# IEEE International Conference on Prognostics and Health Management (PHM2021)
Zoom
June 7-10, 2021
Final Program
20210525

| Monday 6/7/2021 Eastern Daylight Time | Tutorials, Day 1, Part 1 | Monday 6/7/2021 China Standard Time | Monday 6/7/2021 Central European Summer Time |
|---|---|---|---|
| | Zoom Link | | |
| 8:30-8:45 AM | **Conference Opening**<br>**Dr. Steven Li**<br>**Conference Planning Committee** | 8:30-8:45 PM | 2:30-2:45 PM |
| 8:45-9:45 AM | **Keynote 1**<br>**Dr. Steven W. Holland**<br>**Automotive PHM & the Role for Health-Ready Components**<br>**Moderator: Dr. Steven Li** | 8:45-9:45 PM | 2:45-3:45 PM |
| 9:45-10:00 AM | **Break** | 9:45-10:00 PM | 3:45 PM - 4:00 PM |
| 10:00-11:00 AM | **Tutorial 1**<br>**Dr. Chao Hu**<br>**Introduction to Battery Prognostics and Early Life Prediction**<br>**Moderator: Jason Rupe, Ph.D.** | 10:00-11:00 PM | 4:00-5:00 PM |
| 11:00-11:15 AM | **Break** | 11:00-11:15 PM | 5:00 PM - 5:15 PM |
| 11:15 AM - 12:15 PM | **Tutorial 2**<br>**Jason Rupe, Ph.D.**<br>**PHM in the Future of Communications Networks**<br>**Moderator: Dr. Christian Hansen** | 11:15 PM - 12:15 AM | 5:15-6:15 PM |
| 12:15-6:00 PM | **Break** | 12:15-6:00 AM | 6:15 PM - 12:00 AM |
| Monday 6/7/2021 Eastern Daylight Time | Tutorials, Day 1, Part 2 | Tuesday 6/8/2021 China Standard Time | Tuesday 6/8/2021 Central European Summer Time |
| 6:00-7:00 PM | **Tutorial 3**<br>**Dr. Portia Banerjee**<br>**In-Time Safety Assessment & Risk Prediction for Unmanned Aerial Systems**<br>**Moderator: Dr.Steven Li** | 6:00-7:00 AM | 12:00-1:00 AM |
| 7:00-7:30 PM | **Break** | 7:00-7:30 AM | 1:00-1:30 AM |
| 7:30-8:30 PM | **Tutorial 4**<br>**Dr. Yanshuo Wang**<br>**Applied Wavelet Transform in Prognostics and Health Management**<br>**Moderator: Dr. Farnoosh Naderkhani** | 7:30-8:30 AM | 1:30-2:30 AM |

| Tuesday 6/8/2021 Eastern Daylight Time | Regular Papers, Day 2, Part 1 | Regular Papers, Day 2, Part 1 | Tuesday 6/8/2021 China Standard Time | Tuesday 6/9/2021 Central European Summer Time |
|---|---|---|---|---|
| | Zoom Link | Zoom Link | | |
| 9:30-10:30 AM | **Keynote 2**<br>**Sangwon Yoon, Ph.D**<br>**Digital Transformation using Artificial Intelligence/Machine Learning in Electronics Manufacturing**<br>**Moderator: Jason Rupe, Ph.D.** | | 9:30-10:30 PM | 3:30-4:30 PM |
| 10:30-11:00 AM | **Break** | **Break** | 10:30-11:00 PM | 4:30 PM - 5:00 PM |
| 11:00 AM - 12:50 PM | **Prediction Models 1**<br>**Moderator: Jason Rupe, Ph.D., Dr. Jian Guo** | **Batteries & Power**<br>**Moderator: Dr. Steven Li, Hung Nguyen** | 11:00 PM - 12:50 AM | 5:00-6:50 PM |
| | 2: Temporal Convolutional Network Based Regression Approach for Estimation of Remaining Useful Life | 21:Digital Twin for Degradation Parameters Identification of DC-DC Converters Based on Bayesian Optimization | | |
| | 16: A Hybrid Bayesian Deep Learning Model for Remaining Useful Life Prognostics and Uncertainty Quantification | 30: Real Time Ultrasonic Monitoring of Solid-State Lithium-Ion Cells in the Frequency Domain | | |
| | 26: A novel deep soft clustering for unsupervised univariate time series | 40: A Multiscale Entropy-Based Long Short Term Memory Model for Lithium-Ion Battery Prognostics | | |
| | 48: Combining Approaches of Brownian Motion and Similarity Principle to Improve the Remaining Useful Life Prediction | 51: Particle Filtering framework for Health Monitoring of Lithium-Ion Batteries using Ampere-hour Throughput based Semi-Empirical Model | | |
| | | 53: Gaussian Process Regression based State of Health Estimation of Lithium-Ion Batteries using Indirect Battery Health Indicators | | |
| 12:50-1:00 PM | **Break** | **Break** | 12:50-1:00 AM | 6:50-7:00 PM |
| 1:00-2:30 PM | **Planning and Maintenance**<br>**Moderator: Dr. Yiming Deng, Preeti Chauhan, Ph.D.** | | 1:00-2:30 AM | 7:00-8:30 PM |
| | 3: A Maintenance Cost Optimization Strategy Based on Prognostics and Health Monitoring Information | | | |
| | 15: Operating room planning with multiple downstream units | | | |
| | 66: A Dynamic Programming Approach for Multistage Reliability Growth Planning Considering Time and New | | | |
| | 67: Comparison of Two Maintenance Policies for the Coordination of Decisions of Quality Control and | | | |
| 2:30-6:00 PM | **Break** | **Break** | 2:30-6:00 AM | 8:30 PM - 12:00 AM |

| Tuesday 6/8/2021 Eastern Daylight Time | Regular Papers, Day 2, Part 2 | Regular Papers, Day 2, Part 2 | Wednesday 6/9/2021 China Standard Time | Wednesday 6/9/2021 Central European Summer Time |
|---|---|---|---|---|
| 2:30-6:00 PM | **Break** | **Break** | 2:30-6:00 AM | 8:30 PM - 12:00 AM |
| 6:00-8:10 PM | **General Hardware**<br>**Moderator: Alireza Khalilabad, Dr. Qiang Miao** | **Networks**<br>**Moderator: Dr. Christian Hansen, Jason Rupe, Ph.D.** | 6:00-8:10 AM | 12:00-2:10 AM |
| | 5: Research on Residual Life Prediction of Joint Rotating Structure with Multiple Failure Coupling | 11: Sensing Technologies and Artificial Intelligence for Subsea Power Cable Asset Management | | |
| | 25: Tool Wear Prediction Under Varying Milling Conditions via Temporal Convolutional Network and Auxiliary Learning | 22: A Smart Agricultural Monitoring System Based on Cloud Platform of Internet of Things | | |
| | 42: Tool Fault Diagnosis Based on Improved Multiscale Network and Feature Fusion | 31: Fault Prognosis of Satellite Reaction Wheels Using A Two-Step LSTM Network | | |
| | 44: Identification and Analysis of Tool Wear Signal in CNC Machine Tool Based on Chaos Method | | | |
| | 56: Application of Deep CNN-LSTM Network to Gear Fault Diagnostics | | | |
| | 60: A Hybrid F-G-D Approach for Reliability Risk Assessment of Surgical Robots | | | |
| 8:10-8:30 PM | **Break** | **Break** | 8:10-8:30 AM | 2:10-2:30 AM |
| 8:30-10:00 PM | **Prediction Models 2**<br>**Moderator: Dr. Farnoosh Naderkhani, Dr. Rui Zhao** | | 8:30-10:00 AM | 2:30-4:00 AM |
| | 33: Leveraging Big Data to Discover High Yield Prognostics Applications | | | |
| | 50: A remain useful life prediction framework based on residual networks and a novel loss function | | | |
| | 59: OPELRUL: Optimally Weighted Ensemble Learner for Remaining Useful Life Prediction | | | |
| | 61: Remain Useful life Estimation of Turbofan Engine Using Quasi-RNN Neural Networks | | | |
| 10:00 PM - 9:30 AM | **Break** | **Break** | 10:00 AM - 9:30 PM | 4:00 AM - 3:30 PM |

| Wednesday 6/9/2021 Eastern Daylight Time | Regular Papers, Day 3, Part 1 | Regular Papers, Day 3, Part 1 | Wednesday 6/9/2021 China Standard Time | Wednesday 6/9/2021 Central European Summer Time |
|---|---|---|---|---|
| | Zoom Link | Zoom Link | | |
| 9:30-10:30 AM | **Keynote 3**<br>**Jeffrey Voas, Ph.D.**<br>**Trusting A Digital Twin?**<br>**Moderator: Dr. Steven Li** | | 9:30-10:30 PM | 3:30-4:30 PM |
| 10:30-11:00 AM | **Break** | **Break** | 10:30 PM - 11:00 PM | 4:30 PM - 5:00 PM |
| 11:00 AM - 1:10 PM | **Inspection & Sensors**<br>**Dr. Guanyu Piao**<br>**Moderator: Dr. Jian Guo, Preeti Chauhan, Ph.D.** | **Aircraft**<br>**Moderator: Alireza Khalilabad, Dr. Yiming Deng** | 11:00 PM -1:10 AM | 5:00-7:10 PM |
| | 12: Object Detection using Deep Learning in a Manufacturing Plant to Improve Manual Inspection | 27: An Aero-engine Gas Path Fault Diagnosis Method Based on OPABC-BP | | |
| | 13: 3D objects descriptors method for fault detection in a multi sensors context | 28: Remaining Useful Life Prediction Based on Multi-scale Residual Convolutional Network for Aero-engine | | |
| | 23: Simultaneous Actuator and Sensor Faults Estimation for Aircraft Using a Jump-Markov Regularized Particle Filter | 29: An Aero-engine Gas Path Fault Feature Extraction Method Based on IGA-KPCA | | |
| | 41: Source localization using beamforming and double L-shape sensors arrays | 39: GE Aviation Use-case - Apache Spark for Analytics | | |
| | 54: Guided visual inspection enabled by AI-based detection models | 43: Automated Machine Learning for Remaining Useful Life Estimation of Aircraft Engines | | |
| | | 58: Remaining Useful Life Prediction of Aircraft Engines Using Hybrid Model Based on Artificial Intelligence Techniques | | |
| 1:10-1:30 PM | **Break** | **Break** | 1:10-1:30 AM | 7:10 PM - 7:30 PM |
| 1:30-2:40 PM | **General**<br>**Moderator: Dr. Christian Hansen, Preeti Chauhan Ph.D.** | | 1:30-2:40 AM | 7:30-8:40 PM |
| | 37: A Local Mahalanobis Distance Analysis Based Methodology for Incipient Fault Diagnosis | | | |
| | 55: Comparison of Agent Deployment Strategies for Collaborative Prognosis | | | |
| | 14: Automated Dynamic Safety Evaluation of Generic Fail-Operational Mechatronic Systems | | | |
| 2:40-6:00 PM | **Break** | **Break** | 2:40-6:00 AM | 8:40 PM - 12:00 AM |
| Wednesday 6/9/2021 Eastern Daylight Time | Regular Papers, Day 3, Part 2 | Regular Papers, Day 3, Part 2 | Thursday 6/10/2021 China Standard Time | Thursday 6/10/2021 Central European Summer Time |
| 2:20-6:00 PM | **Break** | **Break** | 2:20-6:00 AM | 8:20 PM - 12:00 AM |
| 6:00-7:50 PM | **Bearings**<br>**Moderator: Alireza Khalilabad, Dr. Qiang Miao** | | 6:00-7:50 AM | 12:00-1:10 AM |
| | 10: Exploration and Effect Analysis of Improvement in Convolution Neural Network for Bearing Fault Diagnosis | | | |
| | 19: An improved CNN based on attention mechanism with multi-domain feature fusion for bearing fault diagnosis | | | |
| | 24: Unsupervised Domain Adaptation for Bearing Fault Diagnosis Considering the Decision Boundaries | | | |
| | 36: A Novel Intelligent Diagnosis Method for Bearing Based on Fused-feature Images | | | |
| | 65: GAN-based LSTM Predictor for Failure Prognostics of Rolling Element Bearings | | | |
| 7:50 - 8:00 PM | **Break** | **Break** | 7:50 - 8:00 AM | 1:50-2:00 AM |
| 8:00-9:10 PM | **Systems**<br>**Moderator: Dr. Farnoosh Naderkhani, Dr. Rui Zhao** | | 8:00-9:10 AM | 2:00-3:10 AM |
| | 4: An Optimized Support Vector Regression for Identification of In-phase Faults in Control Moment Gyroscope Assembly | | | |
| | 18: Prognostics and Health Management of Wafer Chemical-Mechanical Polishing System using Unsupervised Deep Learning | | | |
| | 68: Comparison of an Automatic Classification of Partial Discharge Patterns for Large Hydrogenerator | | | |
| 9:10-9:30 PM | **Conference Closing Ceremony**<br>**Dr. Steven Li**<br>**Conference Planning Committee**<br>**Moderator: Alireza Khalilabad, Dr. Rui Zhao** | | 9:10-9:30 AM | 3:10-3:30 AM |