eIMS
CENTER FOR INTELLIGENT MAINTENANCE SYSTEMS

National Science Foundation (NSF)
Industry/University Collaborative Research Center for
Intelligent Maintenance Systems

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JIANSHE FENG

CONTACT	3969 Lowry Ave., Apt 1 Cincinnati, OH, US, 45229	*Phone:* (+1) 843 861 3350 *E-mail:* fengje@mail.uc.edu

RESEARCH FOCUS — Development and implementation of industrial data analytics for fault diagnosis and prognosis, advance process control, predictive analytics, and maintenance scheduling optimization in diverse industrial areas such as manufacturing processes, energy, semiconductor, machine tools, vehicle industry, *etc.*

EDUCATION

University of Cincinnati (UC), Cincinnati, OH, US — *Aug. 2015 - Apr. 2020*
- *Ph.D* in Mechanical Engineering. Advisor: Dr. Jay Lee, GPA: 3.99/4.00
- Concentration: Adaptive Prognostics and Health Management (PHM) of industrial processes in big data environment
- Working at NSF Industry/University Cooperative Research Center (I/UCRC) for Intelligent Maintenance Systems (IMS)

Zhejiang University (ZJU), Hangzhou, China — *March 2015*
- *Master of Science* in Mechatronics Engineering, GPA: 3.91/4.00
- Concentration: Reliability analysis and prognosis of undersea mechatronics system

Tongji University (TJU), Shanghai, China — *July 2012*
- *Bachelor of Engineering* in Mechanical Engineering, GPA: 4.43/5.00
- Concentration: Distributed communication system of machine tools

WORK EXPERIENCE

Foxconn Industrial Internet Co. Ltd (FII), Shenzhen, China
Senior Data Scientist — *Oct. 2019 - present*
- Lighthouse factory and smart manufacturing factory technical lead
- Lighthouse Academy industrial intelligence tool development and talent training

General Motors Co. (GM), Warren, MI, US
Data Scientist Intern — *May 2018 - Aug. 2018*
- Diagnosis and Prognosis (D&P) of autonomous vehicle's chassis system with acoustic signals
- Vehicle health assessment under non-stationary environments using deep learning techniques

Eaton Co., Southfield, MI, US
Data Scientist Intern — *June 2017 - Sept. 2017*
- Arc fault detection and localization in low-voltage secondary power network
- Electrical Vehicle (EV) user behavior modeling using Hidden Markov Model (HMM)

CyberInsight Co., Ltd, Beijing, China
Senior Data Scientist — *Feb. 2017 - May 2017*
- Development of wind turbine health condition monitoring, fault diagnosis and prognosis system
- Development of wind farm operation and maintenance scheduling optimization model

Precision Machinery R&D Center (PMC), Taiwan
Senior Data Scientist — *Aug. 2016, March 2017*
- Lecture of training program *machine learning algorithms and applications for machinery prognostics*
- Development of health condition monitoring and prognosis toolkit for CNC machine

Shanghai Volkswagen Co., Ltd (SVW), Shanghai, China
Product Quality Management Intern — *July 2014 - Aug. 2014*
- Optimization of project planning and technical modification scheduling
- Process optimization to improve supply chain efficiency

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RESEARCH EXPERIENCE	**Multivariate Limits Setting and Simulation Dataset Generation for Fault Detection (FD) in Semiconductor Manufacturing Processes with Applied Materials** *Jan. 2019 - now*

- Development of a multivariate limits setting capability to determine optimal threshold adaptively
- Projection of multivariate limits to low dimension for decision-making support
- Development of a configurable tool to generate process data for FD methods benchmark

Pattern-based Trace Segmentation and Feature Extraction (FE) for FD in Semiconductor Manufacturing Processes with Applied Materials *Jan. 2018 - Dec. 2018*
- Development of pattern-based trace segmentation algorithm and pattern-specified FE method
- Development of FD model with capability to self-adjust adaptively using incremental learning

Predictive Maintenance for Injection Molding Machines with Plastic Omnium *Sept. 2017 - May 2018*
- Maintenance log mining using machine learning and case-based reasoning techniques
- Prognosis and maintenance optimization of critical components in injection molding process

On-line Degradation Prediction for Vibration Motor in Printed Circuit Board (PCB) Manufacturing with Kinpo *Mar. 2016 - Dec. 2017*
- On-line feature extraction and enhancement from noisy process data
- Failure prediction of vibration motor under dynamic working environment

Optimal Scheduling of Offshore Wind Farms Maintenance *Sept. 2016 - Dec. 2017*
- Establishment of a mixed-integer programming formulation (MIP) to minimize loss
- Development an efficient approximation model and solved it using MATLAB and Gurobi
- Design of a dependable scheduling of wind farm maintenance based on evolutionary algorithms

Offshore Wind Power Prediction Using Data-driven Approaches *Dec. 2015 - Dec. 2016*
- Adaptive Neuro Fuzzy Inference system (ANFIS)-based short-term wind power prediction
- Autoregressive Moving Average (ARMA) and Kalman Filter-based mid-term wind power prediction

COMPUTER SKILLS	Matlab, Python, MySQL, Scikit-learn, Tensorflow, Keras, R, Tableau, Gurobi, C#, LabVIEW, LaTeX

PUBLICATIONS	

- **Jianshe Feng**, Xiaodong Jia, James Moyne, Jimmy Iskandar, and Jay Lee, An Online Virtual Metrology Model with Sample Selection for The Tracking of Dynamic Manufacturing Processes with Slow Drift, *IEEE Transaction on Semiconductor Manufacturing* 32.4 (2019): 574-582.
- **Jianshe Feng**, Methodology of Adaptive Prognostics and Health Management Using Streaming Data in Big Data Environment. *Proceedings of Annual Conference of PHM Society.* Vol. 11, No. 1, 2019.
- **Jianshe Feng**, Xinyu Du, Mutasim Salman, Method and Apparatus for Monitoring A Machine Bearing On-Vehicle, U.S. Patent, P047228. Oct. 2018 *pending*
- **Jianshe Feng**, Xiaodong Jia, Feng Zhu, and Jay Lee, An Intelligent System for Off-Shore Wind Farm Maintenance Scheduling Optimization Considering Turbine Production Loss. *Journal of Intelligent & Fuzzy Systems* 37.5 (2019): 6911-6923.
- **Jianshe Feng**, Xiaodong Jia, and Jay Lee, A Cross Trajectory Gaussian Process Regression Model for Battery Health Prediction. *Journal of modern power systems and clean energy. accepted*
- **Jianshe Feng**, Xinyu Du, *et al.* Wheel Bearing Fault Isolation and Prognosis Using Acoustic Based Approach. *Proceedings of the Annual Conference of PHM Society.* Vol. 11, No. 1, 2019.
- Li, Pin, **Jianshe Feng**, *et al.* A Deep Learning-Based Method for Cutting Parameter Optimization for Band Saw Machine. *Proceedings of the Annual Conference of PHM Society.* Vol. 11. No. 1. 2019.
- **Jianshe Feng**, Xiaodong Jia, *et al.*, Pattern-based Trace Segmentation and Feature Extraction for Semiconductor Manufacturing and Application to Fault Detection. Advanced Process Control 30th, Oct 8-11, 2018, Austin, TX, US
- Canjun Yang, **Jianshe Feng**, *et al.*, Method for Quickly Analyzing Universal Reliability Indicators of Printed Circuit Board, China Patent, 2014, CN103902770B