IEEE International Conference on Prognostics and Health Management (ICPHM2023)

Concordia University, Montreal, QC, Canada

June 5-7, 2023

FINAL PROGRAM

	Please note that the conference will take place at the Engineering, Computer Science and Visual Arts Integrated Complex (EV Building), with the second and third floors being designated as EV2 and EV3. **Adress:** 1515 Saint-Catherine St W #1428, Montreal, QC H3G 1S6	Please note that the conference is a hybrid event, featuring three types of sessions: fully in-person sessions denoted by "P," virtual sessions denoted by "V," and hybrid sessions denoted by "H," which will allow for both in-person and virtual participation.	* Lunch will be provided in the Faculty Lounge located on the 4th floor of EV building, EV4. 101. * The banquet is scheduled to take place at the **Concordia University Conference Centre**, which can be found on the 9th floor of the **John Molson Building** which is besid ethe EV buidling in room **MB9**.

Monday 6/05/2023	**Monday Sessions - Day 1**
8:00 - 8:30	**Conference Opening** **Dr. Jason Rupe (General Chair) (Room: EV2.260)**
8:30 - 9:30	**Keynote 1** **Prof. Andrew Jardine** **Role of proportional hazards modeling (PHM) to optimize Condition Based Maintenance (CBM) decisions** **Moderator: Dr. Farnoosh Naderkhani (Room: EV2.260)**
9:30 - 9:45	**Coffee Break & Exhibits**
9:45 - 10:45	**Keynote 2** **Dr. Panagiotis Kakosimos** **Digitalization of Electric Powertrains: Enhancing Reliability and Condition Monitoring through Industry 4.0, IoT and Machine Learning** **Moderator: Dr. Farnoosh Naderkhani (Room: EV2.260)**
10:45 - 11:00	**Coffee Break & Exhibits**
11:00 - 12:00	**Keynote 3** **Tom Coughlin** **Creating Sustainable Storage Devices and Systems** **Moderator: Dr. Steven Li (Room: EV2.260)**
12:00 - 13:00	**Lunch**
13:00 - 14:30	**Recommended Practice for Prognostics and Health Management Systems** **Organizer: Rex Sallade** **Moderator: Dr. Jason Rupe (Room: EV2.260)**
14:30 - 14:45	**Coffee Break and Exhibits**

	Location: EV2. 260	Location: EV2. 184	
14:45 - 16:00	**Regular Session (Artifical Intelligence for PHM , Including Machine Learning) - P** **Session Chair: Dr. Jason Rupe**	**Regular Session (Artifical Intelligence for PHM , Including Machine Learning) - V** **Session Chair: Dr. Christian Hansen**	
	#23: Reliable Thermal Monitoring of Electric Machines through Machine Learning	#35: Age Feature Enhanced Neural Network for RUL Estimation of Power Electronic Devices	
	#27: A Distributed Fault Detection and Estimation for Formation of Clusters of Small Satellites	#41: Discovering Depressurization Events in Service Difficulty Reports using Machine Learning	
	#38: Towards a Deep Reinforcement Learning based approach for real time decision making	#56: Robust Contrastive Learning and Multi-shot Voting for Multivariate Prognostics	
	#52: Deep Learning-Based Virtual Metrology in Multivariate Time Series		
16:00 - 16:15	**Coffee Break & Exhibits**		
16:15 - 17:45	**Reliability Roadmap Workshop** **Organizers: Drs. William R. Tonti & Preeti Chauhan** **Moderator: Dr. Steven Li (Room: EV2.260)**		
18:00 - 19:00	**Networking**		

Tuesday 6/06/2023	Tuesday Sessions - Day 2		
7:00 - 8:00	**Regular Session (Standard & Model-based) V** **Session Chair: Dr. Steven Li & Soroush Shahsafi**	**Regular Session (Artifical Intelligence for PHM , Including Machine Learning) V** **Session Chair: Dr. Farnoosh Naderkhani**	**Please take note that although both of these sessions will be held virtually through Zoom, those who prefer to attend these sessions in person can do so by going to rooms EV2.184 and EV2.260.**
	#43: Bearing compound fault diagnosis based on enhanced variational mode extraction algorithm	#22: Generative Adversarial Network for State of Health Estimation of Lithium-ion Batteries	
	#70: A causal graph-based framework for satellite health monitoring	#47: Intelligent fault diagnosis of rolling bearing based on a deep transfer learning network	
	#105: Fault State Prediction Model of Repaired Equipment Considering Maintenance Effect	#48: Selective Domain Adaptation Network for Lithium-ion Battery Health Monitoring	
8:00 - 8:30	**Break**		
8:30 - 9:30	**Keynote 4** **Dr. Christian Moreau** **Plasma Spray Coating Process: Diagnostics and Control** **Moderator: Dr. Farnoosh Naderkhani (Room: EV2. 260)**		
9:30 - 9:45	**Coffee Break & Exhibits**		

9:45 - 10:45	**Tutorial 1** **Dr. Kailash [Kal] Kapur, P.E.** **Principles and Philosophy for an Integrated and Distributed Approach for Prognostics and Health Management** **Moderator: Dr. Steven Li (Room: EV2. 260)**		
10:45 - 11:00	**Coffee Break & Exhibits**		
11:00 - 12:00	**Tutorial 2** **Dr. Wayne Nelson** **How to Plot, Analyze, and Compare Sets of Repair Data** **Moderator: Dr. Steven Li (Room: EV2. 260)**		
12:00 - 13:00	**Lunch**		
	Location: EV2. 260	**Location: EV3. 309**	**Location: EV2. 184**
13:00 - 14:30	**Regular Session (Artifical Intelligence for PHM , Including Machine Learning) - P** **Session Chair: Dr. Farnoosh Naderkhani**	**Regular Session (Sensors) - H** **Session Chair: Dr. Christian Hansen**	**Data Challenge - H** **Session Chair: Dr. Jason Rupe & Nastaran Enshaei**
	#68: Convolutional Neural Networks for Gas Turbine Exhaust Gas Temperature and Power Predictions	#14: Bearing fault detection and fault size estimation using an embedded PVDF transducer	T1: Inter-class Metric Learning based Depth-wise Convolutional Neural Network for Gear Fault Diagnosis
	#72: Application of Machine Learning for Anomaly Detection in Printed Circuit Boards Imbalance Date Set	#66: Mitigating Electrical Losses Through a Programmable Smart Energy Meter Power Theft Algorithm	T2: MALSTM-MCN Ensemble Learning-based Planetary Gearbox Fault Diagnosis method
	#112: A Reinforcement Learning Algorithm for Optimal Dynamic Policies of Joint Condition-based Maintenance	#42: Angular measurement with a gear wheel as a material measure - Extension as absolute sensor	T3: Deep residual network-based condition monitoring
	#57: Using Digital Twins for CBM+ and RAMS Decision Support	#61: Accurate Material Characterization of Wideband RF Signals via Registration-based Curve Fitting Model	T6: An ensemble of convolution-based methods for fault detection using vibration signals
	#69: Exploring the use of PHM for system security and resilience		T7:Vibration Time Series Classification using Parallel Computing and XGBoost
14:30 - 14:45	**Coffee Break & Exhibits**		
	Location: EV2. 260	**Location: EV2. 184**	**Location: EV3. 309**
14:45 - 16:15	**Regular Session (Artifical Intelligence for PHM , Including Machine Learning) - P** **Session Chair: Dr. Jason Rupe**	**Regular Session (Mix: Model-based & non-destructive) - H** **Session Chair: Dr. Yiming Deng & Dr. Farnoosh Naderkhani**	**Data Challenge - V** **Session Chair: Nastaran Enshaei**
	#65: Fault diagnosis of rolling bearing using a transfer ensemble deep reinforcement learning method	#46: Damage Evolution Characterization of Low Carbon Alloy Steel Based on Multiaxial Fatigue Test and DIC	T8: Analysis of Industrial Systems' Health using Vibration Signal Analysis
	#13: Electrochemical Impedance Spectroscopy & Machine Learning based Battery State of Health Estimation	#60: Gradient feature-based method for Defect Detection of Carbon Fiber Reinforced Polymer Materials	T9:Bearing fault diagnosis under various operating conditions (Team: NJUST)
	#30: A Continual Learning Method for Motor Fault Diagnosis Based on Improved Knowledge Distillation	#3: Modeling Operational Risk to Improve Reliability of Unmanned Aerial Vehicles	T12:A Comprehensive Approach for Gearbox Fault Detection and Diagnosis Using Sequential Neural Networks
	#16: Airborne-Sound Analysis for the Detection of Bearing Faults in Railway Vehicles with Real-World Data	#17: Optimizing Flight Control of Unmanned Aerial Vehicles with Physics-Based Reliability Models	T15:Report on bearing fault diagnosis using deep learning (ICPHM-2023 Data Challenge)
16:15 - 16:30	**Coffee Break & Exhibits**		
16:30 - 18:00	**SoS Reliability/ Resilience panel** **Organizer: Dr. Pierre Dersin** **Moderator: Dr. Jason Rupe (Room: EV2.260)**		
18:00 - 19:00	**Break**		

19:00	**Banquet**

Wednesday 6/07/2023	**Wednesday Sessions - Day 3**		
7:00 - 8:00	**Regular Session (Mix: non-destructive & Data collection) - V** **Session Chair: Soroush Shahsafi**	**Please take note that although this session will be held virtually through Zoom, those who prefer to attend this session in person can do so by going to rooms EV2.184.**	
	#15: A support tensor machine-based fault diagnosis method for metro railway turnout		
	#8: Research on Visual Detection Methods and Development Trends of Surface Defects of Urban Tunnels		
	#114: Imbalanced fault diagnosis of planetary gearboxes based on noise enhancement and threshold adaptive		
8:00 - 8:30	**Break**		
8:30 - 9:30	**Tutorial 3** **Dr. Mohsen Ghafouri** **Security analysis of renewable-based energy sources in smart grids** **Moderator: Dr. Farnoosh Naderkhani (Room: EV2. 260)**		
9:30 - 9:45	**Coffee Break & Exhibits**		
9:45 - 10:45	**Tutorial 4** **Dr. Yiming Deng** **New Paradigms in NDE, Prognostics and System Health Management: Data, Model and Learning for NDE 4.0 and beyond** **Moderator: Dr. Christian Hansen (Room: EV2. 260)**		
10:45 - 11:00	**Coffee Break & Exhibits**		
11:00 - 12:00	**Tutorial 5** **Dr. Sorin Voiculescu** **Continuous safety compliance** **Moderator: Dr. Farnoosh Naderkhani (Room: EV2. 260)**		
12:00 - 13:00	**Lunch**		
	Location: EV2. 260	**Location: EV2. 184**	
13:00 - 15:00	**Regular Session (Artifical Intelligence for PHM , Including Machine Learning) - P** **Session Chair: Nastaran Enshaei**	**Regular Session (Standard & Data collection) - H** **Session Chair: Soroush Shahsafi**	
	#45: A semi-supervised RUL prediction with likelihood-based pseudo labeling for suspension histories	#28: Optimizing Data Training Quantity for Bearing Condition Monitoring	
	#40: Data-driven Health Monitoring and Anomaly Detection in Aircraft Shock Absorbers	#55: Multi-view contextual performance profiling in rotating machinery	
	#18: A Data-driven Condition Monitoring method to predict the Remaining Useful Life of SiC Power Modules	#64: An Entropy-based Data Reduction Method for Data Preprocessing	
	#53: Data-driven estimation of blade icing risk in wind turbines	#31: Experimental Setups for Linear Feed Drive Predictive Maintenance: A Review	
	#36: 2D Characterization Based on MSGMD And Its Application in Gearbox Fault Diagnosis	#71: State Reconstruction: Generating a Reference for Improved Diagnostics	