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KEYWORDS:

- Prognostics and Health Management, Analytics, Artificial Intelligence, Big Data
- Rotating Machines, Manufacturing, Wind, Semiconductors, Batteries, Metallurgy
- Bayesian, Deep Learning, Gaussian Process, Multivariate Analysis, Time Series

EDUCATION:

University of Cincinnati (UC), US

08/2014 - Now

Ph.D Candidate at Center for Intelligent Maintenance System (IMS)

Advisor: Prof. Jay Lee

Shanghai Jiao Tong University (SJTU), China

09/2011 – 04/2014

M.S. in Mechanical Engineering

Central South University (CSU), China

09/2004 – 07/2008

B.S. in Engineering Thermodynamics

TEACHING EXPERIENCE:

TA for the Class Introduction to Industrial Big Data

2018 Spring

TA for the Class Introduction to Industrial Big Data

2017 Spring

WORK EXPERIENCE:

General Motors (at Warren) – Internship

05/2017 – 08/2017

- Early diagnosis of Torque Converter Clutch (TCC) degradation for transmission
- Diagnosis of engine bearing degradation and failures.

Baosteel – Internship

06/2016 – 08/2016

Shanghai Electric – Internship

06/2015 – 12/2015 & 08/2016 – 11/2016

Siemens – Full time

07/2008 – 02/2011

Title: Project Engineer

- Steam turbine design inspections and manufacturing quality inspections
- Project budget, scheduling and logistics management

HONORS:

1st place at PHM data challenge 2016, hosted by PHM society

Objective: Predict Material Removal Rate (MRR) for the Chemical-Mechanical Planarization (CMP) process in semiconductor fabrication

RESEARCH PROJECTS:

- Project with **Applied Materials** on **Semiconductors** **01/2017 - Present**
- Develop semi-automated feature extraction from the trace signal in semiconductor manufacturing process based on time series pattern recognition techniques
 - Failure detection for semiconductors based on the semi-automated feature extraction program.
- Project with **Baosteel** on **Metallurgy Devices** **06/2016 – 08/2017**
- PHM implementations on the continuous casting machine for steel casting process
 - Prognostics of gearbox and bearing failures for the rolling machines
- Project with **HIWIN** on **Ball-screw** **06/2016 – 04/2018**
- Accelerated life test: experiment design and data analysis
 - Data suitability assessment and enhancement implementations
- Project with **American Axle** on **Gear Cutting Machine** **10/2016 – 12/2017**
- Prognostics of potential spindle failures and feeding axis failures for the gear cutting tools
- Project with **Shanghai Electric** on **Wind Turbine** **08/2014 – 12/2017**
- Phase I:**
- Performance degradation assessment for wind turbine based on SCADA data.
 - PHM on the key components of wind turbine, including: drive train, pitch system, yaw system, anemometer, battery and etc.
 - Vibration signal processing and condition monitoring for drive train.
- Phase II:**
- Wind power prediction for the off-shore wind farm
 - Intelligent power dispatching strategy based on the wind speed & power prediction results

PROGRAMMING SKILLS:

Matlab, Python(theano, tensorflow), R, Labview;

SUCCESSFUL JOURNAL PAPERS:

- [1] **X. Jia**, M. Zhao, Y. Di, Q. Yang, and J. Lee, "Assessment of data suitability for Machine Prognosis Using Maximum Mean Discrepancy," **IEEE Transactions on Industrial Electronics**, 2017.
- [2] **X. Jia**, Y. Di, J. Feng, Q. Yang, H. Dai, and J. Lee, "Adaptive virtual metrology for semiconductor chemical mechanical planarization process using GMDH-type polynomial neural networks," **Journal of Process Control**, vol. 62, pp. 44-54, 2018.
- [3] **X. Jia**, M. Zhao, Y. Di, P. Li, and J. Lee, "Sparse filtering with the generalized lp/lq norm and its applications to the condition monitoring of rotating machinery," **Mechanical Systems and Signal Processing**, vol. 102, pp. 198-213, 2018.
- [4] **X. Jia**, C. Jin, M. Buzza, Y. Di, D. Siegel, and J. Lee, "A deviation based

assessment methodology for multiple machine health patterns classification and fault detection," *Mechanical Systems and Signal Processing*, vol. 99, pp. 244-261, 2018.

[5] X. Jia, M. Zhao, M. Buzza, Y. Di, and J. Lee, "A geometrical investigation on the generalized l_p/l_q norm for blind deconvolution," *Signal Processing*, vol. 134, pp. 63-69, 2017.

[6] X. Jia, M. Zhao, Y. Di, C. Jin, and J. Lee, "Investigation on the kurtosis filter and the derivation of convolutional sparse filter for impulsive signature enhancement," *Journal of Sound and Vibration*, vol. 386, pp. 433-448, 2017.

[7] X. Jia, C. Jin, M. Buzza, W. Wang, and J. Lee, "Wind turbine performance degradation assessment based on a novel similarity metric for machine performance curves," *Renewable Energy*, vol. 99, pp. 1191-1201, 2016.

[8] M. Zhao, X. Jia, J. Lin, Y. Lei, and J. Lee, "Instantaneous speed jitter detection via encoder signal and its application for the diagnosis of planetary gearbox," *Mechanical Systems and Signal Processing*, vol. 98, pp. 16-31, 2018.

[9] M. Zhao and X. Jia, "A novel strategy for signal denoising using reweighted SVD and its applications to weak fault feature enhancement of rotating machinery," *Mechanical Systems and Signal Processing*, vol. 94, pp. 129-147, 2017.

[10] Y. Di, X. Jia, and J. Lee, "Enhanced Virtual Metrology on Chemical Mechanical Planarization Process using an Integrated Model and Data-Driven Approach," *International Journal of Prognostics and Health Management*, vol. 8, p. pp, 2017.

[11] P. Li, X. Jia, J. Feng, H. Davari, G. Qiao, Y. Hwang, et al., "Prognosability study of ball screw degradation using systematic methodology," *Mechanical Systems and Signal Processing*, vol. 109, pp. 45-57, 2018.

[12] L. Li, X. Jia, and Y. Liu, "Modified outlet boundary condition schemes for large density ratio lattice Boltzmann models," *Journal of Heat Transfer*, vol. 139, p. 052003, 2017.

[13] L. Li, X. Jia, Y. Liu, and M. Su, "Simulation of double droplets impact on liquid film by a simplified lattice Boltzmann model," *Applied Thermal Engineering*, vol. 98, pp. 656-669, 2016.

[14] X. Jia, "Numerical simulation of two-phase flows about droplets and liquid film by using lattice Boltzmann method," *Shanghai Jiaotong University*, 2014 (Master Thesis, Chinese)

贾晓东, "基于格子 Boltzmann 方法的液滴与液膜两相流动数值模拟," *上海交通大学*, 2014.

[15] X. Jia, Y. Liu, L. Li, and M. Su, "Numerical simulation of falling liquid film based on lattice Boltzmann method," *Journal of Chinese Society of Power Engineering*, pp. 796-800, 2014. (Chinese)

贾晓东, 刘永文, 李龙, and 苏明, "格子 Boltzmann 方法的竖壁汽液降膜数值研究," *动力工程学报*, pp. 796-800, 2014.

[16] X. Jia, Y. Liu, "Simulation of Droplet Splashing on Flowing Liquid Film by Two-



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phase Lattice Boltzmann Method," *Science Technology and Engineering*, pp. 5-9, 2014.(Chinese)

贾晓东, 刘永文, "两相格子 Boltzmann 方法的液滴冲击流动液膜数值模拟," *科学技术与工程*, pp. 5-9, 2014.

[17] L.Li, **X.Jia**, L.Liu and M.Su, "Simulation of flow process of two droplets with large density ratio impacting on liquid film by two-phase lattice Boltzmann method," *Journal of Chinese Society of Power Engineering*, 457-462, 2015..(Chinese)

李龙, 贾晓东, 刘永文, and 苏明, "两相格子 Boltzmann 方法模拟大密度比下双液滴冲击液膜的流动过程," *动力工程学报*, vol. 35, pp. 457-462, 2015.

SERVICES:

I am currently serving as reviewer for the following academic publications:

IEEE TIE, IEEE TASE, MSSP, Applied Energy, Measurement, Renewable Energy International Conference on Sensor Networks and Signal Processing

PROSPECTIVE PUBLICATIONS IN 2018:

[1] Early diagnosis of Torque Converter Clutch Degradation for Vehicle Transmission. *US Patent with General Motors*,2018 (To be awarded)

[2] **X.Jia**, J. Feng, H. Cai, J. Lee, "A Cross Trajectory Gaussian Process Regression Model for Battery Health Prediction," *IEEE Transactions on Industrial Electronics*, 2018. (Under Review)

[3] **X.Jia**, Y.Chen, J. Feng, H. Cai, J. Lee, "Data Suitability Assessment for Prognostics and Health Management: a Systematic Framework," *IEEE Transactions on Industrial Informatics*, 2018 (Under Review)

[4] **X.Jia**, Bin H, J. Feng, H. Cai, J. Lee, "Review of PHM Data Competitions from 2008 to 2017: Methodologies and Analytics", *Proceedings of the Annual Conference of the Prognostics and Health Management Society*, 2018 (Under Review)

[5] H. Cai, **X.Jia**, J.Feng, Q.Yang, Y.Chen, J.Lee, " Gaussian Process Regression for One-Day-Ahead Wind Speed Prediction", *Renewable Energy*, 2018 (Under Review)

[6] J.Feng, **X.Jia**, H.Cai, J.Lee, "Integrated Optimization of Maintenance Scheduling and Vessel Routing with Predictive Analytics for Offshore Wind Farm" , *Applied Energy*, 2018 (Under Review)