

## **Dr. S. Jack Hu**

Senior Vice President for Academic Affairs and Provost  
UGA Foundation Distinguished Professor of Engineering  
University of Georgia  
Athens, GA

Professor Hu's teaching and research interests are in manufacturing systems with a particular focus on quality and productivity of assembly and materials joining systems. He developed the "stream of variation" method for predicting and diagnosing quality variation in multi-stage assembly systems. The implementation of this method in General Motors and Chrysler assembly plants led to improved quality and shortened new vehicle launch time. He also developed algorithms and invented technologies to support smart manufacturing of light weight automotive structures and lithium-ion batteries. His research in manufacturing systems has been supported by more than \$46 million in external funding from agencies such as the U.S. Department of Energy, Department of Commerce, and the National Science Foundation, as well from industry. Hu is the inventor or co-inventor of ten U.S. patents and two foreign patents. He worked closely with several industry partners in implementing these technologies to enhance manufacturing quality and productivity. He has authored or co-authored nearly 250 peer-reviewed journal articles and conference papers, as well as books, book chapters, conference papers, and government & industrial reports.

Citations to his work can be found in GoogleScholar.

<https://scholar.google.com/citations?user=aags9vEAAAJ&hl=en&authuser=1>

Hu teaches classes in design, manufacturing, and statistical quality methods, and has supervised a significant number of undergraduate and graduate students in research.

Hu is a member of the National Academy of Engineering (NAE). He served on the strategic planning committee for the NAE and the Executive Committee of the Transportation Research Board of the National Academies. He is an elected Fellow of the American Society of Mechanical Engineers (ASME), the Society of Manufacturing Engineers (SME), and the International Academy for Production Engineering (CIRP). He is the recipient of various awards, including the DeVor/Kapoor Manufacturing Medal and the William T. Ennor Manufacturing Technology Award from ASME, the Gold Medal from SME, and several best paper awards. In 2021, SME named Dr. Hu one of the 20 most influential academics in smart manufacturing.

### **A. Education**

Ph.D., 1990	Mechanical Engineering, University of Michigan
M.S., 1986	Mechanical Engineering, University of Michigan
B.S., 1983	Mechanical Engineering, Tianjin University, China

### **B. PROFESSIONAL EXPERIENCE**

#### **Positions at the University of Georgia (UGA)**

July 2019 – Present	Senior Vice President for Academic Affairs and Provost, UGA Foundation Distinguished Professor of Engineering
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#### **Positions held at the University of Michigan (UM)**

Jan. 2014 – June 2019	Vice President for Research (interim appointment 2014-2015)
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Sept. 2011 – June 2019	J. Reid and Polly Anderson Professor of Manufacturing
Sept. 2009 – Dec. 2013	Associate Dean for Academic Affairs, College of Engineering
Jan. 2009 – Aug. 2011	G. Lawton and Louise G. Johnson Professor of Engineering
Sept. 2008 – June 2019	Professor, Industrial and Operations Engineering
Jan. 2007 – Aug. 2009	Associate Dean for Research and Graduate Education, College of Engineering
March 2006 – Dec. 2006	Executive Director, Interdisciplinary and Professional Engineering, College of Engineering
Oct. 2002 – Dec. 2006	Director, Interdisciplinary Professional Programs, College of Engineering
Sept. 2002 – June 2019	Professor of Mechanical Engineering
Jan. 2002 – Feb. 2006	Director, Program in Manufacturing
Jan. 2002 – Dec. 2013	University Co-Director, General Motors Collaborative Research Lab in Advanced Vehicle Manufacturing (funded by General Motors)
Sept. 1998 – Aug. 2002	Associate Professor (with Tenure), Department of Mechanical Engineering Director, National Science Foundation Industry/University Cooperative Research Center for Dimensional Measurement and Control in Manufacturing
Sept. 1995 – June 2019	Director, Laboratory for Assembly and Manufacturing Systems
Sept. 1995 – Aug. 1998	Assistant Professor, Department of Mechanical Engineering
Sept. 1991 – Aug. 1995	Assistant Research Scientist
Jan. 1991 – Aug. 1991	Post-Doctoral Research Fellow
Jan. 1987 – Dec. 1990	Research Assistant/Teaching Assistant

#### **Positions held at Other Institutions or Organizations**

Oct. 16 – Dec. 2001	<i>German Academic Exchange Agency (DAAD) Faculty Fellow, Technical University of Berlin, Germany (on sabbatical leave from UM)</i>
Aug. 15 – Oct. 15, 2001	<i>Visiting Scholar, Chamlers University, Sweden (on sabbatical leave from UM)</i>
June 1995 – Dec. 2000	<i>Technical Director, “Intelligent Resistance Welding” program, Auto Body Consortium, member of Executive Committee.</i>
Jan. 1993 – Dec. 1995	<i>Technical Director, “The 2 mm Program,” Auto Body Consortium, member of Executive Committee.</i>  (The Auto Body Consortium consists of about fifty U.S. auto manufacturers and suppliers with the objective of improving U.S. auto manufacturing competitiveness. My role with the consortium was due to my UM PI role for both projects.)
Jan. 2003 – Dec. 2013	<i>Guest Professor, Tianjin University, China.</i>
Sept. 2003 – August 2012	<i>Guest Professor, Shanghai Jiaotong University, China.</i>

## C. HONORS AND AWARDS

### C.1 Membership in Professional Organizations

- Fellow, National Academy of Inventors, elected 2023.
- Fellow, Society of Manufacturing Engineers (SME), elected 2018.
- Foreign Member, Chinese Academy of Engineering, elected 2017.
- Member, U.S. National Academy of Engineering (NAE), elected 2015.
- Fellow, International Academy for Production Engineering (CIRP), elected 2012.
- Fellow, American Society of Mechanical Engineers (ASME), elected 2003.
- Member, American Association for the Advancement of Science.

### C.2. Awards and Recognitions

- DeVor/Kapoor Manufacturing Medal, American Society of Mechanical Engineers, 2024. The Medal recognizes an individual or a team of researchers for a body of impactful achievements in the field of manufacturing.
- 20 Most Influential Academics in Smart Manufacturing, SME Smart Manufacturing Magazine, 2021.
- Best Paper Award, ASME Manufacturing Science and Engineering Conference (MSEC), June, 2017. Chenhui Shao, Jionghua (Judy) Jin and **S. Jack Hu**, "Dynamic sampling design for characterizing spatiotemporal processes in manufacturing."
- ASME Blackall Machine Tool & Gage Award, 2017. H. Nguyen, H. Wang, B. Tai, J. Ren, **S. J. Hu**, and A. Shih, "High definition metrology enabled surface variation control by cutting load rebalancing," ASME Journal of Manufacturing Science and Engineering. This award is the ASME Manufacturing Division's annual literature award.
- Best Applications Paper, IIE Transactions on Quality and Reliability Engineering, 2017. S. Suriano, H. Wang, C. Shao, **S. J. Hu** and P. Sekhar, "Progressive measurement and monitoring for multi-resolution data in surface manufacturing considering spatial and cross correlations."
- SME Gold Medal. 2017. In recognition of intellectual leadership in inventing novel algorithms and practical methodologies for multi-station assembly systems and their implementation in industry, as well as influential service to government and the manufacturing profession.
- SME/NAMRI S. M. Wu Research Implementation Award, 2014. This award recognizes outstanding original research presented as a paper at the annual North American Manufacturing Research Conference (NAMRC) and subsequently, upon implementation, had a significant commercial and/or societal impact. I was recognized for contribution in developing Principal Component Analysis based method for systematically identifying sources of quality variation in assembly systems.
- ASME William T. Ennor Manufacturing Technology Award, 2012. The award recognizes an individual or a team of individuals for developing or contributing significantly to an innovative manufacturing technology, the implementation of which has resulted in substantial economic and/or societal benefits. I was recognized for "developing innovative methods for predicting and diagnosing quality variation in multi-stage assembly systems and methods for designing manufacturing system configurations, and their implementation in automotive assembly and battery manufacturing."

- Best Paper Award, ASME Manufacturing Science and Engineering Conference (MSEC), June 2012, B. Tai, H. Wang, H. Nguyen, **S. J. Hu**, and A. Shih, “Surface variation reduction for face milling based on high definition metrology.”
- Best Paper Award, International Conference in Frontiers of Design and Manufacturing, Chongqing, China, June, 2012, Sha Li, Yhu-Tin Lin, Hui Wang, Sheng Yang, Ci Chen, S. Jack Hu, Jeffrey Abell, “An assembly system configurator for automotive battery packs.”
- J. Reid and Polly Anderson Professor of Manufacturing, The University of Michigan, September 2011 – June 2019.
- Selected as a Big 10 Academic Alliance fellow of Academic Leadership Programs, 2010. (organized by Big 10 + universities in the US for emerging academic leaders.)
- Best Paper Award, 9<sup>th</sup> International Conference on Frontiers of Design and Manufacturing, Changsha, China, July, 2010. S. Suriano, H. Wang, **S. J. Hu**, “Sequential monitoring of surface spatial variation in automotive machining processes based on high definition metrology”. Also recognized for outstanding contributions to the conference series.
- G. Lawton and Louise G. Johnson Professor of Engineering, The University of Michigan, January 2009 – August 2011.
- General Motors Technical Education Program, “Partnership Excellence Award”, March, 2008.
- College of Engineering Research Excellence Award, The University of Michigan, 2006.
- Robert Caddell Faculty/Graduate Student Team Award (with Ph.D. student Guosong Lin), Sept. 2005. University of Michigan.
- Mechanical Engineering Teaching Incentive Award, 2001, 2003, University of Michigan.
- Best Paper Award, ASME Design Engineering Technical Conference/6<sup>th</sup> Design for Manufacturing Conference, September, 2001. J. Camelio, D. Ceglarek, **S. J. Hu**, “Modeling variation propagation in multi-station assembly systems with compliant parts.”
- Faculty Achievement Award, Department of Mechanical Engineering, The University of Michigan, 2000
- Recognized by Society of Automotive Engineers International for Developing the Body-in-White Certificate Program with General Motors, Feb. 1999.
- Robert Caddell Faculty Research Achievement Award, Mechanical Engineering, College of Engineering, The University of Michigan, 1997.
- National Science Foundation *CAREER* Award, 1996.
- Outstanding Young Manufacturing Engineer Award, Society of Manufacturing Engineers, 1993.

### C.3 Other Awards

The two awards listed below were presented to the University of Michigan College of Engineering and General Motors Technical Education Program for joint development of the Master of Engineering in Global Automotive and Manufacturing Engineering program. I led the development in collaboration with GM and was a founding co-director of the program.

- National University Technology Network (NUTN) Distance Education Innovation Award, 2007.
- 2006 Sloan Program Profile Award, University of Michigan College of Engineering and GM Technical Education Program - Master of Engineering in Global Automotive and Manufacturing Engineering

## **D. RESEARCH**

### **D.1 Research Interests**

- 1) *Smart Manufacturing*: sensing, monitoring and data fusion for manufacturing
- 2) *Manufacturing systems*: design, performance analysis (quality, productivity, and responsiveness), customization, personalized products and production
- 2) *Assembly and Materials Joining*: Product family design, assembly variation propagation analysis, welding/joining, assembly and joining of energy devices
- 3) *Data science and engineering statistics*: statistical quality control and monitoring, robust design.

### **D.2 Grants and Contracts**

I have secured more than \$46 million of total grants and contract for research and infrastructure during my tenure at the University of Michigan.

#### ***NIST Construction Grant***

1. National Institute of Standards & Technology, “Center of Excellence in Nano Mechanical Science & Engineering,” PI. \$9,477,359, 11/01/2010 to 11/30/2014. This grant was made toward Mechanical Engineering building addition at the University of Michigan.

#### ***Recent Research Grants***

1. *US Department of Energy*, “A Multi-Scale Computational Platform for Predictive Modeling of Corrosion in Al-Steel Joints,” \$1,978,431. (\$1,500,000 DoE, \$478,431 cost share). PI: S.J. Hu. With subcontracts to University of Illinois, Penn State University, Optimal Process Technologies, and General Motors. Oct. 2018 – Dec. 2021. A small subaward was contracted to University of Georgia after I joined UGA on July 1, 2019.
2. *General Motors*, “Extension of Automotive Collaborative Research Lab,” PI: SJ Hu. Total \$514,983. Feb. 2018 – December, 2019. (The GM CRL was funded from January 1998 through December 2019 with annual budget between \$400,000 and \$750,000)
3. *National Science Foundation*, “EAGER: Collaborative Research: Cyber-Manufacturing Systems for Open Product Realization,” PI: SJ Hu. Co-PI: Kira Barton, Haseung Chung. \$179,365. August 1, 2015 – August 31, 2019.

### **D.3 Patents**

#### ***Granted US Patents***

1. M. Banu, **S. J. Hu**, T.H. Kim and S. L Young, (2021) “Natural fiber reinforced composite panel and method,” **US 11,180,891 B2**.
2. Y. Li, **S. J. Hu**, D. Shriver, K. Wang, M. Banu, J. Arinez, (2021), “Ultrasonic welding of dissimilar sheet materials,” **US 11,027,498 B2**.
3. D. G. Shriver, **S. J. Hu**, M. Banu, K. Wang, (2021), “Fastener and method for joining dissimilar materials”, **US 10,974,462 B2**.
4. M. Banu, **S. J. Hu**, T.H. Kim and S. L Young, (2021) “Natural fiber reinforced composite panel and method,” **US 10,184,215 B2**
5. W. Cai, J. A. Abell, J. C.H. Tang, M. A. Wincek, P. J Boor, P. F. Spacher, **S. J. Hu**, (2014), “Method and System for On-Line Quality Monitoring and Control of a Vibration Welding Process,” **US 8,702,882 B2**.

6. **S.J. Hu**, W. K. Hou, H. Du, P. C. Wang and R. J. Menassa, (2011), “Method for Controlling the Consistency of an Arc Welding Process by Monitoring Welding Voltage to Determine Weld Droplet Detachment,” **US 8,063,340 B2**.
7. W. K. Hou, **S. J. Hu** and P.C. Wang, (2007), “Methods of Joining Dissimilar Materials,” **US 7,267,736**.
8. S. Swillo, K. Iyer, **S. J. Hu**, (2006) “Optical System and Method for Measuring Continuously Distributed Strain,” **US 7,036,364**.
9. P.C. Wang, **S. J. Hu**, K. Iyer, F.L. Brittan, D. B. Hayden, (2004), “Bi-Directional Self-Piercing Riveting,” **US 6,835,020**.
10. **S. J. Hu**, Y. Chu, W.K. Hou, S. P. Marin and P.C. Wang, (2004). “Online Monitoring System and Method for a Short-circuiting Gas Metal Arc Welding Process,” **US 6,744,011**.

#### ***Granted International Patents***

1. Yongqiang Li, Junying Min, Blair E. Carlson, **S. J. Hu**, (2016), “Rivet with cutting mandrel tip and one-sided joining process”. **DE102016100127A1**, Germany.
2. Yongqiang Li, **S. J. Hu**, Daniel Shriver, Kaifeng Wang, Mihaela Banu, Jorge F. Arinez, (2018) “Process for joining different material workpieces”, **DE102017112881B4**, Germany.

#### **D.4 Publications**

Dr. Hu has published more than 250 refereed journal and conference papers. Only books, book chapter and journal papers are listed here.

##### ***Books and Book Chapters:***

1. W. W. Cai, B. Kang, **S. J. Hu**, (2017), *Ultrasonic Welding of Lithium-Ion Batteries*, ASME Press.
2. Z. Marciniak, J. L. Duncan, **S. J. Hu**, (2002), *Mechanics of Sheet Metal Forming*, Second Edition, by Butterworth Heinemann, London, March. (First edition was by Marciniak and Duncan. I worked with John Duncan on the revision for second edition and jointly developed a software tool for teaching sheet metal forming.)
3. **S. J. Hu** and E. Kannatey-Asibu, (2001), “Monitoring and Control of Assembly and Welding Processes”, Chapter 8 in *Mechanical System Design Handbook*, CPC Press.
4. S. M. Wu and **S. J. Hu**, (1993), "Defect Preventive Quality Control in Manufacturing," *Concurrent Engineering Tools and Technologies for Mechanical System Design*, NATO ASI Series F, Ed. E. J. Haug, Springer-Verlag, 1993, pp. 405-431.

##### ***Journal Papers:***

*listed in reverse chronological order. Underlined names indicate past students or mentees.*

1. Sotiris Makris, Franz Dietrich, Karel Kellens, **S. Jack Hu**, (2023), “Automated assembly of non-rigid objects,” keynote paper accepted for *CIRP Annals-Manufacturing Technology*, volume B.
2. Xingyu Lia, Aydin Nassehi, Baicun Wang, **S. Jack Hu**, Bogdan I. Epureanu, (2023), “Human-centric adaptive manufacturing for human-system coevolution in Industry 5.0,” accepted for *CIRP Annals-Manufacturing Technology*.
3. C Tan, K Barton, **SJ Hu**, T Freiheit, (2022), “Integrating optimal process and supplier selection in personalised product architecture design,” *International Journal of Production Research* 60 (8), 2461-2480.

4. Vernnaliz Carrasquillo, Thomas J Armstrong, **S Jack Hu**, (2022), "Field Observation of Hospital Food Service Workers and the Relationship between Customer Demand and Biomechanical Stress: A Case Study," *IISE Transactions on Occupational Ergonomics and Human Factors*, Volume 10, Issue 1. Pages 47-58.
5. L. Sun, C. Tan, **S. J. Hu**, P. Dong, T. Freiheit, (2021), "Quality detection and classification for ultrasonic welding of carbon fiber composites using time-series data and neural network methods," *Journal of Manufacturing Systems*, Volume 61, Pages 562-575
6. L. Sun, **S.J. Hu**, T Freiheit, (2021), "Feature-based quality classification for ultrasonic welding of carbon fiber reinforced polymer through Bayesian regularized neural network," *Journal of Manufacturing Systems*, volume 58, 335-347.
7. B. Wang, **S.J. Hu**, L. Sun, T. Freiheit, (2020), Intelligent welding system technologies: State-of-the-art review and perspectives," *Journal of Manufacturing Systems*, volume 56, 373-391.
8. C. Tan, H. Chung, K. Barton, **S.J. Hu**, T. Freiheit, (2020), "Incorporating customer personalization preferences in open product architecture design," *Journal of Manufacturing Systems*, volume 56, 72-83.
9. Y. Li, T.H. Lee, M. Banu, **S.J. Hu**, (2020), "An integrated process-performance model of ultrasonic composite welding based on finite element and artificial neural network," *Journal of Manufacturing Processes*, April. <https://doi.org/10.1016/j.jmapro.2020.04.033>
10. W.G. Guo, J.J. Jin, **S. J. Hu**, (2019), "Profile Monitoring and Fault Diagnosis Via Sensor Fusion for Ultrasonic Welding," *Journal of Manufacturing Science and Engineering*, 141 (8).
11. C. Shao, H. Wang, S. Suriano-Puchala, **S.J. Hu**, (2019), "Engineering fusion spatial modeling to enable areal measurement system analysis for optical surface metrology," *Measurement* 136, 163-172
12. Y. Li, J. Arinez, Z. Liu, T.H. Lee, H. Fan, G. Xiao, M. Banu, **S.J. Hu**, (2018), "Ultrasonic welding of carbon fiber reinforced composite with variable blank holding force," *Journal of Manufacturing Science and Engineering*. 140(9): 091011.
13. Y. Luo, H. Chung, W. Cai, T. Rinker, **S.J. Hu**, E. Kannatey-Asibu, J. Abell, (2018), "Joint Formation in Multilayered Ultrasonic Welding of Ni-Coated Cu and the Effect of Preheating," *Journal of Manufacturing Science and Engineering*. Volume 140, Issue 11, Pages 111003-10
14. L. Nong, C. Shao, T.H. Kim, **S.J. Hu**, (2018), "Improving process robustness in ultrasonic metal welding of lithium-ion batteries", *Journal of Manufacturing Systems*. Volume 48, Part B, July, Pages 45-54.
15. K. Wang, D. Shriver, Y Li, M. Banu, **S.J. Hu**, G. Xiao, J. Arinez, H.T. Fan, (2017) "Characterization of weld attributes in ultrasonic welding of short carbon fiber reinforced thermoplastic composites", *Journal of Manufacturing Processes*, 29, 124-132.
16. Jian Zhang, Peihua Gu, Qingjin Peng, **S Jack Hu**, (2017), "Open interface design for product personalization," *CIRP Annals-Manufacturing Technology*, 66 (1), Pages 173-176.
17. K. Wang, D. Shriver, M. Banu, **S.J. Hu**, G. Xiao, J. Arinez, H.T. Fan, (2017), "Performance Prediction for Ultrasonic Spot Welds of Short Carbon Fiber-Reinforced Composites Under Shear Loading", *ASME Journal of Manufacturing Science and Engineering* 139 (11), 111001.
18. C. Tan, **S.J. Hu**, H. Chung, K. Barton, C. Piya, K. Ramani, M. Banu, (2017), "Product personalization enabled by assembly architecture and cyber physical systems," *CIRP Annals-Manufacturing Technology*, 66 (1), 33-36.
19. C. Shao, J. Ren, H. Wang, J.J. Jin, **S.J. Hu**, (2016), "Improving Machined Surface Shape Prediction by Integrating Multi-Task Learning With Cutting Force Variation Modeling," *Journal of Manufacturing Science and Engineering*, 139 (1), 011014.

20. Heng Kuang, **S. Jack Hu**, Jeonghan Ko, (2016), “A dynamic programming approach to integrated assembly planning and supplier assignment with lead time constraints,” *International Journal of Production Research*, Volume 54, Issue 9, 2016
21. L. Xi, M. Banu, **S.J. Hu**, W. Cai, J. Abell, (2016), “Performance Prediction for Ultrasonically Welded Dissimilar Materials Joints,” *Journal of Manufacturing Science and Engineering*, 2016, 139(1), p.011008-011008-13.
22. Heng Kuang, **S. Jack Hu**, Jeonghan Ko, (2016), “Concurrent Design of Assembly Plans and Supply Chain Configurations Using AND/OR Graphs and Dynamic Programming,” *Journal of Manufacturing Science and Engineering*, 138 (5), 051011.
23. H.T. Nguyen, H. Wang, B.L. Tai, J. Ren, **S.J. Hu**, A. Shih, (2016), “High-definition Metrology Enabled Surface Variation Control by Cutting Load Balancing,” *Journal of Manufacturing Science and Engineering*, 138 (2), 021010.
24. W. Guo, C. Shao, T.H. Kim, **S.J. Hu**, J.J. Jin, J.P. Spicer, H. Wang, (2016), “Online process monitoring with near-zero misdetection for ultrasonic welding of lithium-ion batteries: An integration of univariate and multivariate methods,” *Journal of Manufacturing Systems* 38, 141-150.
25. C. Shao, T.H. Kim, **S.J. Hu**, J.J. Jin, J.A. Abell, J.P. Spicer, (2015) “Tool wear monitoring for ultrasonic metal welding of lithium-ion batteries,” *ASME Journal of Manufacturing Science and Engineering*, 138 (5), 0510059.
26. R.J. Riggs, X. Jin, **S.J. Hu**, (2015), “Two-stage Sequence Generation for Partial Disassembly of Products with Sequence Dependent Task Times,” *Procedia CIRP*, 29, 698-703
27. K. Martinsen, **S.J. Hu**, and B.E. Carlson, (2015) “Joining of Dissimilar Materials,” *CIRP Annals-Manufacturing Technology*, keynote paper, Volume 64, Issue 2, 2015, Pages 679–699.
28. J. Min, Y. Li, B.E. Carlson, **S.J. Hu**, J. Li, J. Lin, (2015) “A new single-sided blind riveting method for joining dissimilar materials,” *CIRP Annals-Manufacturing Technology*, keynote paper, vol. 64, Issue 1, 2015, Pages 13–16.
29. M.L. Bentaha, O. Battaïa, A. Dolgui, **S.J. Hu**, (2015), “Second order conic approximation for disassembly line design with joint probabilistic constraints”, *European Journal of Operational Research*. Volume 247, Issue 3, Pages 957–967
30. S. Suriano, H. Wang, C. Shao, **S.J. Hu**, P. Sekhar, (2015), “Progressive measurement and monitoring for multi-resolution data in surface manufacturing considering spatial and cross correlations,” *IIE Transactions, Special Issue: Quality & Reliability Engineering*, Volume 47, Issue 10.
31. Robert J Riggs, Olga Battaïa, **S.J. Hu**, (2015), “Disassembly line balancing under high variety of end of life states using a joint precedence graph approach”, *Journal of Manufacturing Systems*, doi:10.1016/j.jmsy.2014.11.002.
32. Hai Trong Nguyen, Hui Wang, Bruce L Tai, Jie Ren, **S.J. Hu**, Albert Shih, (2015), “High-definition Metrology Enabled Surface Variation Control by Cutting Load Balancing,” *ASME Journal of Manufacturing Science and Engineering*, doi:10.1115/1.4030782.
33. S.S. Lee, T.H. Kim, **S.J. Hu**, W.W. Cai, J.A. Abell, (2015), “Analysis of Weld Formation in Multilayer Ultrasonic Metal Welding Using High-Speed Images,” *ASME Journal of Manufacturing Science and Engineering*, 137 (3), 031016.
34. Y. Xu, L. Zhang, S. Wang, H. Du, B. Chai, **S.J. Hu**, (2015), “Active precision design for complex machine tools: methodology and case study,” *The International Journal of Advanced Manufacturing Technology*, 1-10

35. M.L. Bentaha, O. Battaia, A. Dolgui, **S.J. Hu**, (2014), “Dealing with uncertainty in disassembly line design,” *CIRP Annals-Manufacturing Technology*, Volume 63, Issue 1, 2014, Pages 21–24.
36. **S.J. Hu**, (2014), “Assembly,” *CIRP Encyclopedia of Production Engineering*, 50-52.
37. Hai T. Nguyen, Hui Wang, **SJ Hu**, (2014), “Modeling cutter tilt and cutter-spindle stiffness for machine condition monitoring in face milling using high-definition surface metrology,” *Int J Adv Manuf Technol*, Vol. 70, Issues 5-8, pp. 1323-1335.
38. He Wang, Hui Wang, **SJ Hu**, (2013), “Utilizing variant differentiation to mitigate manufacturing complexity in mixed-model assembly systems,” *Journal of Manufacturing System*, Volume 32, Issue 4, October 2013, Pages 731–740.
39. A. Bryan, **S. J. Hu**, and Y. Koren, (2013), “Assembly System Reconfiguration Planning,” *ASME Journal of Manufacturing Science and Engineering*. Vol. 135, August, pp. 041005- 1 – 13.
40. Chenhui Shao, K Paynabar, TH Kim, JJ Jin, **SJ Hu**, JP Spicer, H Wang, JA Abell, (2013) “Feature selection for manufacturing process monitoring using cross-validation,” *Journal of Manufacturing Systems*. Vol. 32, No. 4, 550-555. Also published in Proceedings of the 41st North American Manufacturing Conference, Madison, Wisconsin, June.
41. S. Yang, R.J. Riggs, **S.J. Hu**, “Modeling and analysis of closed loop manufacturing systems using parameter coupling,” *Journal of Manufacturing Systems*. Vol. 32, No. 4, 817-824.
42. Y. Koren, **S.J. Hu**, P. Gu and M Shpitalni, (2013), “Open Architecture Products,” Keynote paper, *Annals of CIRP*. Volume 62, Issue 2.
43. H. Nguyen, H. Wang and **S.J. Hu**, (2013), “Characterization of Cutting Force Induced Surface Shape Variation in Face Milling Using High-Definition Metrology,” *ASME Journal of Manufacturing Science and Engineering*. 135 (4), <https://doi.org/10.1115/1.4024290>
44. S. Lee, TH Kim, **S.J. Hu**, W.W. Cai and J.A. Abell, (2013) “ Characterization of Joint Quality in Ultrasonic Welding of Battery Tabs,” *ASME Journal of Manufacturing Science and Engineering*. 135, 021004. doi: 10.1115/1.4023364. Also published in *Proceedings of ASME Manufacturing Science and Engineering Conference*, University of Notre Dame, IN.
45. S. Yang, H Wang and **S.J. Hu**, (2013) “ Modeling Assembly Systems with Repetitive Operations,” Accepted by *Annals of CIRP*. Volume 60, Issue 1. Pages 5-8.
46. C. Berry, H. Wang, **S. J. Hu**, 2013, “Product architecting for personalization,” *Journal of Manufacturing Systems*, Volume 32, Issue 3, July 2013, Pages 404–411. Also published in *Proceedings of CIRP Conference on Assembly Technologies and Systems*, May, 2012. Ann Arbor
47. W. Guo, J. Jin, and **S.J. Hu**, (2013) “Allocation of maintenance resources in mixed model assembly systems,” *Journal of Manufacturing Systems*, Volume 32, Issue 3, July. Pages 473–479. Also published in *Proceedings of CIRP Conference on Assembly Technologies and Systems*, May, 2012. Ann Arbor. pp 199-202.
48. X. Jin, **S. J. Hu**, J. Ni and G Xiao, (2013), “Assembly Strategies for Remanufacturing Systems With Variable Quality Returns,” *IEEE Transactions on Automation Science and Engineering*, Volume 10, Issue: 1 , pp. 76 – 85.
49. Jialu Liu, S. Yang, Aiguo Wu, **S. J. Hu**, 2012, “Multi-state throughput analysis of a two-stage manufacturing system with parallel unreliable machines and a finite buffer,” *European Journal of Operational Research*, 219, pp 296-304.
50. S. Suriano, H. Wang and **S. J. Hu**, 2012, “Sequential Monitoring of Surface Spatial Variation in Automotive Machining Processes based on High Definition Metrology,” *Journal of Manufacturing Systems*, Volume 31, Issue 1, January 2012, Pages 8-14 . Won best paper award at the 9th International Conference on Frontiers of Design and Manufacturing, Changsha, China, July 2010.

51. L. Zhou, H. Wang, C. Berry, X. Weng, and **S.J. Hu**, (2012), “Functional Morphing in Multistage Manufacturing and its applications in High-Definition Metrology-Based Process Control,” *IEEE Transactions on Automation Science and Engineering*, **9**(1), 124-136.
52. Xiaowei Zhu, **S. Jack Hu**, Yoram Koren, Ningjian Huang, (2012), “A complexity model for sequence planning in mixed-model assembly lines,” *Journal of Manufacturing Systems*, Volume 31, Issue 2, April. Pages 121–130.
53. J. J. Li, **S. J. Hu**, J. E. Carsley, T. M. Lee, L. G. Hector, Jr. and S. Mishra, 2011, “Post Annealing Mechanical Properties of Pre-strained AA5182-O Sheet,” *ASME Journal of Manufacturing Science and Engineering*. Volume 133, Issue 6, 2011, Article number 061007
54. S. Li, H. Wang, Y.-T. Lin, J. A. Abell, and **S. J. Hu**, 2011, “Automatic Generation of Assembly System Configuration with Equipment Selection for Automotive Battery Manufacturing,” *Journal of Manufacturing Systems*, Volume 30, Issue 4, October, Pages 188-195.
55. YB Li, Q. Shen, ZQ Li, and **S.J. Hu**, (2011), “Quality improvement in resistance spot weld of advanced high strength steel using external magnetic field,” *Science and Technology of Welding and Joining*, Volume 16, Issue 5, July 2011, Pages 465-469
56. Liang Zhou, **S. J. Hu**, Thomas Stoughton, “Die Face Morphing with Formability Assessment,” *ASME J. Mfg. Sci. Eng.*, Volume 133, Issue 1, 011003
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175. **S. J. Hu**, (1997), "Stream of Variation Theory for Automotive Body Assembly," *Annals of the CIRP*, Vol. 46/1, pp.1-6.
176. W. J. Cai, **S. J. Hu**, and Jingxia Yuan, (1997), "A Variational Method of Robust Fixture Configuration Design for 3-D Workpieces," *ASME Journal of Manufacturing Science and Engineering*. Vol.119, pp.593-602, November.
177. S. C. Liu and **S. J. Hu**, (1997), "Variation Simulation for Deformable Sheet Metal Assembly Using Finite Element Methods," *ASME Journal of Manufacturing Science and Engineering*, Vol. 119, pp.368-374. August.
178. S.C. Liu and **S. J. Hu**, (1997), "A Parametric Study of Joint Performance in Sheet Metal Assembly," *International Journal of Machine Tools and Manufacture*. Vol. 37, No. 6, pp. 873-884.
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180. **S. J. Hu**, (1996) "Statistical Process Control For Correlated Processes - Case Studies in Automotive Manufacturing," *IASTED J. of Modeling and Simulation*, Special Issue on Manufacturing Reliability. pp. 218-223.
181. W. J. Cai, **S. J. Hu**, and J. Yuan, (1996), "Deformable Sheet Metal Fixturing: Principles, Algorithms and Simulations," *ASME Journal of Engineering for Industry*. Vol.118, pp. 318-324, August. (Also published at 1994 ASME IMECE Proceeding, *Manufacturing Science and Engineering-1994*, PED Vol. 68-1, pp. 13- 20. )
182. **S. J. Hu** and C. Roan (1996), " Change Patterns of Time Series Based Control Charts," *ASQC Journal of Quality Technology*, pp. 302-312, July.
183. U. N. Gandhi and **S. J. Hu**, (1996) "Data Based Models for Automobile Side Impact Analysis and Design Evaluation," *International Journal of Impact Engineering*, Vol. 18, No. 5, pp. 517-537.
184. W. J. Cai, and **S. J. Hu**, (1996), " Optimal Fixture Configuration Design for Sheet Metal Assembly with Springback," *Transactions of NAMRI/SME*. pp. 229-234, May.
185. S. C. Liu, **S. J. Hu**, and T. C. Woo, (1996) "Tolerance Analysis for Sheet Metal Assemblies," *ASME Journal of Mechanical Design*. Vol. 118, pp. 62-67.
186. S. C. Liu and **S. J. Hu**, (1995), "An Offset Finite Element Model and Its Application in Predicting Sheet Metal Assembly Variation," *Int. J. Machine Tools and Manufacture* Vol. 35, No. 11, pp. 1545-1557.
187. D. Khorzad, J. Shi, **S. J. Hu**, J. Ni, and G. Seliger, (1995), "Multiple Panel Fitting for Automobile Manufacturing," *Transactions of NAMRI/SME*, pp. 241-247, May.
188. S. C. Liu, H.-W. Lee, and **S. J. Hu**, (1995), "Variation Simulation for Deformable Sheet Metal Assemblies Using Mechanistic Models," *Transactions of NAMRI/SME*. pp. 235-241, May.
189. C. Roan and **S. J. Hu**, (1995), "Monitoring and Classification of Dimensional Faults for Automotive Body Assembly," *International Journal of Flexible Manufacturing Systems*. Vol. 7, No. 2, pp. 103-125, April.
190. U. N. Gandhi and **S. J. Hu**, (1995), "Data Based Approach in Modeling Automobile Crash," *International Journal of Impact Engineering*, Vol. 16, No. 1, pp. 95-118.
191. H. T. Fan, **S. J. Hu**, and S. M. Wu, (1994) "Forecasting Control of Waterborne Basecoat Viscosity," *Transactions of ASME, Journal of Engineering for Industry*, Vol. 116, pp. 514-516, November.
192. S.- K. Wu, **S. J. Hu**, and S. M. Wu, (1994), "A Fault Identification and Classification Scheme for an Automobile Door Assembly Process," *International Journal of Flexible Manufacturing Systems* , Vol. 6, pp. 261-285, October.
193. S.- K. Wu, **S. J. Hu**, and S. M. Wu, (1994), "Optimal Door Fit With Systematic Fixture Adjustment," *International Journal of Flexible Manufacturing Systems* , Vol. 6, No. 2, pp. 99-121, April.
194. M. R. Rearick, **S. J. Hu**, and S. M. Wu, (1993), "Optimal Fixture Design for Deformable Sheet Metal Workpiece," *Transactions of NAMRI*, Vol. XXI, pp. 407-412, May.
195. **S. J. Hu** and S. M. Wu, (1992), "Identifying Sources of Variation in Automobile Body Assembly Using Principal Component Analysis," *Transactions of NAMRI*, Vol. XX, pp. 311-316, May.
196. **S. Hu**, S.- K. Wu, and S. M. Wu, (1991), "Multivariate Analysis and Variation Reduction Case Studies in Automobile Assembly ," *Transactions of NAMRI*, Vol. XIX, pp. 303-308, May .
197. **S. Hu** and S. M. Wu, (1990), "In-Process 100% Measurement and Statistical Analysis for an Automotive Body Assembly Process," *Transactions of NAMRI*, Vol. XVIII, pp.317-321, May.

198. **S. Hu** and S. M. Wu, (1989), "Prony Estimation of AR Parameters of an ARMA Time Series," *Mechanical Systems and Signal Processing*, 1989, 3(2), pp.207-211.

## **E. TEACHING**

Teaching has been an important part of my professional career. I have taught courses in design, manufacturing, assembly modeling, and engineering statistics. I also supervised a high number of students in research. I was recognized by my department with the Teaching Incentive Award twice for my excellence in teaching. I have mentored a high number of Ph.D. and M.S. students. These students have taken leadership positions in industry and academia.

### **E.1 Current teaching at University of Georgia**

- MCHE/AENG 4910, Capstone Design
- First Year Seminar, "Introduction to Manufacturing Systems".

### **E.2. New courses introduced at University of Michigan**

- IOE 591, "Green Energy Manufacturing," Winter 2011, co-taught with Judy Jin.
- ME588/IOE588, "Assembly Modeling for Design and Manufacturing," Graduate course developed and introduced in Fall 1999, and taught every year till 2009.
- ME483/MFG502, "Manufacturing System Design," Senior undergraduate elective/graduate course developed and introduced in Winter 2006, and taught every year till 2009.
- Significantly modified ME401, "Statistical Methods for Manufacturing Systems".

Here I introduced multivariate correlation, principal component analysis, measurement system study, and case studies into the course contents.

### **E.3 Courses taught at University of Michigan**

#### **Undergraduate courses**

- ME350 Design and Manufacturing (Junior level)
- ME401 Statistical Methods for Manufacturing Systems
- ME450 Senior Capstone Design
- ME483/MFG502 Manufacturing System Design

#### **Graduate courses**

- ME582 Sheet Metal Forming
- ME588 Assembly Modeling for Design and Manufacturing
- ME587 Global Manufacturing (co-instructor)

### **E.4 Ph.D. Dissertation Committees Chaired:**

#### ***Ph.D. Students Supervised at the University of Michigan***

1. Umesh Gandhi, "Data Based Approach in Modeling Automobile Crash," Mechanical Engineering, May, 1993. (Co-chair with late Prof. S. M. Wu. Currently with Toyota Technical Center, Ann Arbor.)

2. Chinmo Roan, "Process Monitoring, Identification, and Fault Classification for Automobile Body Assembly," Mechanical Engineering, May, 1993. (Co-chair with late Prof. S. M. Wu. Currently with Perceptron, Inc.)
3. Shenhui Liu, "Variation Simulation for Sheet Metal Assembly," Mechanical Engineering, May, 1995. (Co-chair with Tony C. Woo. Currently with Siemens)
4. Wenjia Cai, "Optimal Fixture Configuration Design for Deformable Sheet Metal Assembly," Mechanical Engineering, Feb. 1996. (currently with General Motors R&D Center)
5. Jinkoo Lee, "Set Based Approach for Sheet Metal Stamping," Mechanical Engineering, May, 1996 (co-chair with Al Ward, Currently with Ford Motor Company)
6. Peikuang Chen, "On-Line Monitoring and Preventive Maintenance for Progressive Dies," May, 1997 (currently with Foxcon, Taiwan).
7. Thomas W. Weber, "Theory and Analysis of Manufacturing System Configurations," D.Eng., December, 1997. ( co-chaired with Yoram Koren. Current position: CEO of WeberTech)
8. James Lee, "Variability Characterization and Tolerancing for Auto Body Assembly," Mechanical Engineering, September 1998. (Currently with Chrysler Corporation).
9. Wei Li, "Monitoring and Control of Resistance Spot Welding Processes," Mechanical Engineering, Feb., 1999. (Co-Chair with Jun Ni. Currently Professor, University of Texas Austin. Winner of PECASE)
10. Yong Hoon Jang, "Contact Resistance During Resistance Welding," Mechanical Engineering, March, 1999. (co-chair with James Barber. Current position: Professor, Yongsei University, Korea).
11. Narasimhan Seshadri, "Variability Characterization and Control in Stamping Die Development," Mechanical Engineering, May, 1999. (Current position: IT Technologies)
12. Gene Liao, "Modeling, Analysis and Optimization of Fixture-Workpiece Systems," D. Eng in Manufacturing, May 1999 (Current position: Professor, Wayne State University)
13. Joshua Long, "Variation Simulation for Compliant Assembly with Applications," Mechanical Engineering, Dec. 1999 (currently with GM).
14. He Tang, "Machine Mechanical Characteristics and their Impact on Resistance Welding Process and Quality," Mechanical Engineering, December 1999 (Associate Professor, Eastern Michigan University).
15. Guohua Zhang, "Analysis and Optimization of Sheet Metal Flanging and Hemming Processes," Mechanical Engineering, Dec., 2000 (Currently with General Electric).
16. Mingxin Zhou, "A Unified Approach to Assessing the Mechanical Performance of Resistance Spot Welds," Mechanical Engineering, 2001. (Currently with General Motors).
17. Sijun He, "Formability Enhancement for Laser Welded Tailored Blanks," Mechanical Engineering, January 2001. (Currently with General Motors).
18. Yegang Liu, "Statistical Control of Multivariate Processes with Applications to Automobile Body Assembly," Mechanical Engineering, 2002. (Currently with Chery Motors).
19. Weiping Zhong, "Variation Propagation for Machining Systems with Different Configurations," Mechanical Engineering, May, 2002. (Currently with GE).
20. Jaime Camelio, "Variation Analysis for Multi-stage Assembly Systems with Compliant Parts," Mechanical Engineering, October, 2002. (Currently Professor, University of Georgia)

21. Theodor Freiheit, "Reliability and Productivity of Reconfigurable Manufacturing Systems," Mechanical Engineering, October, 2002. (Current position: Research Associate Professor, University of Michigan)
22. Robert Webbink, "Generation and Evaluation of Auto Body Assembly System Configurations," Mechanical Engineering, Feb. 2003. (currently with P&G)
23. Fang Wang, "Droplet Formation and Transfer in Short Circuit GMAW," Mechanical Engineering, May 2003. (co-chair with Elijah Kannatey-Asibu, currently with Radian Heatsinks, California)
24. Valerie Maier-Speredelozzi, "Manufacturing System Convertibility and Configuration Selection," Mechanical Engineering, May 2003. (co-chair with Yoram Koren. Current position: Associate Professor, University of Rhode Island)
25. Wei L. Wang, "Selected Studies on Atom Force Microscopes," Mechanical Engineering, April, 2004. (currently Research Scholar, Harvard University)
26. Melida Chin, "Contact Resistance of Anisotropic Conductive Adhesives (ACAs) in Micro-Scale Packaging," Mechanical Engineering, January 2005. (currently with AMD)
27. Jeonghan Ko, "Design and Analysis of Manufacturing Systems with Complex Configurations," Mechanical Engineering, April 2006. (Current position: Professor, Ajou University, Korea)
28. Guosong Lin, "Formability and Quality in Hemming," Mechanical Engineering, April, 2006. (Currently with Intel)
29. Jianpeng Yue, "Sensitivity and Uncertainty in Simulation Models for Multi-Stage Manufacturing Systems," Mechanical Engineering, April, 2006. (Currently at CNPC USA)
30. Hatem Orban, "Modeling and Analysis of Tube Hydro Forming," Mechanical Engineering, April, 2006, (Currently with GM)
31. Ugur Ersoy, "Modeling and Control of GMAW," Mechanical Engineering, 2007. (co-chair with Elijah Kannatey-Asibu, Currently with Schlumberger)
32. Hao Du: "Monitoring of GMAW of Aluminum Alloys," Mechanical Engineering, 2007. (Currently entrepreneur working in his own startup.)
33. Luis Eduardo Izquierdo, "Adaptive Control of Assembly Quality Using Programmable Tools," Mechanical Engineering, 2007. (co-chair with Jianjun Shi, R&D Director at FPC & FPC Tissue, Chile)
34. April Bryan, "Co-Evolution of Products and Manufacturing Systems," Mechanical Engineering, 2007. (co-chair with Yoram Koren. Current position: University of Manchester)
35. Jian Liu, "Stream of Variation Modeling for Machining Systems," Industrial and Operations Engineering, 2008. (co-chair with Jianjun Shi. Current position: Associate Professor, University of Arizona).
36. Yuanyuan Zhou, "Assembly and Performance Modeling for PEM Fuel Cells," Mechanical Engineering, October 2008 (with Albert Shih. Currently with Dow.)
37. Xiaowei Zhu, "Complexity of Manufacturing Systems," Mechanical Engineering, 2008, (co-chair with Yoram Koren. Currently with Traveler's )
38. Liang Zhou, "Functional Morphing for Manufacturing Process Design and Control," Mechanical Engineering, 2010 (Currently with Savvysherpa, LLC).
39. Hui Wang, "Product Variety Induced Manufacturing Complexity and Its Impact on Mixed Model Assembly Systems and Supply Chains," (2010, co-chair with Goker Aydin of IOE, currently with Bank America).

40. Jingjing Li, "Pre-Form Anneal Forming of Aluminum Alloys," Mechanical Engineering, August 2011. (Current position: Professor, Penn State University).
41. Xiaoning Jin, "Assemble to Order of Remanufactured Products with Variable Quality Returns," Industrial and Operations Engineering. (co-advised with Jun Ni. May, 2012. Current position: Associate Professor, Northeastern University.)
42. Sha Li, "Assembly System Design for Lithium-Ion Battery Manufacturing," Mechanical Engineering, December 2013. (currently with EDP Renewables)
43. Hai Nguyen, "Surface Variation Characterization and Control Using High Definition Metrology," January 2013. (Currently senior lecturer, Hanoi University, Vietnam)
44. Saumuy Suriano, "High Definition Metrology Based Process Control," Industrial and Operations Engineering, April, 2013. (Currently with Ford Motor Company).
45. Shawn Lee, "Characterization Ultrasonic Welding Process and Quality," Mechanical Engineering. June, 2013. (Currently with Morgan, Lewis & Bockius LLP).
46. Robert Riggs. "Modeling and Optimization of Disassembly Systems with High Variety of End of Life States," Industrial and Operations Engineering, January 2015. (currently with Clemson University)
47. Grace Guo, "Sensor Fusion and Process Monitoring for Ultrasonic Welding of Lithium-Ion Batteries," Industrial and Operations Engineering, July 2015. (co-advised with Judy Jin. Associate Professor, Rutgers University)
48. Chenhui Shao, "High Definition Data for Manufacturing Process Monitoring and Control," 2016. (co-advised with Judy Jin. Currently Associate Professor, University of Illinois)
49. Heng Kuang, "Concurrent Assembly System Planning and Supply Chain Design," 2016. (Currently with United Airlines)
50. Vernnaliz Carrasquillo, "Assembly Task Variability and its Impact on Manufacturing and Ergonomic Performance," 2016, Industrial Engineering. (co-advised with Tom Armstrong. Currently Assistant Professor, East Michigan University)
51. Ying Luo, "Weld Propagation in Ultrasonic Welding of Multi-Layered Dissimilar Metal Sheets," ME, 2020. (co-advised with Elijah Kannatey-Asiu. Currently with Exponent, Shanghai)
52. Taehwa Lee, "Experimental and computational investigation of ultrasonic welding of short carbon fiber reinforced plastics," 2020. (co-advised with Mihalea Banu. Currently post-doctoral fellow, UM)
53. Changbai Tan, "Personalized Product Architecture Design, Robustness Optimization, and Integration with Manufacturing Process and Supplier Selection," D. Eng in Manufacturing, 2020. co-advised with Kira Barton.
54. Lei Sun, "Methods for Quality Monitoring in Ultrasonic Welding of Carbon Fiber Reinforced Polymer," D. Eng in Manufacturing, 2021. co-advised with Pingsha Dong.

***Ph.D. Students Advised/Co-Advised at other Institutions***

1. Xintao Cui, "Lightweight Auto Body Design Using Multi-Material Construction Method," 2007, Tianjin University. (Current position, Senior Engineer, R&D Center, Tianjin FAW-Xiali Automobile Co.)
2. Shumin Wan, "Modeling and Experimental Investigation of Self-Piercing Riveting Process," 2008, Tianjin University. (Current position: Associate Professor, Tianjin University).

3. Zhiliang Wu, "Modeling of Contact Resistance in PEM Fuel Cells," 2009, Tianjin University. (Current position: Associate Professor, Tianjin University).
4. Honggang Yang, "Mechanisms and characteristics of tube to sheet resistance welding," 2009, Shanghai Jiaotong University. (Current position: Shanghai Dian Ji University).
5. Ying Liu, "Quality Evaluation and Optimization Design of Robot Assisted Vessel Sutured Anastomosis," 2010 Tianjin University. (Current position: Tianjin Institute of Scientific & Technical Information).
6. He Wang, "Modeling and Optimization of Variety Induced Manufacturing Complexity in Mixed Model Assembly Systems," 2011, Shanghai Jiaotong University.
7. Kaifeng Wang, "Preform annealing age-hardenable aluminum sheets," 2013, Tianjin University.

### **E.5 MS Students Advised:**

1. Mark Rearick, "Optimal Fixture Design for Deformable Workpieces," May, 1992. (Co-chair: S. M. Wu) (Currently with Ford)
2. Kenneth Wentland, "Dimensional Control of Automobile Body in Design and Manufacturing," August, 1992 (Co-chair: S. M. Wu). (Currently with Ford)
3. Sean M. Gelston, "Torque Signature Monitoring in Fastening," May, 1993. (Currently with Victori Capital)
4. Tamar Liebermann, "Tolerance Synthesis for Sheet Metal Assembly," Dec. 1995. co-chair with Jun Ni. (with General Motors Cadillac/Luxury Car Division).
5. Zhi-Qin Li, "Impact of Welding Machine Characteristics on Sheet metal Assembly Dimensions," August, 1997.
6. Ivan Lin, "Analysis of Automotive Body Assembly System Configurations," August, 1997.
7. Pierre-Emmanuel Pazdej, "Precision Locating in Machining without Precision Locators," Graduation date: Dec. 1998.
8. Sharon Wolf, "Influence of weld spacing on bean stiffness," May 1999.
9. Felicia Brittan, "Experimental Research on Self-Piercing Riveting Process," May 2002.
10. Brenton Bergkoeter, "Variation Simulation for Compliant Airframe Assembly," May 2003.
11. Christopher Berry, "Manufacturing Systems for Personalized Shoes," Dec. 2011
12. Lihang Nong, "Real Time Control of Ultrasonic Welding," May 2012. Entrepreneur.
13. Liang Xi, "Performance Modeling of Ultrasonic Weld Joints," May 2014.
14. Daniel Shriver, "Joining of Dissimilar Materials," 2016. Currently with Toyota USA
15. Trey Neveux, "Distortion modeling in Ship Building," 2018. Currently with SpaceX.

### **F. SERVICE**

I have made significant contributions to universities, professional societies, and the nation through a wide range of service activities.

At the national/international level, I served on various committees for ASME, SME and CIRP. I served as the Editor-in-Chief of SME Journal of Manufacturing Systems from January 2008 through June 2014, and as the chair of Scientific Committee on Assembly and Life Cycle Engineering of CIRP in from 2010

through 2013. Since my election to the National Academy of Engineering, I served as a member of the Executive Committee for the Transportation Research Board, NAE Strategic Planning Committee, and as a member of the NAE Peers Committee.

Representing the University of Georgia, I currently serve on the Advisory Board for Georgia Lt. Governor's Partnership for Inclusive Innovation, and on the board of the Rowen Foundation.

At the University of Michigan, I held several leadership positions with progressively more responsibilities, including graduate program chair, Director of Program in Manufacturing, Director/Executive Director of Interdisciplinary Professional Programs, Associate Dean (two different roles), and Vice President for Research. I also served as chair or member of various committees/task forces.

### **F.1 Administrative Experience at UGA**

- Senior Vice President for Academic Affairs and Provost, July 1, 2019 - present

### **F.2 Administrative Experience at U of M**

- Vice President for Research, University of Michigan, January 2014 – June 2019
- Associate Dean for Academic Affairs, College of Engineering, Sept. 1, 2009 – December 2013
- Associate Dean for Research and Graduate Education, College of Engineering, Jan 1, 2007 – August 31, 2009
- Executive Director, Michigan Interdisciplinary and Professional Engineering (InterPro). March 2006 – Dec. 2006.
- Director, Interdisciplinary Professional Programs, Oct. 2002 – Feb. 2006.
- Director, Program in Manufacturing, Jan. 2002 – Feb. 2006.
- Graduate Program Chair, Mechanical Engineering, Sept. 1999 – June 2001.
- October 1998 – December 2002, Director, National Science Foundation Industrial University Cooperative Research Center (I/UCRC) on "Dimensional Measurement and Control in Manufacturing", The University of Michigan, The National Science Foundation sponsored Industrial/ University Cooperative Center has eight industrial members with an annual budget of \$300K 50 \$500K.
- 7/1994 - October 1998, Associate Director, National Science Foundation Industrial University Cooperative Research Center (I/UCRC) on "Dimensional Measurement and Control in Manufacturing", The University of Michigan.
- March 1998 – June 2019, Associate Director, General Motors Satellite Research Laboratory and Divisional Director for Advanced Body Design and Manufacturing Division.

### **F.3 Service to Government Agencies or Professional Organizations**

#### **1. Government and National Organizations**

- Peers Committee, National Academy of Engineering, 2020 - 2022
- Strategic Planning Committee, National Academy of Engineering, 2020
- Member of Executive Committee, Transportation Research Board, 2016 – 2022
- Member, National Materials and Manufacturing Board Committee, May 2015 - 2018
- Member, Operations Committee, Advanced Manufacturing Partnership. Also Co-Lead, Workstream on Shared Infrastructure and Facilities, Advanced Manufacturing Partnership. Developed recommendations for the National Network for Manufacturing Innovation and the Manufacturing Innovation Institutes. 2011 – 2014.
- Served as a member of review panels for *National Science Foundation proposals*

- Co-Chair, National Science Foundation Workshop on “Innovation and Operations of Manufacturing Systems”, May 12 – 14, 2010, Ann Arbor.

2. Editorial Position and Paper Reviews:

- Editor-in-Chief, Journal of Manufacturing Systems, Society of Manufacturing Engineers. Jan. 2008 – June 2014.
- Associate Editor, CIRP Journal of Manufacturing Science and Technology, 2013 – present.
- Founding Editor in Chief, Procedia Manufacturing. 2014 – August 2019
- Chair (2011-2013), Vice Chair (2008-2010), Scientific and Technical Committee (STC) on Life Cycle Engineering and Assembly, International Academy for Production Engineering (CIRP)
- Associate Editor, *CIRP Journal of Manufacturing Science and Technology*, Sept. 2010 - Present
- Guest Editor, *International Journal of Flexible Manufacturing Systems, Special Issues on Reconfigurable Manufacturing*. 2006.
- Associate Editor – *International Journal of Flexible Manufacturing Systems*, September 1997 – 2006
- Associate Editor – *ASME J. of Mfg Science and Engineering*, January 2000 – Dec. 2006
- Member of Editorial Board, *Nanotechnology and Precision Engineering*, Jan. 2003 - present
- Reviewer various journals, transactions, and conferences.