

## LI Weihua

### PRESENT ADDRESS

Center for Intelligent Maintenance Systems  
560 Baldwin Hall  
University of Cincinnati  
PO Box 210072  
Cincinnati, OH 45221  
Tel: (513) 556-3820 Fax: (513) 556-4647  
E-mail: [Liwu@uc.edu](mailto:Liwu@uc.edu) , [weihualee@gmail.com](mailto:weihualee@gmail.com)



### RESEARCH INTERESTS

- *Machine condition monitoring and intelligent fault diagnosis*
- *Kernel based methods in pattern classification and recognition*
- *Time frequency analysis, Higher order spectral analysis and Cyclostationary*

### APPOINTMENTS

2006.12- present, School of Mechanical and Automotive Engineering, South China University of Technology, associate professor

2003.9-2006.11, School of Traffic and Transportations, South China University of Technology, Lecturer

2010-present, Council member of Mechanical Dynamics Committee, Chinese Vibration Engineering Society

2007-present, Senior member of Chinese Mechanical Engineering Society

2005-present, Council Member of Fault Diagnosis Committee, Chinese Vibration Engineering Society

### EDUCATION

Sep.1998 – June 2003 **Ph. D in Mechanical Engineering**, Huazhong University of Science & Technology, Wuhan, China

Sep.1995 – June.1998. **M. S. in Mechanical Engineering**, Taiyuan University of Technology, Taiyuan, China

Sep.1991 – July.1995. **B. S. in Mechanical Engineering**, Taiyuan University of Technology, Taiyuan, China

## **RESEARCH EXPERIENCE**

- 2011-2013 Natural Science Foundation of China (51075150): Health monitoring and faults prognosis of complicated mechanical systems using manifold learning and multi-source information fusion. (approved in Aug.2010)  
Responsibility: **Director**
- 2007-2009 Natural Science Foundation of China (50605021): Machine incipient faults prognosis using semi-supervised learning methods.  
Responsibility: **Director**
- 2006-2007 Natural Science Foundation of Guangdong Province (05300143): Gearbox outlier detection and intelligent diagnosis using semi-supervised learning methods.  
Responsibility: **Director**
- 2004-2005 Open Fund of State Key lab of Vibration, Shock and Noise (VSN-2004-03) Nonlinear feature extraction of machine faults using kernel methods  
Responsibility: **Director**
- July 2002 — 2003 Natural Science Foundation of China (50205009): Theory and Methodology for Similarity-Based Time Series Representation and Pattern Discovery  
Responsibility: **Principal Investigator** Knowledge discovery algorithm in time series data.
- Mar.2002 — 2003 National Key Basic Research Special Found of China 973 Program (G1998020320): Key Scientific Problems in Prediction and Prevention Unforeseen Break of Large Scale Turbine Generator Sets  
Responsibility: **Principal Investigator** Signal processing, feature extraction and tendency prediction.
- Mar.2001 — Dec.2002 Natural Science Foundation of HuBei Province No 2000J125: Research of Production Quality Control Techniques Based on Multivariate Statistical Condition Monitoring  
Responsibility: **Principal Investigator** Multivariate Statistical Process Control theory and methods
- Sep.1999 — Mar.2001 Ninth-five years PANDENG Program of China Grant No PD9521908: Research of Large Scale Mechatronical System Dynamics and Mechanics  
Responsibility: **Principal Investigator** Vibration signal analysis and feature extraction
- Feb.2001 — Oct.2001 Wuhan Steel Corporation Project: An online Vibration Monitoring System for Turbine Compressor Sets of Oxygen Plant  
Responsibility: **Principal Investigator** Vibration signal analysis and Data visualization
- Jan.2001 — Aug.2001 Bao Steel Corporation Project: An On-line Condition Monitoring & Quality Control System for A Cold Strip Mill  
Responsibility: **Principal Investigator** Quality control technology and signal processing
- Mar.1999 — Sep.1999 Bao Steel Corporation Project: A Web-based On-line Condition Monitoring & Faults Diagnosis System for No.2 Finish Rolling Mill  
Responsibility: **Principal Investigator** Vibration signal analysis and Database access
- Sep.1997 — April.1998 Xing Tai Mining Bureau Project: Coal Stratification Sieving System Design and Development in Jigger  
Responsibility: **Principal Investigator** Data collection and analysis

## **SELECTED PUBLICATIONS**

1. Weihua Li, Yabing Xu. Gearbox Incipient Fault Diagnosis using Feature Samples Selection and Principal Component Analysis. *International Journal of Modeling, Identification and Control*. 2010,10(3/4): 246-254
2. Weihua Li, Wei Pan, Shenggang Zhang. Fault diagnosis using rough sets and BP networks. *International Conference on Mechanic Automation and Control Engineering*, MACE2010, 585-588, 2010.6,Wuhan, China
3. Li Weihua, Zhang Shenggang. Fault classification based on improved evidence theory and multiple neural network fusion. *Chinese Journal of Mechanical Engineering*. 2010,46(9): 93-99
4. Ding kang, Zhu Wenying, Yang Zhijian, Li Weihua. Parameter estimation accuracy of fft and ft discrete spectrum correction. *Chinese Journal of Mechanical Engineering*. 2010, 46(7): 68-73
5. Bi Jinyan, Li Weihua. Semi-supervised kernel-based fuzzy clustering for gear outlier detection. *Chinese Journal of Mechanical Engineering*. 2009, 45(10): 48-52
6. Zhang Shenggang, Li Weihua, Ding Kang. A novel approach to evidence combination based on the evidence credibility. *Control Theory and Applications*,2009,26(7):812-814
7. Weihua Li, Yabing Xu. Gearbox Failure Detection using Modified Kernel Principal Component Analysis. The Sino-European Workshop on Intelligent Robots and Systems ( *SEIROS'08*), 2008.12, Chongqing,China.
8. Xiaoying Zhou, Weihua Li, Kang Ding. Gear Fault Detection Based on Relevance Vector Machine, *Journal of Shock and Vibration*. 2008,27(6):51-54
9. Weihua Li, Tielin Shi, Kang Ding, Gear Crack Detection Using Kernel Function Approximation. *ICONIP2006, Hongkong, Neural Information Processing, Pt 3, Lecture Notes In Computer Science 4234 (2006) : 535-544*
10. Weihua Li, Kang Ding, Tielin Shi and Guanglan Liao, Gear Fault Classification Using Kernel Discriminant Analysis. *Advanced Nondestructive Evaluation I ,Key Eng. Mater., Vols. 321-323 (2006) : 1556-1559*
11. Li Weihua, Shi Tielin, Yang Shuzi. Rotor Fault diagnosis using Kernel function approximation. *Chinese Journal of Mechanical Engineering*. 2006,42 (9):76-82
12. Li Weihua, Shi Tielin, Yang Shuzi. An approach for mechanical fault classification based on generalized discriminant analysis. *Front. Mech. Eng China*, 2006(3):292-298
13. Li W, Zhang G, Shi T. Gear Fault Classification Using PCA and RBF networks. *ICMA Proc. Int. Conf. Manuf. Autom. Adv, Des. Manuf. Global Compet.* 2004.339-347
14. Li Weihua, Zhang Guicai, Shi Tielin, Yang Shuzi, Gear Faults Early Diagnosis using Bispectrum Diagonal Slice, *Chinese Journal of Mechanical Engineering*. English Edition. 2003.16(2):86- 89
15. Weihua Li, Tielin Shi, Guanglan Liao, Shuzi Yang, Feature extraction and Classification of gear faults using principal component analysis, *Journal of Quality in Maintenance Engineering(Emeralds)*, 2003,9(2): 132-143.
16. Li Weihua, Liao Guanglan, Shi Tielin, Kernel principal component analysis and its application in gear fault diagnosis, *Chinese Journal of Mechanical Engineering*, 2003. 39 (8) 65-70