

Yixiang Huang

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EDUCATION

- Ph.D. Mechatronics Engineering Shanghai Jiao Tong University 09/2005-07/2010
- M.S. Mechatronics Engineering Shanghai Jiao Tong University 09/2003-03/2006
- B.S. Power and Energy Engineering Shanghai Jiao Tong University 09/1998-07/2002

RESEARCH INTERESTS

- ❖ Feature extraction & degradation assessment; fault diagnosis; prognostics, etc.

PUBLICATIONS

- 1) **Y. Huang**, C. Liu, X. F. Zha, Y. Li. A lean model for performance assessment of machinery using second generation wavelet packet transform and Fisher criterion. *Expert Systems with Applications*, 37 (5) (2010) pp. 3815-3822. (SCI Impact Factor: 2.908, Rank in ENGINEERING, ELECTRICAL & ELECTRONIC: 16/245)
- 2) **Y. Huang**, C. Liu, X. F. Zha, Y. Li. An enhanced feature extraction model using lifting-based wavelet packet transform scheme and sampling-importance-resampling analysis. *Mechanical Systems and Signal Processing*, 23 (8) (2009) pp. 2470-2487. (SCI Impact Factor: 2.075, Rank in MECHANICAL ENGINEERING: 6/115)
- 3) **Y. Huang**, C. Liu, X. F. Zha. Discriminant diffusion maps analysis: a robust manifold learner for dimensionality reduction and its applications in machine condition monitoring and fault diagnosis. Submitted to *Mechanical Systems and Signal Processing* (under review)
- 4) **Y. Huang**, C. Liu, Y. Li. Lifting Wavelet Packet Sampling Importance Resample Model for Feature Extraction, in: Proceedings of the 8th International Conference on Frontiers of Design and Manufacturing, Tianjin, China, 2008, pp. 1833-1838.
- 5) **Y. Huang**, C. Liu, Y. Li. Multi-scale orthogonal time series model and its application to predictive maintenance for networked machine. *Journal of Shanghai Jiao Tong University*, 42(7)(2008)pp. 1168-1172. (Chinese)
- 6) **Y. Huang**, J. Zhou, C. Liu. Equipment remote monitoring system based on WebGIS-GPRS-GPS. *Computer Engineering*, 33 (3) (2007) pp. 225-227. (Chinese)
- 7) H. Liu, C. Liu., **Y. Huang**, Adaptive feature extraction using sparse coding for machinery fault diagnosis. *Mechanical Systems and Signal Processing* (SCI Impact Factor: 2.075, Rank in MECHANICAL ENGINEERING: 6/115) (Article in Press, 2010)
- 8) C. He, Y. Li, **Y. Huang**, C. Liu, S. Fei. Relevance vector machine based gear fault detection, in: Chinese Conference on Pattern Recognition, Nanjing, China, 2009, pp. 731-735.
- 9) F. Cong, I. Kalyakin, T. H. Scott, H. Li, **Y. Huang**, T. Guttorm, T. Ristaniemi, H. Lyytinen. Wavelet decomposition on mismatch negativity of children in uninterrupted sound paradigm. Submitted to *Clinical Neurophysiology* (under review)

RESEARCH PROJECTS

- 1) 01/2005-10/2009 **Intelligent maintenance methods for mechanical systems** (Sponsored by National Natural Science Foundation of China), major researcher.
 - Developed a series of methods for fault diagnosis, degradation assessment, and prognostics of the mechanical systems, including (1) A new dimensionality reduction model; (2) A Lean-Oriented Framework for performance assessment; (3) A new fast feature signal processing model for fault detection and diagnosis; (4) A Multi-scale Orthogonal Time Series Model for prognostics, etc.

- 2) 06/2006-12/2007 **Remote monitoring systems for engineering equipments** (Sponsored by National High Technology R&D Program of China), major researcher.
 - Software development of GPRS/GPS/WebGIS-based remote monitoring platform for hydraulic crawling cranes for Fuwa Heavy Industry Machinery Co., Ltd.
- 3) 09/2005-01/2006 **Remote monitoring system for top-drive drilling equipments**, major researcher.
 - Development of the GPRS/GPS/WebGIS-based remote monitoring platform.
- 4) 03/2005-05/2006 **Experiment of pressure regulators for the draft of ISO Standard 19973: Pneumatic fluid power - Assessment of component reliability by testing**, major researcher.
 - Applied a support vector machine (SVM) model for fault detection of the regulators.
- 5) 10/2003-02/2005 **Applications of industrial digital bus technologies for pneumatic components**, major researcher.
 - Software development of a demo control program for the pneumatic components via industrial CAN-bus.
- 6) 06/2009 **Vortex-induced vibration suppression for deepwater riser systems**, Co-researcher.
 - Design of filters for pressure signal de-noising in the windtunnel test of the deepwater riser system.
- 7) 07/2007 **Key technologies in the production of three-way catalytic converter for automotive**, co-researcher.
 - Developed a method of cepstrum envelope analysis with Wavelet-Denoising Algorithm proposal for detecting cracks in the ceramic body of catalytic converter.
- 8) 12/2009-01/2010 **Key technologies of remote monitoring and maintenance for components and systems** (Sponsored by National High Technology R&D Program of China), co-researcher.
 - Prognostic and diagnostic model proposal for engineering equipments

WORK EXPERIENCE

- **University of Cincinnati** (Post doctoral fellow, 09/2010-present)
 - **Department:** NSF Center for Intelligent Maintenance Systems (IMS), School of Dynamic Systems
- **National Instruments** (Intern, 05/2010-09/2010)
 - **Department:** Technical Engineering Department
 - **Job description:** Development of the power consumption monitoring system for buildings
- **Shanghai Electric Group Co., Ltd** (Intern, 02/2003-08/2003)
 - **Department:** Industrial Network Research Lab, Central Research Academe
 - **Job description:** Development of the monitoring system for engineering mechanical equipments.
- **China Shipbuilding Industry Corporation** (Intern, 07/2001-08/2001)
 - **Department:** Transmission Mechanical Engineering Department, Shanghai
 - **Job description:** Mechanical component design (Hydraulic torque converter TY220).

SERVICES IN RESEARCH SOCIETY

- **Research Assistant**, Institute of Mechatronic Control System, Shanghai Jiao Tong University (2003-2010)
- **Class Monitor**, School of Mechanical Engineering, Shanghai Jiao Tong University (2005-2010)
- **Student Member**, CMES (Chinese Mechanical Engineering Society)
- **Reviewer**, for several international journals

HONORS & AWARDS

- Shanghai City Outstanding Graduate Honor (2010)
- Outstanding Student Honors of Shanghai Jiao Tong University (2000, 2006)
- SMC Scholarship at Shanghai Jiao Tong University (2005)
- Excellent Academic Scholarships at Shanghai Jiao Tong University (1999, 2000, 2001)