



Institute of
mathematics
& its applications

**11TH IMA INTERNATIONAL
CONFERENCE ON
MODELLING IN
INDUSTRIAL MAINTENANCE
AND RELIABILITY (MIMAR)**

ONLINE EVENT VIA ZOOM

29 JUNE - 1 JULY

**CONFERENCE
PROGRAMME**



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11th IMA International Conference on Modelling in Industrial Maintenance and Reliability ((MIMAR) CONFERENCE PROGRAMME

Day One - Tuesday 29 June 2021

09:00	Welcome, Introduction and Housekeeping
09:10	Keynote Talk - <i>An Overview of Optimisation Models for Offshore Windfarm Maintenance</i> - Prof. Rommert Dekker (Erasmus School of Economics, Netherlands)
Topic: Degradation modelling	
09:55	<i>On Missions' Quality of Performance for Systems with Partially or Completely Observable Degradation</i> - Maxim Finkelstein
10:15	<i>Prognosis for a Deterioration System with Deteriorated Sensor Systems</i> - Hai Canh Vu and Mitra Fouladirad
10:35	Short Break
10.45	<i>A Novel Pattern-driven Stochastic Degradation Process for Battery Forecasting</i> - Zihan Zhang
11.05	<i>Incorporating Defect Specific Condition Indicators in A Life Cycle Cost Analysis of Metal Bridges</i> - Gareth Calvert, Luis Neves, John Andrews and Matthew Hamer
11.25	<i>The Performance of The Mixed Weibull Model as a Contribution Tool to Optimized Maintenance Policies of Multi-Component Systems</i> - Lala Houssam, Zellagui Redouane, Bellaouar Ahmed and Bacha Sidali
11.45	<i>Discussions on The Reuse of Items Based on The Delay Time Modelling</i> , Augusto Cesar De Jesus Santos, Cristiano A. V. Cavalcante and Shaomin Wu
12.05	Quickfire Poster Presentations
12.20	Lunch Break

	Room One (Main Room)	Room Two (Breakout Room)
	Topic: Condition Based Maintenance	Topic: Reliability Assessment
13.20	<i>Imperfect Condition-Based Maintenance for Deteriorating Systems with Different Maintenance Efficiencies</i> - Elham Mosayebi Omshi and Antoine Grall	<i>Reliability and Cost Modelling of Diesel Particulate Filter Regeneration Considering Driver Behaviour Prediction Uncertainties</i> - Cuong Dao
13.40	<i>Assessing Trustworthiness of System Operability Checking</i> - Ahmed Raza and Vladimir Vasyly Ulansky	<i>On Conditional Survival Signatures</i> - Daniel Krpelík
14.00	<i>A Condition-Based Maintenance for A Two-Unit System Subject to Dependent Soft and Hard Failures: A Reinforcement Learning Approach</i> - Seyedvahid Najafi, Ji Ye Janet Lam, Chi Guhn Lee	<i>Reliability Centered Maintenance (RCM) In Refrigerators Compressors of a Soft Drink Industry- A Case Study</i> - Diego da Silva Tavares Ribeiro, Viviane Vasconcellos Ferreira Grubisic and Andrea Cristina Santos
14.20	<i>Condition-Based Maintenance with Imperfect Preventive Maintenance Actions and Inspections for Multi-Component System with Various Dependencies</i> - Abdul Rahman Afzal and Ahmad Al Hanbali	<i>A Time-Dependent Proportional Hazard Model for Cutting Tools Remaining Useful Life Estimate Under Varying Cutting Parameters</i> - Lucas Equeter, François Ducobu and Pierre Dehombreux
14.40		<i>Multi-Level Opportunistic Maintenance Policy for Multi-Component System with Multiple Dependences</i> - Duc Hanh Dinh, Phuc Do and Benoit lung
15.00	Short Break	
	Topic: Periodic inspection	Topic: Data analysis
15.15	<i>A Periodic Inspection Policy for Heterogeneous Complex Systems</i> - Lucía Bautista, Inma T. Castro and Luis Landesa	<i>Multivariate Parameter Analysis of Cutting Processes</i> - Max Radetzky, Tim Flegelskamp and Stefan Bracke
15.35	<i>Maintenance at pre-planned schedule times considering opportunistic replacement</i> - Y.R.Melo, Cristiano Cavalcante, Phillip Scarf and R.S Lopes	
15.55	<i>Modelling the Interaction of a Disruptive External Event and Human Error in The Quality of Inspection for A Technical System</i> - Cristiano Cavalcante, L. Q. M. da Costa, W. A. Ferreira Neto and A. R. Alberti	<i>A Comparison of The Performance of The Geometric Process and Its Variants</i> - Jiaqi Yin and Shaomin Wu
16.15	<i>Modelling Alternative Inspection Protocols for Latent Failures</i> - David Silkworth	<i>Affinity Analysis Using Apriori Algorithm to Identify Failure Dependence in Multi-Component Systems</i> - R. S. Lopes, Phuc Do, Cristiano Cavalcante and Benoit lung
16.35	Conference Close	

Day 2 - Wednesday 30 June 2021

09:00	Welcome, Introduction and Housekeeping	
09:10	Keynote Talk - <i>Cyber Physical Systems Analysis: What Can Be the Contributions from the “MIMAR Community”?</i> - Prof. Anne Barros (Centralesupélec, France)	
Topic: Resilience		
09.55	<i>Physics-Informed Stochastic Petri Nets for The Deterioration Modeling And Maintenance Assessment of Torrent Protection Structures</i> – Nour Chahrour, Jean-Marc Tacneta and Christophe Bérenguer	
10.15	<i>Evolutionary Algorithms for Identifying Urban Resilient Designs of Cellular Power Distribution Networks</i> - Sadeeb Simon Ottenburger	
10.35	Short Break	
	Room One (Main Room)	Room Two (Breakout Room)
	Topic: Life Cycle Cost	Topic: Maintenance Optimisation
11.00	<i>Performance Analysis of Maintenance Practices Based on World Class Manufacturing in Brazil: Professional Maintenance Pillar</i> - Ingrid Carneiro da Silva, Viviane Vasconcellos Ferreira Grubisic and Sanderson César Macedo Barbalho	<i>Modeling Environment Dependency in Partially Observable Markov Decision Processes for Maintenance Optimization</i> - Ragnar Eggertsson, Rob Basten and Geert-Jan van Houtum
11.20	<i>A Simulation-Based LCC Model for Railway Track</i> - Wenxu Li and Richard Dwight	<i>Optimal Maintenance Planning Under Population Heterogeneity with Data Retrieved from Multiple Systems</i> - Ipek Dursun, Alp Akcay and Geert-Jan van Houtum
11.40	<i>Two Critical Levels Policy for The Joint Optimization of Condition-Based Maintenance and Economic Production Quantity</i> - Mohamed Elfadel Elfadel	<i>Reliability and Maintainability Optimization for Aircraft’s Repairable Components Based on Cost Modeling Approach</i> - Adel Ghobbar and Shenila Sewgobind
12.00	<i>The Importance of Data Quality in Energy Pipelines Condition Assessment</i> - Muhammad Hussain and Tieling Zhang	<i>Insights into A Two-Scale Policy for Protection Systems Subject to Shocks When Meeting Demands</i> - A. R. Alberti, Cristiano Cavalcante, A. J. S. Rodrigues and F. A. da Mott
12.20	Lunch Break	
	Topic: Risk And Safety Modelling	Topic: Data Analysis
13.20	<i>Risk Modelling Incorporating Complex Maintenance Strategies</i> - Silvia Tolo, Andrew Jackson and John Andrews	<i>Using Data Mining Techniques to Identify Sequential Patterns in Order to Support Maintenance Management</i> - R. G. N. Paiva, V. A. S. Tenório, Y.R.Melo and Cristiano Cavalcante

13.40	<i>A Comparative Analysis for Gas Pipeline Risk Analysis Based on International Standards and A Multicriteria Model</i> - Heitor Fagner Lopes de Lima, Francisco Filipe Cunha Lima Viana, Marcelo Hazin Alencar and Rodrigo José Pires Ferreira	<i>Assessment of Pavement Degradation Through Statistical Analysis Model: A Case Study of Department of Transportation (DOT) Of Iowa</i> - Seyed Mohammad Hossein Seyedi Rezvani
14.00	<i>Safety-Aware Evaluation of Semantic Segmentation Modules Used for Perception in Autonomous Driving</i> - Dominik Brüggemann, Robin Chan, Hanno Gottschalk and Stefan Bracke	<i>Some Recent Developments on Failure Processes with Masked Failure Data</i> - Shaomin Wu
14.20	<i>Prioritization of Maintenance Planning for Natural Gas Pipelines Using Multicriteria Portfolio Assessment</i> – Francisco Filipe Cunha Lima Viana, Ramon Swell Gomes Rodrigues Casado, Lucas Borges Leal da Silva, Marcelo Hazin Alencar, Rodrigo José Pires Ferreira and Adiel Teixeira De Almeida	<i>Design and Pricing of Extended Warranty Menus Based on The Multinomial Logit Choice Model</i> - Xiaolin Wang, Xiujie Zhaob and Bin Liu
14.40	<i>Insights into A Flexible Maintenance Policy for Safety-Critical Systems</i> - W. A. Ferreira Neto, A. C. J. Santos, A. R. Alberti and Cristiano Cavalcante	<i>Imprecise Statistical Inference for Step Stress Accelerated Life Testing Data</i> - Sultan. E. Albalwy, Frank P.A. Coolen and Jonathan. A. Cumming
15.00	Short Break	
Topic: Maintenance Optimisation		
15.10	<i>Integrated Planning of Asset Use and Maintenance for A Fleet of Maritime Assets</i> - Metehan Dilaver, Alp Akçay and Geert-Jan van Houtum	
15.30	<i>Optimizing Maintenance Policies for Safety Brakes Used in Steel Mills</i> - F.A. da Motta, A.J. S. Rodrigues, A.R. Alberti, Cristiano Cavalcante	
15:50	<i>A Reinforcement Learning Based Model for The Optimization of Maintenance in Multi-State Multi Component Systems Under the Perspective of Product Quality Degradation</i> - Hanser Jiménez, Cristiano Cavalcante and Phuc Do	
16.10	<i>Multi-Criteria Decision Analysis of Subcontractors Selection for Infrastructure Projects: A Case Study of An Electrified Railway</i> - Seyed Mohammad Hossein Seyedi Rezvani	
16.30	Conference Close	

Day 3 - Thursday 1 July 2021

09:00	Welcome, Introduction and Housekeeping	
09:10	Keynotes Talk - <i>New Maintenance Orientation in The Frame of Industry of The Future: Challenges and Opportunities Brought by Data Analysis</i> - Prof. Benoît Iung (Université de Lorraine, France)	
Topic: Fault Detection and Diagnostics		
09:55	<i>Using Survival Signature in Systems Failure Diagnostics</i> - Anas Alharshan, Frank P.A. Coolen and Louis J.M. Aslett	
10:15	<i>A Novel Fault Detection and Diagnosis Methodology for Dynamic Systems</i> - Rasa Remenyte-Prescott, Taofeeq Badmus and Darren Prescott	
10:35	Short Break	
	Room One (Main Room)	Room Two (Breakout Room)
	Topic: Condition-Based Maintenance	Topic: Maintenance Optimisation
10.45	<i>Imperfect Maintenance and Gamma Process</i> - Franck Corset, Mitra Fouladirad and Christian Paroissin	<i>Optimization of Supportability and Reliability for Aircraft's Initial Provisioning Service Operations</i> - Adel A Ghobbar and Sandra Rivas
11.05	<i>Health Asset Using Vibration-Based Condition Monitoring in Thermal Power Plants</i> - Carmen Elena Patino Rodriguez, J.C.Urango-Pérez, J.D.Arango and F.J.Guevara-Caraza	<i>Supportability and Availability of Expendable Parts for Aircraft Maintenance: A Multi-Criteria Parts Classification Approach</i> - Adel A Ghobbar and Floris Wolf
11.25	<i>Functional Availability and Reliability Modelling in Platform Design and Manufacture</i> - Erdem Turker Senalp	<i>Build Real-Time Streaming Analytics with An In-Memory, Scale-Out SQL Database (Voltdb)</i> - Kalum Priyanath Udagepola
11.45	<i>Optimal Condition-Based Maintenance for A Deteriorating System with Unscheduled Maintenance Opportunities</i> - Wang Zirui	<i>Optimizing Maintenance Budget for An Interdependent and Heterogeneous Multi-Asset System</i> - L.Dias, A. Leitão and L.Guimarães
12.05	<i>A Reinforcement-Learning Based Model for The Optimization of a Bi-Objective Condition-Based Maintenance Policy in Multi-State Mu</i> - Hanser Jiménez, Vinícius Tenório, Cristiano Cavalcante, Phuc Do and Alexandre Alberti	
12.25	Lunch Break	

Topic: Asset Management	
13.20	<i>Modelling Maintenance of a Multi-Component System with Wear Rate-State Dependence: The Case of a Sea Water Reverse-Osmosis Desalination Train</i> - Frits van Rooij and Phillip Scarf
13.40	<i>Petri Net Modelling for Achieving an Optimal Design of a Wind Turbine Condition Monitoring System</i> - Rundong Yan, Sarah Dunnett and Lisa Jackson
14.00	<i>A Railway Route Model for Track Geometry Maintenance Under the Impacts of Summer Heatwaves</i> - Ben Davies and John Andrews
14.20	<i>Train Derailment Risk Model Incorporating Complex Asset Management Strategies</i> - Andrew Jackson, Silvia Tolo and John Andrews
14.40	Closing Remarks and Conference Close

Poster Presentations

Using Simulation and The Importance Components in Reliability Systems - Daniel Gaspar, Luis Ferreira and José Silva

Assessment of the Influence of Covariates on the Operational Safety of Complex Repairable Systems by a Generalized Proportional - Sidali Bacha, Ahmed Bellaouar, Jean-Paul Dron and Houssam Lala

Diagnosis of Gear and Bearing Combination Defects by Vibration Analysis - Miloudi Zakaria