Qiang Zhou

CONTACT INFORMTION

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EDUCATION

University of Wisconsin – Madison, Madison, WI, USA

Ph.D. in Industrial Eng.   05/2011   Department of Industrial and Systems Engineering
  - **Thesis**:   Computer Simulation Driven Statistical Modeling and Quality Control
M.S. in Statistics   05/2010   Department of Statistics

Tsinghua University, Beijing, China

M.S. in Mechanical Eng.   07/2007   Department of Automotive Engineering
B.S. in Automotive Eng.   07/2005   Department of Automotive Engineering

RESEARCH INTERESTS

- Statistical process control; Design of experiments; Applied statistics
- Modeling and analysis of complex manufacturing systems, particularly in emerging areas such as nano-manufacturing and energy systems
- Fault management for engineering systems, including manufacturing, healthcare, and vehicle systems

TEACHING INTERESTS

Undergraduate Level

- Inspection, Quality Control and Reliability
- Facilities Planning
- Manufacturing Systems
- Engineering Statistics

Graduate Level

- Quality and Reliability Engineering
- Computer Integrated Manufacturing
- Design of Experiments
- Advanced Quality Control Methods

PUBLICATIONS

Journal Papers (published / accepted)

1. **Zhou, Q.**, Qian, P.Z.G., and Zhou, S. (2011), "A Simple Approach to Emulation for Computer Models With Qualitative and Quantitative Factors," *Technometrics*, 53(3), 266–273.
   (*Best Student Paper Award, Quality, Statistics, and Reliability (QSR), INFORMS, 2010*)

2. **Zhou, Q.**, Qian, P.Z.G., Zhou, S.(2011), "Surrogate Modeling of Multistage Assembly Processes Using Integrated Emulation," *ASME Journal of Mechanical Design*, accepted.

3. Zeng, L., **Zhou, Q.**, DeCicco, M., Li, X., and Zhou, S. (2011), "Quantifying Boundary Effect of Nano-particles in Metal Matrix Nano-composite Fabrication Processes," *IIE Transactions*, accepted.

4. **Zhou, Q.**, Zeng, L., and Zhou, S. (2010), "Statistical Detection of Defect Patterns Using Hough Transform," *IEEE Transactions on Semiconductor Manufacturing*, 23(3), 370-380.

5. Loose, J.P., **Zhou, Q.**, Zhou, S., and Ceglarek, D. (2010), "Integrating GD&T into dimensional variation models for multistage machining processes," *International Journal of Production Research*, 48(11), 3129-3149.

Journal Papers (submitted)

6. **Zhou, Q.**, Zhou, J., DeCicco, M., Li, X., and Zhou, S. (2011), "Detecting Particle Clustering in Metal Matrix Nanocomposites Using Microscopic Image Samples," submitted to *Technometrics*.

7. Kam, K-M, Zeng, L., **Zhou, Q.**, Tran, R., and Yang, J. (2011), "On Assessing and Testing Spatial Uniformity of Particle Distributions in Quality Control of Manufacturing Processes," submitted to *Quality and Reliability Engineering International*.

Journal Papers (working)

8. **Zhou, Q.**, Zhou, S., Mao, X., Salman, M., "A Prognostic Framework for Individual Unit Residual Life Distribution Based on Both Time-to-Event Data and Degradation Signal", *to be submitted soon*.

9. **Zhou, Q.**, Li, X., and Zhou, S., "In-Situ Monitoring and Process Control on Ultrasonic Induced Fabrication Process of Metal Matrix Nanocomposites"

10. **Zhou, Q.**, Qian, P.Z.G., Zhou, S. , "Model Selection for Computer Models With Qualitative and Quantitative Factors"

Peer-Reviewed Conference Papers

11. **Zhou, Q.**, Zeng, L., DeCicco, M., Li, X., and Zhou, S. (2011), "A Comparative Study on Clustering Indices for Distribution of Nanoparticles in Metal Matrix Nanocomposites," *The 44th CIRP International Conference on Manufacturing Systems*.

12. **Zhou, Q.**, Huang, Y., Zeng, F., and Chen, Q. (2006), "Dynamic Analysis of DC-DC Boost Converter Based on Its Nonlinear Characteristics," *Proceedings of the 32nd Annual Conference of the IEEE Industrial Electronics Society*, 1769-1774.

RESEARCH EXPERIENCE

Research Associate, Dept. of Industrial and Systems Engineering, University of Wisconsin-Madison (05/2011-present)

1. "*Prognosis on Automotive Battery Aging Process*", supported by GM

2. "*Transformational Casting Technology for Fabrication of Ultra-High Performance Lightweight Aluminum and Magnesium Nanocomposites*", supported by NIST Technology Innovation Program (TIP)

Research Assistant, Dept. of Industrial and Systems Engineering, University of Wisconsin-Madison (09/2007-04/2011)

3. "*Modeling and Prediction for the Failure Process of Medical Image Detector Array*", supported by GE Healthcare
4. "*Computer Simulation-based Design and Operation Optimization of Complex systems*", supported by NSF
5. "*Statistical Analysis and Control of Ultrasonic-based Aluminum Nano-composite Fabrication Processes*", supported by NSF

Research Assistant, Dept. of Automotive Engineering, Tsinghua University (09/2005-07/2007)

6. "*Modeling and Electromagnetic Interference Suppression of the Fuel Cell City Bus Electric Traction Drive*", supported by the National High Technology Research and Development Program of China (the "863" Program)
7. "*Modeling and Nonlinear Dynamical Behavior Analysis of DC/DC Switching Power Converters*", supported by the "863" Program

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TEACHING EXPERIENCE

- **Instructor**, ISyE 512 "Inspection, Quality Control and Reliability". Dept. of Industrial and Systems Eng., University of Wisconsin - Madison, Spring 2010. (undergraduate level, enrollment: 50)
  - full responsibility
- **Teaching Assistant**, ISyE 605 "Computer Integrated Manufacturing". Dept. of Industrial and Systems Eng., University of Wisconsin- Madison, Fall 2009. (graduate level, enrollment: 34)
  - lab session, software teaching (PRO/E), student project supervision
- **Teaching Assistant**, "Automotive Electronics and Control". Dept. of Automotive Eng., Tsinghua University, Fall 2004
  - lab session, experiment design

HONORS AND AWARDS

University of Wisconsin – Madison

1. 10th Annual IIE Doctoral Colloquium Participant, 2011
2. BP Energy Research Award, 2011
3. Best Student Paper Award, Quality, Statistics, and Reliability (QSR), INFORMS, 2010
4. Richard S. and Harriet K. Fein Scholarship, 2010
5. Scholarship, Joint Research Conference on Statistics in Quality, Industry, and Technology, 2010
6. Vilas Conference Presentation Fund, University of Wisconsin Graduate School, 2010
7. Graduate Student Travel Grant, ISyE Department, UW-Madison, 2009

Tsinghua University

8. Volvo Scholarship for Outstanding Graduate Student, 2006
9. Academic Excellence Scholarships, 2002 – 2004

CONFERENCE PRENSENTATIONS

1. "Detecting Particle-Clustering in Metal Matrix Nanocomposites Using Microscopic Image", INFORMS Annual Meeting, Charlotte, NC, November 2011.
2. "A Comparative Study on Clustering Indices for Distribution of Nanoparticles in Metal Matrix Nanocomposites"
   The 44th CIRP International Conference on Manufacturing Systems, Madison, WI, June 2011.
3. "Quantifying Boundary Effect of Nanoparticles in Metal Matrix Nanocomposite Fabrication Processes"
   Spring Research Conference on Statistics in Industry and Technology 2011, Evanston, IL, June 2011.
4. "Quantifying Boundary Effect of Nanoparticles in Metal Matrix Nanocomposite Fabrication Processes"
   Industrial Engineering Research Conference (IERC) 2011, Reno, NV, May 2011.
5. "A Simple Approach to Emulation for Computer Models With Qualitative and Quantitative Factors" (Best Student Paper Award, Quality, Statistics and Reliability)
   "Surrogate Modeling of Multistage Assembly Processes Using Integrated Emulation"
   INFORMS Annual Meeting, Austin, TX, November 2010.
6. "A Simple Approach to Emulation for Computer Models With Qualitative and Quantitative Factors"
   Joint Research Conference (JRC) on Statistics in Quality, Industry, and Technology, Gaithersburg, MD, May 2010.
7. "A Simple Approach to Emulation for Computer Models With Qualitative and Quantitative Factors"
   INFORMS Annual Meeting, San Diego, CA, October 2009.
8. "Statistical Detection of Defect Patterns Using Hough Transform"
   INFORMS Annual Meeting, Washington DC, October 2008.

JOURNAL REFEREE

- IIE Transactions
- Technometrics
- IEEE Transactions Automation Science and Engineering
- Journal of Manufacturing Systems
- Journal of Mechanical Engineering Science
- Kuwait Journal of Science & Engineering

SERVICE AND MEMBERSHIP

- President, Society of Manufacturing Engineers (SME) Student Chapter at University of Wisconsin
- Session Chair, Spatial Data Analysis in Quality, Statistics, and Reliability (QSR), INFORMS, 2010
- Member, The Institute for Operations Research and the Management Sciences (INFORMS)
- Member, Institute of Industrial Engineers (IIE)
- Member, The Institute of Mathematical Statistics (IMS)
- Member, The Society for Industrial and Applied Mathematics (SIAM)