

## Chao Jin

318 Terrace Ave. Apt. 10, Cincinnati, OH, 45220  
(513)338-6022, jinco@mail.uc.edu

### EDUCATION

University of Cincinnati 09/2011~08/2017(Expected)

Pursuing a **Ph.D.** degree in Mechanical Engineering

- Advisor: Professor Jay Lee (jay.lee@uc.edu)
- Research Assistant at the NSF Industry/University Cooperative Research Center (I/UCRC) for Intelligent Maintenance Systems (IMS)
- Research Capability:
  - Prognostics and health management on various applications
  - Vibration-based analysis on rotary machines
  - Machine learning and signal processing

University of Cincinnati 09/2011~12/2015

**M.S.**, Mechanical Engineering

- Advisor: Professor Jay Lee (jay.lee@uc.edu)
- Research Assistant at the NSF Industry/University Cooperative Research Center (I/UCRC) for Intelligent Maintenance Systems (IMS)

Harbin Institute of Technology, China 08/2007~07/2011

**B.E.**, Control Science and Engineering

- Research Interest: Robust control theory

### INTERNSHIP

**Zhen Ding Technology Holding Ltd., China** 08/2015~10/2015

- Data Scientist
  - Fuzzy logic hybrid modeling for integration of expert knowledge and data-driven intelligence

**Applied Materials, Inc.** 06/2014~08/2014

- Data Scientist

**Automated Precision Inc.** 05/2013~08/2013

- Data Modeling and System Engineer

### EXPERIENCE

**Graduate Research Assistant** 01/2012~Present

NSF Industry/University Cooperative Research Center for Intelligent Maintenance Systems (IMS)

- 5 years of experience in the research and development of prognostics and health management systems for various industrial applications, including semiconductor fabrication, electrical power supply, vessel building, metrology devices, and rotary machinery
- Provide leadership and management of research projects

**Panel Speaker** 8/3/2016

NI Week 2016

- Industry Panel: Prognostics and Machine Learning – Adding Knowledge and Intelligence to Data

**Lab Consultant** 10/2011~08/2012

Office of College Computing, University of Cincinnati

## RESEARCH PROJECTS

Project with <b>Cosen Saws, Taiwan</b> Research and Development of Relationship Mining Algorithms for Band Saw Machine Performance Improvement	10/2016~Present
Project with <b>Applied Materials</b> Research and Development of Pattern Recognition-Augmented Feature Extraction Methods for Semiconductor Manufacturing Process Monitoring	01/2016~10/2016
Project with <b>Zhen Ding Technology Holding Ltd., China</b> Development of Condition Monitoring Methods for Bearing Degradation Monitoring	11/2015~07/2016
Project with <b>Eaton</b> Research and Development for Electrical Component Health Monitoring System <ul style="list-style-type: none"> <li>Developed and benchmarked early fault detection approaches based on time series signals.</li> <li>Research on technologies that could improve algorithm performance under uncertain regimes.</li> </ul>	07/2015~08/2015
Project with <b>China State Shipbuilding Corporation (CSSC) Electronics Technology Co., China</b> Research and Development for Smart Vessel System	09/2013~01/2015
NSF Collaborative Opportunity for Research Between I/UCRCs (CORBI) Research with <b>Woodward, Inc.</b> Sensor Health Prognostics with Resilient Intelligence <ul style="list-style-type: none"> <li>Conducted a survey on diesel engine oxygen sensor health monitoring techniques from patent and literature.</li> <li>Contributed to experimental design on oxygen sensor data acquisition from users and test beds.</li> </ul>	11/2013~11/2014
Project with <b>Flanders' Mechatronics Technology Centre (Now Flanders' Make), Belgium</b> Exploration of Induction Motor Stator Winding Fault Diagnosis Techniques <ul style="list-style-type: none"> <li>Developed a vibration-based method for induction motor stator electrical winding fault early detection.</li> <li>Benchmarked with the existing vibration-based methods and proved that the inter-turn fault can be detected when it was much more incipient.</li> </ul>	10/2013~05/2014
Project with <b>Automated Precision Inc.</b>	06/2012~08/2014
Feasibility Study for <b>Korea Electronics Technology Institute, Korea</b> Degradation Monitoring for Solar Module in Solar Power Plant <ul style="list-style-type: none"> <li>Explored and benchmarked different predictive modeling approaches for solar module performances.</li> </ul>	08/2013~12/2013
Project with <b>Institute for Information Industry, Taiwan</b> Optimal Machinery Feature Extraction and Problem Detection <ul style="list-style-type: none"> <li>Conducted a literature survey on motor PHM for feature knowledge base</li> <li>Developed a Bayesian probability based component-and-sensor-wise feature performance metric.</li> <li>Coded the decision tree structure for optimal feature extraction.</li> </ul>	04/2013~12/2013

- Project with **Flanders' Mechatronics Technology Centre (Now Flanders' Make), Belgium** 11/2012~01/2013  
Temperature Prediction for Bearing Use Case
- Explored the feasibility of predicting the bearing temperature by means of curve fitting for the historical data.
- NSF Collaborative Opportunity for Research Between I/UCRCs (CORBI) Research with **SolarWorld** 05/2012~08/2012  
Predictive Modeling for Wire Saw Ingot Cutting Process
- Explored the possibility of applying a virtual metrology model for the wafer cutting wire saw machines.
- Project with **Parker-Hannifin Corporation** 02/2012~04/2012  
Development of Smart Hose
- Experiment assistant to carry out the experiments using LabVIEW and formed a good habit in the documentation for data acquisition and project progress.

## PUBLICATIONS

### Journal

Jia, X., Zhao, M., Di, Y., Jin, C., & Lee, J. (2017). Investigation on the kurtosis filter and the derivation of convolutional sparse filter for impulsive signature enhancement. *Journal of Sound and Vibration*, 386, 433–448. <http://doi.org/10.1016/j.jsv.2016.10.005>

Jia, X., Jin, C., Buzza, M., Wang, W., & Lee, J. (2016). Wind turbine performance degradation assessment based on a novel similarity metric for machine performance curves. *Renewable Energy*, 99, 1191–1201. <http://doi.org/10.1016/j.renene.2016.08.018>

Lee, J., Bagheri, B., & Jin, C. (2016). Introduction to cyber manufacturing. *Manufacturing Letters* (Vol. 8).

Jin, C., Ompusunggu, A. P., Liu, Z., Ardakani, H. D., Petre, F., & Lee, J. (2015). Envelope analysis on vibration signals for stator winding fault early detection in 3-phase induction motors. *International Journal of Prognostics and Health Management*, 6, 12.

### Conference

Jin, C., Di, Y., Moyne, J., Iskandar, J., Hao, H., Schulze, B., Armacost, M., Lee, J. (2016). Pattern Recognition-Augmented Feature Extraction (PRAFE) for Semiconductor Manufacturing Processes. In *Advanced Process Control Conference XXVIII 2016*. Mesa, Arizona, USA.

Jin, C., Djurdjanovic, D., Ardakani, H. D., Wang, K., Buzza, M., Begheri, B., Brown, P., Lee, J. (2015). A comprehensive framework of factory-to-factory dynamic fleet-level prognostics and operation management for geographically distributed assets. In *2015 IEEE International Conference on Automation Science and Engineering (CASE)* (pp. 225–230). IEEE. <http://doi.org/10.1109/CoASE.2015.7294066>

Jin, C., Zhao, W., Liu, Z., & Lee, J. (2014). A Vibration-Based Approach for Diesel Engine Fault Diagnosis. In *Prognostics and Health Management (PHM), 2014 IEEE Conference on*. IEEE.

Jin, C., Ompusunggu, A. P., Liu, Z., Ardakani, H. D., Petre, F., & Lee, J. (2014). A Vibration-Based Approach for Stator Winding Fault Diagnosis of Induction Motors: Application of Envelope Analysis. *Annual Conference of the Prognostics and Health Management Society*. Fort Worth, TX.

Ompusunggu, A. P., Liu, Z., Ardakani, H. D., Jin, C., Petré, F., & Lee, J. (2014). Winding fault diagnosis of a 3-phase induction motor powered by frequency-inverter drive using the current and voltage signals. In *Proceedings of the 14th Mechatronics Forum International Conference* (pp. 16–18).

Kao, H. A., Jin, C., Zongchang, L., Yang, S., & Shi, Z. (2014). Dynamic Condition based Feature Extraction Strategy for Machine Health Monitoring Applications. In *Machinery Failure Prevention Technology (MFPT) 2014* (Vol. 1, pp. 1–18). Virginia Beach, USA. <http://doi.org/10.1017/CBO9781107415324.004>

## SKILLS

---

- Prognostics and health management, Predictive analytics
- Machine learning, Signal processing, Data mining
- Programming: MATLAB, Python, R, C++, LabVIEW

## LANGUAGES

---

- Chinese: Native
- English: Full Proficient
- Korean: Elementary