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# I. Earned Degrees

Ph.D. Mechanical Engineering, University of Michigan, 1992

M.S. Automation, Beijing Institute of Technology, 1987

B.S. Automation, Beijing Institute of Technology, 1984

# II. Employment

1. 2008 – present

*The Carolyn J. Stewart Chair and Professor*, H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology

*Group Leader,* Systems Informatics and Control, H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology

*Professor,* George W. Woodruff School of Mechanical Engineering (since Dec. 2014)

1. 2007

*G. Lawton and Louise G. Johnson Professor of Engineering*, University of Michigan

1. 2006 – 2007

*Director*, Program in Manufacturing, University of Michigan

*Co-Director*, Master of Engineering in Global Automotive and Manufacturing Engineering, University of Michigan

1. 2003 to 2007

*Professor (with Tenure*), Department of Industrial and Operations Engineering, U of M

*Professor,* Department of Mechanical Engineering, U of M

*Director,* Laboratory for In-Process Quality Improvement Research, U of M

1. 2000 to 2003

*Associate Professor (with Tenure*) Department of Industrial and Operations Eng., U of M

*Associate Professor,* Department of Mechanical Engineering, the University of Michigan

*Director,* Laboratory for In-Process Quality Improvement Research, U of M

1. 1995 to 2000

*Assistant Professor*, Department of Industrial and Operations Engineering, U of M

*Director,* Laboratory for In-Process Quality Improvement Research, U of M

1. 1993 - 1995

*Assistant Research Scientist*, Department of Mechanical Engineering, U of M

1. 1989 - 1992

*Graduate Student Research Assistant,* Department of Mechanical Engineering, U of M

***Positions at other institutions or organizations (titles, dates).***

1. 1995 –2000

*Technical Director,* “Agile and Precision Stamping Program - Near Zero Stamping (NZS),” Auto Body Consortium; member of Executive Committee.

The NZS program involved 24 member companies, with U of M, Wayne State University, Ohio State University, Sandia National Research Laboratory, and the Industrial Technology Institute participating in the research. As the technical director for the entire program, I was responsible for coordinating the technical activities, including initial proposal writing, setting the research directions, conducting quarterly progress reviews and reporting to the National Institute of Science and Technology on technical matters.

* 2002 – Present *Guest Professor,* Beijing Science and Technology University
* 2004 – present *Guest Professor,* Tianjin University
* 2004 – present *Guest Professor,* Shanghai Jiaotong University
* 2006 – Present *Guest Professor,* Beijing Chemical Engineering University
* 2008 – present *Guest Professor,* The Chinese Academy of Science
* 2012 - present, *Visiting Chair Professor,* Beijing University
* 2007 – present  *(Founding) Director,* Center for Quality Science Research, The Chinese Academy of Science : The Center for Quality Science Research is located in the Chinese Academy of Science in Beijing, China. The center aims to be a national and international leading center in the research and development of reliability and quality science for complex systems. Leading research scholars and authorities of various universities and agencies in China and other countries have become active members in the center.

# III. Honors and Awards

## International or National Awards

1. 2019, the 2019 ASQ Brumbaugh Award, the American Society for Quality.
2. 2018, The Horace Pops Medal Award, Wire Association International
3. 2018, Best Paper Award, *IEEE Transactions on Automation Science and Engineering*
4. 2018, Member, National Academy of Engineering, USA
5. 2017, Best Paper Award, INFORMS Data Mining Section
6. 2017, Editor in Chief, *IISE Transactions* (2017-2021)
7. 2016, the IISE David F. Baker Distinguished Research Award
8. 2015, Best Paper Award, the Quality, Statistics and Reliability Section at INFORMS
9. 2014, Elected Oversea Expert, Chinese Academy of Science
10. 2013, Academician, the International Academy for Quality
11. 2013, Best Applied Paper Award, IIE Transactions
12. 2012, Elected Member of the International Statistical Institute (ISI)
13. 2011, the IIE Albert G. Holzman Distinguished Educator Award
14. 2008, Fellow of Institute of Operations Research and the Management Science (INFORMS)
15. 2007, Fellow of American Society of Mechanical Engineering (ASME)
16. 2007, Fellow of the Institute of Industrial Engineers (IIE).
17. 2007, FIERF Forging Achievement Award, Forging Industry Educational and Research Foundation.
18. NUTN, 2007 Distance Education Innovation Team Award (this is a team award for “[University of Michigan College of Engineering and GM Technical Education Program -Master of Engineering in Global Automotive and Manufacturing Engineering](http://www.sloan-c-wiki.org/wiki/index.php?title=University_of_Michigan_College_of_Engineering_and_GM_Technical_Education_Program_-Master_of_Engineering_in_Global_Automotive_and_Manufacturing_Engineering) (GAME)”, Dr. Shi serves as the co-Director of the GAME program at U of M)
19. 2007 Monroe-Brown Foundation Research Excellence Award, College of Engineering, The University of Michigan
20. Sloan-C 2006 Program Profile Team Award (this is a team award for “[University of Michigan College of Engineering and GM Technical Education Program -Master of Engineering in Global Automotive and Manufacturing Engineering](http://www.sloan-c-wiki.org/wiki/index.php?title=University_of_Michigan_College_of_Engineering_and_GM_Technical_Education_Program_-Master_of_Engineering_in_Global_Automotive_and_Manufacturing_Engineering) (GAME)”, Dr. Shi serves as the co-Director of the GAME program at U of M.)
21. 2006 Best Paper Award, Industrial Engineering Research Conference, 2006.
22. 2004 Excellence in Service Awards, IIE Transactions
23. The Best Paper Award, ASME International Mechanical Engineering Congress and Exposition, Nov. 2000.
24. NAMRC Best Paper Award Finalist, North America Manufacturing Research Conference, May 2000.
25. CAREER Award by the National Science Foundation,1996

## Institute or School Awards

1. 2011,2012, 2013, Thanks for Being A Great Teacher, The Center for the Enhancement of Teaching and Learning, Georgia Institute of Technology
2. 2008, Endowed Professorship, The Carolyn J. Stewart Chair Professor, Georgia Institute of Technology
3. 2007, Endowed Professorship, G. Lawton and Louise G. Johnson Professor of Engineering, The University of Michigan
4. 2003 Faculty Achievement Award, Department of Industrial and Operations Engineering, University of Michigan
5. Tauber Manufacturing Institute Fellow, 2001.
6. Robert M. Caddell Memorial Award, Department of Mech Engineering, The University of Michigan, 2001.
7. 1999 Faculty Achievement Award, Department of Industrial and Operations Engineering, University of Michigan
8. 1998 Faculty Achievement Award, Department of Industrial and Operations Engineering, University of Michigan
9. 1998 “1938E AWARD”, College of Engineering, the University of Michigan.
10. 1998 Dean’s Honor in Teaching, For the 1997-1998 academic year, the student teaching rankings given to the course IOE 591-042 (Fall, 1997) were among the top in the College of Engineering (Dean Stephen W. Director’s letter dated August 3, 1998).

* 1997 Excellence in Research Award, Department of Industrial and Operations Engineering, University of Michigan
* 2002 Guest Professor, Beijing Science and Technology University, 2002
* 2004 Guest Professor, Shanghai Jiaotong University, 2004
* 2004 Guest Professor, Tianjin University, 2004
* 2006 Guest Professor, Beijing Chemical Engineering University, 2006
* 2008 Guest Professor, Chinese Academy of Science, 2008.
* 2009 Guest Professor, National Material Science and Safety Center, P. R. China
* 2012 Visiting Chair Professor, Peking University

# IV. Research, Scholarship, and creative activities

**Jianjun Shi’s Google Scholar Profile:**

<http://scholar.google.com/citations?user=NhMlhaoAAAAJ&hl=en>

## A. Published Books and Parts of Books

* Jianjun Shi, ***“Stream of Variation Modeling and Analysis for Multistage Manufacturing Processes***”, ISBN: 0-8493-2151-4, CRC Press, Taylor & Francis Group, 2006. 469pp.
* Jianjun Shi, “Stream of Variation Theory for Multistage Systems”, book chapter for ***Encyclopedia of Systems and Control****,* edited by Tariq Samad and John Baillieul. Springer, 2015.

## B. Refereed Publications and Submitted Articles

### B1. Published Papers in Journals

(Papers listed below have received 7000+ citations per Google Scholar)

1. Zhang, Y. and Shi, J., 1988, "Optimal Predictive Control Based on the State Equation", *Journal of Control Theory and Application (in Chinese)*, Vol.5, No.4, p55-63.
2. Zhang, Y. and Shi, J., 1989, "A New Flight Control Scheme and Its Control Law ", *Journal of ACTA* *ARMAMENTARII* *(in Chinese),* No.3.
3. *Ceglarek, D.*, Shi, J. and Wu, S. M., 1994 "[A Knowledge-Based Diagnostic Approach for the Launch of the Auto-Body Assembly Process](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p03.pdf)", *ASME Transactions, Journal of Engineering for Industr*y, Vol. 116, No.4, pp 491-499.
4. *Ceglarek, D.* and Shi, J., 1996, "[Fixture Failure Diagnosis for Auto Body Assembly Using Pattern Recognition](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p04.pdf)", *ASME Transactions, Journal of Engineering for Industry*, Vol. 118, No.1, pp55-65.
5. Shi, J. and Ni, J., 1996, "[Supervisory Adaptive Control for the Structural Vibration of a Coordinate-Measuring Machine](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p05.pdf)", *International Journal of Advanced Manufacturing Technology*, Vol. 11, No.4, pp240-248.
6. *Koh, C.*, Shi, J. and Williams, W., 1995, "[Tonnage Signature Analysis Using the Orthogonal (Harr) Transforms](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p06.pdf)", *NAMRI/SME Transactions*, Vol. 23, pp229-234.
7. *Khorzad, D.*, Shi, J., Hu, S. J., Ni, J., Zussman, E., and Seliger, G., 1995, "[Optimization of Multiple Panel Fitting in Automobile Assembly](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p07.pdf)", *NAMRI/SME Transactions*, Vol. 23, pp241-246.
8. *Ceglarek, D.* and Shi, J., 1995, "[Dimensional Variation Reduction for Automotive Body Assembly](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p08.pdf)", *Journal of Manufacturing Review*, Vol. 8, No.2, pp139-154.
9. *Shiu, B.*, *Ceglarek, D.*, and Shi, J., 1996, "[Multi-stations Sheet Metal Assembly Modeling and Diagnostics](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p09.pdf)", *NAMRI/SME Transactions*, Vol. 23, pp199-204.
10. *Koh, C.*, Shi, J., and Black, J., 1996, "[Tonnage Signature Attribute Analysis for Stamping Process](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p10.pdf)", *NAMRI/SME Transactions*, Vol. 23, pp193-198.
11. *Ceglarek, D.* and Shi, J., 1998, "[Design Evaluation of Sheet Metal Joints for Dimensional Integrity](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p11.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol.120, No.2, pp452-460.
12. *Shiu, B.*, *Ceglarek, D.*, and Shi, J., 1997, “[Flexible Beam-based Modeling of Sheet Metal Assembly for Dimensional Control](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p12.pdf)”, *NAMRI/SME Transactions*, Vol. 24, pp 49-54.
13. *Apley, D.* and Shi, J., 1998, "[Diagnosis of Multiple Fixture Faults in Panel Assembly](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p13.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol.120, pp793-801. (Also Proceedings of the 95’ ASME Winter Annual Meeting, ASME MED-Vol. 4, Nov., 1996, pp575 - 581.).
14. Khan, A., *Ceglarek, D.*, Shi, J. and Ni, J., 1999, "[Sensor Optimization for Fault Diagnosis in Single Fixture System: A Methodology](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p14.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol.121, No.1, pp109-117. (Also in 1995 ASME International Mechanical Engineering Congress and Exposition MED-vol. 2-2, pp. 1165-1176, San Francisco, CA.).
15. *Apley, D.* and Shi, J., 1998, "[Diagnostics in Disassembly Unscrewing Operations](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p15.pdf)", *International Journal of Flexible Manufacturing*. Vol. 10, No.2, pp111-128.
16. *Apley, D.* and Shi, J., 1999, "[A GLRT for Statistical Process Control of Autocorrelated Processes](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p16.pdf)", *IIE Transactions*. Vol. 31, No.2, pp 1123-1134.
17. *Tsung, F.*, Shi, J. and Wu, J., 1999, "[Joint monitoring of PID Controlled Processes](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p17.pdf)", *Journal of Quality Technology*, Vol. 31, No. 3, pp275-285.
18. Shi, J. and *Apley, D.*, 1998, "[A Suboptimal N-Step-Ahead Cautious Controller for Adaptive Control Applications](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p18.pdf)", *ASME Transactions, Journal of Dynamic Systems, Measurement and Control,* Vol. 120, pp419-423.
19. *Koh, C.*, Shi, J., Williams, W., Ni, J., 1999, "[Multiple Fault Detection and Isolation Using the Haar Transform - Part 1: Theory](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p19.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol. 121, No.2, pp290-294.
20. *Koh, C.*, Shi, J., Williams, W., Ni, J., 1999, "[Multiple Fault Detection and Isolation Using the Haar Transform - Part 2: Application to the Stamping Process](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p20.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol. 121, No.2, pp295-299.
21. *Tsung, F.* and Shi, J., 1999, "[Integrated Design of run-to-run PID Controller and SPC Monitoring for Process Disturbance Rejection](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p21.pdf)", *IIE Transactions*, Vol. 31, No.6, pp517-527.
22. *Ceglarek, D.* and Shi, J., 1999, "[Fixture Failure Diagnosis for Sheet Metal Assembly with Consideration of Measurement Noise](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p22.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering,* Vol. 121, No.4, Nov. 1999, pp771-777.
23. Jin, J. and Shi, J., 1999, "[State Space Modeling of Sheet Metal Assembly for Dimensional Control](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p23.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol. 121, No.4, Nov. 1999, pp756-762.
24. Jin, J. and Shi, J., 1999 "[Feature-Preserving Data Compression of Stamping Tonnage Information Using Wavelets](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p24.pdf)", Technometrics, Nov. 1999, Vol. 41, No.4, pp 327-339.
25. *Apley, D.* and Shi, J., 1999, "[An Order Downdating Algorithm for Tracking System Order and Parameters in Recursive Least Squares Identification](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p25.pdf)", *IEEE Transactions on Signal Processing*, Vol. 47, No. 11, pp3134-3137.
26. Jin, J., and Shi, J., 2000, "[Diagnostic Feature Extraction from Stamping Tonnage Signals Based on Design of Experiment](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p26.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering,* Vol. 122, No. 2, pp.360-369.
27. *Rong, Q.*, *Ceglarek, D.*, Shi, J., 2000 "[Dimensional Fault Diagnosis for Compliant Beam Structure Assemblies](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p27.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering,* Vol. 122, No. 4, pp. 773-780 (simultaneously in 1998 ASME International Mechanical Engineering Congress and Exposition, MED-Vol. 8, pp. 93-102, Anaheim, CA.).
28. Zhou, S. and Shi, J., 2000, "[Supervisory Adaptive Balancing of Rigid Rotors During acceleration](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p28.pdf)", *Transactions of NAMRI/SME*, Vol. 28, pp 425-430.
29. Jin, J. and Shi, J., 2001, "[Automatic Feature Extraction of Waveform Signals for In-process Diagnostic Performance Improvement](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p29.pdf)", *Journal of Intelligent Manufacturing,* Vol. 12, No.3, pp267-268.
30. *Rong, Q.*, Shi, J. and *Ceglarek, D.*, 2001, "[Adjusted Least Squares Approach for Diagnosis of III-Conditioned Compliant Assemblies](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p30.pdf)", ASME Transactions, Journal of Manufacturing Science and Engineering, Vol. 123, No. 3., August, pp453-461.
31. *Shiu, B.*, Shi, J., and Tse, K. H., 2000, "[The Dimensional Quality of Sheet Metal Assembly with Welding-induced Internal Stress](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p31.pdf)", Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, Vol. 214, No.7, pp693-704.
32. Zhou, S. and Shi, J., 2001, "[The Analytical Imbalance Response of Jeffcott Rotor During Acceleration](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p32.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*. Vol. 123, No.1, Feb, 2001.
33. *Dyer, S.*, Zhuang, Z., Ni, J. and Shi, J. (2000), "[Auto-tuning Adaptive Supervisory Control of Single-plane Active Balancing Systems](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p33.pdf)", *Transactions of NAMRI/SME*, Vol. 28.
34. Nair, V., Hansen, M., and Shi, J. (2000), "[Statistics in Advanced Manufacturing](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p34.pdf)", *Journal of the American Statistical Association*, Vol. 95, No.451, pp1002-1005.
35. *Shiu, B.*, *Apley, D.*, *Ceglarek, D.*, Shi, J., 2003, "Tolerance allocation for compliant beam structure assemblies", *IIE Transactions on Design and Manufacturing*, Vol. 35, No. 4, pp. 329-342.
36. *Apley, D.* and Shi, J., 2001, "[A Factor-Analysis Method for Diagnosing Variability in Multivariate Manufacturing Processes](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p37.pdf)", *Technometrics*, Vol. 43, No.1, pp84 – 95.
37. Zhou, S. and Shi, J., 2001, "[Imbalance Estimation for Speed-Varying Rigid Rotors Using Time-varying Observer](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p38.pdf)", *ASME Transactions, Journal of Dynamic Systems, Measurement and Control,* Vol. 123, No. 4, Dec., pp637-644.
38. Zhou, S., and Shi, J., 2002, "[Optimal One-Plane Active balancing of Rigid Rotor During Acceleration](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p39.pdf)", *Journal of Sound and Vibration,* Vol. 249, No.1, pp196-205.
39. *Li, H.*, *Ceglarek, D.*, and Shi, J., 2002, "[A Dexterous Part-Holding Model for Handling Compliant Sheet Metal Parts](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p40.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering*. Vol. 124, No. 1, pp. 109-118.
40. *Ding, Y.*, *Ceglarek, D.*, Shi, J., 2002, "[Fault Diagnosis of Multistage Manufacturing Processes by Using State Space Approach](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p41.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering,* Vol.124, No. 2, pp. 313-322.
41. Zhou, S. and Shi, J., 2001, "[Active Balancing and Vibration Control of Rotating Machinery: A Survey](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p42.pdf)", The Shock and Vibration Digest, Vol. 33, No. 5, pp361-371.
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43. Huang, Q., Zhou, S. and Shi, J., 2002, "[Diagnosis of Multi-Operational Machining Processes through Variation Propagation Analysis](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p44.pdf)", *Robotics and CIM Journal,* Vol. 18, No.3-4, pp233-239.
44. *Ding, Y.*, *Ceglarek, D.* and Shi, J., 2002, "[Design Evaluation of Multi-station Assembly Processes by Using State Space Approach](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p45.pdf)", *ASME Transactions, Journal of Mechanical Design*, Vol. 124, No. 2, pp369-378.
45. *Dyer, S.*, Shi, J., Ni, J. and Shin, K., 2002, "[Robust Optimal Influence-Coefficient Control of Multiple-Plane Active Rotor Balancing Systems](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p46.pdf)", *ASME Transactions, Journal of Dynamic Systems, Measurement, and Control.* Vol. 124, No. 1, pp41-46.
46. Zhou, S., Huang, Q., and Shi, J., 2003, "[State Space Modeling for Dimensional Monitoring of Multistage Machining Process Using Differential Motion Vector](file:///C:\Users\jshi33\AppData\AppData\Roaming\Microsoft\Word\p47.pdf)", *IEEE Transactions on Robotics and Automation*, Vol. 19, No.2, April., pp296-309.
47. Huang, Q., Shi, J. and Yuan, J., 2003, "Part Dimensional Error and Its Propagation Modeling in Multi-Operational Machining Processes", *ASME Transactions, Journal of Manufacturing Science and Engineering*. Vol. 125, No.2, pp255-262.
48. Zhou, S., *Ding, Y*, *Chen, Y.*, Shi, J., 2003, "Diagnosability Study of Multistage Manufacturing Processes Based on Linear Mixed-effects Models", *Technometrics*. Vol. 45, No.4, pp312-325.
49. *Ding, Y.*, Jin, J., *Ceglarek, D.*, Shi, J., 2005, "Process-oriented Tolerancing for Multi-station Assembly Systems", *IIE Transactions*, Vol. 37, No.6, pp493-508.
50. Huang, Q. and Shi, J., 2003, "Simultaneous Tolerance Synthesis through Variation Propagation Modeling of Multistage Manufacturing Processes", *NAMRI/SME Transactions*, Vol. 31, pp515-522.
51. Zhou, S. and Shi, J. 2004, "Identification of nonlinear effects in rotor systems using recursive QR factorization method", *Journal of Sound and Vibration*, Vol. 270, No.1-2, Feb., pp455-469.
52. Zhou, S., Chen, Y., and Shi, J., 2004, "Statistical estimation and testing for variation root-cause identification of multistage manufacturing Processes ", *IEEE Transactions on Robotics and Automation*, Vol.1, No.1, pp73-83.
53. Zhou, S., Shin, K., *Dyer, S.*, Shi, J. and Ni, J., 2004, "Extended Influence Coefficient Method for Rotor Active Balancing during Acceleration", *ASME Transactions, Journal of Dynamic Systems, Measurement and Control*, Vol. 126, No. 1, pp219-223.
54. *Chen, Y.*, Jin, J. and Shi, J., 2004, "Integration of dimensional quality and locator reliability in design and evaluation of multi-station body-in-white assembly processes", *IIE Transaction*, Vol. 36, No.9, pp827-839.
55. Huang, Q. and Shi, J., 2004, "Variation Transmission Analysis and Diagnosis of Multi-Operational Machining Processes", *IIE Transaction*, Vol. 36, No.9, pp807-815.
56. Jin, J., and Shi, J., 2005, "Press Tonnage Signal Decomposition and Validation Analysis For Transfer or Progressive Die Processes", *ASME Transactions, Journal of Manufacturing Science and Engineering*, Vol. 127, No. 1, pp231-235.
57. Huang, Q. and Shi, J., 2004, "[Stream of Variation Modeling and Analysis of Serial-Parallel Multistage Manufacturing Systems](http://www-personal.engin.umich.edu/~shihang/p57.pdf)", *ASME Transactions, Journal of Manufacturing Science and Engineering,* Vol. 126, No.3, pp611-618.
58. Liu, J., Li, J. and Shi, J. 2005, "Engineering Knowledge Driven Cause-Effect Modeling and Statistical Analysis for Multi-Operational Machining Process Diagnosis", *Transactions of NAMRI/SME,* Vol. 33, pp65-72.
59. Zhou, S., Sun, B., Shi, J., 2006, "An SPC Monitoring System for Cycle-Based Waveform Signals Using Haar Transform", *IEEE Transactions on Automation Science and Engineering*, Vol. 3, No.1, pp60-72.
60. Kim, J., Huang, Q., Shi, J., and Chang, T.-S., 2006, "Online Multi-Channel Forging Tonnage Monitoring and Fault Pattern Discrimination Using Principal Curve", *Transactions of the ASME, Journal of Manufacturing Science and Engineering*, Vol. 128, No.4, pp944-950.
61. Ding, Y., Elsayed, E.A., Kumara, S., Lu, J.C., Niu, F., and Shi, J., 2006 "Distributed Sensing for Quality and Productivity Improvements", *IEEE Transactions on Automation Science and Engineering,* Vol. 3, No. 4. pp 344- 359.
62. Li, J., and Shi, J., 2007, "Knowledge Discovery from Observational Data for Process Control through Causal Bayesian Networks", *IIE Transactions,* Vol. 39, No.6, pp681-690.
63. Li, J., Shi, J., and Chang, T., 2007, "On-Line Seam Detection in Rolling Processes using Snake Projection and Discrete Wavelet Transform", *ASME Transactions, Journal of Manufacturing Science and Engineering,* Vol.129, No. 5, pp926-933.
64. Izquierdo, L. E., Shi, J., Hu, S. J., and Wampler, C. W., 2007, "Feedforward Control of Multistage Assembly Processes Using Programmable Tooling",*Transactions of NAMRI/SME.* Vol. 35.
65. Izquierdo, L. E., Hu, S. J., Du, H., Jin, R., Jee, H., and Shi, J., 2009, "Robust Fixture Layout Design for a Product Family Assembled in a Multistage Reconfigurable Line", *ASME Transactions, Journal of Manufacturing Sciences and Engineering,* Vol.131, No.4, 041008.
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### B2. Refereed conference or symposium proceedings

(excluding papers revised for journals / transactions publications)

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49. Li, Jing, Shi, J., Chang, T. S.. On-line Seam Detection in Rolling Processes using Snake Projection and Discrete Wavelet Transform. the International Conference on Manufacturing Science and Engineering, Ypsilanti, MI (2006).
50. “Data Fusion for In-Process Quality Improvement”, Proceedings of the 5th Manufacturing Engineering Society International Conference, Zaragoza , Spain, June 2013 (invited Keynote talk)
51. Cheng, T., Huang, H., Shi, J. 2017, “Moving toward visible difference and beyond: imaging-based surface quality control for rod and wire”, 2017 Global Ferrous Rod & Wire Symposium, Atlanta, USA.

### B3. Other Refereed Material

(Refereed conference summaries or abstracts)

1. J. Shi, 1996, “CAREER: In-Process Quality Improvement Methodologies and Implementation -- Progress Report’96," *Proceedings of The 1996 NSF Design and Manufacturing Grantees Conference*.
2. J. Shi, 1997, “CAREER: In-Process Quality Improvement Methodologies and Implementation -- Progress Report’97," *Proceedings of The 1997 NSF Design and Manufacturing Grantees Conference*.
3. Shi, S. Pollock and V. Nair, 1997, “Proactive Maintenance: Integration of Engineering, Statistics and Operations Research towards a General Framework and Methodology," *Proceedings of The 1997 NSF Design and Manufacturing Grantees Conference*.
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### B4. Submitted Journal Articles

(with date of submission)

**Papers under Review**

1. Wang, Y., Yue, X., Tuo, R., Hunt, J. H., Shi, J., (2017) “Effective Model Calibration via Sensible Variable Identification and Adjustment, with application to Composite Fuselage Simulation ”, Technometrics, (submitted in Jan. 2018, under review)
2. Zhang, R., Mei, Y., Shi, J., 2017, "Wavelet-based profile monitoring using order-thresholding recursive CUSUM schemes”, ICSA Springer Book.  (Submitted in 2017, under revision)
3. Yan, H., Paynabar, K., Shi, J., 2018, “AKM2D: An Adaptive Framework for Online Sensing And Anomaly Detection”, *submitted to IIE Transactions*. (This paper is one of the four finalists of Best Student Paper Award in Quality, Statistics, and Reliability Section of INFORMS).
4. Zhang, C., Yan, H., Lee, S., Shi, J., “Dynamic Multivariate Functional Data Modeling via Sparse Subspace Learning”,  *arXiv preprint arXiv:1804.03797* (2018). (This paper received the Best Student Paper Award in Data Mining Section of INFORMS 2017).
5. Yue, X., Wen, Y., Hunt, J. H., Shi, J., 2018, “Active Learning for Gaussian Process considering Uncertainties, with an Application to Automatic Shape Control of Composite Fuselage”, IEEE Transactions on Automation Science and Engineering.
6. Fangyu Li, Rui Xie, Bowen Yang, Lulu Guo, Ping Ma, Jianjun Shi, Jin Ye, WenZhan Song, “Detection and Identification of Cyber and Physical Attacks on Distribution Power Grids with PVs: An Online High-Dimensional Data-driven Approach”, submitted to *IEEE Journal of Emerging and Selected Topics in Power Electronics*, Special Section on Cybersecurity of Power Electronics through Hardware Hardening (April, 1, 2019)

**Working Papers (Papers to be submitted)**

1. Reisi Gahrooei, M., Paynabar, K., Shi, J., "Process modeling and prediction with High-Dimensional variables using functional regression”, Under preparation.
2. Reisi Gahrooei, M., Yan, H., Paynabar, K., Shi, J., "Multiple Tensor on Tensor Regression: An approach for modeling processes with heterogeneous sources of data”, Under preparation.
3. Nabhan, M., Mei, Y., Shi, J., “High-dimensional Process Monitoring Using Robust Sparse Principal Component Analysis”.
4. Nabhan, M., Mei, Y., Shi, J., “Correlation Based Dynamic Selection for Online High-dimensional Process Monitoring”.
5. Shi, X., Li, J., Shi, J., “An Optimal Proactive Maintenance Scheduling Model for Semiconductor Manufacturing”.
6. Zhang, C., Yan, H., Lee, S., Shi, J., “Dynamic Multivariate Functional Data Modeling via Sparse Subspace Learning”, to be submitted.
7. Yan, H., Paynabar, K., Shi, J., “AKM2D: An Adaptive Framework for Online Sensing And Anomaly Detection”, to be submitted
8. Yue, X., Wang, K., Park, J. G., Liang, Z., Zhang, C., Wang, B., Shi, J., “In-situ Process Monitoring for Continuous Nanomanufacturing Process”, (working paper).
9. Wang, W., Yue, X., Haaland, B., Shi, J., Wu, J., “Noisy Input Gaussian Process with Application to Composite Fuselage Simulation”, (working paper).
10. Du, J., Zhang, X., and Shi, J., “A Condition Change Detection Approach for Solar Conversion Efficiency in Solar Cell Manufacturing Processes”, IEEE Transactions on Semiconductor Manufacturing, to be submitted.
11. Du, J., Zhang, X., Xu, X., and Shi, J., “A Novel Critical Point Detection Method for Mechanical Deformation in Tightening Processes”, Journal of Manufacturing Systems, to be submitted.
12. Wang, A., Du, J., Zhang, X., and Shi, J., “Feature Shrinkage Method by Analyzing Variable Dependency for Process Monitoring”, in preparation.

**Book reviews**

* “An Introduction to Quality, Management and Engineering” by Victor E. Sower, Michael J. Savoie, and Stephen Renick. Prentice Hall, Upper Saddle River, NJ 07458. IIE Transactions 32(6): 571~572.

**Government, university, or industrial reports (non-refereed)**

1. "Process Variation Reduction for Body-in-white of Minivan", Final Report for the Minivan Dimensional "2 mm" Program for Chrysler Corp., University of Michigan, Ann Arbor, 1992.
2. "Variation Reduction for Body Assembly: Methodologies and Case Studies Analysis", Final Report for the Jeep Grand Cherokee Dimensional "2 mm" Program for Chrysler Corp., University of Michigan, Ann Arbor, 1993.
3. "Sliding Door Process Variation Study", Technical Report for Chrysler Corp., University of Michigan, Ann Arbor, 1993.
4. "Variation Reduction for Panel Closure Fitting: Methodologies and Case Studies Analysis", Final Report for the Jeep Grand Cherokee Dimensional "2 mm" Program for Chrysler Corp., University of Michigan, Ann Arbor, 1995.
5. "A Final Report for GMT-600 Program - Variation Reduction for Body Assembly", General Motors Corp., University of Michigan, Ann Arbor, 1997.
6. "Process Capability Studies for Dimensional Control of Critical Assembly and Stamping Processes. Final Report for Chrysler Corporation, University of Michigan, Ann Arbor, 1998.
7. "Variation Reduction, 2mm Program," Final report to Chrysler Corporation, 1993
8. "Agile and Precision Sheet Metal Stamping – Near Zero Stamping Program”, 14 Quarterly Progress Reports to NIST, Jan, 1996 to Oct. 1999,
9. “Multiple Tooling and Variability Study”, Technical Report to General Motors, Dec. 1997.
10. “Process Capability Study for NS Body Manufacturing Processes”, Technical Report to Chrysler Corp. (w/ Ceglarek, et al), Jan. 1997.
11. “Real-Time Active Balancing for High Speed Machining”, Quarterly Progress Reports to NIST, 12 reports starting from January 1998 to December 2000.
12. “An-Image-based high Temperature Deformation Process Control Systems: Samrtsmith Predictive Control Systems”, Quarterly Progress Reports to NIST, 7 reports starting from January 2001 to July 2002

## C. Other Publications and creative products

## D. Presentations

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### D1. Keynote Addresses and Plenary Lectures

1. “System Informatics and Control for Multistage Systems”, a keynote talk at the International Conference on the Interface of Statistics and Engineering, Beijing, 2009.
2. “Causation-based quality control and applications”, a keynote talk at the Applied Statistics Conference, Shanghai, 2009
3. “Stream of Variation theory and applications”, a keynote talk at 7th International Conference on Manufacturing Research (ICMR’2009) in United Kingdom.
4. “System Informatics and Control: research and education review”, International Education Forum on Reliability and Systems Engineering, Beijing, China, October, 2010.
5. “Data Fusion for System Performance Improvements”, Industrial Engineering Workshop, Taiwan, June, 2010.
6. “Statistics Methods Driven by Engineering Model for System Performance Improvements”, Chinese Academy of Science, March 2011
7. “System Informatics and Control Research through Developing Statistics Methods Driven by Engineering Model”, a keynote talk at the The 1st International Conference on System Informatics and Engineering, Qiangdao, China, July 2011.
8. “Statistics Methods Driven by Engineering Model for System Performance Improvements”, a keynote talk at the Spring Research Confernece, Chicago, June 2011
9. “Data Fusuion for In-Process Quality Improvement of Complex Systems”, a keynote talk at The 2nd Asia IIE Research Confernece, Singapore, June 2012.
10. “Data Fusion for In-Process Quality Improvement”, A keynote talk at the 5th Manufacturing Engineering Society International Conference, Zaragoza, Spain, June 2013
11. “Data Fusion for System Modeling, Performance Assessment and Improvement”, a keynote talk at The 3rd Asia IIE Research Confernece, Taipei, Taiwan, July, 2013.
12. “Image-based Process Control”, The Frontier of Industrial Statistics, Dec, 2013.
13. “Engineering-Driven Statistics for Quality Improvement”, A keynote talk at “The 21st International Conference on Industrial Engineering and Engineering Management 2014” (IEEM 2014), Zhuhai, China.
14. “New Achievements of R&D on Data Fusion for Prognostics”, A keynote talk at “The First International Conference on Reliability Systems Engineering & 2015 Prognostics and System Health Management Conference-Beijing (2015 ICRSE & PHM-Beijing)”, Beijing, China. Oct. 2015.
15. “Manufacturing Analytics: Synergies between Engineering and Statistics”, A keynote talk at the 4th International Conference on Interface between Engineering and Statistics, Palermo, Italy, June, 2016.
16. “Big Data Analytics, Data Fusion, and Composite Index Development”, A keynote talk at the 5th Institute of Industrial and Systems Engineers Asian Conference (IISEAsia2016), Hong Kong, July, 2016.
17. “Manufacturing Analytics for System Improvements”, A keynote talk at the Second Workshop on Operations Analytics and Optimization for Smart Industry, Shenyang, China, December, 2016.
18. “The frontiers of data fusion for quality improvements”, A keynote talk at the 2nd Sino-US Conference on Quality, Analytics and Innovations, Beijing, June 26-27, 2017.
19. “Challenges and Opportunities of Quality Improvement in Big Data Environment” A keynote talk at the 2nd China Quality Conference, Sept. 15-16, 2017. Shanghai, China.
20. “Multichannel Profile Data Monitoring with Case Studies”, A keynote talk at the 3rd Sino-US Conference on Quality, Analytics and Innovations, Xian, May 27-29, 2018.
21. “High Dimensional Data Analysis for Anomaly Detection for Quality Improvements”, A keynote talk at the annual conference of Tsinghua Institute of Quality and Reliability (IQR), Beijing, June 8-10, 2018.
22. “Data Fusion for Quality Improvement in Smart Manufacturing System”, Distinguised Leceture at Shanghai Jiaotong University, June 5, 2018.

### D2. Invited Publications and Presentations

*(Note: This list excludes the papers listed as conference papers. All those conference papers in Section E.4 have been presented in the corresponding conferences.)*

1. “Variation Reduction for Automotive Assembly Process”, Management Colloquia of Mr. Bob Eaton (Chairman and CEO of Chrysler) and his top 40 Executives, Chrysler Corporation, January 1994.
2. “Next Generation Sheet Metal Stamping: Agility and Precision”, National Institute of Standards and Technology, Washington D.C., 1995
3. “An Optimal Sensor Location Methodology for Fixture Fault Diagnosis,” Second Spring Research Conference on Statistics in Industry and Technology, University of Waterloo, June 12-14, Waterloo, Canada. 1995
4. "Stamping signature analysis using Haar transform", Second Spring Research Conference on Statistics in Industry and Technology, University of Waterloo, June 12-14, Waterloo, Canada. 1995
5. “Modeling of Automotive Body Structure for Dimensional Variation Analysis,” Third Annual Conference on Stamping and Body in White Assembly, Novi, Michigan, May 16-17, 1996.
6. “Signature Analysis for Stamping Process Monitoring and Fault Diagnosis”, the NSF Industrial/University Cooperative Research Center, July, 1996.
7. “Data Compression Using Wavelets for the Stamping Tonnage Signal”, the Auto Body Consortium, Ann Arbor, Michigan, November, 1997.
8. “Multiple fixture faults diagnosis for assembly fixtures”, The 5th Industrial Engineering Research Conference, Miami, 1997.
9. “IPQI: Integration of Engineering and Advanced Statistics”, The 5th Industrial Engineering Research Conference, Miami, 1997.
10. “Sensor Placement Optimization for In-Process Quality Improvement in Multi-Fixture Assembly Systems,” INFORMS Spring 1998 Conference, Canada, April 26-29, 1998.
11. “In-Process Quality Improvement Research - an Overview and New Progress”, INFORMS’98 Spring Conference, Montreal, Canada, 1998.
12. “DOE-Based Feature Extraction and Classification of Waveform Signals for Process Monitoring and Fault Diagnosis”, The 6th Industrial Engineering Research Conference, Banff, Canada, 1998.
13. “Feature-Preserving Data Compression Using Wavelets for the Stamping Tonnage Signal”, INFORMS’98, Montréal, Canada, April, 1998.
14. “Assembly Fixture Failure Diagnosis Using Principal Component Analysis and Pattern Recognition”, The 6th Industrial Engineering Research Conference, Banff, Canada, 1998
15. “In-Process Quality Improvement Methodologies and Implementations in Automotive Manufacturing”, The 5th Regional Applied Statistics Conference, Kalamazoo, MI. Oct. 22, 1998.
16. “Proactive Maintenance: Integration of Advanced Statistics, Engineering and Operations Research”, The 6th Industrial Engineering Research Conference, Banff, Canada, 1998.
17. "Model-Based Diagnostics for Compliant Beam Structure Assemblies," INFORMS Spring 1999 Conference, Cincinnati, OH, May 2-5, 1999.
18. “SPC for Stamping Processes Based on Feature-Preserving Data Compression of Tonnage Signals”, the Spring Research Conference on Statistics in Industry and Technology (SRC’99), Minneapolis, June, 1999.
19. Hierarchical Diagnostic Feature Extraction from a Stamping Tonnage Signal Using Principal Component Analysis”, The 7th Industrial Engineering Research Conference, Phoenix, May, 1999.
20. “Waveform Signal Decomposition Using a Process-Oriented Basis for Multiple Die Condition Monitoring and Fault Diagnosis”, INFORMS’99, Cincinnati, May, 1999.
21. “In-Process Quality Improvements (IPQI) Methodologies and Implementations”, the International Symposium on Quality Improvement, Kumi, Korea, August 1999.
22. “Modeling and Diagnosis of Multi-station Manufacturing Processes: Part II – Fault Diagnosis,” Japan/USA Symposium on Flexible Automation, July 23-26, Ann Arbor, MI, 2000.
23. “Diagnosability Analysis of Stream-of-Variation in Multistage Manufacturing Processes”, INFORMS’00, San Antonio, TX, November 5-8, 2000.
24. “Quality and Reliability Integration for Single Station Manufacturing System”, INFORMS’00, San Antonio, TX, November 5-8, 2000.
25. “Modeling of a Multistage Process for SPC and APC Integration”, INFORMS, Salt Lake City, May 5-8, 2000. (Jointly with Y. Ding)
26. “Quality and Reliability Information Integration in Multistage Manufacturing Processes”, the 9th Annual Industrial Engineering Research Conference, Cleveland, May 2000. (Jointly with Y. Chen)
27. “Stream-of-Variation Modeling and Analysis of Multistage Manufacturing Processes”, Annual IIE Research Conference, Cleveland, May 23-26, 2000.
28. “Modeling and Diagnosis of Multi-station Manufacturing Processes: Part I – State Space Model,” Japan/USA Symposium on Flexible Automation, July 23-26, Ann Arbor, MI, 2000.
29. “Quality and Reliability Chain (QR-Chain) Modeling for System Reliability Analysis of Multistage Manufacturing Processes”, The 10th Industrial Engineering Research Conference, May, 2000.
30. “Proactive Maintenance Methodology Through Integration of Statistics, Engineering Model, and Operations Research”, INFORM’2000, San Antonia, November, 2000
31. “Imbalance Estimation for Speed-Varying Rigid Rotors Using Time-Varying Observer”, Japan-USA Symposium on Flexible Manufacturing, 2000, Ann Arbor, Michigan, 2000.
32. “Supervisory Adaptive Balancing of Rigid Rotors During Acceleration”, NAMRC XXVII, July, 2000, Lexington, Kentucky. 2000. ((jointly with S. Zhou)
33. "Quality and Reliability Chain Modeling for System Reliability Analysis in Multi-station Manufacturing Processes", INFORMS, Miami, November 2001.
34. “Automatic Feature Extraction and In-Process Diagnostic Performance Improvement”, INFORMS, 2001.
35. “Integration of Quality and Reliability for Design Evaluation and Optimization of Multi-station Body-In-White Assembly Processes”, INFORMS’2001, November, Miami. 2001.
36. “Quality Oriented Maintenance for Manufacturing Processes”, Fall Technical Conference, Oct. Canada. 2001.
37. “Tonnage Signature Decomposition for Multiple Operation Stamping Processes”, INFORMS’2001, June, Hawaii, 2001.
38. “Variation Propagation Modeling and Analysis for Multistage Manufacturing Systems”, IEEE SMC Conference, 2001.
39. "Research Challenges in Fault Diagnosis of Multi-station Manufacturing Processes", INFORMS, Miami, FL, November 4-7, 2001.
40. “In-Process Quality Improvement Methodologies and Applications”, National Science Foundation of China. June, 2001.
41. “Real-Time Active Balancing for High-Speed Machining”, IMEC, Nov., 2001, New York. (jointly with S. Zhou)
42. “Sensor Distribution Strategy in Automotive Body Assembly,” NSF I/U CRC, Plymouth, MI, August 1, 2001.
43. “Integration of Tolerance and Maintenance Design for Multi-station Manufacturing Processes,” IIE Annual Conference, Orland, FL, May 19-22, 2002. (jointly with Q. Huang)
44. “Variance Components Analysis Method for Diagnosability Study of Multi-station Manufacturing Processes,” ASA/ASQ Spring Technical Conference, Ann Arbor, MI, May 20-23, 2002. (jointly with S. Zhou)
45. Ding, J and J. Shi, “Variation Modeling and Analysis for Multistage Manufacturing Processes”, e-Manufacturing Review, 2001.
46. “Variance Components Analysis Method for Diagnosability Study of Multistage Manufacturing Processes”, Spring Research Conference on Statistics in Industry and Technology, May, 2002, Ann Arbor, Michigan. (jointly with S. Zhou)
47. “An Overview of Stream of Variation Methodology and Its Applications”, Spring Research Conference on Statistics in Industry and Technology, May, 2002, Ann Arbor, Michigan.
48. “Diagnosability Study of Multistage Manufacturing Processes Based on Linear Mixed-effects Models”, INFORMS Nov. 2002, San Jose. (jointly with Y. Chen)
49. “Data Mining of CDR for Costumer Relationship Management in Telecom Applications”, INFORMS Nov. 2002, San Jose.

***At U.S. Institutions* (Partial List)**

1. “In-Process Quality Improvement Research for AutoBody Assembly Processes”, Department of Industrial Engineering, Rutgers University. Nov. 4, 1997
2. “Current Research on Fault Detection and Diagnosis in Manufacturing Processes”, Department of Statistics, The University of Michigan, March 9, 1998.
3. “In-Process Quality Improvement Methodologies and Implementation” , Department of Industrial Engineering, University of Illinois at Urbana-Champaign, Feb. 10, 1998.
4. “Statistical Methods Driven by Engineering Models for In-Process Quality Improvement (IPQI)”, Department of Industrial and Systems Engineering, Georgia Institute of Technology, Nov. 6, 1998
5. “Stream of Variation Methodologies in Manufacturing Processes”, College of Engineering Manufacturing Series, The University of Michigan, April 8, 1999.
6. “Variation Propagation Modeling and Analysis for Multistage Machining Processes”, Department of Industrial and Systems Engineering, The University of Arizona, Dec., 2001.
7. “In-Process Quality Improvement Methodologies: Theory and Applications”, Department of Industrial Engineering, Northwestern University, March, 2002.
8. “Stream of Variation Theory for Multistage Manufacturing Processes”, Distinguished Seminar Series, Penn State University, Oct. 2, 2003.
9. “Variation modeling, analysis and control for complex systems”, Department of Industrial Engineering, Northwestern University, 2006.
10. “Data Fusion for Quality and Productivity Improvement”, Department of Industrial Engineering, Texas A&M University, 2006.
11. “Stream of Variation Theory and Applications”, Department of Industrial Engineering, Iowa State University, 2007.
12. “Data Fusion Concepts and Applications”, Department of Industrial Engineering, South Florida University, 2008.
13. “Monitoring of high dimensional streaming data for process control”, Department of Industrial Engineering, Rutgers University, Nov. 2014.

***At International Institutions* (Partial List)**

1. “CMM throughput improvement through active structural vibration control”, Fraundhofer - Production Technology, Achen, Germany, Nov. 1994.
2. “On-line dynamic data system modeling and implementation”, Institute of Technical University, Berlin, Dec., 1994, Germany.
3. “Signature analysis for sheet metal stamping process monitoring and diagnosis”, The University of Waterloo, Canada, 1995.
4. “On-line Time Series Modeling for CMM Vibration Control”, Southeast University, China, 1996.
5. “Stamping Process Control Using In-Process Sensing Signals”, Shanghai Jiaotong University, 1997.
6. “In-Process Quality Improvement Methodologies in Manufacturing Processes”, Beijing Institute of Technology, August, 1999.
7. “Information fusion for process control in hot deformation processes”, Beijing Science and Technology University, March, 2001.
8. “Dimensional Control in Automotive Body Design and Manufacturing”, Shanghai Jiaotong University, July, 2002.
9. “Stream of Variation Modeling and Analysis for Multistage Manufacturing Processes”, Hong Kong Science and Technology University, August, 2002.
10. “Multivariate process monitoring and diagnosis in a complex system”, Shanghai Jiantong University, 2005.
11. “Quality Control in a Distributed Sensing and Seing Network Environment”, Tianjin University, 2006.
12. “Data Fusion for Quality and Productivity Improvement”, Chinese Academy of Science, 2006.
13. “Causation-based Quality Control for MMP”, Department of Electrical Engineering, Hong Kong Chinese University, 2008.
14. “Stream of Variation Theory and Applications: An Overview”, Chinese Academy of Science, 2008.

***At industrial laboratories (Partial List)***

1. “Chrysler/U-M Cooperative Activities on Variation Reduction for Automotive Manufacturing,” Presentation given to Chrysler Executives (D. Pawley and his staff members), Ann Arbor, 1997
2. "Speed-Varying Transient Rotor Dynamics Modeling and Simulation", Presented at BalaDyne Corporation, Nov. 1998.
3. “Linear Diagnostic Modeling Based on Product Quality Information for Multistage Machining Processes”, Lamb Tech., Aug., 1999.
4. “An overview of Information Technology (IT) applications in manufacturing”, Ford Science Research Lab, Feb., 2001.
5. “Defect Prevention for Catalytic Converter through Innovation in both Design and Manufacturing”, September, 2002, Tenneco Corporation, 2002.
6. “Stream of Variation Methodologies in Machining Processes”, GM Tech Center, 2002.
7. “Causal discovery and modeling for complex systems”, GM R&D, 2004.

## E. Grants and Contracts

### E1. As Principal Investigator

ference papers itygapore Institute of Technology, rsll be editorial board of several journals in his researh

1. Title of Project: Multi-axes active vibration control of a CMM

Agency/Company: Giddings & Lewis - Sheffield Measurement Inc.

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $50,000

Period of Contract: 5/1994 – 4/1995

Candidate’s Share: 100.0% ($50K)

1. Title of Project: Development of advanced systems and technologies for the panel fitting

Agency/Company: Chrysler Corp

Role: PI/PD-Shi

Collaborators: None

Total Dollar Amount: $150,000

Period of Contract: 3/1993 – 4/1995

Candidate’s Share: 100.0% ($150K)

1. Title of Project: On-line intelligent modeling, monitoring and control workstation

Agency/Company: NSF Industry/University Cooperative Research Center (I/UCRC)

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $100,000

Period of Contract: 1/1994 – 12/1995

Candidate’s Share: 100.0% ($100K)

1. Title of Project: Signature analysis for sheet metal stamping

Agency/Company: NSF Industry/University Cooperative Research Center (I/UCRC) and Chrysler Corp

Role: PI/PD-Shi

Collaborators: None

Total Dollar Amount: $100,000

Period of Contract: 1/1994-8/1996

Candidate’s Share: 100.0% ($100K)

1. Title of Project: Multivariate Data Analysis-Technical Assistance Program for Perceptron

Agency/Company: Perceptron Inc.

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $50,000

Period of Contract: 12/1995 - 12/1997

Candidate’s Share: 100.0% ($50K)

1. Title of Project: Process Navigator Validation and Process Variation Reduction

Agency/Company: General Motors Corp

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $300,000

Period of Contract: 5/1995 - 6/1997

Candidate’s Share: 100.0% ($300K)

1. Title of Project: A Testbed for Proactive Maintenance Policy Evaluation in Dimensional Control

Agency/Company: NSF Industry/University Cooperative Research Center

Role: PI/PD-Shi

Collaborators: None

Total Dollar Amount: $25,000

Period of Contract: 9/1/1997 - 8/31/1998

Candidate’s Share: 100.0% ($25K)

1. Title of Project: Intelligent on-line Modeling and Control Modules

Agency/Company: IMT

Role: PI/PD-Shi

Collaborators: None

Total Dollar Amount: $40,000

Period of Contract: 1/1/1997 - 12/31/1998

Candidate’s Share: 100.0% ($40K)

1. Title of Project: Hemming Research

Agency/Company: Forming Technology Institute

Role: PI/PD-Shi

Collaborators: None

Total Dollar Amount: $12,000

Period of Contract: 8/1/1998 – 10/1/1998

Candidate’s Share: 100.0% ($12K)

1. Title of Project: Distributed Sensing and Data Analysis for Auto Body Assembly

Agency/Company: NSF Industry/University Cooperative Research Center

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $50,000

Period of Contract: 9/1/1999 – 8/31/2000 (renewable for one more year)

Candidate’s Share: 100.0% ($50K)

1. Title of Project: Multivariate SPC and Variation Reduction for DN Body Assembly

Agency/Company: IMT and Chrysler

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $110,000

Period of Contract: 1/1/1998 - 12/31/2000

Candidate’s Share: 100.0% ($110K)

1. Title of Project: Agile and Precision Stamping Lab Equipment Fund

Agency/Company: Auto Body Consortium

Role: PI/PD-Shi

Collaborators: None

Total Dollar Amount: $140,000

Period of Contract: 6/1/1996 - 12/31/1999

Candidate’s Share: 100.0% ($140K)

1. Title of Project: Proactive Maintenance: Integration of Engineering, Statistics, and Operations Research towards a General Framework and Methodology

Agency/Company: National Science Foundation

Role: PI/PD- Shi

Collaborators: Pollock (Co-PI) and Nair (Co-PI)

Total Dollar Amount: $285,000

Period of Contract: 9/1997 - 8/2002

Candidate’s Share: 33.3% ($95K)

1. Title of Project: Agile and Precision Sheet Metal Stamping - Near Zero Stamping progra

Agency/Company: Advanced Technology Program, National Institute of Standards and Technology (NIST) and Near Zero Stamping Inc.

Role: PI/PD- Shi

Collaborators: Ni(Co-PI), Hu(Co-PI), Ghosh(Co-PI), Jeff Wu(Co-PI)

Total Dollar Amount: $2,880,000

Period of Contract: 1/1995 – 06/2000

Candidate’s Share: 75.0% ($2,160K)

1. Title of Project: CAREER: The In-Process Quality Improvement Methodologies for Manufacturing

Agency/Company: National Science Foundation (NSF) CAREER Award

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $315,000 (plus additional $200,000: $100,000 from industry and $100,000 from NSF match)

Period of Contract: 9/1996 - 8/2002

Candidate’s Share: 100.0% ($315K)

1. Title of Project: Stream of Variation for Multistage Manufacturing Processes

Agency/Company: NSF ERC on RMS at U of M

Role: PI/PD- Shi

Collaborators: Ni(Co-PI)

Total Dollar Amount: (estimated $240,000 per year, sub account from ERC)

Period of Contract: 9/1998 – 8/2004 (renewable up to NSF ERC managements)

Candidate’s Share: 50.0% ($120K)

1. Title of Project: Incremental Machine Learning in Vehicle Diagnosis

Agency/Company: Ford

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $14,220

Period of Contract: 1/1/2002 – 8/31/2004

Candidate’s Share: 100.0% ($14K)

1. Title of Project: Variation Reduction for Multistage Manufacturing Processes

Agency/Company: DaimlerChrysler and IMT

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $101,407

Period of Contract: 9/1/2000 – 8/31/2002

Candidate’s Share: 100.0% ($101K)

1. Title of Project: An-Image-based high Temperature Deformation Process Control Systems: Samrtsmith Predictive Control Systems

Agency/Company: NIST-ATP and OG Technology Inc.

Role: PI/PD- Shi

Collaborators: Hu(Co-PI)

Total Dollar Amount: $388,450

Period of Contract: 1/1/2001-12/31/2003[SJJ1]

Candidate’s Share: 50.0% ($194K)

1. Title of Project: Throughput improvement and waste reduction in the HTS processes in Pfizer

Agency/Company: Pfizer

Role: PI/PD - Shi

Collaborators: None

Total Dollar Amount: $50,000

Candidate’s Share: 100% ($50K)

1. Title of Project: Variation Management for Aircraft Structures

Agency/Company: TMI and Lockheed Martin

Role: PI/PD- Shi

Collaborators: Hu(Co-PI), Ivy(Co-PI)

Total Dollar Amount: $140,000

Period of Contract: 5/1/2001-5/31/2004

Candidate’s Share: 33.3% ($47K)

1. Title of Project: Consumer Relationship Management and Business Intelligence Researc

Agency/Company: Powerise

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $80,000

Candidate’s Share: 100.0% ($80K)

1. Title of Project: Adaptive Assembly for Automotive Body Manufacturing Systems

Agency/Company: General Motors Satellite Lab at University of Michigan

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $300,000

Period of Contract: 1/1/2003 – 12/31/2005

Candidate’s Share: 100.0% ($300K)

1. Title of Project: DOE Based APC: A Methodology for Process Variation Reduction Beyond Robust Parameter Design

Agency/Company: National Science Foundation

Role: PI/PD- Shi

Collaborators: Wu(Co-PI)

Total Dollar Amount: $295,500

Period of Contract: 9/1/2002-8/31/2006

Candidate’s Share: 50.0% ($148K)

1. Title of Project: Causal Network Modeling and Analysis for Health Care Data

Agency/Company: Synchronous Knowledge Inc.

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: requested $40000

Candidate’s Share: 100.0% ($40K)

1. Title of Project: Active Control of C-flex for Variation Reduction of Automotive Body Assembly

Agency/Company: General Motors Collaborative Research Lab at UM

Role: PI/PD- Shi

Collaborators: Hu(Co-PI)

Total Dollar Amount: $150,000

Period of Contract: 1/1/2006 – 8/31/2007

Candidate’s Share: 50.0% ($75K)

1. Title of Project: Data Mining and Decision Making for Proactive Maintenance of RMS

Agency/Company: NSF ERC on RMS

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $140,000

Period of Contract: 5/1/2003-8/31/2005

Candidate’s Share: 100.0% ($140K)

1. Title of Project: Forging Process Control through Signature Analysis

Agency/Company: Forging Industry Educational and Research Foundation

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $10,000

Period of Contract: open

Candidate’s Share: 100.0% ($10K)

1. Title of Project: Quality-Ensured Maintenance Strategy for Complex Manufacturing Systems

Agency/Company: NSF ERC on RMS

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $200,000

Period of Contract: 9/1/2005 – 8/31/2007

Candidate’s Share: 100.0% ($200K)

1. Title of Project: Development of a CAE Design Tool for Minimizing Door Seal Gap Variation by Optimizing Component and Sub-Assembly Locator Position & Orientation

Agency/Company: Ford Company

Role: PI/PD- Shi

Collaborators: Jin(Co-PI)

Total Dollar Amount: $99,864

Period of Contract: 8/1/2006 – 12/31/2007

Candidate’s Share: 50.0% ($50K)

1. Title of Project: Data Mining and Causal Discovery for Predictive Process Control in Data Rich Environments

Agency/Company: Department of Energy

Role: PI/PD- Shi

Collaborators: None

Total Dollar Amount: $564,000

Period of Contract: 1/1/2004-12/31/2008

Candidate’s Share: 100.0% ($564K)

1. Title of Project: Sensor-based Prognostics and Predictive Process Control for Hot Deformation Processes

Agency/Company: Michigan 21st Century Job Fund

Role: PI/PD- Shi

Collaborators: Jin(Co-PI)

Total Dollar Amount: $1,742,500 ($895, 000 from the MEDC - 21st Century Job fund, $30,000 from UM contribution, $817,500 from industrial cash/in-kind contribution)

Period of Contract: 1/1/2007 – 6/30/2010

Candidate’s Share: 50.0% ($871K)

1. Title of Project: Advanced Tonnage Signal Analysis for Forging Processes

Agency/Company: NSF SBIR and OG Technologies

Role: PI/PD- Shi

Collaborators: Jin(Co-PI)

Total Dollar Amount: $200,000

Period of Contract: 9/1/2006 – 8/31/2009

Candidate’s Share: 50.0% ($100K)

1. Title of Project: In-situ Process Control and Variability Reduction for Nano-powder Production Scale-up

Agency/Company: Department of Energy/nGimat Company

Role: PI/PD- SHI

Collaborators: None

Total Dollar Amount: $197,712

Period of Contract: 9/01/2010 – 8/31/2012

Candidate’s Share: 100.0% ($198K)

1. Title of Project: Imaging-based Optical Caliper for Objects in Hot Manufacturing Processes

Agency/Company: Department of Energy/OG Technologies

Role: PI/PD- SHI

Collaborators: None

Total Dollar Amount: $315,000

Period of Contract: 9/01/2010 – 8/31/2012

Candidate’s Share: 100.0% ($315K)

1. Title of Project: SICS: A Sensor-based in-line control system for the surfaces of continuously cast slabs

Agency/Company: Department of Energy/OG Technologies

Role: PI/PD- SHI

Collaborators: None

Total Dollar Amount: $215,000

Period of Contract: 9/01/2010 – 8/31/2013

Candidate’s Share: 100.0% ($215K)

1. Title of Project: Causation-based monitoring, diagnosis and control for complex systems

Agency/Company: NSF-ID: 927574

Role: PI/PD- SHI

Collaborators: None

Total Dollar Amount: $389,500

Period of Contract: 9/01/2009 – 8/31/2014

Candidate’s Share: 100.0% ($390K)

1. Title of Project: Collaborative Research: Process Monitoring and Control in Autocorrelated Multistage Manufacturing Processes

Agency/Company: NSF – Award ID: 1233143

Role: PI/PD- SHI

Collaborators: None

Total Dollar Amount: $200, 000

Period of Contract: 9/01/2012 – 8/31/2016

Candidate’s Share: 100.0% ($200K)

1. Title of Project: Variation Analysis for Composite Manufacturing

Agency/Company: Boeing Company

Role: PI- Shi

Collaborators: Kamran Paynabar(Co-PI)

Total Dollar Amount: $270,000

Period of Contract: 1/1/2013 to 12/31/2015

Candidate’s Share: 50.0% ($135K)

1. Title of Project: Data Fusion for Metamodeling and Hybrid Process Control in High Speed Rail Manufacturing

Agency/Company: Department of Energy/OG Technologies

Role: PI/PD- SHI

Collaborators: None

Total Dollar Amount: $280, 476.55

Period of Contract: 9/01/2014 – 8/31/2017

Candidate’s Share: 100.0% ($280K)

1. Title of Project: Method for data fusion and domain knowledge incorporation for multiple sensor based anomaly detection

Agency/Company: Samsung Company

Role: PI- Shi

Collaborators: None

Total Dollar Amount: $149,950.00

Period of Contract: 12/1/2015 to 1/31/2017

Candidate’s Share: 100.0% ($150K)

1. Title of Project: Stream of Variation Modeling and Analysis for Composite Manufacturing

Agency/Company: Boeing Company

Role: PI- Shi

Collaborators: None

Total Dollar Amount: $300,000

Period of Contract: 7/1/2016 to 6/30/2019

Candidate’s Share: 100.0% ($300K)

1. Title of Project: Data Fusion for Quality Assured Proactive Maintenance for Defect Reduction and Yield Improvement.

Agency/Company: Samsung Company

Role: PI- Shi

Collaborators: None

Total Dollar Amount: $99,998.65

Period of Contract: 2/1/2017 – 1/31/2018

Candidate’s Share: 100.0% (~$100K)

1. Title of Project: Multistage Process Control for Correlation Analysis between Semiconductor Processes

Agency/Company: Samsung Company

Role: PI- Shi

Collaborators: None

Total Dollar Amount: $200,000

Period of Contract: 3/1/2017 – 12/31/2018

Candidate’s Share: 100.0% ($200K)

1. Title of Project: Run-to-Run Control System Optimization Based on Artificial Intelligence and Machine Learning

Agency/Company: Samsung Company

Role: PI- Shi

Collaborators: None

Total Dollar Amount: $150,000

Period of Contract: 10/1/2017 – 1/31/2019

Candidate’s Share: 100.0% ($150K)

1. Title of Project: Dimension Variation Reduction in Half to Half Composite Fuselage Assembly and Transportation

Agency/Company: Boeing Company

Role: PI- Shi

Collaborators: None

Total Dollar Amount: $351,232

Period of Contract: 1/1/2019 to 12/31/2021

Candidate’s Share: 100.0% ($351K)

### E2. As Co-Principal Investigator

1. Title of Project: 2mm program - Variation Reduction for T300

Agency/Company: Chrysler Corp

Total Dollar Amount: $340,000

Role: co-PI

Collaborators: PI/PD-J. Ni, Co-PIs- Shi and Hu

Period of Contract: 1/1993 – 12/1994

Candidate's Share: ~33.3% ($113K)

1. Title of Project: Process Capability Study for Chrysler NS Program

Agency/Company: Chrysler Corp

Total Dollar Amount: $300,000

Role: co-PI

Collaborators: PI/PD- J. Ni, Co-PIs- J. Shi, D. Ceglarek, G. Herrin and X. Wu

Period of Contract: 9/1996 - 8/1997

Candidate's Share: 20% ($60K)

1. Title of Project: Remote Diagnosis and System Reliability Evaluation

Agency/Company: NSF Engineering Research Center at the University of Michigan

Total Dollar Amount: ERC supports two 50 % GSRA

Role: co-PI

Collaborators: PI/PD- Ni, Co-PIs- Shi

Period of Contract: 9/1996-8/1998

Candidate's Share: 50% ($60k)

1. Title of Project: Integrated Dimensional Design Evaluation and Process Control for Automotive Door Manufacturing

Agency/Company: General Motors Corp

Total Dollar Amount: $140,000

Role: co-PI

Collaborators: PI/PD- Ceglarek, Co-PIs- Shi

Period of Contract: 10/1995 - 12/1998

Candidate's Share: 50% ($70K)

1. Title of Project: D-Ring Seal Gap Dimensional Variation Reduction and System Analysis

Agency/Company: General Motors

Total Dollar Amount: $125,000

Role: co-PI

Collaborators: PI/PD- D. Ceglarek, Co-PIs- Shi and Hu

Period of Contract: 11/1/1998 - 10/31/2000

Candidate's Share: ~33.3% ($42K)

1. Title of Project: Dimensional Control for WJ program using Multiple in-line Sensing Stations

Agency/Company: Chrysler Corp

Total Dollar Amount: $150,000

Role: co-PI

Collaborators: PI/PD- D. Ceglarek, Co-PIs- Shi

Period of Contract: 3/1/1998 - 2/28/2000

Candidate's Share: 50% ($75K)

1. Title of Project: Panel Fitting Process Evaluation and Optimization

Agency/Company: NSF Industry/University Cooperative Research Center

Total Dollar Amount: $50,000

Role: co-PI

Collaborators: PI/PD- D. Ceglarek, Co-PIs- Shi

Period of Contract: 1/1/1999 - 12/31/1999

Candidate's Share: 50% ($25K)

1. Title of Project: Variation and Reliability Modeling and Analysis for Assembly Fixtures

Agency/Company: General Motors

Total Dollar Amount: $100,000

Role: co-PI

Collaborators: PI/PD- D. Ceglarek, Co-PIs- Shi

Period of Contract: 1/1/1998 - 12/31/2001

Candidate's Share: 50% ($50K)

1. Title of Project: Real-Time Active Balancing for High Speed Machining

Agency/Company: Advanced Technology Program, National Institute of Standards and Technology (NIST) and Balance Dynamics Corp

Total Dollar Amount: $800,000

Role: co-PI

Collaborators: PI/PD- Ni, Co-PIs- Shi

Period of Contract: 1/1998 - 12/2000

Candidate's Share: 50% ($400K)

1. Title of Project: Quality Control for a Multistage Process Combining SPC and APC

Agency/Company: Hong Kong NSF (RGC)

Total Dollar Amount: HKD 437,817.00

Role: co-PI

Collaborators: PI/PD- Tsung, Co-PI- Shi and Tsui

Period of Contract: 1/2000 – 12/2001

Candidate's Share: 33% (HKD 145K)

1. Title of Project: Concurrent Design of Next-Generation Power trains

Agency/Company: U.S. DOD-Army/TACOM

Total Dollar Amount: $3,000,000

Role: co-PI

Collaborators: PI/PD- P. Papalambros, Co-PIs- J. Hu, J. Shi, D. Assanis, Z. Filipi, K. Nagarathnam, N. Michelena and K. Saitou

Period of Contract: 5/1/2001 – 4/30/2003

Candidate's Share: 12.5% ($375K)

1. Title of Project: Maintenance models involving minor and major maintenance

Agency/Company: RESEARCH GRANTS COUNCIL

Total Dollar Amount: (requested) HKD 576,000

Role: co-PI

Collaborators: PI/PD- P. Chan, Co-PIs- Tsung and Shi

Period of Contract: 10/1/2003-9/30/2006

Candidate's Share: ~33.3% (HKD 192K)

1. Title of Project: A Unified Methodology for Service Quality Improvement through Integration of QFD and SEM

Agency/Company: RESEARCH GRANTS COUNCIL

Total Dollar Amount: (requested) HKD 630,000

Role: co-PI

Collaborators: PI/PD- Tsung, Co-PI- Shi

Period of Contract: 10/1/2003-9/30/2006

Candidate's Share: 50% (HKD 315K)

1. Title of Project: Future Combat Systems (FCS): Phase II Production Planning Study for the Manned Ground Vehicle (MGV)

Agency/Company: Boeing Company and Department of Defense

Total Dollar Amount: $599,000

Role: co-PI

Collaborators: PI/PD- Hu, Co-PI- John Cristiano, Steve Skerlos, Albert Shih and Galip Ulsoy

Period of Contract: 1/2005 – 3/2006

Candidate's Share: 20% ($120K)

1. Title of Project: A New Venture to Expand Response Surface Methodology for Engineering Process Control

Agency/Company: RESEARCH GRANTS COUNCIL

Total Dollar Amount: (requested) HKD 558,000

Role: co-PI

Collaborators: PI/PD- Tsung, Co-PI- Shi and Jin

Period of Contract: 10/1/2005-9/30/2008

Candidate's Share: ~33.3% (HKD 186K)

1. Title of Project: ARI-MA: Development of Integrated Real-Time Imaging and Isotope Detection Algorithms for 3-D Position-Sensitive Semiconductor Gamma-Ray Imaging Spectrometers and Sensor Networks

Agency/Company: National Science Foundation, CEBT-0736091

Total Dollar Amount: $1,993,290

Role: co-PI

Collaborators: PI/PD- Zhong He, Co-PI- J. Shi and J. Fessler

Period of Contract: 7/30/2007 – 12/31/2011

Candidate's Share: ~33.3% ($664K)

1. Title of Project: Bayesian process control for nano-manufacturing with mixed-resolution information

Agency/Company: Hong Kong RGC

Total Dollar Amount: HKD 279,610

Role: co-PI

Collaborators: PI/PD- Tsung, Co-PI- Huang and Shi

Period of Contract: 01/01/2009 – 12/31/2011

Candidate's Share: 33.30% (HKD 93K)

1. Title of Project: Metamodel-Based Measurement, and Optimization of Engineered Surfaces

Agency/Company: NSF

Total Dollar Amount: $380,000

Role: co-PI

Collaborators: PI/PD- Vengazhiyil Co-PI- Shi

Period of Contract: 9/01/2010 – 8/31/2015

Candidate's Share: 50% ($190K)

1. Title of Project: Reliability Modeling, and Improvement of FUSE Video System (April 2014 ~ April 2015)

Agency/Company: Endochoice Company

Total Dollar Amount: (Gift fund no IDC) $80,000

Role: co-PI

Collaborators: PI- Paynabar, K., Co-PI- Shi, J.

Period of Contract: 5/1/2014 - 4/30/2015

Candidate's Share: 50% ($40K)

1. Title of Project: SNM: Roll-to-Roll Manufacturing of High Quality Bucky-tape with Aligned and Crosslinked Carbon Nanotubes Through In-line Sensing and Control

Agency/Company: NSF Award Number: 1344672

Total Dollar Amount: $1,465,059.00

Role: co-PI

Collaborators: PI- Liang, Co-PI- Zhang, Shi, Vanli and Wang

Period of Contract: 10/1/2013 to 9/30/2017

Candidate's Share: 20% ($320K)

1. Title of Project: Collaborative Research: Online Monitoring of High-Dimensional Streaming Data Using Adaptive Order Shrinkage

Agency/Company: NSF

Total Dollar Amount: $22,400.00

Role: co-PI

Collaborators: PI- Mei Co-PI- Shi

Period of Contract: 9/1/2014 - 8/31/2017

Candidate's Share: 50% ($11K)

1. Title of Project: DATA-DRIVEN RECONFIGURABLE MANUFACTURING SYSTEMS FOR THE AIR FORCE AIRCRAFT MAINTENANCE ENVIRONMENT (SBIR PHASE I)

Agency/Company: Department of Defense/ Aging Aircraft Consulting LLC (AACL)

Total Dollar Amount: $50,000

Role: co-PI

Collaborators: PI/PD- Paynabar, K. , Co-PI- Shi, J.

Period of Contract: 9/01/2016 – 8/31/2017

Candidate's Share: 50% ($25K)

23 Title of Project: Data-Driven Reconfigurable Manufacturing Systems for the Air Force Aircraft Maintenance Environment – Phase II

Agency/Company: SBIR Program – Air Force

Total Dollar Amount: DOE Funding: $125,000

Role: co-PI

Collaborators: PI/PD- Paynabar, K.

Period of Contract: 10/1/2017 – 10/1/2018

Candidate’s Share: 50% ($62,500)

### E3. As Senior Personnel or Contributor

### E4. Pending Proposals

Title: Intelligent Cyber and Physical Security Awareness for Networked Grid Edge Solar Energy”

Source: Department of Energy

Amount: $996,238

PI: Shi.

Co-PI: None

9/1/2019 – 8/31/2022.

Cal: 0.00 Acad: 0.00 Sumr: 1

### E5. Proposals Submitted But Not Funded

(Some proposals to Department of Energy, NASA, NSF, etc.)

## F. Other Scholarly Accomplishments

List all other scholarly accomplishments such as software, patents, invention disclosures, etc.

1. "Body-in-white Conference", workshop organized by the University of Michigan, April, 1994. I was the co-organizer and lectured in the workshop on the topic of “Measurement Strategies for Automotive Sheet Metal Manufacturing.” About 130 industrial engineers participated in the workshop.
2. "Process Control for Automotive Body Assembly Processes," short course offered at General Motors Lansing Assembly Plant, May, 1995, 20 students. Lectured two out of three days.
3. “Near Zero Stamping (NZS) Technology Transfer Workshop”, June, 1999. As the Technical Director of the NZS program, I am the co-organizer of the workshop, which intends to present the technologies developed in the NZS program to the industrial members. About 116 people from GM, Ford, DaimlerChrysler, and more than 30 supplier companies have participated in this two-day workshop.
4. “Stamping Signature Analysis and Process Control for Sheet Metal Stamping”, short course offered in Chrysler Training Center, 1994. 20 students.
5. “Introductions of Data Mining and Business Intelligence”, Beijing, China, Feb., 2001. About 80 people attended the workshop.
6. “Introductions of Data Mining and Consumer Relationship Management (CRM)”, Hangzhou, China, April, 2001. About 60 people attend the workshop.
7. “Critical Issues and Challenges on the Dimensional Control of Automotive Body Manufacturing”, Automotive Body Research Center, Shanghai, China, June, 2002. About 30 research stuff and engineers attended the workshop.
8. “A Six Sigma Workshop”, Shanghai Automotive Company, July, 2002. About 130 engineers attended the workshop.

# V. Teaching

## A. Courses Taught

Semester, Year Course Number Number of Students

Fall/2018 ISyE6405 20

Fall/2017 ISyE6405 26

Fall/2017 ISyE3039 45

Fall/2016 ISyE6405 23

Fall2016 ISyE7204 12

Fall/2015 ISyE3039 62

Fall/2015 ISyE6405 17

Spring/2015 ISyE3039 56

Fall/2014 ISyE6405 40

Fall2014 ISyE7204 18

Fall/2013 ISyE3039 72

Fall/2013 ISyE6405 36

Spring/2013 ISyE3039 86

Fall/20012 ISyE6405 37

Fall/2012 ISyE7204 5

Fall/20011 ISyE6405 30

Fall/2011 ISyE7204 3

***Course Name:***

*ISyE 6405 Statistical Methods for Manufacturing Systems Design/Improvement*

***ISYE 7204 A - Info Prod & Ser Sys***

***ISYE 3039 Statistical Quality Control***

## B. Individual Student Guidance

### B1. Ph.D. Students

B.1.a Ph.D. Students Graduated

***Ph.D. committees chaired or co-chaired* (33 graduated with a Ph.D. degree)**

1. Darek Ceglarek, 1994, “Knowledge-Based Diagnosis for Automotive Body Assembly: Methodology and Implementation”

Current Position: EPSRC Research Chair Professor, Director of Digital Product Lifecycle Management, University of Warwick, UK

Professor, Dept. of Industrial Engineering, University of Wisconsin-Madison, *(received the* ***NSF CAREER Award*** *in 2003)*

1. Chris Koh, 1995, “Tonnage Signature Analysis for Stamping Process Fault Detection and Isolation”

Current Position: Director of Asia Management Consulting, Singapore

1. Davoud Khorzad, 1996, “Model Based Optimization for Auto Body Dimensional Control in Design and Assembly”

Current Position: Director of Engineering, Pharmaceutical Systems Inc. (PSI)

1. Boon W. Shiu, 1996, “Modeling of an Automotive Body Assembly System for Dimensional Control”

Current Position: Executive Consulting, Hong Kong

1. Fu-gee Tsung, 1997, “Run-to-run Proportional-Integrated-Derivative Process Control and Monitoring Schemes”

Current Position: Professor and Department Head, Dept. of Industrial Engineering, Hong Kong Science and Technology University

1. Dan Apley, 1997, “Supervisory Adaptive Control: Monitoring, Diagnosis and Uncertainty”

Current Position: Professor, Dept. of Industrial Engineering, Northwestern University *(received the* ***NSF CAREER Award*** *in 2001)*

1. Jionghua Jin, 1998, “Feature Extraction of Waveform Signals for Stamping Process Monitoring and Fault Diagnosis”

Current Position: Professor and PIM Director, Dept. of Industrial and Operations Engineering, University of Michigan *(received the* ***NSF CAREER Award*** *in 2002,* ***PECASE Award*** *in 2004)*

(8) Steve Dyer, 1999, “Real-time In-process Dynamic Balancing for High Speed Rotating Machinery”

Current Position: Partner and Vice President, A.T. Kearney Company

(9) Qiang Rong, 2000, “Modeling and Diagnosis of Assembly Systems with Complaint Structures for Dimensional Control”

Current Position: Senior Vice President of Global Alternative, Morningstar Company

1. Baocheng Sun, 2000, “Statistical Process Monitoring for Non-IID Process”

Current Position: Manager, Ford Company

1. Shiyu Zhou, 2000, “Real Time Dynamic Balancing under Abrupt Change Conditions”

Current Position: Professor and Associate Chair, Department of Industrial Engineering at the University of Wisconsin – Madison *(received the* ***NSF CAREER Award*** *in 2005)*

1. Huifang Li, 2000, “Modeling, Analysis, and Performance Optimization for Material Handling of Compliant Sheet Metal Parts”

Current Position: Senior Engineer, Robert Bosch Corporation

(13) Yu Ding, 2001, “Modeling and Analysis of Stream of Variation in Multistage Manufacturing Processes”

Current Position: Endowed Barnes Professor, Dept. of Industrial Engineering, Texas A&M University *(received the* ***NSF CAREER Award*** *in 2004)*

(14) Sittiporn Pimsakul, 2002, “Reconfigurable Manufacturing systems for Automotive Body Assembly”

Current Position: Associate Professor, Industrial Engineering Department, King Mongkut's Institute of Technology Ladkrabang, Thailand

(15) Qiang Huang, 2003, “Stream of Variation Modeling and Analysis in Machining Processes”,

Current Position: Associate Professor and Gordon S. Marshall Early Career Chair in Engineering, Industrial Engineering Department, University of Southern California, *(received the* ***NSF CAREER Award*** *in 2011)*

1. Yong Chen, 2003, “Integrated Design and Analysis of Product Quality and Tooling Reliability”

Current Position: Professor, Department of Mechanical and Industrial Engineering, University of Iowa

1. Jihyun Kim, 2004, “In-Process Sensor Fusion and Data Analysis for Forging Process Control and Quality Improvements”

Current Position: Associate Professor, Industrial Engineering Department, Kwangwoon University Business School, Korea.

1. Hongbin Jia, 2005, “Rolling Process Control”

Current Position: Senior Engineer, OG Technology Company

1. Pornpen Chaipradubkiat, 2006, “Integration of Part Quality and Tooling Information for Effective Process Control and Maintenance Planning”

Current Position: Associate Professor, Industrial Engineering Department, Khon Kaen University, Thailand

1. Jing Li, 2007, “Causation-based Quality Control Methodologies with Applications”,

Current Position: Associate Professor, Department of Industrial Engineering, Arizona State University, *(received the* ***NSF CAREER Award*** *in 2011)*

1. Eduardo Izquierdo, 2007, “Adaptive Assembly for Variation Reduction with Programmable Tooling”

Current Position: Assistant Professor, University of Warwick, UK

1. Jian Liu, 2008, “System-level Quality Planning and Diagnosis for Complex Multistage Manufacturing Processes”

Current Position: Associate Professor, Department of Industrial Engineering, University of Arizona

1. Jing Zhong, 2009, “DOE-based APC: Variation Reduction beyond Robust Design”

Current Position: Research Staff, Microsoft Research, Microsoft Company

1. Ran Jin, 2011, “Modeling and Analysis for Multistage Wafer Manufacturing Processes”

Current Position: Assistant Professor, Department of Industrial and Systems Engineering, Virginia Tech

1. Chia-Jun Chang, 2012, “Statistics methods driven by engineering model for quality improvement” (co-chair with Roshan),

Current Position: Associate Professor, Department of Statistics, National University of Singapore

1. Kaibo Liu, 2013, “Data fusion for quality improvement”

Current Position: Assistant Professor, Department of Industrial Engineering at the University of Wisconsin – Madison.

1. Hao Li, 2015, “Residual life prediction and degradation-based control of multi-component systems”

Current Position: Senior Analyst, Cox Communications Company

1. Matt Plumlee, 2015, “Fast methods for identifying high dimensional systems using observations”

Current Position: Assistant Professor, Dept. of Industrial Engineering, Northwestern University

1. Cheng Zhou, 2016, “Process Monitoring and Fault Diagnosis Using Recurrence Plot in Industrial Processes” (Note: co-advised Ph.D. in Beijing Science and Technology University, P.R. China)

Current Position: Research Engineer, Academy of Information Science Innovation

1. Hao Yan, 2017, “Online Monitoring of High-Dimensional Streaming Data Using Adaptive Order Shrinkage”

Current Position: Assistant Professor, Department of Industrial Engineering, Arizona State University

1. Yibo Ai, 2017, “Study on Cross-scale Life Prediction of High Speed Train Gearbox Shell”

Current Position: Assistant Professor, Department of Industrial Engineering, Beijing Science and Technology University (Note: co-advised Ph.D. in Beijing Science and Technology University, P.R. China)

1. Xiaowei Yue, 2018, “Engineering-driven data analytics for in situ process monitoring of nanomanufacturing”

Current Position: Assistant Professor, Department of Industrial and Systems Engineering, Virginia Tech

1. Yuchen Wen, 2018, “Stream of Variation and shape control for composite fuselage assembly”

Current Position: Senior Data Scientist, FedEx

1. Mohammed Nabhan, 2019, “High-Dimensional Streaming Data Monitoring Using Correlation Based Sampling And Robust Sparse Reduction”

Accepted offer as Assistant Professor, Department of Industrial and Systems Engineering, King Fahd University of Petroleum and Minerals

1. Juan Du, 2019, “Change Points Detection for Pipe Fasting Process” (Note: co-advised Ph.D. Student at Peking University; visiting Ph.D. student at Georgia Tech (2017-2018))

Accepted offer as Assistant Professor, Oregon State University

1. Ruizhi Zhang, 2019, “ROBUST SPARSE LEARNING AND MONITORING OF HIGH-DIMENSIONAL DATA”

Accepted offer as Assistant Professor, Department of Statistics, University of Nebraska

1. Mostafa Reisi, 2019, “Modeling and Analysis Processes with Heterogeneous Sources of Data”

Accepted offer as Assistant Professor, Department of Industrial and Systems Engineering, University of Florida

B.1.b Ph.D. Students In-Progress

1. Xinran Shi, “In-Situ Monitoring of Multiple Sensing Anomaly Detection with Applications”
2. Andi Wang, “Machine Learning in Manufacturing System Informatics”
3. Zhen Zhong, “Process Control for Semiconductor Processes”
4. Dhari Alenezi, “Data Analytics Topics for Quality Improvements”

### B2. M. S. Theses Chaired

1. Matthias Dubiel, 1996, “Stamping Signature Analysis for Sheet Metal Stamping”, Exchange student from University of Cheminitiz, Germany
2. Emilio Pastor Brahmst3, 1996, “Application and Improvement of a Knowledge Based Method for Variation Reduction in Automobile Body Assembly”, Exchange student from University of Technical Berlin, Germany
3. Axel Riched3, 1998, “Vibration Testbed Design and Analysis”, Exchange student from University of Technical Berlin, Germany
4. Dongdong Li, 1998, “Tapping Process Monitoring and Diagnosis”, co-chaired with Jun Ni.
5. Nairong Zhou, 1999, “Stream of Variation of Multistage Machining Processes”
6. Andrew Macedo, 2000, “Degradation Modeling and Monitoring for Die Predictive Maintenance”
7. Thorsten Wöhrmann3, 2000, “Panel Fitting System Design and Evaluation”, Exchange student from University of Technical Berlin, Germany
8. Charles C. Garnett, 2003, “The General Motors Product Development Process:A Lean “Engineering Factory” Approach”
9. ChulHun Park, 2003, “Finding Best-fit Transformation Matrix and its Applications”
10. Ryan Arens, Jason Brown, Todd Watson, and Gary Kronenberg, 2004 “Supplemental Basecoat Paint Zone Production Capability: Lansing Grand River (LGR) Assembly Plant – Paint Shop”
11. Eric Hunsanger, Rita Kim, Phenella Paras, 2004, “Ford Expedition & Lincoln Navigator A/C Evac and Fill Capability Study”
12. Job Eliud Garcia Charles, 2005, “Value Stream Mapping Application in a Manufacturing Process”

### B3. Undergraduate special projects directed

(Includes project title and brief summary of the work and results.)

1. Richard Lu, 2012-2013 “DOE for Quality Improvement”, NSF REU project. (Lu received the best student undergraduate research award at School of ISyE, Georgia Tech, in 2013)
2. Christina Lembong, Fall, 1997, “Tapping Process Monitoring and Diagnosis”. Christina was working with Ms. Dongdong Li (MS student) on the tapping experiments and also did initial data analysis.
3. Alexander V. Kotlyar, Winter, 1998, “Implementation of Knowledge Based Diagnosis for Body Assembly Processes”. Alex developed software to implement the knowledge based diagnostic methodologies in a Chrysler Assembly Plant. He performed software design, programming, and testing based on the real production layout.
4. Pamela Rayford, Fall, 1998, “Machine Diagnostics Project: Data Collection and Analysis. Student of Center for Advanced Technologies, Focus: Hope. (This is an effort to involve minority student in my NSF research project. She did an independent study under my supervision in my research project)
5. John Redmond, Fall, 2001, "Development of Web-Based software for Stream of Variation".  John worked with Dr. Zhou on the development of software for the implementation of the stream of variation methodology using Visual InterDev.  He participated in the feasibility study, design, and programming.
6. Zeamma Walker, Summer, 2001, “Consumer Relationship Management (CRM) in Mobile Telecommunication”. Zeamma conducted the development of CRM system infrastructure and design of function module in Mobile Telecommunication. In her study, she focused on the research of one of CRM's key issues, fraud detection. In addition, she did data analysis for calling behavior profiling based on massive CDR (Call Detail Record).
7. Richard Lu, Fall, 2011 “Topic of Quality Improvement in Manufacturing”.

### B4. Service on thesis or dissertation committees

*(I did not track the Ph.D. dissertation committees that I have served.)*

### B5. Mentorship of postdoctoral fellows or visiting scholars

* Mr. Joo Suk Yang, Samsng Company, 2017
* Dr. Saungho Li, Samsung Company, 2016
* Dr. Chen Zhang, National University of Singapore, 2016
* Dr. Tingyu Zhang, Beijing Institute of Technology, 2014-2015

## C. Other Teaching Activities

List all other significant teaching activities such as continuing education, new courses developed, laboratory experiments and instructional materials developed, etc.

# VI. Service

## A. Professional Contributions

(List all national and international contributions of service and positions of leadership in the profession.)

***Service to Professional Organizations***

1. **Founder and Chairperson:** Quality, Statistics and Reliability Section of INFORMS

Since Fall 1997, I have played a leading role in establishing a new “Quality, Statistics and Reliability Section” in the Institute for Operations Research and the Management Science (INFORMS). The section was officially approved by the INFORMS board in August 1998. I have initiated and organized a cluster of sessions in a series of INFORMS conferences in Montreal (April, 1998), Seattle (Oct., 1998) and Cincinnati (May, 1999). I also wrote the by-laws and guidelines, created a Web site, and invited a group of potential subdivision members and advisory board members for the new section. This initiative has generated great responses and interests from both academia and industry. In the past six INFORMS annual conference, the QSR Section has organized the cluster featured the most number of sessions among all subdivisions/sections. I served as the first chairperson from in 1998 and 1999.

**(2) Editorial Functions**

1. Editor-in-Chief, *IISE Transactions,* (2017-2021)
2. Editor, *Journal of System Science and Complexity*, 2008-present
3. Advisory Editor, *Journal of Quality Technology and Quantitative Management* (QTQM) ISSN 1684-3703), 2016-2018.
4. Focus Issue Editor, *IIE Transactions on Quality and Reliability Engineering*, January 1, 2009 to 2016
5. Associate Editor, *ASME Transactions, Journal of Manufacturing Science and Engineering,* 2014-2016
6. (Interim) Focus Issue Editor, *IIE Transactions on Quality and Reliability Engineering*, 2007-2008.
7. Department Editor, *IIE Transactions on Quality and Reliability Engineering*, 2001 to 2008.
8. Associate Editor, *International Journal of Flexible Manufacturing Systems,* 2004 to 2007.
9. Senior Editor, *Chinese Journal of Institute of Industrial Engineering*, 2007 to present.
10. Co-guest editor, IIE Transactions on Quality and Reliability Engineering, Special Issues on “Quality Control and Improvement for Multistage Systems”, 2007-2009
11. Co-guest editor, IEEE Transactions on Automation Science and Engineering, special issues on distributed sensing, 2005-2006.
12. Editorial Board Member, *IIE Transactions on Quality and Reliability*, May, 1998 to 2001.
13. Member, Scientific Committee, “1997 NAMRI/SME Twenty-Fifth North American Manufacturing Research Conference," 1997
14. Member, Scientific Committee, "1996 NAMRI/SME Twenty-Fourth North American Manufacturing Research Conference," 1996
15. Member, Scientific Committee, "1995 NAMRI/SME twenty-third North American Manufacturing Research Conference," 1995
16. Reviewer for various technical journals and conferences including

- ASME Journal of Dynamic Systems, Measurement, and Control

- IIE Transactions

- ASME Journal of Engineering for Industry

- ASME Journal of Manufacturing Science and Engineering

- Journal of Manufacturing Systems

- ASME Winter Annual Meetings

- American Control Conference

- Transaction of North American Manufacturing Research Institution

- USA-Japan Symposium on Flexible Automation

- International Mechanical Engineering Congress

**(3) Conference Organization**

* Member of Advisory Committee, International Conference of Interface of Statistics and Engineering, Soul, Korea, June, 2018.
* Organizer, 4 sessions in the ISERC’2019. Orlando, FL, May 2019.
* Co-Organizer, The 6th International Workshop on Reliability Technology and Quality Science, June 2016, Beijing, China.
* Co-Organizer, The 5th International Workshop on Reliability Technology and Quality Science, July 2015, Beijing, China.
* Member of Advisory Committee, International Conference of Interface of Statistics and Engineering, Hong Kong, Dec. 2014.
* Co-Organizer, The First International Workshop on Reliability Technology and Quality Science, July 10–12, 2009, Beijing, China.
* Co-Organizer, The Second International Workshop on Reliability Technology and Quality Science, October 27 - November 2, 2010, Hong Kong
* Co-Organizer, The Third International Workshop on Reliability Technology and Quality Science, July 10, 2013, Beijing
* Co-Organizer, The Third International Workshop on Reliability Technology and Quality Science, June 23, 2014, Beijing
* Member of International Advisory Committee, The International Conference on Quality, Reliability, Maintainability and Safety (QR2MSE2012)
* Member, Advisory committee, 2010 INFORMS International Conf. on Service Science.
* Member, Advisory committee, 2009 INFORMS International Conf. on Service Science.
* Tutorials Chair, The fifth annual IEEE Conference on Automation Science and Engineering (IEEE CASE 2009), August 22 to 25, 2009, Bangalore, India
* Member, Scientific Committee, 7th International Conference on Manufacturing Research (ICMR’2009), September 08 - 10, 2009, United Kingdom
* Member, management committee of the Spring Research Conference on Statistics in Industry (SRC). 2006-2009.
* Member, Program Committee, “7th IFIP International Conference on Information Technology for BALANCED AUTOMATION SYSTEMS in Manufacturing and Services”, 2006, Canada.
* Member, Organizing Committee, “North American Manufacturing Research Conference," 2005, 2006, 2007
* Member, Program Committee, **Fourth International Symposium on Business and Industrial Statistics (ISBIS4), 2005.**
* Co-organizer, An invited cluster on “Data Mining and Business Intelligence”, INFORMS’22 in San Jose.
* Organizer, A session on “Modeling, Monitoring and Diagnostics of Multistage Manufacturing Processes”, Spring Research Conference, Ann Arbor, 2002.
* Organizer, An invited panel on “Emerging Issues and Directions in Quality, Statistics and Reliability (QSR)- Editor's Point of View”, INFORMS’99 in Philadelphia

1. Co-Organizer, A Quality, Statistics and Reliability Track with 10 Sessions on “Quality, Statistics and Reliability”, INFORMS’99 in Cincinnati.
2. Organizer, A Quality and Statistics Track with Six Sessions on “Quality and Statistics”, INFORMS’98 in Seattle.
3. Organizer, an invited panel on “Emerging field and Research Directions in Quality Engineering”, INFORMS’98 in Seattle.
4. Co-Organizer, A Quality Track with three sessions on “In-Process Quality Improvement Methodologies and Implementations”, INFORMS’97 in Montreal.
5. Co-Organizer, Symposium on Advanced Maintenance Methodologies and Technologies (IMEC), Anaheim, California, Nov. 15-20, 1998.
6. Member, Program Committee, “USA-Japan Flexible Manufacturing Conference” Japan, 1997.
7. Member, Program Committee, “Chinese NSF Grantee Conference and the 3rd Wu Symposium” Wuhan, China, 1997.
8. Organizer, Invited Session on “In-Process Quality Improvement Methodologies and Implementations,” The 6th Industrial Engineering Research Conference, Miami, May, 1997
9. Member, Program Committee, joint “International Workshop on Automotive Manufacturing Science and Technology” and “The Second S. M. Wu Symposium on Manufacturing Science: Far East Program”, Shanghai, China June 1996
10. Member, Organizing Committee, The Second S. M. Wu Symposium on Manufacturing Science: U.S. Program, Ann Arbor, MI, May 1996
11. Co-Organizer, Session on “Dimensional Control of Sheet Metal Stamping and Assembly,” International Mechanical Engineer Congress (IMEC), 1995.

• Member, International Program Committee, "1996 USA-Japan Symposium on Flexible Automation", Sponsored by ASME, MED, 1996

**(4) Service to the Professional Organization:**

* Member, a National Academy of Engineering (NAE) review panel for the NRC Research Associateship Programs for the 2019 program year
* Member, Advisory committee, INFORMS Service Section, 2008-2010.
* Member, Pritsker Doctoral Dissertation Award Committee/a CIEADH Committee, Institute of Industrial Engineering, 2003-2007.
* Member, The ASQ Award and Medal Committee, American Society for Quality, 2006-2007
* Member, [Smart Manufacturing Leadership Coalition (SMLC)](http://bit.ly/smartmanufacturing), 2014 – present

## B. Campus Contributions

**Committee assignments at the Georgia Tech**

1. Member, the (ad-hoc) Chair Professor Search Advisory Committee, School of ISyE at GT, 2017 - present
2. Member, GT Chapter of Sigma Xi Sustained Research Award, 2017-2018
3. Member, ISyE Tenure & Promotion Committee, 2016-2018
4. Member, COE Regents Professor Selection Committee, Georgia Tech, 2015 - 2017
5. Member, External Review Committee for GT Manufacturing Institute, 2015
6. Member, ISyE Periodic Peer Review - PPR committee, 2014, 2015
7. Chair, System Informatics and Control (SIAC) Comprehensive Exam Committee, ISyE, 2015
8. Member, Faculty Committee, Master of Analytics Program, Georgia Tech, 2014 - present
9. Member, The 2014 Sigma Xi Young Faculty Award Committee, Georgia Tech, 2014
10. Member, “Chandler Chair” Selection Committee, ISyE, Georgia Tech. 2013-2014.
11. Member, “Coca-Cola Chair in Logistics” Selection Committee, ISyE, Georgia Tech. 2013-2014.
12. Chair, Coca-Cola Junior Chair Selection Committee, ISyE, Georgia Tech. 2008.
13. Group Leader, System Informatics and Control Group
14. Member, School Review, Promotion and Tenure Committee, ISyE, Georgia Tech, 2009-2012
15. Member, Review, Promotion and Tenure Committee, College of Engineering, Georgia Tech, 2009-2010

**Administrative duties at U of M**

* + Director, Program in Manufacturing, 2006 - 2007

As director, I was responsible for all academic and administrative matters related to the Master of Engineering in Manufacturing (MEM) and Doctor of Engineering in Manufacturing, two interdisciplinary programs at the University of Michigan. I also served as the chairperson of the Manufacturing Council of the College of Engineering. The PIM is a multidisciplinary program with active participation from multiple departments of the College of Engineering and the Ross Business School at UM. The program offers both Master of Engineering and Doctor of Engineering degrees. The program produced 333 graduates since it was established, and about 100 registered students when I served as the Director.

* + Co-Director, Global Automotive and Manufacturing Engineering, 2006 - 2007

As co-director, I was responsible for all academic and administrative matters related to the Master of Engineering in Global Automotive and Manufacturing Engineering (GAME) at the University of Michigan. The Masters of Engineering in GAME is a graduate professional degree in engineering for students who have already earned a B.S.E. degree in any field of engineering (e.g., aerospace, mechanical, electrical, civil, industrial, naval, chemical, material science) and who already have industrial work experience. The degree offers global contents, integrates automotive design and manufacturing, and provides students with extended exposure to an engineering specialty as well as breadth in engineering and business integration. The program has strong international components in its curriculum, course offering, and students body. The program has grown from 60 registered students to about 250 registered students during my term as the director.

• S. M. Wu Manufacturing Research Center

Associate Director, January 1993 - 2007

(The Wu Manufacturing Research Center had over 70 research staff and graduate students, and it maintains an annual research budget of approximately $4 million dollars.)

• National Science Foundation - Industry/University Cooperative Research Center for Dimensional Measurement and Control in Manufacturing

Associate Director, July, 1998 – August 2002.

(The NSF-I/UCRC has 7 industrial members and has annual industrial membership fees of $300,000 to $500,000. Faculty members from four different departments in the College of Engineering participate in the Center.)

• Director, Thrust Area: System and Operations, NSF Engineering Research Center for Reconfigurable Manufacturing Systems. (Sept. 1999 – 2007)

(I was responsible for various research projects in the thrust area with about six faculty members and a dozen graduate students. Funding totals approximately $800,000 each year in the past 8 years.)

**Committee assignments at the University of Michigan**

1. Member, International Program Planning Task Force, College of Engineering, 2007.
2. Member, Strategic Planning Committee for Research, College of Engineering, 2007.
3. Chair, IOE Honor and Award Committee, 2005- present
4. Chair, IOE Publication and Newsletter Committee, 2004 – 2007
5. Member, COE International Committee. 2004 – 2007
6. Member, COE Strategic Planning Committee, 2005
7. Member, CAEN Advisory Committee, May, 2003 – 2007
8. Member, IOE Department Committee, Sept. 2004 – August, 2006
9. IOE and Collage Development Liaison, January, 2003 - 2007
10. Chair, Reappointment Committee for Prof. Mark Lwies, 2002
11. Member, IOE Department Committee, Sept. 2001 – August, 2002
12. Member, the Program in Manufacturing (PIM) Council, Sept. 1999 – 2007
13. Member, IOE Department Honors and Awards Committee, Sept. 2001 – August, 2002
14. Coordinator, Ph.D. Prelim Exam in Quality Engineering Area, 1997 - August, 2002
15. Member, IOE Department Safety Committee, Sept. 1996 - August, 2002
16. Member, IOE Graduate Student Program Committee, Sept. 1995- August, 2002
17. Member, PIM/TMI Evaluation Committee at COE, Fall, 2001
18. Member, Promotion Committee for Dr. Z. Pasek, 2001
19. Chair, IOE Department Honors and Awards Committee, 1999 – 2001
20. Member, IOE Department Chairperson Search Committee, Sept. 1999 –March, 2000
21. Member, the College of Engineering Honors and Award Committee, Sept. 1999 – August, 2002
22. Member, IOE Department Committee, 1997-1998

## C. Other Service

* + External Academic Advisor (EAA), Department of Industrial Engineering, National University of Singapore, 2019
  + Advisory Board Member, “GO0D Man: aGent Oriented Zero Defect Multi stage mANufacturing Program”, funded by the European Commission, 2016-2019.
  + External Academic Advisor (EAA), Department of System Engineering & Engineering Management (MEEM), Hong Kong City University, 2001-2020
  + External Academic Advisor (EAA), Department of Industrial Engineering and Logistics, Hong Kong University of Science and Technology, 2001-2014
  + External Academic Advisor (EAA), Department of Industrial Engineering, National University of Singapore, 2014
  + Founding Director, Quality Science Center at Chinese Academy of Science
  + Founding co-Director, Nano-Statistics Research Laboratory, Chinese Academy of Science