

CURRICULUM VITAE

Zhenyu (James) Kong, Ph.D.

Associate Professor

Grado Department of Industrial and Systems Engineering
Virginia Tech, 123 Durham (MC 0118), Blacksburg, VA 24061
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I. Academic Qualifications

- Ph.D. Industrial and Systems Engineering, Univ. of Wisconsin-Madison July 2004
- M.S. Mechanical Engineering, Harbin Institute of Technology, China March 1995
- B.S. Mechanical Engineering, Harbin Institute of Technology, China July 1993

II. Professional Experiences

- Associate Professor Grado Department of Industrial and Systems Engineering, Virginia Tech 08/2013 - present
- Associate Professor School of Industrial Engineering and Management, Oklahoma State University 07/2012 - 08/2013
- Assistant Professor School of Industrial Engineering and Management, Oklahoma State University 08/2006 - 07/2012
- Senior Research Engineer Dimensional Control Systems Inc., Troy, Michigan 07/2004 - 07/2006
- Research Assistant Department of Industrial and Systems Engineering, University of Wisconsin-Madison 09/2000 - 07/2004
- Research Associate Department of Mechanical Engineering, University of Michigan-Ann Arbor 10/1998 - 09/2000

III. Research Interests

- Sensing and analytics for smart manufacturing.
- Modeling, synthesis, and diagnosis for large and complex manufacturing systems.
- Data mining and machine learning for manufacturing and service applications.

IV. Courses Taught at Oklahoma State University

- IEM 3703 Manufacturing and Service Systems and Tools II F06, S09, S10, S11,S12
- IEM 4203 Facility and Material Handling System Design F07, F08, F09, F10, F11, F12
- IEM 4323 Manufacturing Processes and Systems F07, F08, F12
- IEM 5103 Breakthrough Quality S07, S08, S09, S11,S13
- IEM 5143 Reliability and Maintainability S08, S10,S12
- IEM 5990 Advanced Methods for Quality Improvement F11

Courses Taught at Virginia Tech

- ISE 3214 Facility Planning and Material Handling S14, S15
- ISE 6284 Advanced Topics in Manufacturing Systems Engineering F14
- ISE 5984 Sensing and Data Analytics for Complex Systems F15
- ISE 4984 Data Analytics in Manufacturing and Service Systems S16
- ISE 2214 Manufacturing Process Laboratory F16, F17
- ISE 4404 Statistical Quality Control S17

V. Funding Received: (total amount ~\$3.7M, personal share ~\$1.8M)

- National Science Foundation, (2017-2021), "CPS: Medium: Collaborative Research: Cyber-Enabled Online Quality Assurance for Scalable Additive Bio-Manufacturing," amount: \$1,000,000 (VT portion: \$800,000). Position: Lead PI.
- US Economic Development Administration (sub-contract via Virginia Tech Office of Economic Development), (2017), "Thermal Gradient Modeling, Monitoring and Control for Additive Friction Stir (AFS) Process," amount: \$30,000. Position: PI.
- Center for Commonwealth Advanced Manufacturing, (2016), "Data analytics for advanced manufacturing processes," amount: \$20,000. Position: PI.
- GenEdge, (2016), "An Online Machine Vision System for Additive Friction Stir Surface Quality Monitoring and Control," amount: \$25,600. Position: PI.
- NIH-STTR Phase I, (2015), "A Dual-Polarized Doppler Radar System for Fall Detection in an Indoor Environment," amount: \$86,818, Co-PI.
- Center for Commonwealth Advanced Manufacturing, (2015), "Online Surface Measurement," amount: \$96,446 (VT portion: \$50,000). Position: PI.
- National Science Foundation, (2014-2017), "GOALI: Online Defect Detection and Mitigation Method for Incipient Anomalies in Additive Manufacturing Processes," amount: \$300,000. Position: PI.
- Center for Commonwealth Advanced Manufacturing, (2014), "In-Process Surface Finishing Measurement," amount: \$35,000. Position: PI.
- National Science Foundation, (2013-2016), "Atomistic Dynamics of AE Generation in Ultra-Precision Machining (UPM) for Incipient Anomaly Detection," requested amount: \$200,000. Position: Co-PI.30
- National Science Foundation, (2011-2014), "A Recurrent Nested Bayesian Non-parametric Model for Real Time Monitoring of Pattern Dependent Surface Topography in Chemical Mechanical Planarization (CMP)," amount: \$355,000. Position: PI.
- National Science Foundation, (2009-2012, extended to 2013), "GOALI: Collaborative Research: A Mode-Based Simulation Enabling Model and Methodologies for Geometric Variation and Tolerance Control," amount: \$340,000 (OSU portion: 170,000). Position: PI.
- National Science Foundation, (2010-2013), "Characterization and Real Time Defect Mitigation in Chemical/Mechanical Polishing of Microelectronic Wafers Using Decision Theory and MultiSensor Fusion," amount: \$400,000. Position: co-PI.
- National Science Foundation, (2008-2009), "Sequential Bayesian Decision Making for End-Point Detection and Control in Chemical Mechanical Planarization (CMP) Processes," amount: \$80,000.

Position: co-PI.

- Department of Transportation through Oklahoma Transportation Center, (2009-2012), "Development of a Structural Health Monitoring (SHM) Guidebook for Critical Bridge Structures," amount: \$300,000. Position: PI.
- Department of Transportation through Oklahoma Transportation Center, (2010-2011), "Acquisition of a Lidar Laser Scanner for Bridge Inspection," amount: \$200,000. Position: PI.
- Department of Transportation through Oklahoma Transportation Center, (2009-2011), "Proactive Approach to Transportation Resource Allocation Under Severe Weather Emergencies," amount: \$261,194. Position: co-PI.
- National Institute of Standards and Technology, (Aug. 2006 - Nov. 2006), "Support for Development of Stream-of-Variation Analysis System for Multistage Manufacturing Processes", subcontract from Dimensional Control Systems, Inc., amount: \$15,000. Position: PI.

VI. Graduate Students Advising (Ph.D. and MS Theses)

- Ph.D. Students:
 - Asil Oztekin (graduated in Dec. 2010 from Oklahoma State University)
 - Dissertation title: Data Mining-based Survival Analysis and Simulation Modeling for Lung Transplant
 - Assistant Professor in Department of Operations and Information Systems at University of Massachusetts - Lowell
 - Omer Beyca (graduated in July 2013 from Oklahoma State University)
 - Dissertation topic: Real time prediction and sequential classification for micro-electronic fabrication processes
 - Assistant Professor in the Department of Industrial Engineering at Fatih University, Turkey
 - Mahmoud Mistarihi (graduated in July 2013 from Oklahoma State University)
 - Dissertation topic: Structural health monitoring for processes with nonlinear and nonstationary data
 - Assistant Professor in the Department of Industrial Engineering at Yarmouk University, Jordan.
 - Prahalad Rao (co-advised with Dr. Bukkapatnam, graduated in July 2013 from Oklahoma State University)
 - Dissertation topic: MEMS sensing based quality monitoring and control for CMP
 - Assistant Professor in the Department of Mechanical and Materials Engineering, University of Nebraska - Lincoln
 - Kaveh Bastani (graduated in Feb. 2016 from Virginia Tech)
 - Dissertation topic: Compressed sensing for large and complex manufacturing process (3 journal paper published/accepted, and 1 journal paper submitted)
 - Senior Analytics Engineer at UniFund, Inc.
 - Jia (Peter) Liu (graduated in July 2017 from Virginia Tech)
 - Dissertation topic: Spatial and temporal modeling for process monitoring.
 - Data Scientist at Turner Broadcasting System, Inc.

- Chen-ang Liu (expected to graduate in Aug. 2019)
 - Dissertation topic: Images based process monitoring and control
- Bo Shen (expected to graduate in Aug. 2022)
 - Dissertation topic: Compressive sensing approach for nonlinear system identification
- Jihoon Chung (expected to graduate in Aug. 2022)
 - Dissertation topic: Heterogeneous sensor fusion for process monitoring
- M.S. Students (with Thesis):
 - Kaustubh Erande (graduated in Dec. 2008)
 - Thesis title: Design of user driven real time asset tracking system using RFID in a healthcare environment
 - Senior Transportation Analyst - Caterpillar Inc.
 - Ermias Biru (graduated in Dec. 2010)
 - Thesis title: Statistical analysis for structural health monitoring of Critical Bridges
 - Analyst at Johns Hopkins HealthCare
 - Banafsheh Aven Samareh (graduated in Dec. 2013)
 - Thesis title: Non-parametric Bayesian pattern recognition for biological analysis
 - Ph.D. student at the University of Washington-Seattle
 - David Roberson (graduated in August 2016)
 - Thesis title: Sensor-based Online Process Monitoring in Advanced Manufacturing
 - Andrew Law (expected to graduate in May 2018)
 - Thesis topic: Control System in Advanced Manufacturing

VII. Honors and Awards Received by Students under My Supervision

- Asil Oztekin
 - Outstanding Research Assistant Award by School of Industrial Engineering and Management, Oklahoma State University, 2009
 - The Hanel Storage Systems Honor Scholarship by the Material Handling Education Foundation Inc., 2010
- Omer Beyca
 - INFORMS, QSR Section, Best Student Paper Competition Finalist, 2009
- Kaveh Bastani
 - INFORMS, QSR Section, Best Student Paper Competition Finalist, 2015
- Chenang Liu
 - INFORMS, QSR Section, Best Paper Award, 2017
 - IISE Annual Conference, QCRE division, Best Paper Award, 2017

VIII. Honors, Awards, Recognitions

- Best Paper award, Quality Statistics and Reliability (QSR) Section, INFORMS Annual Meeting, Houston, TX, USA, October 22-25, 2017.
- Best Paper award, Division of Quality Control and Reliability Engineering (QCRE), IISE Annual Research Conference, Pittsburgh, PA, USA, May 21-23, 2017.
- Best Applications Paper Honorable Mention designation in the IIE Transactions Focus Issue on Quality and Reliability Engineering Best Paper Award Competition for 2017.
- Best Applications Paper Honorable Mention designation in the IIE Transactions Focus Issue on Design and Manufacturing Best Paper Award Competition for 2017.
- Best Applications Paper Honorable Mention designation in the IIE Transactions Focused Issue on Quality and Reliability Engineering Best Paper Award Competition for 2015.
- Halliburton Outstanding Faculty Award, College of Engineering, Architecture and Technology, Oklahoma State University, 2013
- Richard S and Harriet K. Fein Scholarship, the University of Wisconsin-Madison, 2004
- The Best Paper Award Finalist, 2003 ASME DETC/DFM Conference, Chicago, Sept. 2-6, 2003
- Outstanding Graduate Award, Harbin Institute of Technology, 1995
- Guanghua Scholarship, Harbin Institute of Technology, 1995

IX. Publications

Journal Publication (*students under my supervision):

1. Sun, H., Rao, P., Kong, Z., Deng, X., and Jin, R., 2017, "Functional Quantitative and Qualitative Models for Quality Modeling in a Fused Deposition Modeling Process," *IEEE Trans. Journal of Automation Science and Engineering* (accepted).
2. Bastani, K.*, Barazandeh, B.*, Kong, Z., 2017, "Fault Diagnosis in Multi-Station Assembly Systems using Spatially Correlated Bayesian Learning Algorithm," *ASME Trans. Journal of Manufacturing Science and Engineering* (online), doi:10.1115/1.4038184.
3. Barazandeh, B.*, Bastani, K.*, Rafieisakhaei, M., Kim, S., Kong, Z., and Nussbaum, M., 2017, "Robust Sparse Representation based Classification using Online Sensor Data for Monitoring Manual Material Handling Tasks," *IEEE Trans. Journal of Automation Science and Engineering* (online), DOI: 10.1109/TASE.2017.2729583.
4. Tootooni, S., Dsouza, A., Donovan, R., Rao, P., Kong, Z., and Borgesen, P., 2017, "Classifying the Dimensional Variation in Additive Manufactured Parts from Laser-Scanned 3D Point Cloud Data using Machine Learning Approaches," *ASME Trans. Journal of Manufacturing Science and Engineering*, Vol. 139, No. 9, pp. 091005-1 – 091005-14, DOI: 10.1115/1.4031574
5. Liu, J.*, Beyca, O.*, Rao, P., Kong, Z., and Bukkapatnam, S., 2017, "A Recurrent Nested Dirichlet Process (RNDP) Model for Evolutionary Clustering Analysis and its Application to Online Monitoring of Ultraprecision Manufacturing Processes," *IEEE Trans. Journal of Automation Science and Engineering*, Vol. 14, No. 1, pp. 208-221.
6. Tootooni, M., Liu, C.*, Robertson, D.*, Rao, P., and Kong, Z., 2016, "Online Non-contact Surface Finish Measurement in Machining using Graph-based Image Analysis," *Journal of Manufacturing Systems*, Vol. 41 pp. 266-276.

7. Tootooni, M., Rao, P., Chou, C., and Kong, Z., 2016, "A Spectral Graph Theoretic Approach for Monitoring Multivariate Time Series Data From Complex Dynamical Processes," *IEEE Trans. Journal of Automation Science and Engineering*, DOI: 10.1109/TASE.2016.2598094.
8. Bastani, K.*, Kim, W., Kong, Z., Nussbaum, M., and Huang, W., 2016, "Online Classification and Sensor Selection Optimization with Applications to Human Material Handling Tasks Using Wearable Sensing Technologies," *IEEE Trans Journal of Human-Machine Systems*, Vol. 46, No., 4, pp. 485-497, DOI: 10.1109/THMS.2016.2537747.
9. Bastani, K.*, Rao, P., and Kong, Z., 2016, "An Online Sparse Estimation based Classification Approach for Real-time Monitoring in Advanced Manufacturing Processes from Heterogeneous Sensor Data," *IIE Trans.* Vol. 48, No. 7, pp. 579-598, DOI: 10.1080/0740817X.2015.1122254.
10. Bastani, K.*, Kong, Z., Huang, W., and Zhou, Y., 2016, "Compressive Sensing Based Optimal Sensor Placement and Fault Diagnosis for Multi-Station Assembly Processes," *IIE Trans.*, Vol. 48, No., 5, pp. 462-474, DOI: 10.1080/0740817X.2015.1096431.
11. Beyca, O.*, Rao, P.*, Kong, Z., and Bukkapatnam, S., 2016, "Heterogeneous Sensor Data Fusion Approach for Real-time Monitoring in Ultraprecision Machining (UPM) Process using Non-parametric Bayesian Clustering and Evidence Theory," *IEEE Trans Journal of Automation Science and Engineering*, Vol. 13, No. 2, pp. 1033-1044, DOI: 10.1109/TASE.2015.2447454.
12. Rao, P.*, Kong, Z. and Duty, C., Smith, R., Kunc, V., and Love, L., 2015, "Assessment of Dimensional Integrity and Spatial Defect Localization in Additive Manufacturing (AM) using Spectral Graph Theory (SGT)," *ASME Trans. Journal of Manufacturing Science and Engineering*, Vol. 138, No. 5, pp. 051007-1 – 051007-12, DOI: 10.1115/1.4031574.
13. Rao, P.*, Liu, J.*, Roberson, D.*, Kong, Z., and Williams, C., 2015, "Online Real-time Quality Monitoring in Additive Manufacturing Processes using Heterogeneous Sensors," *ASME Trans Journal of Manufacturing Science and Engineering*, Vol. 137, No. 6, pp. 1007-1 - 1007-12. DOI: 10.1115/1.4029823.
14. Rao, P.*, Beyca, O., Kong, Z., Bukkapatnam, S., Case, K., and Komanduri, R., 2015, "A Graph Theoretic Approach for Quantification of Surface Morphology and its Application to Chemical Mechanical Planarization (CMP) Process," *IIE Trans.* Vol. 47. No. 10, pp. 1088-1111. DOI: 10.1080/0740817X.2014.1001927.
15. Cheng, C.*, Sa-ngasoongsong, A., Beyca, O.*, Le, T., Yang, H., Kong, Z., and Bukkapatnam, S., 2015, "Time Series Forecasting for Nonlinear and Nonstationary Processes: A Review and Comparative Study," *IIE Trans.*, Vol. 47, pp. 1-19, doi: 10.1080/0740817X.2014.999180
16. Wang, Z., Bukkapatnam, S., Kumara, S., Kong, Z., and Katz, Z., 2014, "Change detection in precision manufacturing processes under transient conditions," *CIRP Annals, Manufacturing Technology*, Vol. 63, No. 1, pp. 449-452.
17. Rao, P.*, Bhushan, M.B., Bukkapatnam, S.T., Kong, Z., Byalal, S., Beyca, O.*, Fields, A., and Komanduri, R., 2014, "Process-Machine Interaction (PMI) Modeling and Monitoring of Chemical Mechanical Planarization (CMP) Process using Wireless Vibration Sensors," *IEEE Trans. Semiconductor Manufacturing*, Vol. 27, No. 1, pp. 1-15.
18. Rao, P.*, Bukkapatnam, S.T, Beyca, O.*, Kong, Z., and Komanduri, R. 2014, "Real-time Identification of Incipient Surface Morphology Variations in ultra-Precision Machining Process," *ASME Trans. Journal of Manufacturing Science and Engineering*, Vol. 136, No. 2, doi:10.1115/1.4026210.
19. Huang, W., Liu, J., Jalali, N., Ceglarek, D., Kong, Z., and Zhou, Y., 2014, "Statistical Modal Analysis (SMA) for Variation Characterization and Application in Manufacturing Quality Control," *IIE Trans.* Vol. 46, No. 5, pp. 497-511.

20. Huang, S., Kong, Z., and Huang, W., 2014, "High-dimensional Process Monitoring and Change Point Detection using Embedding Distribution in Reproducing Kernel Hilbert Space (RKHS)," *IIE Trans*, Vol. 46, No. 10, pp. 999-1016.
21. Li, Z., and Kong, Z., 2014 "A Generalized Statistical Procedure for Monitoring Right-Censored Failure Time Data," *Quality and Reliability Engineering International*, DOI:10.1002/qre.1629.
22. Bastani, K.*, Kong, Z., Huang, W., Huo, X., and Zhou, Y., 2013, "Fault Diagnosis Using an Enhanced Relevance Vector Machine (RVM) for Partially Diagnosable Multi-station Assembly Processes," *IEEE Trans. Automation Science and Engineering*, Vol. 10, No. 1, pp. 124-136.
23. Grout, T., Hong, Y., Basara, J., Balasundaram, B., Kong, Z., and Bukkapatnam, T.S., 2012, "Significant Winter Weather Events and Associated Socioeconomic Impacts (Federal Aid Expenditures) across Oklahoma: 2000–10," *Weather, Climate, and Society*, Vol. 4, pp. 48-58.
24. Kong, Z., Beyca, O.*, Bukkapatnam, S., and Komanduri, R., 2011, "Nonlinear Sequential Bayesian Analysis-Based Decision Making for End-Point Detection of Chemical Mechanical Planarization (CMP) Processes," *IEEE Trans. Semiconductor Manufacturing*, Vol. 4, No. 24, pp. 523-532.
25. Oztekin, A.*, Kong, Z., and Delen, D., 2011, "Development of a Structural Equation Modeling-based Decision Tree Methodology for the Analysis of Lung Transplantations," *Decision Support Systems*, Vol. 51, No. 1, pp. 155-166.
26. Kong, Z., Oztekin, A.*, Beyca, O.*, Phatak, U., Bukkapatnam, S.T., and Komanduri, R., 2010, "Performance Prediction for Chemical Mechanical Planarization (CMP) by Integration of Nonlinear Bayesian Analysis and Statistical Modeling," *IEEE Trans. Semiconductor Manufacturing*, Vol. 23, No. 2, pp. 316-327.
27. Huang, W., and Kong, Z., 2010, "Process Capability Sensitivity Analysis for Design Evaluation of Multi-Station Assembly Systems," *IEEE Trans. Automation Science and Engineering*, Vol. 7, No. 4, pp. 736-745.
28. Delen, D., Oztekin, A.*, and Kong, Z., 2010, "A Machine Learning-based Approach to Prognostic Analysis of Thoracic Transplantations," *Artificial Intelligence in Medicine*, Vol. 49, No. 1, pp. 33-42.
29. Oztekin, A.*, Kong, Z., and Uysal, O., 2010, "UseLearn: A Novel Checklist and Usability Evaluation Method for eLearning Systems by Criticality Metric Analysis," *International Journal of Industrial Ergonomics*, Vol. 40, No.4, pp. 455-469.
30. Huang, W., Konda, B. R., and Kong, Z., 2010, "Geometric Tolerance Simulation Model for Rectangular and Circular Planar Features", *Trans. NAMRI/SME*, Vol. 38., pp. 363-370.
31. Oztekin, A.*, Pajouh, F.M., Erande, K.*, Kong, Z., Bukkapatnam S.T., and Swim, L.K., 2010, "Criticality Index Analysis based Optimal RFID Reader Placement Models for Asset Tracking," *International Journal of Production Research*, Vol. 48, No. 9, pp. 2679 – 2698.
32. Huang, W., Kong, Z., and Chennamaraju, A., 2010, "Robust Design for Fixture Layout in Multi-Station Assembly Systems using Sequential Space Filling Method," *ASME Trans. Journal of Computing and Information Science in Engineering*, Vol. 10, No. 4, 041001.
33. Kong, Z., Huang, W., and Oztekin, A.*, 2009, "Variation Propagation Analysis for Multi-Station Assembly Process with Consideration of GD&T Factors," *ASME Trans., Journal of Manufacturing Science and Engineering*, Vol. 131, No. 5, p. 051010.
34. Oztekin, A.*, Delen, D., and Kong, Z., 2009, "Predicting the Graft Survivability for Thoracic Transplantation Patients: An Integrated Data Mining Methodology," *International Journal of Medical Informatics*, Vol. 78, No. 12, pp. 84-96.

35. Phatak, U.*, Bukkapatnam, S., Kong, Z., Chandrasekaran, N., Varghese, S. and Komanduri, R., 2009, "Sensor based Modeling of Slurry Chemistry Effects on MRR in Copper CMP," *International Journal of Machine Tools and Manufacture*, Vol. 49, No. 2, pp. 171-181.
36. Huang, W., and Kong, Z., 2008, "Model Simplification in Compliant Part Assembly Analysis," *Trans. of NAMRI/SME*, Vol. 36, pp. 549-556.
37. Kong, Z., Ceglarek, D., and Huang, W., 2008, "Multiple Fault Diagnosis Method in Multi-Station Assembly Processes using State Space Model and Orthogonal Diagonalization analysis," *ASME Trans., Journal of Manufacturing Science and Engineering*, Vol. 130, No. 1, p.011014.
38. Huang, W., and Kong, Z., 2008, "Simulation and Integration of Geometric and Rigid Body Kinematics Errors for Assembly Variation Analysis," *Journal of Manufacturing Systems*, Vol. 27, No. 1, pp. 36-44.
39. Huang, W., Lin, J., Bezdecny, M, Kong, Z., and Ceglarek, D., 2007, "Stream-of-Variation Modeling I: A Generic 3D Variation Model for Rigid Body Assembly in Single Station Assembly Processes," *ASME Trans., Journal of Manufacturing Science and Engineering*, Vol. 129, No. 4, pp. 821-831.
40. Huang, W., Lin, J., Kong, Z., and Ceglarek, D., 2007, "Stream-of-Variation Modeling II: A Generic 3D Variation Model for Rigid Body Assembly in Multi Station Assembly Processes," *ASME Trans., Journal of Manufacturing Science and Engineering*, Vol., 129, No. 4., pp. 832-842.
41. Kong, Z. and Ceglarek, D., 2006, "Fixture Configuration Synthesis for Reconfigurable Assembly Using Procrustes-based Pairwise Optimization," *Journal of Manufacturing Systems*, Vol. 25, No. 1, pp. 25-38.
42. Kong, Z., and Ceglarek, D., 2006, "Stream of Variation Analysis for Multiple Station Assembly with Various Tolerance Modes", *Trans. of NAMRI/SME*, Vol. 34, pp. 469-476.
43. Kong, Z., Huang, W., and Ceglarek, D., 2005, "Visibility Analysis for Assembly Fixture Calibration Using Screen Space Transformation," *ASME Trans., Journal of Manufacturing Science and Engineering*, Vol. 126, No.3. pp. 622-634.
44. Huang, W., Kong, Z., Ceglarek, D., and Brahmst, E., 2004, "The Analysis of Feature-based Measurement Error in Coordinate Metrology," *IIE Trans.*, Vol. 36, No. 3, pp. 237-251.
45. Kong, Z. and Ceglarek, D., 2003, "Rapid Deployment of Reconfigurable Assembly Fixtures using Workspace Synthesis and Visibility Analysis," *Annals of the CIRP*, Vol. 52/1, pp. 13-16.

Journal Publication (under review):

46. Liu, J., Kong, Z., and Jin, R., 2017, "Spatial Dirichlet Process Modeling based Statistical Control Scheme and its Application for Geometric Quality Assurance with Wafer Thickness Profiles," submitted to *IISE Trans.*
47. Liu, J., Bai, Y., Kong, Z., Williams, C., 2017, "Spatiotemporal Modeling for Additive Manufacturing Porosity Prediction," submitted to *IISE Trans.*

Journal Publication (working papers):

48. Chenang Liu, Ankur Kapoor, Joshua VanOsdol, Kalyani Ektate, Zhenyu Kong, Ashish Ranjan, "Ultrasound mapping of nanoparticle distribution and drug delivery in solid tumor with spectral Fiedler field imaging," to be submitted to TBD.
49. Chenang Liu, Ankur Kapoor, Joshua VanOsdol, Kalyani Ektate, Zhenyu Kong*, Ashish* RanjanLiu, C., and Kong, Z., 2017, "Textual Analysis based Closed Loop Control for Additive Manufacturing," to be submitted to *IEEE Trans. Journal of Automation Science and Engineering*.

50. Komolafe, T., Liu, C., Camelio, J., and Kong, Z., 2017, "Detection of Cyber-Physical Attacks for Additive Manufactured Parts Using Real-Time In-Situ Sensors? A Case Study," submitted to *ASME Trans. Journal of Manufacturing Science and Engineering*.

Conference Proceedings

1. Tootooni, S., Dsouza, A., Donovan, R., Rao, P., Kong, Z., and Borgesen, P., "Assessing the Geometric Integrity of Additive manufactured Parts from Point Cloud Data using Spectral Graph Theoretic Sparse Representation-based classification," *Proceedings of the ASME 2017 12th International Manufacturing Science and Engineering Conference*, Los Angeles, CA, June 4-8, 2017.
2. Liu, C, Roberson, D, and Kong, Z. "Textural Analysis-based Online Closed-Loop Quality Control for Additive Manufacturing Processes," *Proceedings of the 2017 Industrial and Systems Engineering Conference*, Pittsburgh, PA, May 20-23, 2017.
3. Rao, P., Kong, Z., Duty, C., and Smith, R. "Three Dimensional Point Cloud Measurement Based Dimensional Integrity Assessment for Additive Manufactured Parts Using Spectral Graph Theory," *Proceedings of the ASME 2017 11th International Manufacturing Science and Engineering Conference*, Blacksburg, VA, June 27-July 1, 2016.
4. Rao, P., Bukkapatnam, S., Kong, Z., Beyca, O., and Case, K., "Quantification of Ultraprecision Surface Morphology using an Algebraic Graph Theoretic Approach," *The 43th SME North American Manufacturing Research Conference*, Charlotte, NC, June 8-12, 2015.
5. Rao, P., Liu, J. *, Johnson, D., Kong, Z., and Williams, C., "Sensor-based Online Process Fault Detection in Additive Manufacturing," *Proceedings of the ASME 2015 10th International Manufacturing Science and Engineering Conference*, Charlotte, NC, June 8-12, 2015.
6. Pahwa, A., Huang, W., and Kong, Z., "Kernel Density Estimation and Metropolis-Hastings Sampling in Process Capability Analysis of Unknown Distributions," *ASME 2012 International Manufacturing Science and Engineering Conf.*, University of Notre Dame, IN, USA, June 4-8, 2012.
7. Mistarihi, M.*, Kong, Z., Bukkapatnam, S.B., Ley, T., and Liu, T., "A Quasi-Recursive Correlation Dimension Analysis for Online Structural Health Monitoring (SHM)," *IIE Annual Conference. Proceedings*, Orlando, FL, USA, May 19-23, 2012.
8. Bukkapatnam, S., Rao, P. *, Beyca, O.*, Kong, Z., and Komanduri, R., "Towards Real-time Detection of Incipient Surface Variations in Ultra-Precision Machining Process," *44th CIRP Conference on Manufacturing Systems*, Madison, WI, USA, May 31-June 3, 2011.
9. Oztekin, A. *, Pajouh, F.M., Kong, Z., and Bukkapatnam, S.T., "Determining the Optimum Number of RFID Readers for Efficient Asset Tracking," *Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, San Diego, CA, August 30-September 2, 2009.
10. Huang, W., and Kong, Z., "Process Capability Sensitivity Analysis for Design Evaluation of Multi-Station Assembly Systems," *The 4th annual IEEE Conference on Automation Science and Engineering (CASE)*, Washington D.C., August 23-26, 2008.
11. Qian, L., and Kong, Z., "Supply Chain Performance with Various Price-dependent Demand Functions and Component Commonality in One Product family," *The 4th annual IEEE Conference on Automation Science and Engineering (CASE)*, Washington D.C., August 23-26, 2008.
12. Huang, W., Kong, Z., and Ceglarek, D., "Stream-Of-Variation Modeling I: A Generic 3D Variation Model for Rigid Body Assembly in Single Station Assembly Processes," *ASME International Manufacturing Science and Engineering Conference (MSEC)*, Ypsilanti, Michigan, Oct. 8-11, 2006.

13. Kong, Z., Ceglarek, D., and Huang, W., "Multiple Fault Diagnosis Method in Multi-Station Assembly Processes Using State Space Model and Orthogonal Diagonalization Analysis (ODA)," *International Mechanical Engineering Congress and Exposition (IMECE)*, Orlando, Florida, Nov 5-11, 2005.
14. Kong, Z., and Ceglarek, D., "Fixture Workspace Synthesis for Hybrid Assembly Systems," *The 3rd International Conference on Reconfigurable Manufacturing*, Ann Arbor, MI, May 9-12, 2005.
15. Kong, Z., Ceglarek, D., and Huang, W., "Visibility Analysis for Assembly Fixture Calibration Using Screen Space Transformation," *ASME 2003 Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Chicago, Illinois, September 2-6, 2003.
16. Smithson, A, Kong, Z., and Ceglarek, D., "Fixture Reusability Index for Automotive Assembly Systems," *International Mechanical Engineering Congress & Exposition (IMECE)*, Orlando, Florida, Nov. 5-10, 2000.

Conference Presentations and Invited Talks

1. "An Integrated Manifold Learning for Online Monitoring of Additive Manufacturing Processes," *INFORMS Annual Meeting*, Houston, TX, Oct. 22-25, 2017.
2. "Spatiotemporal Modeling and Layer-wise Prediction of Porosity in Additive Manufacturing," *INFORMS Annual Meeting*, Houston, TX, Oct. 22-25, 2017.
3. "Textural Analysis-based Online Closed-Loop Quality Control for Additive Manufacturing Processes," *Industrial and Systems Engineering Research Conference*, Pittsburgh, PA, May 20-23, 2017.
4. "Layer-wise Porosity Modeling and Forecasting for Additive Manufacturing with Spatiotemporal Log-Gaussian Cox Process Analysis," *Industrial and Systems Engineering Research Conference*, Pittsburgh, PA, May 20-23, 2017.
5. "Detection for Cyber-physical Attacked Additive Manufactured Parts by Real-time Sensing and Analysis," *INFORMS Annual Meeting*, Nashville, TN, Nov. 13-16, 2016.
6. "Spatiotemporal Modeling and Analysis with Dirichlet Process Mixing for Non-Gaussian and Nonstationary Data," *INFORMS Annual Meeting*, Nashville, TN, Nov. 13-16, 2016.
7. "Sparse Representation based Classification using Hybrid Norm," *Industrial and Systems Engineering Research Conference*, Anaheim, CA, May 21-24, 2016.
8. "Porosity detection based on layer-wise images for additive manufacturing processes," *Industrial and Systems Engineering Research Conference*, Nashville, TN, May 30-June 2, 2015.
9. "Sensor Selection Optimization for Classification of manual material handling tasks," *Industrial and Systems Engineering Research Conference*, Nashville, TN, May 30-June 2, 2015.
10. "Graphical Models with Mixed Types of Variables for Additive Manufacturing Process Modeling," *Industrial and Systems Engineering Research Conference*, Nashville, TN, May 30-June 2, 2015.
11. "Online Real-time Quality Monitoring in Additive Manufacturing Processes using Heterogeneous Sensors," *Industrial and Systems Engineering Research Conference*, Nashville, TN, May 30-June 2, 2015.
12. "Heterogeneous Sensor Data Fusion for Real-time Monitoring in Additive Manufacturing (AM) Process," *INFORMS Annual Meeting*, San Francisco, CA, Nov. 9-12, 2014.
13. "Joint Modeling of Quantitative and Qualitative Responses in Additive Manufacturing," *INFORMS Annual Meeting*, San Francisco, CA, Nov. 9-12, 2014.
14. "Recursive Reconstruction Method for Time Varying Sparse Signal from Noisy Undersampled Measurements," *INFORMS Annual Meeting*, San Francisco, CA, Nov. 9-12, 2014.

15. "Sensor Data Fusion for Real-time Monitoring in Ultraprecision Machining (UPM) Process," Industrial and Systems Engineering Research Conference, Montreal, Canada, May 31-June 3, 2014.
16. "A Greedy Bayesian Compressive Sensing Method for Fault Diagnosis of Multi-Station Assembly Processes: A Novel Algorithm with Performance Guarantee," *INFORMS Annual Meeting*, Minneapolis, MN, Oct. 6-9, 2013.
17. "An Evidence Theoretic Heterogeneous Sensor Data Fusion Approach for Real-time Monitoring in Ultraprecision Machining (UPM) Process," *INFORMS Annual Meeting*, Minneapolis, MN, Oct. 6-9, 2013.
18. "Chemical Mechanical Planarization (CMP) Process Monitoring by Using Evolutionary Clustering Analysis," *INFORMS Annual Meeting*, Phoenix, AZ, Oct. 14-17, 2012.
19. "Optimal Sensor Placement for Multi-station Assembly Processes Based on Compressive Sensing," *INFORMS Annual Meeting*, Phoenix, AZ, Oct. 14-17, 2012.
20. "Quasi-Recursive Correlation Dimensional Analysis for Structural Health Monitoring," Industrial and Systems Engineering Research Conference, Orlando, FL, May 20-22, 2012
21. "Fault Diagnosis for Partially Diagnosable Systems using an Enhanced Relevance Vector Machine," *INFORMS Annual Meeting*, Charlotte, NC, Nov. 13-16, 2011.
22. "Process Monitoring for Chemical and Mechanical Planarization Processes using Evolutionary Analysis," *INFORMS Annual Meeting*, Charlotte, NC, Nov. 13-16, 2011.
23. "A Data Mining Approach to Prognostic Analysis of Thoracic Transplantations," *INFORMS Annual Meeting*, Austin, TX, Nov. 7-10, 2010.
24. "Real-time Prediction of Incipient Surface Variations in Ultraprecision Machining," *INFORMS Annual Meeting*, Austin, TX, Nov. 7-10, 2010.
25. "Sequential Bayesian Decision Making for End-Point Detection of Chemical Mechanical Planarization (CMP) Processes," *INFORMS Annual Meeting*, San Diego, CA, Oct. 9-12, 2009.
26. "Process Performance Prediction for Chemical Mechanical Planarization (CMP) by Integration of Statistical Modeling and Process Dynamic Modeling using Particle Filtering," *INFORMS Annual Meeting*, Washington D.C., Oct. 12-15, 2008.
27. "Fault Diagnosis for Partially Diagnosable Assembly Processes," *INFORMS Annual Meeting*, Washington D.C., Oct. 12-15, 2008.
28. "Multivariate Process Capability Analysis with Non-Parametric Bootstrap Method," *INFORMS Annual Meeting*, Washington D.C., Oct. 12-15, 2008.
29. "Process Capability Sensitivity Analysis for Design Evaluation of Multi-Station Assembly Systems," *The 4th annual IEEE Conference on Automation Science and Engineering (CASE)*, Washington D.C., August 23-26, 2008.
30. "Supply Chain Performance with Various Price-dependent Demand Functions and Component Commonality in One Product family," *The 4th annual IEEE Conference on Automation Science and Engineering (CASE)*, Washington D.C., August 23-26, 2008.
31. "Incorporation of Some GD&T Aspects into Stream of Variation Analysis for Multistage Assembly Processes," *INFORMS Annual Meeting*, Seattle, Washington, Nov. 4-7, 2007.
32. "Stream of Variation Analysis in Assembly Systems: Modeling and Its Applications," *INFORMS Annual Meeting*, Seattle, Washington, Nov. 4-7, 2007.
33. "Stream of Variation Analysis for Multi-Station Assembly Systems," Mercury Marine, Inc., Stillwater, Oklahoma, Jan. 28, 2008.

34. "Stream of Variation Analysis for Multi-Station Assembly Systems," Spirit AeroSystems, Inc., Tulsa, Oklahoma, May. 19, 2007.
35. "Stream-Of-Variation Modeling I: A Generic 3D Variation Model for Rigid Body Assembly in Single Station Assembly Processes," *ASME International Manufacturing Science and Engineering Conference (MSEC)*, Ypsilanti, Michigan, Oct. 8-11, 2006.
36. "Mode-Based Tolerance Analysis in Multi-Station Assembly using Stream of Variation Model," *The 34th North American Manufacturing Research Conference (NAMRC)*, Milwaukee, Wisconsin, May 23-26, 2006.
37. "Fixture Workspace Synthesis for Hybrid Assembly Systems," *The 3rd International Conference on Reconfigurable Manufacturing*, Ann Arbor, MI, May 9-12, 2005.
38. "Multiple Fault Diagnosis Method in Multi-Station Assembly Processes Using State Space Model and Orthogonal Diagonalization Analysis (ODA)," *The International Mechanical Engineering Congress and Exposition (IMECE)*, Orlando, Florida, Nov 5-11, 2005.
39. "Stream-of-Variation Analysis System for Multistage Assembly Processes," Guest lecture to IOE 566 Advanced Quality Control, University of Michigan-Ann Arbor, Nov. 22, 2005.
40. "Stream-of-Variation Analysis System for Multistage Assembly Processes," The United States Council for Automotive Research (USCAR), Southfield, Michigan, Oct. 4, 2005.
41. "Stream-of-Variation Analysis System for Multistage Assembly Processes," General Motor's Technical Center, Warren, Michigan, April 25, 2005.
42. "Visibility Analysis for Assembly Fixture Calibration Using Screen Space Transformation," *ASME 2003 Design Engineering Technical Conferences and Computers and Information in Engineering Conference Chicago*, Illinois USA, September 2-6, 2003.
43. "Hybrid Automotive Body Assembly Systems Paradigms," Ford's Science Research Lab, Dearborn, Michigan, June 16, 2003.
44. "Analysis of Assembly System Reconfigurability," NSF-Site Visit of NSF-Engineering Research Center at University of Michigan, May 12, 2003.
45. "Investigation of Reusable/Reconfigurable Fixture System for Auto Body Assembly," Center for Quality and Productivity Improvement at University of Wisconsin-Madison, March 15, 2002.
46. "Reusability of Auto Body Assembly System Tooling," NSF-Industry/University Cooperative Research Center at University of Michigan, July 12, 2000.

X. Professional Activities

- Associate Editor for *IISE Transaction* Focus Issue on Quality and Reliability Engineering (2017-present)
- Associate Editor for *IISE Transaction* Focus Issue on Design and Manufacturing (2017-present)
- Associate Editor for *Journal of Manufacturing Systems* (2011-present)
- Guest Editor for *IISE Transaction* on Additive Manufacturing 2017
- Guest Editor for *Journal of Manufacturing Systems* special issue for International Conference on Frontiers of Design and Manufacturing (ICFDM) 2016
- Member of *North American Manufacturing Research Institute (NAMRI)* Scientific Committee, 2016-2018
- Associate Chair of *North American Manufacturing Research Institute (NAMRI)* Scientific Committee, 2014-2016

- NSF Panel Review, 2010, 2011, 2012
- NRC Panel Review, 2017
- Co-Chair for 2016 *Industrial and System Engineering Research Conference (ISERC)*
- President of *IIE Division of Quality Control and Reliability Engineering (QCRE)* (2015-2016)
- President-elect of *IIE Division of Quality Control and Reliability Engineering (QCRE)* (2014-2015)
- Board member of *IIE Division of Quality Control and Reliability Engineering (QCRE)* (2012-2014)
- Council member for *INFORMS Cluster of Quality Statistics and Reliability (QSR)* (2010-2012)
- Associate Editor for 2008 *IEEE Conference for Automation Science and Engineering*
- Session Chair for *INFORMS Annual Meeting, QSR cluster* (2007-2015)
- Symposium Organizer for 2006 *ASME International Conf. on Manufacturing Science and Engineering*
- Session Chair for 2006 *ASME International Conference on Manufacturing Science and Engineering*.
- Member of Scientific Committee, *The First International Symposium on Computing in Science and Engineering*, June 3-5, 2010, Kusadasi, Aydin, Turkey
- One of 50 invitees for the workshop titled "Sensing and Prognostics for Scalability of Nanomanufacturing" sponsored by NSF CMMI MES, Nov. 2-4, 2009, Boston, MA
- One of 40 invitees for the workshop titled "Uncertainty in Machining" sponsored by NSF CMMI MCME, Feb. 24-26, 2010, Arlington, VA
- Member of the host committee, *North American Manufacturing Science and Engineering*, June 27-July 1, 2016.
- Reviewer for:
 - *Applied Mathematical Modeling*
 - *ASME Transactions on Manufacturing Sciences and Engineering*
 - *ASME Transactions on Computing and Information Science in Engineering*
 - *IEEE Transactions on Automation Science and Engineering*
 - *IIE Transactions*
 - *International Journal of Flexible Manufacturing Systems*
 - *International Journal of Machining Science and Technology*
 - *International Journal of Manufacturing Research*
 - *International Journal of Production Research*
 - *Journal of Computers and Industrial Engineering*
 - *Journal of Computer Methods and Programs in Biomedicine*
 - *Journal of Construction Engineering and Management*
 - *Journal of Manufacturing Processes*
 - *Journal of Manufacturing Systems*
 - *Journal of Reinforced Plastics and Composites*
- Faculty advisor for ASQ student chapter at Oklahoma State University, 2006 - 2013
- OSU ENSC 2213 oversight committee, 2007 - 2013
- Faculty member of interview committee for OSU CEAT Scholar Day, 2009
- IE&M ABET evaluation committee, 2007 - 2013
- ISE Undergraduate Program Committee at Virginia Tech, 2013-2014
- ISE Graduate Program Committee at Virginia Tech, 2014-2017

- ISE Faculty Search Committee Chair at Virginia Tech, 2014-2015
- ISE Faculty Search Committee at Virginia Tech, 2016-2017
- ISE Seminar Committee Chair at Virginia Tech, 2015-2016

XI. Professional Society Memberships

- Member of Institute of Industrial and Systems Engineers (IISE)
- Member of Institute for Operation Research and the Management Sciences (INFORMS)
- Member of American Society of Mechanical Engineering (ASME)
- Member of Society of Manufacturing Engineers (SME)
- Member of Institute of Electrical and Electronics Engineers (IEEE)