

IEEE International Conference on Prognostics and Health Management (PHM2019)
Hyatt Regency San Francisco Airport Burlingame, CA, USA
June 17-19, 2019

FINAL PROGRAM

17-Jun-19

Monday 6/17/2019	Monday Sessions - Day 1		
8:00 - 17:00	Registration (CYPRESS FOYER)		
7:30-8:30	Breakfast		
	Location: Cypress A Moderator: Steven Li	Location: Cypress B Moderator: Peter Liu	Location: Cypress C Moderator: Christian Hansen
8:30-10:00	Tutorial M.A.1: Using Fractional Failure for Reliability Assessment under Uncertainty Dr. Feng-Bin (Frank) Sun, Tesla Inc.	Tutorial M.B.1: Dimensionality Reduction Theories for PHM Dr. Yixiang Huang, Assistant Professor, Shanghai Jiaotong University, China	Tutorial M.C.1: The Virtual SME (Subject Matter Expert): Enhanced Asset Monitoring with Automated Diagnostics Dr. Randy Bickford, Expert Microsystems, Inc., USA
10:00-10:30	Morning Break		
10:30-12:00	Tutorial M.A.2: Key Ingredients of Intellectual Property Dr. Bill Tonti, IEEE Fellow Sr. Director of IEEE Future Directions, USA	Tutorial M.B.2: Fault Detection, Diagnosis, & Prognosis towards Autonomous Health Management and Maintenance Optimization for Rail Vehicle Systems Dr. Gang Niu, Associate Professor and Director of Intelligent Maintenance and Autonomous Systems Laboratory, Tongji University, China	Tutorial M.C.2: Design Principles for Robust and Reliable Inverter Power Drives Dr. Antonio Ginart, Principal R&D engineer at SmartWires, CA, USA
12:00-13:00	Lunch (POOLSIDE PAVILLION)		
	Regular Session M.A.3 (Data-Driven Methods for PHM) Session Chair: Dr. Meng Ma	Regular Session M.B.3 (Time Series Analysis) Session Chair: Dr. Frank Sun	Regular Session M.C.3 (Advanced Signal Processing for PHM) Session Chair: Dr. Hansi Jiang
13:00-14:30	27: Remaining Useful Life Estimation Using Functional Data Analysis 61: A Parameter Adaptive Date Driven Approach for Remaining Useful Life Prediction of Solenoid Valves 58: Deep Recurrent Convolutional Neural Network for Remaining Useful Life Prediction 57: Fault Detection and Isolation in Industrial Networks using Graph Convolutional Neural Networks	12: Online Change Detection in Time Series: An Overview 45: Fault Detection and Classification of Time Series Using Localized Matrix Profiles 71: A One-Class Support Vector Machine Calibration Method for Time Series Change Point Detection 34: High-Accuracy Unsupervised Fault Detection of Industrial Robots Using Current Signal Analysis	39: Generating Real-valued Failure Data for Prognostics Under the Conditions of Limited Data Availability 44: Transferring Random Samples in Actuator Systems for Binary Damage Detection 64: Visual Explanation of Neural Network Based Rotation Machinery Anomaly Detection System 52: Data-driven Prognosis of Fatigue-induced Delamination in Composites using Optical and Acoustic NDE methods
14:30-15:00	Afternoon Break		
	Regular Session M.A.4 (Advanced Prognostics Methods & Application) Session Chair: Dr. Meng Ma	Regular Session M.B.4 (Gearbox Diagnosis & Prognosis) Session Chair: Dr. Fisseha Alemayehu	Regular Session M.C.4 (Big Data in PHM) Session Chair: Dr. Hansi Jiang
15:00-16:30	11: Quantifying the Impact of Prognostic Distance on Average Cost per Cycle 46: Data-driven Prognostics of Remaining Useful Life for Milling Machine Cutting Tools 6: An Operation Condition-Matched Similarity Method for Remaining Useful Life Estimation with Dynamic Sample Fusion 50: A Maintenance Cost Optimization Strategy Based on Prognostics and Health Monitoring Information	14: Load sharing Analysis of Compound Planetary Gear Set with Cracked Sun Gear 43: Early Gear Tooth Crack Detection Based on Singular Value Decomposition 49: Unsupervised Anomaly Detection Using Variational Auto-Encoder based Feature Extraction 56: Gearbox Fault Diagnostics Using Deep Learning with Simulated Data	42: NDE 4.0: Smart NDE 54: Fault Recognition Technology for Pipeline Systems Based on Multi-feature Fusion of Monitoring Data 70: Building the Tower of Babel for Big Data

18:00-20:00 Welcome Reception (Hyatt Regency San Francisco Airport, Room: THE GROVE 1)

Tuesday 6/18/2019		Tuesday Sessions - Day 2		
7:30 - 17:30	Registration (CYPRESS FOYER)			
7:30-8:30	Breakfast			
8:30 - 8:40	Conference Opening Dr. Jie (Peter) Liu (General Chair) (Room: Sequoia A)			
8:40 - 9:40	Keynote What Comes after Prognostic Dr. Kai Goebel, Principal Scientist, Palo Alto Research Center (PARC), USA (Room: Sequoia A)			
9:40-10:00	Morning Break			
10:00 - 11:00	Keynote Structural Health Monitoring from Diagnostics to Prognostics Dr. Fu-Kuo Chang, Professor, Stanford University; Editor-in-Chief, International Journal of Structural Health Monitoring, USA (Room: Sequoia A)			
11:00 - 12:00	Keynote Industrial AI for Maintenance and Repair: Recent Advances and New Applications Dr. Chetan Gupta, Chief Data Scientist and Architect, Lab Manager, Industrial AI Lab, Hitachi America Ltd., USA (Room: Sequoia A)			
12:00 - 13:00	Lunch (POOLSIDE PAVILLION)			
	Location: Cypress A	Location: Cypress B	Location: Cypress C	
13:00 - 14:30	Regular Session T.A.1 (RUL Prediction) Session Chair: Dr. Houman Hanachi	Regular Session T.B.1 (Maintenance & Condition Monitoring) Session Chair: Dr. Hasan Ferdowsi	Regular Session T.C.1 (AI for PHM) Session Chair: Dr. Yongzhi Qu	
	19: An Improved Particle Filter Method for Accurate Remaining Useful Life Prediction	10: A New Anomaly Detection Method Based on Multi-dimensional Condition Monitoring Data for Aircraft Engine	16: A Novel Bayesian Update Method for Parameter-Reconstruction of Remaining Useful Life Prognostics	
	31: Remaining Useful Life Prediction of Air Spring	17: A Measurement Frequency Estimation Method for Failure Prognosis of an Automated Tire Condition Monitoring System	35: Detecting and Diagnosing Incipient Building Faults Using Uncertainty Information from Deep Neural Networks	
	79: Data-Driven Model Selection Study for Long-Term Performance Deterioration of Gas Turbines	69: Fault Detection and Estimation for a Class of Nonlinear Distributed Parameter Systems	36: Remaining Useful Life Estimation by Empirical Mode Decomposition and Ensemble Deep Convolution Neural Networks	
14:30-15:00	Afternoon Break			
15:00-16:30	Regular Session T.A.2 (Battery Prognostics) Session Chair: Dr. Rui Zhao	Regular Session T.B.2 (PHM for Wind Turbine) Session Chair: Dr. Fisseha Alemayehu	Regular Session T.C.2 (Recent PHM Advances and Applications in Aerospace Engineering) Session Chairs: Dr. Yongzhi Qu	
	25: An Aging-Aware SOC Estimation Method for Lithium-Ion Batteries using XGBoost Algorithm	1: Using Fan Deceleration Variability to determine the Health of Cooling Fans	8: Research on General Aircraft Cluster Health Assessment Method	
	41: A Hybrid Deep Learning Based Approach for Remaining Useful Life Estimation	33: Degradation Estimation of Turbines in Wind Farm Using Denoising Autoencoder Model	60: Diagnosing Strong-fault Models with a Two-step A* Search Method	
	55: Diagnosis of Membrane Chemical Degradation For Health Management of Polymer Electrolyte Fuel Cells	38: Generating Mathematical Model of Equipment and Its Applications in PHM	48: An Adaptive Fault Diagnosis System Framework for Aircraft Based on Man-in-loop	

Wednesday
6/19/2019
7:30 - 17:30
Wednesday Sessions - Day 3
Registration (CYPRESS FOYER)

7:30-8:30	Breakfast		
	Location: Cypress A	Location: Cypress B	Location: Cypress C
8:30-10:00	Regular Session W.A.1 (Electronics PHM) Session Chair: Dr. Houman Hanachi	Regular Session W.B.1 (PHM Alogrithm) Session Chair: Dr. Gang Niu	Regular Session W.C.1 (PHM for Transportation) Session Chair: Dr. Michael Azarian
	2: Diagnosis Method for Hydro-generator Rotor Fault Based on Stochastic Resonance	18: One Self-Adaptive Alarm Method for Equipment Condition based on IQR-LOF	24: Prognostics of Polygonalization of High-speed Railway (HSR) Train Wheels Using a Generalized Additive Model (GAM) Smoothed by Spline-backfitted Kernel
	23: Essentials to Develop Data-Driven Predictive Models of Prognostics and Health Management for Distributed Electrical Systems	63: A Data-Based Approach for Sensor Fault Detection and Diagnosis of Electro-Pneumatic Brake	78: Wheel Polygonalization Identification Method Based on Fluctuation of Temperature Data and Wheel Set Dynamic Monitoring Data
	3: Faults Analysis of Double Water Inner Cooled Synchronous Machines	76: Multi-model Gaussian Process-based Remaining Useful Life Prediction	74: Electronic Circuit Diagnosis with No Data
10:00 - 10:30	Morning Break		
10:30-12:00	Regular Session W.A.2 (Structural Diagnostics & Prognostics) Session Chair: Dr. Yongzhi Qu	Regular Session W.B.2 (Physics-based Models in Prognostics) Session Chair: Dr. Gang Niu	Regular Session W.C.2 (Data-Driven PHM Methods) Session Chair: Dr. Michael Azarian
	4: An FBG Based Smart Clamp Fabricated by 3D Printing Technology and Its Application To Incipient Clamp Looseness Detection	47: Predicting Time-to-Failure of Plasma Etching Equipment using Machine Learning	59: A Comparative Study of Deep Learning-Based Diagnostics for Automotive Safety Components Using a Raspberry Pi
	22: Research on the Propagation of Defects in Assembly Process Based on SIR Epidemic Model	68: A Physics Based Prognostics Approach for Tidal Turbines	66: Unsupervised Fault Detection in Varying Operating Conditions
	26: Estimating Remaining Useful Life of Machine Tool Ball Screws via Probabilistic Classification	67: Differentiation of Journal Bearing Friction States under varying Oil Viscosities based on Acoustic Emission Signals	65: Health Assessment for Crane Pumps based on Vehicle Tests using Deep Autoencoder and Metric Learning
12:00-13:00	Lunch (POOLSIDE PAVILLION)		
13:00 - 14:30	Regular Session W.A.3 (Bearings Prognostics) Session Chair: Dr. Wendai Wang	Regular Session W.B.3 (Bearings Fault Diagnosis) Session Chair: Dr. Hubert Razik	Regular Session W.C.3 (General Topic) Session Chair: Dr. Anne Kao
	9: Calculating the Contact Forces at Imperfect Surfaces Considering Elastohydrodynamic Lubrication Effects in Rolling Element Bearings	15: Intelligent Fault Diagnosis of Rolling Element Bearing Based on Convolutional Neural Network and Frequency Spectrograms	28: Part Name Normalization
	20: A Novel Bearing Health Indicator Construction Method Based on Ensemble Stacked Autoencoder	21: Vibration Feature Extraction Using Local Temporal Self-similarity for Rolling Bearing Fault Diagnosis	32: Formulation and Solution for the Predictive Maintenance Integrated Job Shop Scheduling Problem
	75: A Deep Learning Approach for Failure Prognostics of Rolling Element Bearings	29: Construction and Application of Failure Prediction and Health Management System for Bearing of Running Gear of Rolling Stock	62: Implementing Predictive Maintenance in a Company: Industry Insights with Expert Interviews
14:30-15:00	Afternoon Break		
15:00-16:30	Regular Session W.A.4 (Reliability and PHM) Session Chair: Dr. Guoliang Lu	Regular Session W.B.4 (Fault Diagnosis Approaches) Session Chair: Dr. Hubert Razik	Regular Session W.C.4 (General Topic) Session Chair: Dr. Christian Hansen
	7: Data-Informed Lifetime Reliability Prediction for Offshore Wind Farms	72: Fault Diagnosis of Lubrication System in Internal Combustion Engine	37: A Multivalued Test and Diagnostic Strategy Optimization Method for Aircraft System Fault Diagnosis
	77: Dynamic Programming for Multi-Stage Reliability Growth Planning	13: A novel unsupervised anomaly detection for gas turbine using Isolation Forest	40: Operating State Evaluation of Smart Electricity Meter Based on Data Fusion Method
		73: Application of Deep Learning for Fault Diagnostic in Induction Machine's Bearings	30: Distributed Computational Architecture for Industrial Motion Control and PHM Implementation
18:00-21:00	Conference Banquet (Poolside Pavilion in HOTEL)		

