politecnico di Milano, Italy)

16:30 – 17:15 (Rome Time)
Plenary Lecture: Overcoming Regulatory Barriers to the Application of Machine Learning in Safety and Security Critical Applications
Chair:Todd Paulos (Jet Propulsion Laboratory, USA)
Lecturer: Chris Johnson (Queen's University Belfast, UK)

17:15 – 18:00 (Rome Time)
Closing Ceremony