
PERSONAL SUMMARY

- Nationally active in the automotive manufacturing field (ASME Manufacturing Public Policy Task Force member, Executive Board of SME North American Manufacturing Research Institute, Executive Committee of ASME Manufacturing Engineering Division, Fellow of ASME, Fellow of SME).
- Founding faculty member of Clemson University Automotive Engineering graduate program.
- Ten+ years industrial experience in manufacturing engineering and management.
- Professional Engineer, SME Certified Manufacturing Engineer, ASQ Certified Quality Engineer, BMW Lean Six Sigma Black Belt.
- Research in manufacturing process physical modeling and model-based control approaches.
- Teaching in mfg. process modeling, Smart Manufacturing, Quality, and launch processes.

PROFESSIONAL EXPERIENCE

Clemson University

International Center for Automotive Research (CU-ICAR)

Clemson, SC

Professor and BMW SmartState Chair in Automotive Manufacturing,

Automotive Engineering

Dec. 2016 – present

(joint appointment in Mechanical Engineering)

- Director, NSF NRT in Technology-Human Integrated Knowledge Education and Research (THINKER), educating graduate students at the intersection of human data and machine data in the manufacturing enterprise.
- With a cross-disciplinary team, founded the Clemson Vehicle Assembly Center, a new pedagogical venture where research and workforce development occur together, across the educational spectrum.

CECAS Dean's Professor, Automotive Engineering

Aug. 2015 -Nov. 2016

- Director, Okuma Education Partner Center (www.okuma.com/cu-icar).
- Graduate Program Coordinator (2012-2016).

Associate Professor, Automotive Engineering

Aug. 2012 - Jul. 2015

- Founded Automotive Engineering department at Clemson: Part of a team that developed a new interdisciplinary curriculum, engaged industrial interaction for research and education, and set long-term strategy.
- Heading a set of outreach activities for K-12 STEM Education.

Assistant Professor, Mechanical Engineering

Jul. 2006 - Jul. 2012

- Conducting research in machining, real-time manufacturing control and automation.
- Teaching Manufacturing Process Modeling and Selection, Automation Integration, Automotive Manufacturing Processes, and Vehicle Production Preparation.

PROFESSIONAL EXPERIENCE (continued)

Georgia Institute of Technology

Atlanta, GA

Graduate Research Assistant

Jan. 2004 - May 2006

Research Sponsors: The Timken Company, National Instruments

- Integrate friction modeling to the control of a prototype system to automatically measure and center cylindrical objects for metrology or machining for real-time manufacturing applications.
- Create self-adapting system that learns about its instantaneous environment through friction estimation and modifies its control scheme based on this knowledge.
- Set up distributed communication data structure between deterministic hardware and user interface computer using an *ad hoc* Local Area Network.
- Integrate motion control and data collection requirements in overall system design.

Hitachi Unisia Automotive

Monroe, GA

Assistant Engineering Manager

May 2003 - Dec. 2003

- Accountable for engineering operations for US auto customers (7 products).
- Responsible for one engineer and two supervisors, 4 manufacturing lines.
- Primary engineering representative for customer audits and customer engineering.
- Liaison to customer for planning activities and defect analysis resolution.

Senior Project Engineer

Oct. 1999 - Apr. 2003

- Lead implementation of new product programs, including product design input (Design for Manufacturing), process design, quality planning, equipment specification, line qualification and component supplier evaluations.
- Head introduction of two new US automotive customers to the company.
- Company interface for construction of new 120,000 ft² manufacturing facility.
- Chaired Safety Kaizen team to promote improvements and OSHA compliance.

SKF USA Inc.

Gainesville, GA

Manufacturing Unit Manager

Jan. 1998 - Sep. 1999

- Responsible and accountable for performance of three manufacturing channels.
- Analyze performance and cost data to drive organization improvement.
- Managed staff of sixty line personnel, engineers, and managers.

Manufacturing Engineer

Aug. 1993 - Dec. 1997

- Design, install and start up new cold rolling manufacturing process.
- Initiate Statistical Process Control (SPC) systems and train analysis personnel.
- Lead improvement team in setup downtime reduction activities.
- Design grinding and rolling machine tooling (parametric design in AutoCAD).

EDUCATION

Georgia Institute of Technology

Atlanta, GA

Ph.D. Mechanical Engineering GPA = 4.0 / 4.0

Jan. 2002-May 2006

- Major area: Manufacturing Minor area: Industrial and Systems Engineering
- Dissertation: *Geometry Estimation and Adaptive Actuation for Centering Preprocessing and Precision Measurement*
- Completed Manufacturing Education Program (MEP) certificate.
- Coursework in manufacturing quality control, manufacturing process analysis, automated process planning, discrete event simulation, metrology and measurement systems.

Georgia Institute of Technology

Atlanta, GA

MS Mechanical Engineering GPA = 4.0 / 4.0

Aug. 1997-Aug. 2001

- Major area: Manufacturing Minor area: Design Optimization
- Achieved through Distance Learning while employed full time.
- Coursework in design optimization, open system design, machine tool control, statistics, solid modeling, operations research, economic decision analysis, warehousing.

Virginia Polytechnic Institute and State University

Blacksburg, VA

BS Mechanical Engineering GPA = 3.4 / 4.0

Sep. 1988-May 1993

- Senior project: *Design of a Speaking Children's Book Utilizing Acoustic Piezoelectrics*
- Built a prototype book that reads itself. Work done in conjunction with Center for Intelligent Material Systems and Structures (CIMSS).

HONORS AND AWARDS

Internal

- Nominee, College of Engineering Computing and Applied Science, Clemson University Researcher of the Year Award (2019)
- Clemson University Board of Trustees Award for Faculty Excellence (2018)
- BMW SmartState Endowed Professorship of Automotive Manufacturing (2016)
- College of Engineering Computing and Applied Science Dean's Professorship (2015 - 2018)
- Clemson University College of Engineering and Science McQueen Quattlebaum Faculty Achievement Award (*highest distinction awarded by the College to engineering faculty; recognizes Engineering leadership*) (2013)
- Clemson University Board of Trustees Award for Faculty Excellence (2012)
- Clemson University Board of Trustees Award for Faculty Excellence (2011)
- Clemson University College of Engineering and Science Collaboration Award (2010)

External

- Runner up, NSF David Dornfeld Manufacturing Vision Award and Blue Sky Competition (2018)
- Fellow of SME (2017)
- Fellow of the American Society of Mechanical Engineers (2016)
- Institution of Mechanical Engineers (UK) Thatcher Brothers Prize (*awarded for the best paper on a manufacturing industries subject*) (2016)
- Selected as ASME Mfg. Engineering Division Executive Committee Member (2016)
- Elected SME North American Mfg. Research Institute Executive Board member (2016)
- Advisor for student winner of Grand Prize for US Dept. of Defense / National Center for Defense Manufacturing and Machining MTConnect Challenge Part II (2014)
- 3rd place, ASME Manufacturing Science and Engineering Conference Best Paper Award, (2014)
- Institution of Mechanical Engineers (UK) George Stephenson Gold Medal (*awarded for best original paper published by the Institution during the past 12 months*) (2013)
- SAGE Best Paper Prize, Journal of Engineering Manufacture (2012)
- Society of Automotive Engineers Ralph R. Teetor Educational Award (2011)
- South Carolina Governor's Young Researcher Award for Excellence in Scientific Research (2011)
- ASME Manufacturing Engineering Division Award for Best Organizer of Symposium and Sessions (BOSS) (2011)
- National Science Foundation CAREER Award (2010)
- General Motors Manufacturing Scholar (2005-2006)
- Best Presentation Award, International Conference on Agility, Helsinki (2005)
- American Society for Quality Joe D. Simmons Scholar (2004)

HONORS AND AWARDS (continued)

Student Awards

- NAMRC47 Student Research Presentation Award, Overall Winner (2019), Sidharth Baskaran
- Honorable Mention, National Science Foundation Graduate Research Fellowship (2019), Tyler Grimm
- Honorable Mention, Robotics/Automation/Manufacturing Category, NASA Tech Briefs Create the Future Design Contest (2018), Matthew Krugh
- First runner up, SME North American Manufacturing Research Conference Student Presentation Competition (2018), Abram Pleta
- Clemson Automotive Engineering Department Outstanding PhD Student (2017), Brandt Ruszkiewicz
- Hitachi High Technologies Electron Microscopy Graduate Fellowship (2017), Brandt Ruszkiewicz
- National Science Foundation Graduate Research Fellowship (2017-2020), Brandt Ruszkiewicz
- Autodesk® Fusion 360™ student design challenge award (2016), Farbod Akhavan Niaki
- SME E. Wayne Kay Graduate Scholarship (2016), Brandt Ruszkiewicz
- R.C. Edwards Fellowship (2015-2017), Brandt Ruszkiewicz
- Grand Prize in the US Dept. of Defense / National Center for Defense Manufacturing and Machining MTConnect Challenge Part II (2014), Valerie Pezzullo
- 3rd place, ASME Manufacturing Science and Engineering Conference Best Paper Award, (2014), Kavit Antani
- Clemson College of Engineering and Science Outstanding Young Alumni Award (2014), Mathew Kuttolamadom
- Clemson Mechanical Engineering Excellence in Engineering Award (*given for the top undergraduate honors research project*) (2014), Elizabeth Jones
- Clemson University College of Engineering and Science Graduate Research and Discovery Symposium poster competition second place (2014), Farbod Akhavan Niaki
- Clemson Calhoun Honors College Research Grant (2013), Elizabeth Jones
- Clemson Calhoun Honors College Research Grant (2013), Andrew Barrett
- Society of Manufacturing Engineers (SME) E. Wayne Kay Graduate Scholarship (2012), Joshua Jones
- Clemson Automotive Engineering Department Outstanding PhD Student (2012), Wes Salandro
- Clemson Material Science and Engineering Department Best Student Presentation Award (2012), Mathew Kuttolamadom
- SME E. Wayne Kay Graduate Scholarship (2011), Wes Salandro
- SME Schneider-Bingle Endowed Scholarship (2011), Joshua Jones
- Clemson Distinguished Graduate Student Research Fellowship (2011), Wes Salandro
- Honorable Mention, National Science Foundation Graduate Research Fellowship (2011), Wes Salandro
- Honorable Mention, National Science Foundation Graduate Research Fellowship (2010), Wes Salandro

HONORS AND AWARDS (continued)

Student Awards (continued)

- Clemson University George R. MacDonald Fellowship (2009), Wes Salandro

INVITED PRESENTATIONS AND SEMINARS

- Mears, L., Stringfellow, P. (2019). “Driving Toward a New Model for Automotive Manufacturing Education,” (invited talk) *Advanced Manufacturing Education Day, Commonwealth Center for Advanced Manufacturing*, Petersburg, VA, May 1, 2019.
- Mears, L. (2019). “SmartState Centers: Just the Beginning?,” (invited panel session) *SmartState Council of Chairs Forum*, Charleston, SC, April 25, 2019.
- Mears, L., Siebrecht, T., Akhavan Niaki, F. (2019). “Reflections on Collaboration: Stochastic Modeling of the Interaction of Tool Wear and the Machining Affected Zone in Nickel-Based Superalloys and Application in Dynamic Stability,” (invited talk) *NSF/DFG Workshop on U.S.-German Collaborative Research in Advanced Manufacturing II*, Dulles, VA, April 2, 2019.
- Mears, L., Antani, K. (2019). “Technologies Toward Zero Defects for Assembly,” (invited talk) *South Carolina/Fraunhofer Industry 4.0 Seminar*, Columbia, SC, March 7, 2019.
- Mears, L. (2018). “A Case in SmartState Center Collaboration,” (invited panel session) *South Carolina Aerospace Conference*, Columbia, SC, October 10, 2018.
- Mears, L. (2018). “South Carolina Fraunhofer Project Center,” (invited panel session) *South Carolina Aerospace Conference*, Columbia, SC, October 10, 2018.
- Mears, L. (2017). “How can current and new research efforts be leveraged by the machine tool and machining industry?,” (invited panel session) *NSF Workshop on Research Needs in Machining and Machine Tools*, Alexandria, VA, March 5-6, 2018.
- Mears, L. (2017). “Establishing the Need for Extended Manufacturing Engineering Education Funding,” (invited talk and panel session) *ASME Noontime Congressional Briefing: DOD’s New Manufacturing Engineering Education Grant Program* (in conjunction with The House and Senate Manufacturing Caucuses and The Senate Competitiveness Caucus), Washington, DC, July 25, 2017.
- Mears, L., Pleta, A., Krugh, M. (2017). “Cost-Driven Machining Planning: Industry 4.0 integration and relating path to wear,” (invited talk) *Okuma America Corporation Summer Showcase*, July 19-20, 2017.
- Mears, L. (2017). “Vision for BMW Chair in Advanced Manufacturing: Team, Strategy, and Funding Approaches,” (invited talk) *6th Annual SmartState Council of Chairs*, Charleston, SC, April 27, 2017.

INVITED PRESENTATIONS AND SEMINARS (continued)

- Mears, L. (2017). “Industry 4.0: SMART Factories and Big Data Transformation,” (invited panel session) *6th Annual SC Automotive Summit: Where Connectivity Happens*, Greenville, SC, February 21, 2017.
- Mears, L. (2016). “Best practices and pitfalls in US Germany research collaborations: Setting up a visiting scholar stream,” (invited talk) *NSF-DFG Workshop on U.S.-Germany Collaborative Research in Advanced Manufacturing*, TU-Darmstadt, February 10, 2016.
- Mears, L. (2015). “Automotive Industry: Research (R)evolution and new Educational Paradigms,” (invited presentation and panel session) *COPEN Conference*, Indian Institute of Technology - Bombay (IITB), December 9, 2015.
- Mears, L. (2015). “Digital Manufacturing: The Human Effect,” (invited presentation and panel session) *Bosch Industrial Summit: Leveraging Public-Private Partnerships for Regional Growth*, Carnegie Mellon University, September 17, 2015.
- Mears, L., (2015). “Digital Manufacturing and Industrie 4.0: Future Directions,” (invited talk) *BMW AG*, Munich, July 14, 2015.
- Mears, L., (2015). “Manufacturing Plant Energy Optimization,” (invited talk) *BMW AG*, Munich, July 14, 2015.
- Mears, L., Summers, J., Mocko, G., Kurz, M. (2015). “Improving Assembly Systems Data and Decision-Making,” (invited talk) *BMW AG*, Munich, July 14, 2015.
- Mears, L., Apon, A., Venayagamoorthy, K. (2015). “Big Data: Big Opportunities without Big Costs,” (invited panelist) *BMW AG*, Munich, July 14, 2015.
- Mears, L., (2013). “Electrically-Assisted Forming of High-Strength Steels,” (invited talk) *Universitat de València*, October 2, 2013.
- Mears, L., (2013). “Model-Based Control and Automated Learning through Bayesian Updating: Applications Across the Time Scale,” (invited talk) *University of North Carolina-Charlotte*, June 6, 2013.
- Mears, L., Kuttolamadom, M., Jones J. (2013). “Manufacturing using Lightweight Metals,” (invited talk) *Southern Advanced Materials Research Exchange II*, Clemson University, February 28, 2013.
- Mears, L., (2012). “Model-Based Control of Machining Processes and Extension to Condition-Based Maintenance Systems,” (invited talk) *University of North Carolina-Charlotte*, May 7, 2012.
- Mears, L., Kuttolamadom, M., Jones J. (2012). “Lightweight Material Manufacturing Approaches for the Automotive Industry,” (invited talk) *Southern Advanced Materials Research Exchange*, Oak Ridge National Lab, Oak Ridge, TN, May 31, 2012.

INVITED PRESENTATIONS AND SEMINARS (continued)

- Mears, L. (2011), “Case Study to Predict Failure: An Integrated Condition-Based Monitoring System,” (invited talk), *Interactive Manufacturing Experience*, Las Vegas, NV, September 12-13, 2011.
- Mears, L. (2011), “Improving Cost of Ownership: A Planned Maintenance Approach,” (invited talk), *Interactive Manufacturing Experience*, Las Vegas, NV, September 12, 2011.
- Mears, L. (2011), “Integration of a Predictive Maintenance System to the Machine Tool,” (invited talk), *Okuma America Partners Group*, August 15, 2011.
- Mears, L. (2010), “Electrification of the Transportation Industry” Presentation followed by hosting of panel session, *ASME International Manufacturing Science and Engineering Conference (MSEC2010)*, Erie, PA, October 15, 2010.
- Mears, L. (2010) “Preparing for and writing proposals to NSF - with additional thought on the CAREER” (invited talk), *2010 NSF Proposal Writing Workshop*, Lincoln, NE, September 1-2, 2010.
- Mears, M.L. (2009) “Real-Time Prototyping and Deployment Controls for Automotive and Manufacturing Applications,” (invited talk) *NI-Week*, Austin, TX, August 4, 2009.
- Mears, M.L. (2008) “Quality Integration in the Automotive Supply Chain,” (invited talk) *Lang-Mekra Supplier Day*, Columbia, SC, September 16, 2008.
- Mears, M.L. (2008) “Simulation and Model-Based Machining to Support Titanium Use in the Commercial Automotive Industry,” (invited talk) *National Center for Manufacturing Sciences (NCMS) Automotive Summit*, Ann Arbor, MI, July 23, 2008.
- Mears, M.L. (2008) “Energy-Based Precision Positioning and Its Application to Automotive Manufacturing,” (invited talk) *Marquette University*, Milwaukee, WI, March 6, 2008.
- Mears, M.L. (2007) “Employment in the Automotive Industry,” (invited talk) *Greenville Technical College*, Greenville, SC, November 29, 2007.
- Mears, M.L. (2007) “Training and Keeping the Technical Future of SC in Lightweight Composite Manufacturing,” (invited talk) *South Carolina Composite Economic Cluster Conference*, Spartanburg, SC, November 11, 2007.
- Mears, M.L. (2007) “Precision Machining and Measurement with Adaptive Control and Online System Identification,” (invited talk) *NI-Week*, Austin, TX, August 19, 2007.
- Mears, M.L. (2007) “Real-Time Identification of Sliding Friction Using LabVIEW FPGA,” (invited talk) *Applied Control and Technology Consortium (ACTC) Automotive Control Workshop*, Auburn Hills, MI, March 19, 2007.
- Mears, M.L. (2006) “Opportunities in Automotive Education in South Carolina,” (invited talk) *Concours d’Elegance Motoring Show Education Symposium*, Hilton Head, SC, November 4, 2006.

INVITED PRESENTATIONS AND SEMINARS (continued)

- Mears, M.L. (2005) “Control Design Utilizing LabVIEW Real-Time Deterministic Looping,” (invited talk) *National Instruments Real-Time Symposium*, University of Alabama, Tuscaloosa, AL, June 2005.
- Mears, M.L. (2005) “Control Design Utilizing LabVIEW Real-Time Deterministic Looping,” (invited talk) *National Instruments Real-Time Symposium*, Mississippi State University, Starkeville, MS, June 2005.
- Mears, L. (2005) “Cost Modeling of Positioning Systems for Manufacturing and Metrology,” General Motors Scholar Final Presentation, *GM R&D*, Warren, MI, February 2005.
- Mears, M.L. (2005) “Control Design Utilizing LabVIEW Real-Time Deterministic Looping,” (invited talk) *National Instruments Real-Time Symposium*, McGill University, Montreal, Quebec, February 2005.
- Mears, M.L. (2005) “Control Design Utilizing LabVIEW Real-Time Deterministic Looping,” (invited talk) *National Instruments Real-Time Symposium*, University of Toronto, Ontario, February 2005.
- Mears, M.L. (2004) “Design of a Centering Control System for Precision Measurement of Bearing Rings,” *Georgia Tech Industrial Advisory Board* presentation and poster session, Atlanta, October 20, 2004.
- Mears, M.L. (2001) “Flow Testing Cycle Time Reduction Using Statistical Approximation Techniques,” *Unisia-JECS Engineering Summit*, Atsugi, Japan, September 21, 2001.

RESEARCH GRANTS

Total Sponsored Research Funding = \$14.5M (\$6.5M Mears credit share)

- “Sensing Platform for Electrical Connector Confirmation,” (Samsung Home Appliances). Manufacturing quality validation for consumer products.
2018-2019, \$174,980 (\$69,992). Role=PI
- “TIME for Robotics,” (Office of Naval Research award N00014-18-1-2882). Department of Defense Manufacturing Engineering Education Grant Program. Workforce development for advanced robotic systems through virtual and augmented reality training in a realistic manufacturing environment.
2018-2021, \$1,798,744 (\$404,717). Role=Co-PI
- “NRT: Technology-Human Integrated Knowledge Education and Research (THINKER),” (National Science Foundation grant 1829008). Graduate education program establishment in human integration to the digital manufacturing enterprise; integration of curricula with undergraduate and technical college programs.
2018-2023, \$2,993,421 (\$1,017,763). Role=PI

RESEARCH GRANTS (continued)

- “Augmented Associate Phase 3,” (BMW AG).
Sensing, edge computing, and state estimation strategies for human interaction with Assembly.
2018, \$160,000 (\$80,000). Role=PI
- “Interaction of Tool Wear and the Machining Affected Zone in Nickel-Based Superalloys,”
(National Science Foundation grant 1760809).
Modeling tool wear progression bifurcation in superalloy machining, and using that as a
predictor of the machining affected zone; applications in path planning and stability.
2018-2022, \$439,999 (\$220,000). Role=PI
- “Smart Companion,” (Advanced Robotics for Manufacturing Institute).
Development of a mobile robotic assistant for assembly line workers. Integration of control
and manufacturing systems, and simulation of the control system in a virtual environment
2018-2019, \$1,055,684 (\$263,921). Role=Co-PI
- “OEE: Predictive Maintenance,” (BMW AG).
Sensing, edge computing, and state estimation strategies for downtime reduction, as part of
maintenance strategy planning.
2017-2018, \$166,263 (\$99,758). Role=PI
- “OEE: Vehicle Assembly Center,” (BMW AG).
Infrastructure support to enhance IT and ancillary systems in pilot vehicle manufacturing hall.
2017-2018, \$149,560 (\$74,780). Role=PI
- “Support of Postdoctoral Researcher for Launching the Robotics Institute and Assembly
Center,” (Clemson Vice President of Research Office).
Development of a Research Scientist to be on the team for large Center efforts.
2017, \$76,592. Role=PI
- “Augmenting Assembly Associate to Ensure Quality,” (BMW AG).
Wearable sensing and feedback mechanisms for improving worker integration to the digital
manufacturing system.
2017, \$120,000 (\$60,000). Role=PI
- “Energy Health Monitoring Phase 5,” (BMW AG).
Application of machine health monitoring principles to manufacturing energy systems.
2016-2017, \$60,000 (\$30,000). Role=PI
- “South Carolina Rapid Innovation Pilot Study,” (South Carolina Department of Commerce).
Pilot program to realize innovation prototypes for manufacturing companies through rapid
ideation-build-test cycles.
2017, \$226,000 (\$113,000). Role=PI

RESEARCH GRANTS (continued)

- “Pilot Assembly Center,” (BMW MC).
Design and construction of a vehicle assembly hall for prototyping digital manufacturing and control solutions.
2017, \$170,000. Role=PI
- “Fraunhofer Planning Workshop,” (South Carolina Department of Commerce).
Conduct a planning workshop with University of South Carolina and Fraunhofer USA on Innovation to support economic development in South Carolina.
2017, \$35,000. Role=PI
- “Human Data Use for Manufacturing: Gait Analysis Pattern Identification to Provide Process Information,” (Robert Bosch LLC).
Modeling and measuring of human behaviors in assembly manufacturing systems.
2016, \$70,904 (\$35,452). Role=PI
- “Themed preliminary investigation (TPI) of Friction Element Welding (FEW),”
Creation of simulation models for the FEW process, and prediction of joint metrics.
2016-2018, \$474,178 (\$292,523). Role=PI
- “Sensing and Prediction for Manual Assembly Processes,” (BMW AG).
Sensing platforms and data streaming for measuring quality of manual assembly processes.
2016-2017, \$100,000. Role=PI
- “Energy Health Monitoring Phase 4,” (BMW AG).
Application of machine health monitoring principles to manufacturing energy systems.
2016-2017, \$100,000 (\$50,000). Role=PI
- “Machinability Modeling and Data Use for Manufacturing: Cost Reduction for Manufacturing of Superalloy Components through Information,” (GE Power and Water).
Protocols and control systems for knowledge-based machining.
2015-2016, \$235,488 (\$117,744). Role=PI
- “Plant Energy Modeling and Optimization: Phase 3,” (BMW AG).
Modeling energy consumption in the manufacturing plant and performing pilot improvement studies for energy use reduction.
2015-2016, \$120,000. Role=PI
- “Process-Based Measurement and Prediction of Assembly Quality,” (BMW AG).
Use of process-based metrics for prediction of assembly quality.
2014-2015, \$134,524 (\$100,893). Role=PI
- “Product-Based Prediction of Assembly Quality,” (BMW AG).
Use of product design and interfaces for prediction of assembly quality.
2014-2015, \$151,301 (\$37,825). Role=Co-PI

RESEARCH GRANTS (continued)

- “Electrically-Assisted Forming Technique Development,” (Johnson Controls Inc.).
Investigation of electrically-assisted forming process design for seat component manufacture.
2014-2015, \$125,011. Role=PI
- “Early Career Forum Event Support,” (ASME Old Guard).
Support for hosting an event at the co-located ASME MSEC conference and SME NAMRC conference for students to meet with panelists from different career fields.
2014, \$2,000. Role=PI
- “Factory Intelligence for Improving Machining Operations,” (GE Power and Water).
Generation and use of model-based information in the manufacturing enterprise.
2013-2014, \$266,297. Role=PI
- “Sustainable Manufacturing Plant Assessment,” (BMW Manufacturing Corporation).
Analysis and optimization of energy generation and consumption in vehicle assembly systems.
2013-2014, \$155,139. Role=PI
- “Simulation of Paint Shop Material Handling,” (BMW Manufacturing Corporation).
Discrete-event analysis of automated guided vehicles in manufacturing, planning for need.
2013-2014, \$11,442. Role=PI
- “Flow Drill Screwing Process Modeling and Enhancement,”
Modeling, optimization and enhancement of one-sided multi-material joining processes.
2013-2015, \$442,661. Role=PI
- “Machining Process Monitoring on Superalloys Phase 2,” (GE Energy).
Machinability and process planning for processing superalloys used in gas turbine generators.
2013, \$142,605. Role=PI
- “Student Participation Grant for National Manufacturing Conferences: 2013 ASME MSEC and SME NAMRC 41,” (National Science Foundation grant 1263802).
Support grant for students to travel to national manufacturing conference.
2013-2014, \$24,900. Role=PI
- “Electrically-Assisted Machining of Superalloys,” (Clemson Calhoun Honors College).
Internal funding for undergraduate research projects, supporting 2 students.
2013, \$1,500
- “Machining Process Monitoring on Superalloys,” (GE Energy).
Machining modeling and control approaches for processing superalloys used in gas turbines.
2012, \$130,691 (\$65,345). Role=PI

RESEARCH GRANTS (continued)

- “Student Participation Grant for National Manufacturing Conferences: 2012 ASME MSEC and SME NAMRC 40,” (National Science Foundation grant 1156247).
Support grant for students to travel to national manufacturing conference.
2012-2013, \$24,900. Role=PI
- “Robust Work Optimization,” (BMW AG).
Optimization of task distribution in the manufacturing environment.
2011-2013, \$472,275 (\$160,574). Role=Co-PI
- “Titanium Cutting Analysis Using High-Performance Computing,” (National Center for Manufacturing Sciences).
Simulation of titanium machining with consideration of material and process variability.
2010-2012, \$144,948 (\$72,474). Role=PI
- “CAREER: Model-Based Control of Machining Processes and Scalability for Manufacturing System Control,” (National Science Foundation grant 0954318).
Integration of physical models to real-time machining process and manufacturing system control. Pilot of 7th grade Gateway to Technology vehicle build and competition.
2010-2016, \$406,150. Role=PI
- “Micro-Feature Mold Development,” (Hoowaki LLC).
Study of the effect of surface microstructures on tribological behavior and development of a manufacturing process.
2009-2011, \$74,793. Role=PI
- “Integrating Lightweight Automotive Materials,” (National Center for Manufacturing Sciences).
Redesign of automotive components in titanium, model-based control of manufacturing for optimized lifecycle cost.
2009-2010, \$169,023 (\$84,511). Role=PI
- “Computer-Aided Production Engineering to Support Value-Added Production System: Powertrain Optimization,” (BMW AG).
Discrete-event simulation of powertrain assembly to drive value-added improvements, development of automated planning tool.
2009-2010, \$133,798 (\$66,898). Role=Co-PI
- “Authentic Logistics Projects -- A CELDi Extension,” (National Science Foundation grant 0641414).
Enhancement of Middle School technical curriculum through student involvement with manufacturing logistics research.
2009, \$10,000 (\$4000). Role=Co-PI

RESEARCH GRANTS (continued)

- “Machining Accuracy Improvement through Visual Control of an Active Stage,” (National Science Foundation grant 0800507).
Address fundamental accuracy issues of traditional machine positioning through vision processing and feedback control.
2008-2012, \$363,013 (\$181,506). Role=PI
- “Advanced Tweel Development: Meta-Materials Design, Analysis, and Manufacturing,” (Michelin Americas Research Corporation).
Develop manufacturing process in support of design of a new passenger car tire, analysis and control of polyurethane spin casting.
2008-2011, \$1,908,993 (\$343,619). Role=Co-PI
- “Computer-Aided Production Engineering to Support Value-Added Production System: Warehouse Simulation, Flow Analysis and Optimization,” (BMW AG).
Discrete-event simulation of an automated warehouse to drive value-added improvements.
2008-2009, \$108,038 (\$43,215). Role=PI
- “CAPE to support VPS – Engine Line Optimization; Improving throughput using Simulation,” (BMW AG).
Discrete-event simulation of an engine production facility to drive lean manufacturing improvements.
2008-2009, \$108,038 (\$32,411). Role=Co-PI
- “Development of a New Forecast Model for Service Parts Demand,” (BMW AG).
Model development to predict future demand for spare parts.
2008-2009, \$29,855 (\$14,928). Role=PI
- “Authentic Logistics Projects -- A CELDi Extension,” (National Science Foundation grant 0641414).
Curriculum development for secondary education incorporating manufacturing logistics and new delivery technologies.
2008, \$10,000 (\$4000). Role=Co-PI
- “Mud Fly-Off Measurement System,” (Michelin Americas Research Corporation).
Analysis of composition and properties of soil interaction with off-road tires, methodology for assessing tire performance in soil.
2007-2008, \$122,858 (\$61,843). Role=Co-PI

DONATIONS AND EQUIPMENT GRANTS

- ioxp software and support, SeeDaten, Inc. Virtual work instruction creation and deployment on augmented reality systems.
2019, \$100,000
- (4) PLC and associated control hardware, Siemens AG. S7 PLC, drives, I/O modules and integration to enclosure for use in educational assembly factory.
2017, \$43,500
- Skid for vehicle transport in an assembly factory, BMW Manufacturing Corp. Vehicle carrier with integrated lift to be retrofitted for use in educational assembly factory.
2017, \$23,000
- Software Donation and Maintenance Agreement, Gibbs and Associates. Donation of 50 licenses of GibbsCAM with updates for use in graduate AuE lab and undergraduate courses.
2009-present, \$488,235
- Machine Consignment and Engineering Partnership Agreement, Okuma Americas Corporation. Consignment of 3-axis and 5-axis milling machines, CNC lathe, and access to engineering support and partnership network.
2008-present, \$1,100,000 (\$880,000). Role=PI
- Hardware Donation, Caron Engineering. Power monitoring and control interface for machine tool monitoring and feedback.
2010, \$8,750
- Hardware Donation, Renishaw. On machine probing, signal conditioning, software.
2009, \$43,000
- Hardware Donation, Chipblaster Corp. High-pressure coolant system.
2009, \$22,000
- Robot Donation, Automation Engineering Corporation, 6-axis KUKA Robot for use in AuE Automation graduate course
2009, \$20,000
- Ultrasonic Welder Donation, Michelin North America, for Manufacturing research
2009, \$30,000
- Hardware Donation, National Instruments. Real-time controllers and I/O modules.
2008-2009, \$15,000
- Software Donation, Siemens Corp. TeamCenter PLM software (20 seats)
2008-2009, \$100,000

Laine Mears

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CURRENT PHD RESEARCHERS ADVISED AS CHAIR

- Matthew Krugh, Ph.D. candidate, Automotive Engineering (expected 2019)
Embedded Devices for Information Generation in Manual Manufacturing Processes
- Tyler Grimm, Ph.D. candidate, Automotive Engineering (expected 2022)
Modeling and Control of Electrically-Assisted Joining and Forming Processes
- Ethan Wescoat, MS candidate, Mechanical Engineering (expected 2020)
Information Generation in on Embedded System Machine Health Monitor

CURRENT MS RESEARCHERS ADVISED AS CHAIR

- Mark Allen, MS candidate, Mechanical Engineering (expected 2020)
Design and Prototyping of a Wire Harness Inspection System
- Brian Skoglund, MS candidate, Mechanical Engineering (expected 2020)
Assembly Quality Monitoring through Acoustic Emission Analysis

CURRENT UNDERGRADUATE ADVISEES

- Andrew Billings, Mechanical Engineering
Integration of Embedded Systems to Programmable Logic Controllers

PAST RESEARCHERS ADVISED AS CHAIR

(Lab alumni include 7 Postdoctoral researchers, 12 PhD, 10 MS, 10 Undergraduate Researchers, 14 Visiting Scholars)

Postdoctoral

- Dr. Farbod Akhavan Niaki, Research Assistant Professor, Automotive Engineering
Superalloy Machining Modeling, Multimaterial Joining, Pedagogical Advances (various projects)
- Dr. Lujia Feng, Postdoctoral Researcher, Automotive Engineering (2016-2018)
Process Health Monitoring Applied to Manufacturing Energy Flow
- Dr. Lanny Sitanayah, Postdoctoral Researcher, School of Computing (2015-2016)
Wireless Networks and Embedded Computing Applied to Manufacturing Systems
- Dr. Durul Ulutan, Postdoctoral Researcher, Automotive Engineering (2013-2014)
Machining Characterization of Superalloys
- Dr. Cristina Bunget, Postdoctoral Researcher, Automotive Engineering (2009-2012)
*Electrically-Assisted Forming of Titanium
Machining Characterization of Superalloys*
- Dr. April Bryan, Postdoctoral Researcher (2008)
*Characterization of Tool Wear on Complex Milling Cutter Surfaces
Titanium Applications in Automotive Manufacturing*
- Dr. Uli Burger, Postdoctoral Researcher (2008)
Characterization of Titanium Machining and Application of Models to Control

PhD

- Abram Pleta, Ph.D. candidate, Automotive Engineering (2018)
Machine Health Models for Superalloy Cutting Operations
- Jamie Skovron, Ph.D. candidate, Automotive Engineering (2018)
Multiphysics Modeling of Flow Drilling and Joining Process
- Brandt Ruszkiewicz, Ph.D. candidate, Automotive Engineering (2018)
Evaluation of Thermal Mechanisms to Predict the Transient Electroplastic Effect in Aluminum and an Investigation of Electrically-Assisted Drilling
- Farbod Akhavan Niaki, Ph.D. candidate, Automotive Engineering (2016)
Machine Intelligence Generation and Sharing in a Manufacturing System
- Lujia Feng, Ph.D. candidate, Automotive Engineering (2016)
Energy Use Modeling and Optimization in Large Manufacturing System
- Kavita Antani, Ph.D., Automotive Engineering (2014)
Learning and Optimization System for Manufacturing Task Distribution

PAST RESEARCHERS ADVISED AS CHAIR (continued)

PhD (continued)

- Parikshit Mehta, Ph.D. Mechanical Engineering (2013)
Model-based Control of Machining Operations
- Joshua Jones, Ph.D., Automotive Engineering (2012)
Flow Behavior Modeling and Process Control of Electrically-Assisted Forming (EAF) for Sheet Metals in Uniaxial Tension
- Mathew Kuttolamadam, Ph.D. Material Science and Engineering (2012)
Volumetric Tool Wear Assessment and Microstructural Modeling of Wear in the WC-Ti6Al4V Machining Tribosystem
- Wesley Salandro, Ph.D. Automotive Engineering (2012)
Grain Size and Contact Effects in Electrically-Assisted Deformation
- Chan Wong, Ph.D. Automotive Engineering (2011)
System Integration for a Novel Positioning System Using a Model-Based Control Approach
- Thomas Martens, Ph.D. Automotive Engineering (2011)
Microfeature-Enhanced Sinter Bonding of Metal Injection Molded (MIM) Parts to a Solid Substrate

MS

- Valerie Pezzullo, M.S., Mechanical Engineering (2014)
System-Level Control for Model-Based Machining Processes
- Hemanth Potluri, M.S. Automotive Engineering (2013)
Microstructural Evaluation of Superalloys Machined at Different Starting Conditions
- Seetha Ram Bavuluri, M.S. Mechanical Engineering (2012)
Setup Time Reduction in Machining Operations through Fixturing and Metrology
- Drew Werner, M.S. Mechanical Engineering (2011)
Predictive Modeling Approaches for Machine Tool Maintenance
- Manjesh Dubey, M.S. Mechanical Engineering (2011)
Process Optimization for Micro-Injection Molding
- Todd Titus, M.S. Automotive Engineering (2011)
Characterization and Control Feedback for Manual Manufacturing Operations
- Brian Stevenson, M.S. Automotive Engineering (2010)
Inductive Inspection System for Embedded Wire Geometry
- Sumalatha Yaski, M.S., Mechanical Engineering (2008)
Force Modeling and Sensing of Deformable Media in Channels
- Swathi Chimalapathi, M.S., Mechanical Engineering (2008)
Characterization of Nanocomposite Pressure Sensor in Multiple Environmental Domains

PAST RESEARCHERS ADVISED AS CHAIR (continued)

MS (continued)

- Soujanya Teppa, M.S., Mechanical Engineering (2008)
Bonding Strength Modeling of Polyurethane to Vulcanized Rubber As-Manufactured and After Dynamic Loading

Undergraduate

- Gregory Wilson, undergraduate researcher, Mechanical Engineering (2012, 2013, 2014)
Cutting Force and Microstructure Under Different Machining Conditions
- Nathan DeVol, undergraduate researcher, Mechanical Engineering (2012, 2013)
Cutting Force Prediction in Titanium Machining
- Corey Benson, undergraduate researcher, Mechanical Engineering (2013)
Experimental Setup for Flow Drilling Force and Torque Measurement
- Ryan Herrick, undergraduate researcher, Mechanical Engineering (2013)
Effect of Meshing on FEM Failure Predictability in Automotive Structures
- Elizabeth Jones, Undergraduate Researcher, Mechanical Engineering (2012-2013)
Cutting Torque Modeling of an Electrically-Assisted Machining Process
- Andrew Barrett, Undergraduate Researcher, Mechanical Engineering (2012-2013)
Force Modeling of Superalloy Machining
- Drew Werner, Undergraduate Researcher, Mechanical Engineering (2009)
Dynamic Evaluation of Nanocomposite Force Sensor
- Danielle Lanigan, Undergraduate Researcher, Industrial Engineering, co-advised with Professor Maria Mayorga (2009)
Outreach and Real World Problem Solving Positively Affects Students
- Marshall Saunders, Undergraduate Researcher, Mechanical Engineering (2007-2008)
Development of a Control and Sensing System for Dynamic Event Modeling
- Shannon Edd, Undergraduate Researcher, Mechanical Engineering, co-advised with Professor John Ziegert (2007)
Metrology Accuracy Characterization of Conical and Cylindrical Forms Using Small Included-Angle Data

PAST VISITING RESEARCHERS

- Dr. Peter Kerstiens, Professor, Fachhochschule Bocholt, Germany (2018)
Integration of Automation with Human Element in Assembly Environments
- Benjamin Franzil, undergraduate researcher, Hochschule Trier (2017)
Simulation of Human Behaviors in the Assembly Process
- Martin Michel, undergraduate researcher, Hochschule Birkenfeld (2015-16)
Effect of Tool Wear Condition on Surface Residual Stress in Machining of Superalloys
- Rohan Prasad, B.S. candidate, Indian Institute of Technology, Ropar (2015)
Modeling of Solid-State Stir Drilling Temperature Evolution
- Philipp Klee, undergraduate researcher, Hochschule Birkenfeld (2014)
Electrically-Assisted Machining of Superalloys
- Michael Schmitt, undergraduate researcher, Hochschule Birkenfeld (2013)
Mitigating Tool Wear in Superalloy Machining
- Cindy Stanley, undergraduate researcher, University of Notre Dame (2013)
Cutting Force Model Programming using MATLAB
- Martin Rokvam, Visiting Researcher, Arts et Métiers ParisTech (ENSAM) (2012)
Influence of Rake Angle on Forces in Rough Milling of Superalloys
- Endris Kerga, Visiting Researcher, Politecnico di Milano (2012)
Integration of Process Knowledge at Vehicle Design Refinement
- Christoph Spindler, Visiting Researcher, Fachhochschule Birkenfeld (2011)
Simulation of Vehicle Assembly Line Performance
- Andreas Emrich, Visiting Researcher, Fachhochschule Birkenfeld (2010)
Setup Time Reduction for Automated Machining Operation
- Thorsten Pröpper, Visiting Researcher, Fachhochschule Birkenfeld (2009)
Development of Curriculum Project, Robotic Systems
- Christoph Fey, Visiting Researcher, Fachhochschule Trier (2009)
Dynamic Machining Force Characterization and Application to Simulation
- Alireza Safarian, Visiting Researcher, Technische Universität - München (2008)
Service Center of the Future
- Nico Naumann, Visiting Researcher, Hasso Plattner Institute for Software System Engineering (2008)
Data Mining for Vehicle Diagnostics

THESIS COMMITTEE MEMBER

- Chase Wentzky, M.S. Candidate, Mechanical Engineering (2020)
- Xiao Jia, Ph.D. Candidate, Mechanical Engineering (2020)
- Stephanie Hulsey, Ph.D. Candidate, Mechanical Engineering (2020)
- Ankit Varma, M.S. Candidate, Mechanical Engineering (2019)
- Aditya Verra Yerra, Ph.D. Candidate, Automotive Engineering (2019)
- Rakesh Lingam, Ph.D. Candidate, IIT-Hyderabad Department of Mechanical and Aerospace Engineering (2018)
- Nandeesh Kadengodlu, M.S. Candidate, Mechanical Engineering (2017)
- Jianan Sun, Ph.D. Candidate, Automotive Engineering (2017)
- Amaninder Gill, M.S. Candidate, Automotive Engineering (2017)
- Rahul Renu, Ph.D. Candidate, Mechanical Engineering (2016)
- Xiaqing Cao, Ph.D. Candidate, Automotive Engineering (2016)
- Bryan Pearce, Ph.D. Candidate, Industrial Engineering (2015)
- Jayavardhan Dhulia, M.S. Candidate, Mechanical Engineering (2014)
- Dmytro Konobrytskyi, Ph.D. Candidate, Automotive Engineering (2013)
- Qin Shen, Ph.D. Candidate, Automotive Engineering (2013)
- Andy Henderson, Ph.D. Candidate, Automotive Engineering (2012)
- Ala Qattawi, Ph.D. Candidate, Automotive Engineering (2012)
- Ashwin Murali, M.S. Candidate, Mechanical Engineering (2011)
- Prabhu Shankar, Ph.D. Candidate, Mechanical Engineering (2011)
- Vincent Lee, Ph.D. Candidate, Automotive Engineering (2010)
- Boyce Richardson, M.S. Candidate, Mechanical Engineering (2010)
- Essam Namouz, M.S. candidate, Mechanical Engineering (2010)
- Sree Pamidi, M.S. Candidate, Mechanical Engineering (2010)
- Tim Brown, M.S. Candidate, Mechanical Engineering (2008)
- Stuart Miller, M.S. Candidate, Mechanical Engineering (2008)
- Gauri Phadke, M.S. Candidate, Mechanical Engineering (2008)
- Vijay Sellappan, M.S. Candidate, Mechanical Engineering (2008)
- Soon-Chun Kuek, M.S. Candidate, Mechanical Engineering (2007)
- Peyton Frick, M.S. Candidate, Mechanical Engineering (2007)
- Joshua Tarbutton, M.S. Candidate, Mechanical Engineering (2007)
- Vedik Bobba, M.S. Candidate, Mechanical Engineering (2007)

NEW COURSES DEVELOPED

AuE 4860/6860 – Digital Automotive Manufacturing

Spring 2019-present

This course covers the ontology of the Digitization of Manufacturing Systems, including the roles of sensing, control and information generation technologies in use in the automotive industry. We explore the framework and definitions of Smart Manufacturing systems, information generation approaches and tradeoffs, signal processing and fusion strategies and their selection, and considerations for local (edge) computing and cloud analytics. Overall architectures of enterprise and system level control are also explored.

AuE 8550 – Vehicle Body Structure Analysis

Fall 2013-present

This course is developed in conjunction with Honda R&D Americas and Altair Engineering technical specialists, and covers strength and performance analysis of multi-material body structures. Body structures are analyzed for first failure point, and then verified in experiment using bodies supplied by Honda in a lab space developed for the course.

AuE 8330 – Automotive Manufacturing Development

Fall 2018-present

This course addresses an overview of vehicle manufacturing from an OEM perspective. Issues such as supplier integration, flexible manufacturing, and quality engineering methods and their applications to manufacturing are presented. Emphasis is placed on opportunities and challenges presented with automotive manufacturing in a global environment, integrated processes, product development, flexible and agile manufacturing, supplier integration.

AuE 8690 – Quality Assurance for Automotive Manufacturing

Fall 2010-present

This course covers derivation of the tools commonly used in quality engineering for manufacturing, and an understanding of common metrology systems. The Lean Six Sigma framework is described, and students engage in projects supported by the tools. Additionally, Advance Product Quality Planning (APQP) is exercised in a project.

AuE 8330 – Automotive Manufacturing Devel. Lab (w. Ziegert)

Fall 2009

Developed and taught module on machining systems, incorporating elements of machining (machine tool, tooling, fixturing, programming), Computer-Aided Manufacturing (CAM) path planning, simulation and practical machining of test pieces. This was required for all Automotive Engineering Master's program students.

AuE 8670 – Automotive Manufacturing Processes

Fall 2007-present

This course presents modeling and simulation of production processes used in vehicle subsystem and component manufacturing through analytical treatment of specific product cases. The course is modular in nature, allowing arrangement of cases to model and analyze new technologies as they develop. Analytic content is blended with enterprise topics such as Quality System Standards and Supply Chain Management.

NEW COURSES DEVELOPED (continued)

AuE 8930 – Automotive Manufacturing Automation

Spring 2009

This course explores factory automation at the process, cell, plant and enterprise levels. Machine automation modeling and simulation (e.g., servo-drivetrains), communication protocols, robotics, and applications to material handling and logistic systems. Supported by practical simulation, build and test exercises. Developed in conjunction with the Fachhochschule-Bocholt Mechatronics and Machining laboratory in Bocholt, Germany.

AuE 8810 –Vehicle Systems Overview (Steering Module)

Fall 2008

Developed and taught module on steering system overview, including component functional descriptions, geometric and stability analysis, technology application and integration, and alternative technology approaches to vehicle guidance.

AuE 8340 – Automotive Production Preparation and Launch

Spring 2008

This course prepares the student to manage the activities of vehicle launch, including coupled product and tooling design, equipment specification, supplier integration, production trials and inventory management. The course is taught in cooperation with the launch management group of an OEM partner. Case studies and production trials are used.

AuE 8800 –Vehicle Project Management (Management module)

Spring 2007

Taught module on project management from an industrial perspective. Includes project planning, analysis, execution and review. Covers stage gate process and effective communication strategy.

COURSES TAUGHT

AuE 8900 – Automotive Engineering Project

Fall 2012-present

This course is the evaluation conduit for the external internship required in the AuE curriculum. Review of student reports to evaluate their learning experience, as well as employer evaluation of student performance. Work with administration to identify and facilitate new internships and industrial relationships.

ME 312 / ME404 – Manufacturing Processes and Application

Fall 2006-Fall 2010

This course is designed to give students an overview of manufacturing processes, their characteristics, modeling, and process selection criteria. My aim is to give students hands-on experience through true manufacturing problem examples from industry. I have leveraged numerous industrial contacts to provide in-class demonstrations and physical examples from different processes, highlighting design issues and defects.

ME 402 – Senior Capstone Design

Spring 2008

This course presents students with an open-ended design project sponsored by industry, and drives application of design tools to create feasible solutions. Acted as advisor to 4 teams designing a manufacturing system, tooling and fixturing for new tire types.

COURSES TAUGHT (continued)

ME2110 – Creative Decisions and Design

Spring 2004

For this course (as a graduate student), I worked with a seasoned professor to teach design methodology in the classroom, and then apply it directly in a lab environment. Activities:

- Assist students directly in lab with design, machining and assembly of semester project
- Coordinate and participate in end-of-semester design competition
- Participate in weekly collaboration with other students to review the collective experience.

National Instruments Invited Lectures

Spring 2005

I was invited by NI to travel to 4 universities and give a series of workshops on the application of hardware determinism to motion control. Activities:

- Prepared and presented research results specific to deterministic hardware and LabVIEW real-time software.
- Taught Real-Time programming techniques in all-day seminars with hands-on lab.

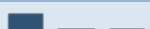
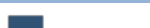
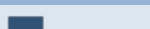
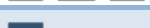
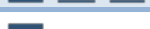
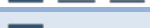
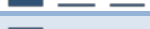
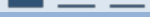
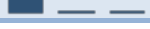
Industrial Machine Instruction

1994-2003

As a manufacturing and project engineer starting up new processes, a main responsibility was training other engineers and operators. Over 10 years, my activities in this role include:

- Taught machine theory, quality and operation to engineers and associates.
- Prepared detailed work instructions on machine operation and abnormal state recovery.

Laine Mears**mears@clemson.edu; 864-283-7229; <http://www.clemson.edu/manufacturing-lab>****COURSES TAUGHT (continued)***Summary of teaching ratings (“Overall, the instructor is an effective teacher”):*

Term	Course	Mears	Same Level	Same Discipline	Graphical
Spring 2017	AuE 869	4.41	4.47	4.48	
Fall 2016	AuE 867	4.12	4.32	4.33	
Spring 2016	AuE 869	4.27	4.35	4.35	
Fall 2015	AuE 867	4.36	4.04	4.04	
Spring 2015	AuE 869	4.71	4.01	4.04	
Fall 2014	AuE 867	4.33	4.07	4.08	
Spring 2014	AuE 869	4.43	4.23	4.21	
Spring 2014	AuE 855	4.17	4.21	4.22	
Fall 2013	AuE 833	4.13	4.26	4.27	
Spring 2013	AuE 867	4.29	4.27	4.28	
Fall 2012	AuE 869	4.50	4.32	4.34	
Spring 2012	AuE 867	4.78	4.51	4.52	
Fall 2011	AuE 869	4.67	4.47	4.47	
Spring 2011	AuE 867	4.89	4.30	4.33	
Fall 2010	AuE 869	4.75	4.09	4.10	
Spring 2010	AuE 867	4.92	4.46	4.46	
Fall 2009	ME 312	4.35	4.03	4.04	
Spring 2009	AuE 893	4.75	4.74	4.75	
Fall 2008	AuE 867	4.56	3.79	3.79	
Fall 2008	ME 312	4.46	3.57	3.75	
Spring 2008	AuE 834	4.00	3.91	3.98	
Fall 2007	AuE 867	4.75	3.67	3.67	
Fall 2006	ME 404	4.56	3.87	3.89	

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SERVICE - LEADERSHIP

- Program Chair, ASME Manufacturing Engineering Division Executive Committee (2016-2021, formerly Secretary, Treasurer)
- Chair, SME/ASME Conference Coordinating Committee (2019-2020)
- Member, SME North American Manufacturing Research Institute Board of Directors (2016-2021)
- Member, ASME Manufacturing Public Policy Task Force (2018-)

SERVICE - EDITORSHIP

- Editor-in-Chief, SME Manufacturing Letters (2019-2021)
- Associate Editor, ASME Journal of Manufacturing Science and Engineering (2015-2021)
- Associate Editor, SME Journal of Manufacturing Systems (2014-2020)

SERVICE - OTHER PROFESSIONAL

- Scientific Committee, Manufacturing Engineering Society International Conference (2019)
- Member, ASME Manufacturing Engineering Division Blackall Tool and Gage & William T. Ennor Awards Committee (2018-2020)
- Executive Advisor, SME Smart Manufacturing Tiger Team Task Force (2018)
- Organizer and Host, ASME Student Manufacturing Design Competition (2018)
- Member, SME/ASME Conference Coordinating Committee (2018-2020)
- Associate Chair of SME NAMRI Scientific Committee (2015-2018)
- Program Committee, SME North American Manufacturing Research Conference (2015)
- Organizer and Host, ASME/NSF Early Career Forum, Detroit, MI (June 2014)
- Symposium Chair, Fiber Society: Fibers Interfacing the World Conference, Clemson University (October 2013)
- Technical Program Chair, 2013 ASME International Manufacturing Science and Engineering Conference, University of Wisconsin-Madison (June 2013)
- Co-Organizer, Southern Advanced Materials Research Exchange II, Clemson U. (Feb. 2013)
- International Advisor, Int'l Conference on Extropianism: Towards Convergence of Human Values and Technology, Ansal University, Gurgaon, India (Jan. 2013)
- SME NAMRI Scientific Committee (2012-2019)
- Vice-Chair, Technical Program, 2012 ASME Int'l Manufacturing Science and Engineering Conference, University of Notre Dame, South Bend, IN (Jun. 2012)
- Chair, Quality and Reliability Technical Committee, ASME Mfg. Eng. Division (2008-2011)
- Track Chair, ASME Int'l Manufacturing Science and Engineering Conference, Oregon State University, Corvallis, OR (Jun. 2011)
- Symposium Co-Chair, ASME Manufacturing Science and Engineering Conference, Oregon State University, Corvallis, OR (Jun. 2011)

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SERVICE - OTHER PROFESSIONAL (continued)

- Symposium Co-Chair, ASME Manufacturing Science and Engineering Conference, Penn. State University-Erie (Oct. 2010)
- Organizing Committee, SME North American Manufacturing Research Conference, Greenville, SC (2009)
- Member of 6-person special task force (ASME, SME) to review and recommend co-location of major US manufacturing conferences ASME MSEC and SME NAMRC (2009)
- Symposium Chair, ASME Int'l Manufacturing Science and Engineering Conference, Purdue University, West Lafayette, IN (Oct. 2009)
- Judge, FIRST Robotics Regional Competition, Clemson, SC (2008-2010)
- Industrial Advisory Board, Sensortech Corporation, Greenville, SC (2008-2009)
- Symposium Chair, ASME Int'l Manufacturing Science and Engineering Conference, Northwestern University, Evanston, IL (2008)
- Technical Judge, FIRST Robotics Regional competition (2008-2010)
- Industrial Advisory Committee, NSF Mechatronics Education Project, Clemson University and Greenville Technical College (2007-2008)
- Symposium Chair, ASME Int'l Manufacturing Science and Engineering Conference, Georgia Tech, Atlanta, GA (Oct. 2007)
- Session Chair, SME North American Manufacturing Research Conference, University of Michigan, Ann Arbor, MI (May 2007)
- NCEES Professional Engineer Exam Construction and Review (2007)

SERVICE – UNIVERSITY & DEPARTMENT

- Chair and Member, multiple faculty and administrator search committees (2015-present)
- Session chair, “Plugging Humans into the Digital World”, Clemson University Research Symposium (2019)
- Member, Curriculum Review Committee, Automotive Engineering (2018-2019)
- Member, Tenure, Promotion & Reappointment Committee, Automotive Eng. (2016-present)
- Member, Graduate Record Committee, Automotive Engineering (2012-present)
- Graduate Program Coordinator, Automotive Engineering (2012-2017)
- Chair, Graduate Record Committee, Automotive Engineering (2012-2017)
- Chair, Endowed Chair Search Committee, Automotive Engineering (2015)
- Faculty Advisor, College of Engineering and Science Sustainable Energy Systems International Undergraduate Program, Trier, Germany (2014)
- Systems Engineering Program Committee, College of Engineering and Science (2011-2012)
- Chair, Ad Hoc Committee on External Education, Automotive Engineering (2011-2012)
- Seminar Series Coordinator, Automotive Engineering (2010-2011)
- Undergraduate Committee, Mechanical Engineering (2009-10)
- Laboratory Committee, Mechanical Engineering (2008-9)
- Scholarship, Awards and Honors Committee, Mechanical Engineering (2006-8)

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SERVICE – UNIVERSITY & DEPARTMENT (continued)

- Chair and Member, Ph.D. Qualification Exam Committee, Mechanical Engineering (2006-2010)

SERVICE – PROPOSAL, JOURNAL & CONFERENCE REVIEW

- Numerous federal agency proposal panel reviews
- ASME International Journal of Manufacturing Science and Engineering
- ASME International Journal of Micro- and Nano-Manufacturing
- SME Transactions of the North American Manufacturing Research Institute
- SME Journal of Manufacturing Processes
- SME Journal of Manufacturing Systems
- T&F Machining Science and Technology
- ASPE Precision Engineering
- Computer-Aided Design & Applications
- AAAS Indo-US Science and Technology Forum (IUSSTF) proposal review
- ASME Manufacturing Science and Engineering Conference
- SME North American Manufacturing Research Conference
- ASEE Advances in Engineering Education
- IASTED International Journal of Modeling and Simulation
- IFAC Mechatronics
- IEEE/ASME Transactions on Mechatronics
- Research in Engineering Design

PROFESSIONAL SOCIETY AFFILIATIONS

- Fellow, SME, formerly Society of Manufacturing Engineers (2004-, 2017 Fellow)
- Fellow, American Society of Mechanical Engineers (1993-, 2016 Fellow)
- Senior Member, American Society for Quality (1996-)
- Member, Society of Automotive Engineers (2007-)

CERTIFICATES AND LICENSURE

- Professional Engineer, Georgia (#PE030834, 2006) (Virginia EIT #0420034741, 1993)
- American Society for Quality Certified Quality Engineer (#36420, 1997)
- SME Certified Manufacturing Engineer (#11820235, 2014)
- BMW Lean Six Sigma Black Belt (2012)
- Georgia Tech Manufacturing Education Program (MEP) Certificate (2001)

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ADDITIONAL PROFESSIONAL COURSEWORK

- Clemson University Faculty Leadership Development Program, Greenville, SC, January - February 2015
- BMW Lean Six Sigma Black Belt, Spartanburg, SC, March 2010-March 2012
- Team Accelerator Training, BMW Spartanburg, March 15-19, 2010
- Lean Manufacturing Practical Training, BMW Spartanburg, Dec. 9-10, 2009
- Plant Simulation VDA Manufacturing Tools, Spartanburg, SC, March 23-28, 2009
- Value-Added Production System (lean manufacturing), BMW Spartanburg, Oct. 16, 2008
- Okuma VMC Operation and Control, Tom Dickerson, Clemson, July 28-31, 2008
- Product Lifecycle Management, Dr. Michael Grieves, Detroit, MI, Apr. 17-18, 2008
- GibbsCAM Machining Software, Morningstar, Albemarle, NC, Sept. 4-6, 2007
- Vehicle Development Processes, Dr. Julian Weber (BMW), Clemson, SC, May 29-30, 2007
- Hard Machining and Grinding Control Workshop, SKF Bearings, Lidköping, Sweden, 1995

COMPUTER AND TECHNICAL SKILLS

- Engineering Software: LabVIEW, LabVIEW RT, GibbsCAM, CATIA, Solidworks, AutoCAD, ARENA simulation, Siemens Plant Simulation, linear/nonlinear programming
- Programming/Mathematical: Visual BASIC, DirectX 3D, Maple, MathCAD, Minitab, SPSS
- Hardware: NI systems, FPGA, servo and stepper motor, drives, encoders, PLC, PAC
- Machining: CNC programming (Okuma P300 and Sinumerik 840D controllers), lathe, machining center, multitasking lathe

PATENTS, PUBLICATIONS AND PRESENTATIONS

Google Scholar: <https://scholar.google.com/citations?user=drAE3qEAAAAJ>

ResearchGate: https://www.researchgate.net/profile/Laine_Mears

SCOPUS: <https://www.scopus.com/authid/detail.uri?authorId=16053382900>

ORCID: <https://orcid.org/0000-0002-4793-1406>

Books

B01. Salandro, W., Jones, J., Bunget, C., Mears, L., Roth, J.T. (2015). Electrically-Assisted Forming: Modeling and Control (Springer series in Advanced Manufacturing). ISBN 978-3-319-08878-5, Springer-Verlag: London, 355 pp.

Book Chapters

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