Dawn M. Tilbury

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Professor of Electrical Engineering
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Degrees

University of California, Berkeley

Ph.D. in Electrical Engineering and Computer Sciences, December 1994
Major: Systems and Control. Minor: Robotics, Mathematics
Dissertation title: Exterior differential systems and nonholonomic motion planning.
Adviser: S. Shankar Sastry
M.S. in Electrical Engineering, May 1992

University of Minnesota

B.S. in Electrical Engineering, *summa cum laude*, June 1989. Minor in French.

Positions at the University of Michigan

Associate Vice President for Research –Convergence Science, July 2021 – present
Associate Dean for Research, College of Engineering, August 2014 – December 2016
Associate Dean for Research and Graduate Education, January 2014 – July 2014
Chair, Robotics Steering Committee, September 2011–September 2016
Deputy Director, Automotive Research Center (ARC), October 2011 – August 2013
Director, Ground Robotics Reliability Center (GRRC), September 2009 – August 2011
Associate Department Chair, Mechanical Engineering, September 2007 – August 2010
Professor, 2007 – present
Associate Professor, 2001–2007
Assistant Professor, 1995–2001

Positions at other organizations

National Science Foundation, Assistant Director, Engineering Directorate, June 2017–June 2021
Lund University, Department of Automatic Control, Guest Professor, September 2010 – June 2011.
Shanghai Jiaotong University, Visiting Professor (taught ME 360), Summer 2004
DaimlerChrysler, Professor Summer Intern, Summer 2003
ITIA-CNR (Institute for Industrial Technologies and Automation), Visiting Professor, Milan, Italy, October 2001 – August 2002
IBM T. J. Watson Research Center, Academic Visitor, June – September 2001; March 2002

Honors and Awards

Sarah Goddard Power Award, University of Michigan, 2021
SAE Vincent Bendix Award, best paper on the subject of automotive electronics engineering, 2020. Joint with L. Petersen, L. P. Robert, and X. J. Yang.
Leadership in Engineering Award, Washington Academy of Sciences, 2020
Ted Kennedy Family Faculty Team Excellence Award, with the Automotive Research Center team, University of Michigan College of Engineering, 2020
Harold Johnson Diversity Service Award, University of Michigan, 2017
Engineering Society of Detroit, Gold Award, 2016
ASME Dynamic Systems and Control Division, Michael J. Rabins Leadership Award, 2014
Trailblazer Award, presented by Graduate-SWE, University of Michigan, 2014
Education Excellence Award, College of Engineering, 2014
SWE Distinguished Engineering Educator Award, 2012
ASME Fellow, 2012
Best Application Paper Award, IEEE Conference on Automation Science and Engineering (CASE), August 2011. Joint with L. V. Allen and J. A. Broderick.

Best Conference Paper Award, IEEE Conference on Automation Science and Engineering (CASE), August 2009. Joint with L. V. Allen and K. M. Goh
Outstanding Service Award, University of Michigan, College of Engineering, 2009.
IEEE Fellow, 2008
ASME Dynamic Systems and Control Division Education Award, 2003
Distinguished Engineering Alumnus Award, Outstanding Young Leader, University of California Engineering Alumni Association, 2003
Teaching Incentive Award, Mechanical Engineering Department, 2003
Best paper award, NOMS (Network Operations and Management Symposium), Florence, April 2002. Joint with Y. Diao, N. Gandhi, J. Hellerstein, S. Parekh.
Outstanding Faculty Award, Mechanical Engineering Department, 2001
Donald P. Eckman Award of the AACC, for outstanding accomplishments by a young engineer in the field of automatic control, 2001
NSF CAREER Award, 1998

Invited Plenary Talks

1. "Reconfigurable Logic Control for High Volume Manufacturing Systems," American Control Conference, Anchorage, May 2002
2. "Delays in Control over Communication Networks: Characterization, Impact, and Reduction Strategies," Workshop on Networked Embedded Sensing and Control, Notre Dame, October 2005
3. "Exploiting Information to Improve Control of Large-scale Manufacturing Systems," ASME Engineering Systems Design and Analysis Conference (ESDA), Haifa, July 2008
4. "Information and Control Applied Research in Manufacturing Automation," AEC/APC Symposium, Ann Arbor, September 2009
5. "Anomaly Detection in Event-Based Manufacturing Systems Using Model Generation," International Workshop on Dependable Control of Discrete Systems, Saarbrücken, Germany, June 2011
6. "Hybrid Processes for Controlling Manufacturing Systems," SIAM Conference on Control & its Applications, Paris, July 2015
7. "Virtual Fusion: Combining simulations with operations to improve manufacturing system control," IEEE Conference on Automation Science and Engineering (CASE), Ft. Worth, Texas, August 2016
8. "Hybrid processes for controlling cyber-physical manufacturing systems," IFAC World Congress, Toulouse, July 2017.
9. "Convergence in Manufacturing," Engineering A World of Difference: Convergence in Manufacturing, Minority Faculty Development Workshop, Ann Arbor, September 2018.
10. "Cyber-physical Manufacturing Systems: Improving Productivity with Advanced Control," Vistas in Control Workshop, ETH Zurich, September 2018.
11. "Big Data in Manufacturing Systems with Internet-of-Things Connectivity," Michigan Institute for Data Science Symposium, October 2018.
12. Commencement Address, University of Minnesota, College of Science and Engineering, May 2019.
13. "Future of Work at the Human-Technology Frontier," Robotics Summit and Expo, Boston, June 2019.
14. "Cyber-physical manufacturing systems: Improving productivity through advanced automation," IEEE Conference on Control Technology and Applications (CCTA), Hong Kong, August 2019.
15. "Distributed control of manufacturing systems," IFAC Distributed Estimation and Control in Networked Systems (NecSys), Chicago, September 2019.

16. "The central role of systems and control in multidisciplinary and convergent research," International Conference on Control, Automation and Systems, Korea, October 2019.
17. "A trust management framework for calibrating driver trust in semi-automated vehicles," C3.AI Digital Transformation Institute Workshop on Safe Autonomy: Learning, Verification, and Trusted Operation of Autonomous Systems, December 2020.

Books

1. W. C. Messner and D. M. Tilbury, *Control Tutorials for MATLAB and Simulink: A Web-based Approach*, CD-ROM textbook supplement, Addison-Wesley, 1998.

   Now a website: http://ctms.engin.umich.edu

2. J. L. Hellerstein, Y. Diao, S. Parekh, and D. M. Tilbury, *Feedback Control of Computing Systems*, Wiley–IEEE Press, 2004.

Refereed Journal Articles

1. G. Walsh, D. Tilbury, S. Sastry, R. Murray, and J.-P. Laumond, "Stabilization of Trajectories for Systems with Nonholonomic Constraints," *IEEE Transactions on Automatic Control,* 39(1), pp. 216–222, January 1994.
2. D. Tilbury, R. Murray, and S. Sastry, "Trajectory Generation for the N-Trailer Problem using Goursat Normal Form," *IEEE Transactions on Automatic Control,* 40(5), pp. 802–819, May 1995.
3. D. Tilbury and S. Sastry, "The Multi-Steering N-Trailer System: A Case Study of Goursat Normal Forms and Prolongations," *International Journal of Robust and Nonlinear Control,* 5(4), pp. 343–364, July 1995.
4. L. Bushnell, D. Tilbury, and S. Sastry, "Steering Three-input Nonholonomic Systems: The Firetruck Example," *International Journal of Robotics Research,* 14(4), pp. 366–381, August 1995.
5. D. Tilbury, O. Sørdalen, L. Bushnell, and S. Sastry, "A Multi-Steering Trailer System: Conversion into Chained Form using Dynamic Feedback," *IEEE Transactions on Robotics and Automation,* 11(6), pp. 807–818, December 1995.
6. W. M. Sluis and D. M. Tilbury, "A Bound on the Number of Integrators Needed to Linearize a Control System," *Systems and Control Letters,* 29, pp. 43–50, 1996.
7. D. Tilbury and W. Messner, "Control Tutorials for Software Instruction over the World-Wide Web," *IEEE Transactions on Education*, 42(4), pp. 237–246, November 1999.
8. E. Park, D. M. Tilbury, and P. P. Khargonekar, "Modular Logic Controller for Machining Systems: Formal Representation and Performance Analysis using Petri Nets," *IEEE Transactions on Robotics and Automation,* 15(6), pp. 1046–1061, December 1999.
9. J. K. Yook, D. M. Tilbury, and N. R. Soparkar, "A Design Method for Distributed Control Systems to Optimize Performance in the Presence of Time Delays," *International Journal of Control,* 74(1), pp. 58–76, January 2001.
10. F.-L. Lian, J. R. Moyne, and D. M. Tilbury, "Performance Evaluation of Control Networks: Ethernet, ControlNet, and DeviceNet," *IEEE Control Systems Magazine,* 21(1), pp. 66–83, February 2001.
11. G. Tryggvason, M. Thouless, D. Dutta, S. L. Ceccio, and D. M. Tilbury, "The New Mechanical Engineering Curriculum at the University of Michigan," *Journal of Engineering Education,* 90(3), pp. 437–444, July 2001.
12. E. Park, D. M. Tilbury, and P. P. Khargonekar, "A Modeling and Analysis Methodology for Modular Logic Controllers of Machining Systems using Petri Net Formalism," *IEEE Transactions on Systems, Man, and Cybernetics–C,* 31(2), pp. 168–188, May 2001.
13. F.-L. Lian, J. R. Moyne, and D. M. Tilbury, "Network Design Consideration for Distributed Control Systems," *IEEE Transactions on Control Systems Technology,* 10(2), pp. 297–307, March 2002.
14. J. K. Yook, D. M. Tilbury, and N. R. Soparkar, "Trading Computation for Bandwidth: Reducing Communication in Distributed Control Systems using State Estimators," *IEEE Transactions on Control Systems Technology*, 10(4), pp. 503–517, July 2002.

15. S. Parekh, N. Gandhi, J. Hellerstein, D. Tilbury, T. Jayram, and J. Bigus, "Using Control Theory to Achieve Service Level Objectives In Performance Management," *Real-Time Systems Journal*, 23(1), pp. 127–141, July 2002.
16. F.-L. Lian, J. R. Moyne, and D. M. Tilbury, "Modeling and Optimal Controller Design for Networked Control Systems with Multiple Delays," *International Journal of Control,* 76(6), pp. 591–606, April 2003.
17. M. R. Lucas and D. M. Tilbury, "A Study of Current Logic Design Practices in the Automotive Manufacturing Industry," *International Journal of Human Computer Studies,* 59(5):725–753, November 2003.
18. S. K. Kim and D. M. Tilbury, "Mathematical Modeling and Experimental Identification of an Unmanned Helicopter Robot with Flybar Dynamics," *Journal of Robotic Systems,* 21(3):95–116, March 2004.
19. M. R. Lucas and D. M. Tilbury, "Methods of Measuring the Size and Complexity of PLC Programs in Different Logic Control Design Methodologies," *International Journal of Advanced Manufacturing Technology,* 26(5–6):436–447, September 2005.
20. J. L. Hellerstein, Y. Diao, S. Parekh, and D. M. Tilbury, "Control Engineering for Computing Systems: Industry Experience and Research Challenges," *IEEE Control Systems Magazine*, 25(6):56–68, December 2005.
21. D. Georgiev and D. M. Tilbury, "Packet-Based Control: The H2 Optimal Solution," *Automatica,* 42(1):137–144, January 2006.
22. E. W. Endsley, E. E. Almeida, and D. M. Tilbury, "Modular Finite State Machines: Development and Application to Reconfigurable Manufacturing Cell Controller Generation," *Control Engineering Practice,* 14(10):1127–1142, October 2006. Invited for WODES Special Issue.
23. F.-L. Lian, J. K. Yook, D. M. Tilbury, and J. R. Moyne, "Network Architecture and Communication Modules for Guaranteeing Acceptable Control and Communication Performance for Networked Multi-Agent Systems," *IEEE Transactions on Industrial Informatics,* 2(1):12–24, February 2006.
24. J. R. Moyne, B. Triden, A. Thomas, K. Schroeder, and D. Tilbury, "Cost Function and Tradeoff Analysis of Dedicated vs. Shared Networks for Safety and Control Systems," *ATP: Automation-Technological–Practice,* 4(2):22–31, September 2006.
25. J. R. Moyne and D. M. Tilbury, "The Emergence of Industrial Control Networks for Manufacturing Control, Diagnostics, and Safety Data," *IEEE Proceedings*, 95(1):29–47, January 2007. Invited for Special Issue on "The Emerging Technology of Networked Control Systems."
26. E. E. Almeida, J. E. Luntz, and D. M. Tilbury, "Event Condition Action Systems for Reconfigurable Logic Control," *IEEE Transactions on Automation Science and Engineering,* 4(2):167–181, April 2007.
27. S. Lee and D. M. Tilbury, "Deadlock-Free Resource Allocation Control for a Reconfigurable Manufacturing System with Serial-Parallel Configuration," *IEEE Transactions on Systems, Man, and Cybernetics–C,* 37(6):1373–1381, November 2007.
28. A. A. Khan, J. R. Moyne, and D. M. Tilbury, "An Approach for Factory-Wide Control Utilizing Virtual Metrology," *IEEE Transactions on Semiconductor Manufacturing*, 20(4):364–375, November 2007.
29. A. A. Khan, J. R. Moyne, and D. M. Tilbury, "Favorable effect of time delays on tracking performance of type-I control systems," *IET Control Theory & Applications,* 2(3):210–218, 2008.
30. S. Lee and D. M. Tilbury, "A Modular Control Design Method for a Flexible Manufacturing Cell Including Error Handling," *Flexible Services and Manufacturing Journal,* 19(3):308–330, March 2008.
31. R. C. Hill and D. M. Tilbury, "Incremental hierarchical construction of modular supervisors for discrete-event systems," *International Journal of Control,* 81(9): 1364–1381, September 2008.

32. D. Georgiev, P. T. Kabamba, and D. M. Tilbury, "A New Model of Team Optimization: The Effect of Uncertainty on Interaction," *IEEE Transactions on Systems, Man, and Cybernetics–A,* 38(6):1234–1247, November 2008.
33. A. A. Khan, J. R. Moyne, and D. M. Tilbury, "Virtual metrology and feedback control for semiconductor manufacturing processes using recursive partial least squares," *Journal of Process Control,* 18(10):961–974, December 2008.
34. R. C. Hill, D. M. Tilbury, and S. Lafortune, "Modular Supervisory Control with Equivalence-Based Abstraction and Covering-Based Conflict Resolution," *Journal of Discrete Event Dynamic Systems,* 20(1):139–185, March 2010.
35. R. C. Hill, J. E. R. Cury, M. H. de Queiroz, D. M. Tilbury, and S. Lafortune, "Multiple-Level Hierarchical Interface-Based Supervisory Control," *Automatica*, 46(7):1152–1164, July 2010.
36. W. S. Harrison and D. M. Tilbury, "A Formal Characterization and Analysis for Hardware-in-the-Loop and Hybrid Process Simulation during Manufacturing System Deployment," *International Journal on Interactive Design and Manufacturing,* 5(3):151–169, August 2011.
37. L. V. Allen, K. M. Goh, and D. M. Tilbury, "Input-Order Robustness: Definition, Verification Procedure, and Examples," *IEEE Transactions on Automation Science and Engineering*, 9(1):3–15, January 2012.
38. W. S. Harrison, D. M. Tilbury and C. Yuan, "From Hardware-in-the-Loop to Hybrid Process Simulation: An Ontology for the Implementation Phase of a Manufacturing System," *IEEE Transactions on Automation Science and Engineering,* 9(1):96–109, January 2012.
39. L. V. Allen and D. M. Tilbury, "Anomaly Detection using Model Generation for Event-Based Systems Without a Pre-Existing Formal Model," *IEEE Transactions on Systems, Man and Cybernetics—Part A,* 42(3):654–668, May 2012.
40. J. A. Broderick, D. M. Tilbury, and E. M. Atkins, "Optimal Coverage Trajectories for a UGV with Tradeoffs for Energy and Time," *Autonomous Robots,* 36(3):257–271, March 2014.
41. H. ElMoaqet, D. M. Tilbury, and S. K. Ramachandran, "Evaluating predictions of critical oxygen desaturation events," *Physiological Measurements,* 35(4):639–655, 2014.
42. J. A. Broderick, D. M. Tilbury, and E. M. Atkins, "Characterizing Energy Use of a Commercially Available Ground Robot: Method and Results," *Journal of Field Robotics,* 31(3):441–454, May/June 2014.
43. D. M. Anand, J. Moyne and D.M., Tilbury, "A method for reducing noise and complexity in yield analysis for manufacturing process workflows," *IEEE Transactions on Semiconductor Manufacturing*, 27(4):501–514, November 2014.
44. H. ElMoaqet, D. M. Tilbury, and S. K. Ramachandran, "Effect of concurrent oxygen therapy on accuracy of forecasting imminent postoperative desaturation," *Journal of Clinical Modeling and Computing,* 29(4): 521-531, 2015.
45. D. M. Anand, R. Tull de Salis, Y. Cheng, J. R. Moyne, D. M. Tilbury, "A Hierarchical Incentive Arbitration Scheme for Coordinated PEV Charging Stations," *IEEE Transactions on Smart Grid,* 6(4):1775–1784, July 2015.
46. H. ElMoaqet, D. M. Tilbury, and S. K. Ramachandran, "Multistep Ahead Predictions for Critical Levels in Physiological Time Series," *IEEE Transactions on Cybernetics,* 46(7):1704–1714, July 2016.
47. J. G. Storms and D. M. Tilbury, "Dynamic Weight-Shifting for Improved Maneuverability and Rollover Prevention in High Speed Mobile Manipulators," *ASME Journal of Dynamic Systems, Measurement, and Control,* 138(10):101007, October 2016.
48. S. Vozar, J. Storms, and D. Tilbury, "Development and Analysis of an Operator Steering Model for Teleoperated Mobile Robots Under Constant and Variable Latencies," *Robotica*, 36(2):167–186, February 2018.
49. Z. Wang, D. M. Anand, J. Moyne, D. M. Tilbury, "Improved sensor fault detection, isolation, and mitigation using multiple observers approach," *Systems Science and Control Engineering,* 5(1):70–96, January 2017.

50. F. Lamnabhi-Lagarrigue, A. Annaswamy, S. Engell, A. Isaksson, P. Khargonekar, R. M Murray, H. Nijmeijer, T. Samad, D. Tilbury, P. Van den Hof, "Systems & Control for the future of humanity, research agenda: Current and future roles, impact and grand challenges," *Annual Reviews in Control,* 43:1–64, January, 2017.
51. J. G. Storms, K. Chen, and D. M. Tilbury, "A Shared Control Method for Obstacle Avoidance with Mobile Robots and its Interaction with Communication Delay," *International Journal of Robotics Research,* 36(5-6):820–839, June 2017.
52. J. G. Storms and D. M. Tilbury, "A new difficulty index for teleoperated robot driving through obstacles," *Journal of Intelligent and Robotic Systems,* 90(1-2):147–160, May 2018.
53. Miguel Saez, Francisco Maturana, Kira Barton, and Dawn Tilbury, "Real-time manufacturing machine and system performance monitoring using Internet of Things," *IEEE Transactions on Automation Science and Engineering,* 15(4):1735–1748, October 2018.
54. N. Putman, F. Maturana, K. Barton, and D. M. Tilbury, "Virtual Fusion: A Hybrid Environment for Improved Commissioning in Manufacturing Systems," *International Journal of Production Research,* 55(21):6254–6265, 2017.
55. I. Kovalenko, M. Saez, K. Barton, D. M. Tilbury, "SMART: A System-level Manufacturing and Automation Research Testbed," *ASTM Smart and Sustainable Manufacturing Systems,* 1(1):232–261, 2017.
56. F. Lopez, M. Saez, Y. Shao, E. Balta, J. Moyne, Z. M. Mao, K. Barton, and D. Tilbury, "Categorization of anomalies in smart manufacturing systems to support the selection of detection mechanisms," *IEEE Robotics and Automation Letters,* 2(4):1885–1892, October 2017.
57. F. Lopez, Y. Shao, Z. M. Mao, J. Moyne, K. Barton, and D. Tilbury, "A software-defined framework for the integrated management of smart manufacturing systems," *Manufacturing Letters,* 15:18–21, January 2018.
58. Efe C. Balta, Yikai Lin, Kira Barton, Dawn Tilbury, Z. Morley Mao, "Production as a Service: A Digital Manufacturing Framework for Optimizing Utilization," *IEEE Transactions on Automation Science and Engineering,* 15(4): 1483–1493, October 2018.
59. L. Petersen, L. Robert, X. J. Yang, D. M. Tilbury, "Improving Driver's Trust in Automated Driving Systems through Situational Awareness," *SAE International Journal of Connected and Automated Vehicles,* 2(2):129-141, May 2019.
60. I. Kovalenko, K. Barton, and D. M. Tilbury, "The Model-Based Product Agent: A Control Oriented Architecture for Intelligent Products in Multi-Agent Manufacturing Systems," *Control Engineering Practice,* 86:105–117, May 2019.
61. J. Kim, H. ElMoaqet, D. M. Tilbury, S. K. Ramachandran, and T. Penzel, "Time domain characterization for sleep apnea in oronasal airflow signal: a dynamic threshold classification approach," *Physiological Measurement,* 40(5):054007, June 2019.
62. I. Kovalenko, D. Ryashentseva, B. Vogel-Heuser, D. Tilbury, K. Barton, "Dynamic Resource Task Negotiation to Enable Product Agent Exploration in Multi-Agent Manufacturing Systems," *IEEE Robotics and Automation Letters,* 4(3):2854–2861, June 2019. Also presented at *IEEE Conference on Automation Science and Engineering (CASE),* August 2019.
63. F. Ocker, I. Kovalenko, K. Barton, D. Tilbury, B. Vogel-Heuser, "A Framework for Automatic Initialization of Multi-Agent Production Systems using Semantic Web Technologies," *IEEE Robotics and Automation Letters,* 4(4):4330-4337, July 2019. Also presented at *IEEE Conference on Automation Science and Engineering (CASE),* August 2019.
64. N. Du, A. K. Pradhan, Q. Zhang, J. Haspiel, X. J. Yang, D. Tilbury, and L. P. Robert, "Look Who's Talking Now: Implications of AV's Explanations on Driver's Trust, AV Preference, Anxiety and Mental Workload," *Transportation Research Part C,* 104:428–442, July 2019.
65. S. Jayaraman, C. Creech, D. M. Tilbury, X. J. Yang, A. K. Pradhan, K. M. Tsui, and L. P. Robert, "Pedestrian Trust in Automated Vehicles: Role of Traffic Signal and AV Driving Behavior," *Frontiers in Robotics and AI,* 6:117, November 2019.

66. M. Saez, F. Maturana, K. Barton, and D. Tilbury, "Context-Sensitive Modeling and Analysis of Cyber-Physical Manufacturing Systems for Anomaly Detection and Diagnosis," *IEEE Transactions on Automation Science and Engineering,* 17(1):2940, January 2020.
67. N. Du, F. Zhou, E. Pulver, D. Tilbury, L. P. Robert, A. K. Pradhan, and X. J. Yang, "Examining the effects of emotional valence and arousal on takeover performance in conditionally automated driving," *Transportation Research Part C,* 112:78–87, March 2020.
68. J. Moyne[1], Y. Qamsane[1], E. C. Balta[1], I. Kovalenko[1], J. Faris[1], K. Barton[1], and D. M. Tilbury, "A Requirements Driven Digital Twin Framework: Specification and Opportunities," *IEEE Access,* 8:107781–107801, June 2020.
69. H. Azevedo-Sa, S. K. Jayaraman, C. T. Esterwood, X. J. Yang, L. P. Robert, and D. M. Tilbury, "Real-Time Estimation of Drivers' Trust in Automated Driving Systems," *International Journal of Social Robotics,* September 2020.
70. H. Azevedo-Sa, S. K. Jayaraman, X. J. Yang, L. P. Robert, and D. M. Tilbury, "Context-Adaptive Management of Drivers' Trust in Automated Vehicles," in *IEEE Robotics and Automation Letters,* 5(4):6908–6915, October 2020.
71. I. Kovalenko, E. Balta, Y. Qamsane, P. Koman, X. Zhu, Y. Lin, D. Tilbury, Z. Morley Mao, and K. Barton, "Developing the Workforce for Next-Generation Smart Manufacturing Systems: A Multidisciplinary Research Team Approach," *ASTM Smart and Sustainable Manufacturing Systems,* published on-line, August 2020.
72. E. Balta, K. Barton, and D. M. Tilbury, "Layer-to-layer Stability of Linear Layer-wise Spatially Varying Systems: Applications in Fused Deposition Modeling," *IEEE Transactions on Control Systems Technology,* published on-line, January 2021.
73. H. ElMoaqet, J-Y. Kim, D. Tilbury, S. K. Ramachandran, M. Ryalat, C.-H. Chu, "Gaussian Mixture Models for Detecting Sleep Apnea Events Using Single Oronasal Airflow Record," *Applied Sciences,* published online, November 2020.
74. N. Du, F. Zhou, E. Pulver, D. Tilbury, L. P. Robert, A. K. Pradhan, and X. J. Yang, "Predicting driver takeover performance in conditionally automated driving," *Accident Analysis and Prevention,* 148, 2020.
75. E. C. Balta, I. Kovalenko, I. A. Spiegel, D. M. Tilbury, and K. Barton, "Model Predictive Control of Priced Timed Automata Encoded with First-Order Logic," published on-line,*IEEE Transactions on Control Systems Technology,* February 2021.
76. H. Azevedo-Sa, H. Zhao, C. T. Esterwood, X. J. Yang, L. P. Robert, and D. M. Tilbury, "How internal and external risks affect the relationships between trust and driver behavior in automated driving systems," *Transportation Research Part C,* 123:102973, February 2021.
77. J. Kim, Y. Jang, E. Byon, D. M. Tilbury, M. Engoren, S. K. Ramachandran, and M.-S. Kang, "New Unobtrusive Tidal Volume Monitoring System using Channel State Information in Wi-Fi Signal: Preliminary Result," *IEEE Sensors,* 21(3):3810–3821, February 2021.
78. M. Saez, K. Barton, F. Maturana, and D. M. Tilbury, "Modeling Framework to Support Decision Making and Control of Manufacturing Systems Considering the Relationship between Productivity, Reliability, Quality, and Energy Consumption," *Journal of Manufacturing Systems,* published online, May 2021.
79. M. Toothman, B. Braun, S. J. Bury, M. Dessauer, K. Henderson, R. Wright, D. M. Tilbury, J. Moyne, and K. Barton, "Trend-based repair quality assessment for industrial rotating equipment," *IEEE Control Systems Letters,* 5(5):1675–1680, November 2021.
80. S. K. Jayaraman, L. P. Robert, X. J. Yang, and D. M. Tilbury, "Multimodal Hybrid Pedestrian: A Hybrid Automaton Model of Urban Pedestrian Behavior for Automated Driving Applications," *IEEE Access,* 9(27708-27722), February 2021.
81. Y. Qamsane, J. Moyne, M. Toothman, I. Kovalenko, E. C. Balta, J. Faris, D. M. Tilbury, and K. Barton, "A Methodology to Develop and Implement Digital Twin Solutions for Manufacturing Systems," *IEEE Access,* 9(44247 – 44265), March 2021.

82. H. Azevedo-Sa, X. J. Yang, L. P. Robert, and D. M. Tilbury, "A Unified Bi-directional Model for Natural and Artificial Trust in Human-Robot Collaboration," in *IEEE Robotics and Automation Letters,* 6(3):5913–5920, July 2021.

Journal Papers submitted:

1. E. C. Balta, M. Pease, J. Moyne, K. Barton, and D. M. Tilbury, "Cyber-Attack Detection Digital Twins for Cyber-Physical Manufacturing Sytesms," submitted to *IEEE Transactions on Automation Science and Engineering,"* December 2020.

Other Articles

1. D. M. Tilbury and J. R. Moyne, Discussion on: "Stabilization of Networked Control Systems with Data Packet Dropout and Transmission Delays: Continuous-Time Case", *European Journal of Control,* 11(1):50–53, 2005.
2. D. M. Tilbury, Discussion on: "Reconfigurable Logic Control for Manufacturing Systems", *Mechanical Engineering Magazine (Dynamic Systems and Control Insert),* 136(12):71–78, 2014.
3. D. M. Tilbury, "Cyber-Physical Manufacturing Systems," *Annual Review of Control, Robotics, and Autonomous Systems,"* 2:427–443, May 2019.

Patents

1. "A Formal Implementation of Logic Controllers for Machining Systems Using Petri Nets and Sequential Function Charts," E. Park, D. Tilbury, and P. Khargonekar, U.S. Patent 6256598, issued July 3, 2001.
2. "Centralized Framework for Small Batch Manufacturing," K. Barton, Y. Lin, Z. M. Mao, D. M. Tilbury, and E. Balta, US patent applied for, August 2017.

Websites

1. Control Tutorials for Matlab and Simulink, originally created with W. C. Messner; updated and revised periodically with assistance from R. C. Hill. http://www.engin.umich.edu/class/ctms
2. D. Tilbury, Linear Systems Theory Videos on YouTube. https://tinyurl.com/linsysYT

Grants and Contracts

1. "Modular Control Design for Reconfigurability," NSF-ERC for Reconfigurable Machining Systems, Sept. 1996 – Aug. 2002, $692,302, Dawn Tilbury, PI, Pramod Khargonekar, EECS, co-PI.
2. "Controls Education using Matlab: Tutorials on the World-Wide Web," NSF DUE-CCD, Feb. 1996 – Jan. 1998, $193,908, Dawn Tilbury, PI, and William Messner, Carnegie Mellon University, co-PI.
3. "Web-Assisted Experimentation: Enhancing Controls Education," NSF DUE-CCD, May 1998 – Apr. 2000, $186,259, William Messner, Carnegie-Mellon University, PI, and Dawn Tilbury, co-PI.
4. "CAREER: Integration of Planning and Control for Nonlinear Systems," NSF ENG-CMS, Sept. 1999 – Aug. 2005, $200,000, Dawn Tilbury, PI.
5. "Real-Time Distributed Control: Optimizing Mechanical Performance using Adaptive Computing and Communication Techniques," NSF ENG-ECE, Sept. 1999 – Aug. 2003, $147,700, Dawn Tilbury, PI, and Nandit Soparkar, EECS, co-PI.
6. "Reconfigurable Distributed Real-Time Control for Manufacturing Systems," NSF-ERC for Reconfigurable Machining Systems, Jan. 1997 – Dec. 1997, $92,258, Nandit Soparkar, EECS, PI, and Dawn Tilbury, co-PI.
7. "Generic, Adaptive Control for Distributed Computing Systems," IBM, Dec. 1999 – Aug. 2001, $80,092, Dawn Tilbury, PI.

8. "Workshop on Logic Control for Manufacturing Systems," NSF ENG-CMS, Aug. 2000 – Feb. 2001, $12,000, Dawn Tilbury, PI and Pramod Khargonekar, co-PI.
9. "Partnership in Flexible and Reconfigurable Logic Control for Manufacturing," NSF ENG-EEC, Oct. 2001–Sept. 2002, ERC supplement, $99,886, Yoram Koren, PI and Dawn Tilbury, co-PI.
10. "Reconfigurable Factory Testbed," NSF-ERC for Reconfigurable Manufacturing Systems, Sept. 2000 – Aug. 2007, $1,203,141, Dawn Tilbury, PI and James Moyne, co-PI.
11. "Feedback Control of Dynamic Computing Systems," NSF CCR-ITR, Sept. 2002–Aug. 2005, $350,000, Dawn Tilbury, PI and Brian Noble, co-PI.
12. "Modular Logic Control," NSF-ERC for Reconfigurable Machining Systems, Sept. 2002 – Aug. 2007, $435,875, Dawn Tilbury, PI.
13. "Distributed Control Networks," NSF-ERC for Reconfigurable Manufacturing Systems, Sept. 2002 – Aug. 2007, $536,823, James Moyne, PI and Dawn Tilbury, co-PI.
14. "Gift for Research on Industrial Control," National Instruments, $45,000, December 2004.
15. "Workshop on Feedback Control of Computing Systems," NSF-CISE, May 2005–April 2006, $10,000, Dawn Tilbury, PI.
16. "Modular Verification of Logic Controllers," NSF-CMS, Sept. 2005–Aug. 2009, $239,947, Dawn Tilbury, PI.
17. "Emotion Regulation as a Complex System," NSF-HSD, Sept. 2005–Aug. 2009, $708,627, Twila Tardif, PI; Rosa Angulo-Barroso, Barbara Felt, Sheryl Olson and Dawn Tilbury, co-PIs.
18. "Gift for Research on Industrial Control," National Instruments, $19,740, March 2006.
19. "Support for the 8th International Workshop on Discrete Event Systems WODES'06," NSF-CNCI, June 2006–Dec. 2006, $10,000, Stéphane Lafortune, PI; Dawn Tilbury, co-PI.
20. "Reliability and Manufacturing in Robotics," Ground Robotics Research Center (US Army TARDEC), Sept. 2008–June 2010, $950,000, Dawn Tilbury, PI; Galip Ulsoy, co-PI.
21. "Mentoring and Networking Workshop for Junior Women Faculty in the Big 10," Mar. 2010–Feb. 2011, Dawn Tilbury, PI, $49,031.
22. "Real-Virtual Integrated Testing Framework for Battery Assembly Process," Subcontract to GM from a DoE grant, April 2010 – April 2012, Dawn Tilbury, PI, $166,080.
23. "Admin Core," GRRC (US Army TARDEC), July 2010 – June 2011, Dawn Tilbury, PI, $110,000.
24. "Reconfigurable Control for Failure Prevention and Recovery," GRRC, July 2010 – June 2011, Dawn Tilbury, PI; Ella Atkins, co-PI, $170,000.
25. "Augmented Reality User Interfaces for UGVs," GRRC, July 2010 – June 2011, Dawn Tilbury, PI, $90,000.
26. "EAGER: Cyberinfrastructure for Manufacturing: Needs and Opportunities," NSF, Sept. 2011 – Aug. 2013, Dawn Tilbury, PI; Z. Morley Mao and S. Jack Hu, co-PIs, $100,000.
27. "Reconfigurable Control for Failure Prevention and Recovery," ARC, January–December 2014, Dawn Tilbury, PI; Ella Atkins, co-PI, $157,500..
28. "Evaluation and Performance Modeling of User Interfaces for UGVs", ARC, January–June 2013, Dawn Tilbury, PI, $124,500.
29. "Teleoperation with Semi-Autonomous Behaviors and Latency: User Modeling to Maximize System Performance," ARC, January 2014–December 2016, $330,990
30. "Validating Interconnected Hybrid Process Simulations for Networked Cyber-Physical Systems," NIST, January 2014 – June 2016, $241,729.
31. "Evaluation of Continuous Physiological Monitoring Data Using Time Series Analyses to Forecast Pulmonary Adverse Events", MICHR (Michigan Institute for Clinical and Health

Research) Pilot Grant, S. K. Ramachandran, PI, Dawn Tilbury, co-PI, January–December 2014, $50,000.

32. "Cloud Manufacturing Automation using High-Performance Computing", Gift from Rockwell Automation, March 2014, $101,192; March 2015, $104,490.
33. "An Autonomous Innovator to Enhance Long-Duration Mission Success," ONR, Ella Atkins, PI; Dennis Bernstein and Dawn Tilbury, co-PIs, 5/1/14–9/30/17, $900,000.
34. "GOALI: Modeling and Control for Manufacturing Intelligence with the Cloud," NSF, PI, $299,997, 5/1/15–4/30/18. Kira Barton and Francisco Maturana (Rockwell Automation), co-PIs.*
35. "EAGER: Cybermanufacturing: Enabling Production as a Service (PaaS)," NSF, co-PI, $250,000, 10/1/15–9/30/17. Z. Mao (PI) and K. Barton, co-PI.*
36. "Improving Manufacturing Efficiency Using Big Data through the Connected Enterprise," Gift from Rockwell Automation, March 2016, $110,188.
37. "CPS: Frontiers: Software-Defined Control for Smart Manufacturing Systems," NSF, PI, $4,000,000, 9/1/16–8/31/21. K. Barton, Z. Mao, J. Moyne, co-PIs. S. Mitra and S. Mohan (UIUC), and E. Shi (Cornell).*
38. "Enhancing resilience of industrial control systems to cyber attacks using hybrid processes," NIST, PI, $201,921. 7/1/2016–6/30/2019. J. Moyne, co-PI.
39. "Modeling bi-directional trust in semi-autonomy for improved system performance", ARC, PI, Jan. 2017–Dec. 2019, $300,000. L. P. Robert and X. J. Yang, co-PIs.
40. "Trust, Control and Risk in Autonomous Vehicles," TRI, co-PI, $100,000, Jan.–Dec. 2017. L. P. Robert, PI and A. K. Pradhan, co-PI.
41. "Explanations and Expectations: Trust Building in Autonomous Vehicles," MTC, co-PI, $300,000, 1/1/2017–12/31/2018. L. P. Robert, PI and A. K. Pradhan, co-PI.
42. "Data-Driven Modeling of System-Level Plant Floor Interactions for Enhanced Fault Prediction and Increased System Throughput," Ford Motor Company, co-PI, $99,000, 1/1/2017–12/31/2018. K. Barton, PI.
43. "Predicting driver's takeover readiness and designing adaptive in-vehicle alert system," Mcity, co-PI, $300,000, 1/1/2018–12/31/2020, X. J. Yang, PI and A. K. Pradhan, L. P. Robert, F. Zhao, co-PIs.
44. "Trust but Communicate: Implicit and Explicit AV Communications on Pedestrians' Trust," TRI, co-PI, $150,000, Jan.–Dec. 2018. L. P. Robert, PI and A. K. Pradhan and X. J. Yang, co-PIs.
45. "Improving the Detection of Cyber-Attacks in Cyber-Physical Manufacturing Systems Using Digital Twins," NIST, PI, $118,232, 9/1/2019–8/31/2021. K. Barton and J. Moyne, co-PIs.
46. "Developing standard metrics for measuring takeover performance in highly automated driving," Mcity, co-PI, $230,555, 1/1/2020–12/31/2021. X. J. Yang, PI and F. Zhou, L. P. Robert, and L. Molnar, co-PIs.
47. "Measuring and Predicting Drivers' Takeover Readiness in Automated Driving," AAA Foundation, co-PI, $222,494, 1/1/2020–12/31/2021. X. J. Yang, PI and F. Zhou, L. P. Robert, and L. Molnar, co-PIs.
48. "System-level Digital Twins for Cyber-Physical Manufacturing Systems to Improve Detection of Cyber-Attacks," NIST, PI, $110,000, 9/1/2020–8/31/2022. K. Barton and J. Moyne, co-PIs.
49. "Building Trust Across Dynamic, Heterogeneous Teams," Army Research Laboratory (ARL), PI, $100,000, 7/1/2021–6/30/2022. L. P. Robert, co-PI.

**Note: While I was on rotation at NSF, I was unable to be PI or co-PI on active NSF grants.*

Chapters in Books

1. M. Tayara, N. Soparkar, J. Yook, and D. Tilbury, "Real Time Data and Coordination Control for Reconfigurable Manufacturing Systems," in *Real-Time Database and Information Systems:*

Research Advances, A. Bestavros and V. Wolfe, eds., pp. 23–48, Kluwer, 1997. Paper presented at RTDB 1997.

2. G. J. Pappas, J. Lygeros, D. Tilbury, and S. Sastry, "Exterior Differential Systems in Control and Robotics," in *Essays on Mathematical Robotics*, J. Baillieul, S. S. Sastry, and H. J. Sussmann, eds., Springer-Verlag, 1998.
3. E. Park, D. M. Tilbury, and P. P. Khargonekar, "Modeling, Analysis, and Implementation of Logic Controllers for Machining Systems using Petri Nets and SFC," in *Discrete Event Systems: Analysis and Control,* R. Boel and G. Stremersch, eds., pp. 265–274, Kluwer, 2000. Paper presented at WODES 2000.
4. D. M. Tilbury and P. P. Khargonekar, "Discrete Event Control of Manufacturing Systems," in *Mechanical Systems Design Handbook,* Y. Hurmuzlu, ed., CRC Press, 2002.
5. F.-L. Lian, J. R. Moyne, and D. M. Tilbury. "Network Protocols for Networked Control Systems," in *Handbook of Networked and Embedded Systems,* D. Hristu-Varsakalis and W. S. Levine, eds, Springer, 2005.
6. J. R. Moyne, D. M. Tilbury, and D. Anand, "Networked Control Systems for Manufacturing: Parameterization, Differentiation, Evaluation, and Application," in *Industrial Communication Technology Handbook*, Second Edition, Richard Zurawski, ed., CRC Press 2014.

Ph. D. Students Supervised

Euisu Park, Ph.D. Fall 1999. Co-chair with P. Khargonekar, EECS.
John Yook, Ph.D. Fall 2000.
Sung K. Kim, Ph.D. Winter 2001.
Feng-Li Lian, Ph.D. Winter 2001. Co-chair with J. Moyne, EECS.
Morrison Lucas, Ph.D. Summer 2003.
Eric Endsley, Ph.D. Winter 2004.
Seungjoo Lee, Ph.D. Fall 2005.
Emanuel Almeida, Ph.D. Summer 2006.
Aftab Khan, Ph.D. Winter 2007. Co-chair with J. Moyne, ME.
Daniel Georgiev, Ph.D Summer 2007. Co-chair with P. Kabamba, AERO.
Richard Hill, Ph.D., Summer 2008. Co-chair with S. Lafortune, EECS.
Lindsay Allen, Ph.D. Fall 2010.
William Harrison, Ph.D., Summer 2011.
Dhananjay Anand, Ph.D., Winter 2013. Co-chair with J. Moyne.
Steve Vozar, Ph.D., Summer 2013.
John Broderick, Ph.D. EECS, Fall 2014. Co-chair with E. Atkins, AERO.
Hisham ElMoaqet, Ph.D., Summer 2015.
Justin Storms, Ph.D., Fall 2016.
Miguel Saez, Ph.D., Summer 2018. Co-chair with K. Barton.
Zheng Wang, Ph.D., Summer 2018. Co-chair with J. Moyne.
Ilya Kovalenko, PhD Summer 2020. Co-chair with K. Barton.
Efe Balta, PhD Summer, 2021. Co-chair with K. Barton.
Hebert Azevado-Sa, PhD Summer 2021. Co-chair with L. Robert.
Suresh Jayaraman, Ph.D. Summer, 2021.

Max Toothman, PhD candidate, expected graduation 2022. Co-chair with K. Barton.
Tyler Toner, PhD candidate, expected graduation 2023. Co-chair with K. Barton.
Mingjie Bi, PhD candidate, expected graduation 2024. Co-chair with K. Barton.
Arsha Ali, PhD pre-candidate, expected graduation 2025. Co-chair with L. Robert.
Allison Rafter, PhD pre-candidate, expected graduation 2026. Co-chair with K. Barton.

Master's Students Supervised

Namrata Arora, M.S. EECS May 2007. Co-chair with J. Moyne.
Niresh Agrawal, M.S. EECS May 2004. Co-chair with J. Moyne.
Efe Balta, M.S. ME 2018. Co-chair with K. Barton.
Kevin Chen, M.S. ME May 2016.

Adran Clarke, M.S. ME, Dec. 2014.
Shyam Gala, M.S. EECS May 2007. Co-chair with J. Moyne.
Neha Gandhi, M.S. December 2001.
Chandra Gollapudi, M.Eng. December 2001.
Jason House, M.S. December 2008. Co-chair with J. Moyne.
Rob Isenberg, M.S. ME May 2015.
Naveen Kalappa, M.Eng. May 2007. Co-chair with J. Moyne.
Joachim Klima, M.S., December 2007.
Joshua Langsfeld, M.S. May 2010. Co-chair with E. Atkins
Chen Li, M.S. ECE 2017. Co-chair with E. Atkins.
David Linz, M.S. May 2010. Co-chair with J. Moyne.
Paul Otanez, M.S., August 2002. Co-chair with J. Moyne.
Jonathan Parrott, M.S. December 2005. Co-chair with J. Moyne.
Luke Petersen, M.S. ME 2018. Co-chair with L. Robert.
Stephanie Pollice, M.S. May 2003.
Nick Putman, M.S. ME, May 2015.
Krishnakumar Ramamoorthy, M.S. EECS May 2007.
Zachary Renwick, M.S. ME, May 2016.
Meghan Richey, M.S. Robotics, December 2015.
Kyle Schroeder, M.S. May 2008. Co-chair with J. Moyne.
Deepak Sharma, M.S., May 2009. Co-chair with J. Moyne.
Joshua Titus, M.S. May 2009. Co-chair with A. G. Ulsoy.
Bradley Triden, M.S. December 2005. Co-chair with J. Moyne.
Peter Turpel, M.S. May 2013.
Janani Viswanathan, M.S. December 2011.
Allison White, M.S. ME, May 2021. Co-chair with K. Barton.
Huajing Zhao, M.S. Robotics 2019. Co-chair with L. Robert.

Postdoctoral Fellows Supervised

Brandon Moore, 2009–2011. Co-advised with A. G. Ulsoy.
Jungyoon Kim, 2015–2017. Co-advised with K. Ramachandran.
Ilya Kovalenko, 2020–present. Co-advised with K. Barton.
Felipe Lopez, 2016–2018. Co-advised with K. Barton.
Yassine Qamsane, 2018–present. Co-advised with K. Barton.
Ilya Kovalenko, 2020–present. Co-advised with K. Barton.

PhD Opponent

Knut Akesson, "Methods and Tools in Supervisory Control Theory — Operator Aspects, Computational Efficiency, and Applications," Chalmers University, September 2002.
Dan Henriksson, "Resource Constrained Embedded Control and Computing Systems," Lund University, January 2006.

Licentiate Opponent

Chithrupa Ramesh, "Contention-based Multiple Access Architectures for Networked Control Systems," Royal Institute of Technology (KTH), Stockholm, February 2011.

Service to Government or Professional Organizations

DARPA Study Groups
Defense Science Study Group (DSSG), 2004–2005.
Information Science and Technology (ISAT), 2005–2008.

Conference/Workshop Organization
IFAC Conference on Cyber-Physical and Human Systems (CPHS), General Co-Chair, 2018.
IFAC 2023 Advisory Committee, bidding for the 2023 World Congress, Chair.
NSF Workshop: Setting a Broader Impact Innovation Roadmap, co-Organizer, 2016.
IEEE International Conference on Robotics and Automation (ICRA), Publications Chair, 2015.
American Control Conference, General Chair, 2014.
American Control Conference, Program Chair, June 2012.

Mentoring and Networking Workshop for Junior Women Faculty in the Big 10, Co-Organizer, April 2010 and April 2013. Advisory Committee, May 2016.
IEEE Conference on Decision and Control (CDC), Publications Chair, December 2009.
ASME Dynamic Systems and Control Conference (DSCC), Finance and Registration Chair, October 2008.
American Control Conference (ACC), Vice-Chair for Student Affairs, June 2008.
Workshop on Discrete Event Systems (WODES), Co-organizer with Stéphane Lafortune and Feng Lin, July 2006.
NSF Workshop on Feedback Control of Computing Systems, Co-organizer with Tarek Abdelzaher and Joe Hellerstein, May 2005.
IEEE Conference on Decision and Control, Publications Chair, 2004.
CIRP RMS Conference, Organizing Committee Member, 2003.
Workshop on Control of Manufacturing Systems, co-organized by ERC/RMS, ITIA-CNR, and Politecnico di Milano, February 2002.

Editorial Appointments
IEEE Transactions on Automation Science and Engineering, Associate Editor, 2008–2011; Senior Editor, 2012–2017.
Robotics: Science and Systems (RSS) Conference, Area Chair, 2016
IEEE International Conference on Robotics and Automation (ICRA), Senior Program Committee, 2015.
IEEE Conference on Automation Science and Engineering (CASE), Track chair for Automation in Manufacturing, Logistics and Supply Chain Management Systems, 2009, 2011.
IEEE Conference on Automation Science and Engineering (CASE), Track chair for Reconfigurable Automation Systems, 2008.
Workshop on Discrete-Event Systems (WODES), program committee, 2008.
CDC 2006, Program Committee Member
CDC–ECC (Joint conference), Associate Editor, 2005.
IEEE Control Systems Magazine, Associate Editor, 2002–2007.
Workshop on Discrete Event Systems (WODES), Technical Program Committee Member, 2004.
Japan-USA Symposium on Flexible Automation (JUSFA), Technical Program Committee Member, 2004.
IFAC Symposium on Mechatronic Systems, Technical Program Committee member, 2002.

Committee Service
AACC Vice-President, 2020–2021. Will be President 2022–2023 and Past President 2024–2025.
IFAC Council, Member, 2017–2020 and 2020–2023.
ASME Dynamic Systems and Control Division, Honors and Awards Committee, Chair, 2016–2018.
IFAC Policy Committee, Chair, 2014–2017.
AACC Director, appointed by ASME, 2015–2017.
ASME Dynamic Systems and Control Division, executive committee (elected) 2008–2013. Chair: July 2011 – June 2012.
IEEE Control Systems Society, Board of Governors (elected) 2005–2007 and 2014–2016, (appointed) 2008.
ASME–DSC Technical Committee on Computer, Communications, and Control, Vice-chair, 2000–2002. Organized special sessions for ACC 2001, ASME–IMECE 2001, ACC 2002, ACC 2003.
Women in Control, IEEE Control Systems Society, mailing list coordinator, 1995–2004.

Service at University of Michigan
Manufacturing Task Force, Chair, 2017.
Institutional Autonomous Systems Committee, Chair, 2016.
Autonomous Systems Policy Committee, 2015-2016.
Distinguished Faculty Achievement Awards Selection Committee, 2012, 2013, 2014.
Rackham Distinguished Dissertation Award Selection Committee, 2004.

CoE Freshmen Admissions Committee, 2011–2012.
Dean's Advisory Committee on Women Faculty, 2004–2010, 2011–2013; Chair 2013–2014.

CoE Committee on Interdisciplinary Support, 2002–2003.

ME Associate Chair for Facilities and Planning, 2007–2010.
ME Faculty Search Committee, member 2005–2006, chair 2006–2007, chair 2011–2012.
ME Advisory Committee, 2002, 2003–2005, 2006–2008, 2011–2013.
ME Undergraduate Committee, 2004–2006.
ME Graduate Committee, 2002–2003.

ERC-RMS, Thrust Area 2 leader, 2002–2011.
ERC-RMS, Testbed coordinator, 2002–2011.
GRRC, Research Area 4 leader, 2008–2009.
GRRC, Director, 2009–2011.
ARC, Deputy Director, 2011–2013.

Leadership Development

CIC Academic Leadership Program (ALP), 2014-2015.
Executive Leadership for Academics in Technology and Engineering (ELATE), 2015–2016.

Courses Taught at UM

ME 360, Modeling, Analysis, and Control of Dynamic Systems: Fall 1997, Winter 1998, Winter 2000, Winter 2001, Winter 2003, Winter 2004, Spring 2004 (at SJTU), Fall 2006, Winter 2009, Fall 2009, Fall 2013.
ME 395, Mechanical Engineering Laboratory I: Winter 1999, Winter 2000, Fall 2002, Winter 2004, Winter 2005, Winter 2006, Winter 2012, Winter 2016.
ME 461, Automatic Control Systems: Winter 1995, Winter 1996, Fall 1998, Fall 1999, Fall 2005, Fall 2011, Winter 2017. Introduced an innovative tutorial on the WWW to illustrate the use of Matlab for solving control analysis and design problems (1995). Introduced "take-home control experiments" (2011). Introduced "in class labs" using Arduinos (2017).
ME 540/Aero 540, Introduction to Dynamics: Fall 2004.
ME 564/EECS 560/Aero 550, Linear Systems Theory: Fall 1996, Fall 1998, Fall 2000, Fall 2012.
ME 561/EECS 561/Aero 571, Design of Digital Control Systems: Winter 1997.
ME 567/EECS 567, Introduction to Robotics: Winter 2007, Winter 2008, Winter 2013, Winter 2015.
ME 662/EECS 662/Aero 672, Advanced Nonlinear Control: Fall 1995.

Refereed Conference Papers (since 2009)

1. L. V. Allen, K. M. Goh, and D. M. Tilbury, "Closed-Loop Determinism for Non-Deterministic Environments: Verification for IEC 61499 Logic Controllers," *Proceedings of the IEEE Conference on Automation Science and Engineering (CASE),* Bangalore, India, August 2009. Best Conference Paper Award.
2. D. M. Anand, J. R. Moyne, and D. M. Tilbury, "Performance Evaluation of Wireless Networks for Factory Automation Applications, *Proceedings of the IEEE Conference on Automation Science and Engineering (CASE),* Bangalore, India, August 2009.
3. D. M. Tilbury and A. G. Ulsoy, "Improving the Reliable Operations of Ground Robotics: Research Activities at the Ground Robotics Reliability Center," *Proceedings of the IARP Workshop on Technical Challenges for Dependable Robots in Human Environments,"* Toulouse, France, June 2010.
4. L. V. Allen and D. M. Tilbury, "Event-Based Fault Detection of Manufacturing Cell: Data Inconsistencies Between Academic Assumptions and Industry Practice, *Proceedings of the IEEE Conference on Automation Science and Engineering (CASE),* Toronto, August 2010.
5. D. Sharma, D. M. Tilbury, and L. Seno, "Time-Domain Input-Output Transient Performance Validation for Modular Control Systems: Method and Examples," *Proceedings of the ASME Dynamic Systems and Control Conference,* Cambridge, MA, September 2010.
6. L. V. Allen and D. M. Tilbury, "Necessary Condition for a Petri Net Model that Incorporates Resources to Produce an Event Stream From an Unknown Initial State," *Proceedings of the American Control Conference,* San Francisco, June 2011.

7. J. A. Broderick, L. V. Allen, and D. M. Tilbury, "Anomaly Detection without a Pre-Existing Formal Model: Application to an Industrial System," *Proceedings of the IEEE Conference on Automation Science and Engineering,* Trieste, Italy, August 2011. Best Application Paper Award.
8. D. M. Anand, J. Moyne, and D. M. Tilbury, "Running Simulation Models in Parallel with Physical Systems for Improved Estimation Performance: Semantic Models Facilitate Updating Model State, Parameters, and Structure," *Proceedings of the ASME Dynamic Systems and Control Conference,* Arlington, VA, October 2011.
9. J. Viswanathan, W. S. Harrison, D. M. Tilbury, and F. Gu, "Using Hybrid Process Simulation to Evaluate Manufacturing Component Choices: Integrating a Virtual Robot with the Physical System," *Proceedings of the Winter Simulation Conference,* Phoenix, December 2011.
10. J. Viswanathan, D. M. Tilbury, S. J. Hu, and Z. Mao, "Cyberinfrastructure Enabling Personalized Production," *Proceedings of the ASME International Symposium on Flexible Automation,* St. Louis, June, 2012.
11. S. Vozar and D. M. Tilbury, "Augmented Reality User Interface for Mobile Robots With Manipulator Arms: Development, Testing, and Qualitative Analysis, " *Proceedings of the ASME International Design Engineering Technical Conferences,* Chicago, August 2012.
12. J. A. Broderick, E. M. Atkins, and D. M. Tilbury, "Maximizing Coverage for Mobile Robots While Conserving Energy," *Proceedings of the ASME International Design Engineering Technical Conferences,* Chicago, August 2012.
13. B. Moore, D. M. Tilbury, and E. M. Atkins, "Thermal Modeling for Temperature Aware Operations in Field Robots," *Proceedings of the ASME Dynamic Systems and Control Conference,* Ft. Lauderdale, October 2012.
14. D. M. Tilbury, E. Renard, and R. Johansson, "Integrating Multiple Controllers to Balance Competing Performance Objectives: Application to Blood Glucose Management," *Proceedings of the ASME Dynamic Systems and Control Conference,* Ft. Lauderdale, October 2012.
15. S. Vozar and D. Tilbury, "Improving Teleoperated Robot Speed using Optimization Techniques," *Proceedings of the Human-Robot Interaction Conference,* March 2013, Tokyo.
16. H. ElMoaqet, D. M. Tilbury, and S.-K. Ramachandran, "Predicting Oxygen Saturation Levels in Blood using Autoregressive Models," *Proceedings of the American Control Conference,* Washington, DC, June 2013.
17. J. Broderick, D. Tilbury, and E. Atkins, "Supervisory Traction Control for a Slipping UGV," *Proceedings of the American Control Conference,* Washington, DC, June 2013.
18. J. G. Storms, S. Vozar, and D. M. Tilbury, "Predicting Human Performance during Teleoperation," *Proceedings of the Human-Robot Interaction Conference,* Bielefeld, Germany, March 2014.
19. H. ElMoaqet, D. M. Tilbury, and S.-K. Ramachandran, "A Novel Dynamic Model to Predict Abnormal Oxygen Desaturations in Blood," *Proceedings of the IEEE Medical Measurements and Applications Conference,* Lisbon, June 2014.
20. J. G. Storms and D. M. Tilbury, "Blending of Human and Obstacle Avoidance Control for a High Speed Mobile Robot," *Proceedings of the American Control Conference,* Portland, Oregon, June 2014.
21. S. Vozar and D. M. Tilbury, "Driver Modeling for Teleoperation with Time Delay", *Proceedings of the IFAC World Congress,* Cape Town, South Africa, August 2014.
22. J. A. Broderick, D. M. Tilbury, and E. M. Atkins, "Modeling and Scheduling of Multiple Power Sources for a Ground Robot," *Proceedings of the ASME Dynamic Systems and Control Conference (DSCC),* San Antonio, TX, October 2014.
23. Zheng Wang, Adrian Clarke, J. Moyne, and D. Tilbury, "Utilizing Intra-day Prediction Modification Strategies to Improve Peak Power Shaving Using Energy Storage Systems for Smart Buildings," *Proceedings of the ASME Dynamic Systems and Control Conference (DSCC),* San Antonio, TX, October 2014.

24. J. G. Storms and D. M. Tilbury, "Dynamic Weight-Shifting to Reduce Rollover Risk in High Speed Mobile Manipulators," *Proceedings of the ASME Dynamic Systems and Control Conference (DSCC),* San Antonio, TX, October 2014.
25. N. Putman, F. Maturana, K. Barton, and D. Tilbury, "Virtual Fusion: Integrating Virtual Components into a Physical Manufacturing System," *Proceedings of the IFAC Workshop on Information Control Problems in Manufacturing,"* Ottawa, May 2015.
26. J. G. Storms and D. M. Tilbury, "Equating User Performance Among Communication Latency Distributions and Simulation Fidelities for a Teleoperated Mobile Robot," *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA),* Seattle, May 2015.
27. M. Saez, F. Maturana, K. Barton, and D. Tilbury, "Real-Time Hybrid Simulation of Manufacturing Systems for Performance Analysis and Control," *Proceedings of the IEEE International Conference on Automation Science and Engineering,* August 2015, Gothenberg, Sweden.
28. H. ElMoaqet, D. M. Tilbury, and S.-K. Ramachandran, "A Probabilistic Approach for Evaluating Predictions of Critical Levels in Physiological Time Series," *Proceedings of the American Control Conference,* July 2016, Boston.
29. J. Storms, K. Chen, and D. Tilbury, "A Semi-Autonomous Control Method to Improve Performance of Small Unmanned Ground Vehicles with Communication Latency," *Proceedings of ASME International Design Engineering Technical Conferences*, August 2016.
30. J. Kim, H. ElMoaqet, D. M. Tilbury, and S.-K. Ramachandran, "A New Algorithm for the Detection of Sleep Apnea Events in Respiration Signals," *Proceedings of the International Conference of the IEEE Engineering in Medicine and Biology Society,* August 2016, Orlando.
31. M. Porter, V. Raghavan, Y. Lin, Z. M. Mao, K. Barton, D. Tilbury, "Production as a Service: Optimizing Utilization in Manufacturing Systems," *Proceedings of the ASME Dynamic Systems and Control Conference (DSCC),* October 2016, Minneapolis.
32. J. Storms, K. Chen, and D. Tilbury, "Modeling teleoperated robot driving performance as a function of environment difficulty," *IFAC Conference on Cyber-Physical and Human Systems*, Florianopolis, Brazil, December 2016.
33. M. Saez, F. Maturana, K. Barton and D. Tilbury, "Anomaly Detection and Productivity Analysis for Cyber-Physical Systems in Manufacturing," *Proceedings of the IEEE Conference on Automation Science and Engineering (CASE),* Xian, China, August 2017.
34. Efe Balta, Kshitij Jain, Yikai Lin, Dawn Tilbury, Kira Barton, Morley Mao, "Production as a Service: A Centralized Framework for Small Batch Manufacturing, *Proceedings of the IEEE Conference on Automation Science and Engineering (CASE),* Xian, China, August 2017.
35. Ilya Kovalenko, Kira Barton and Dawn Tilbury, "Design and Implementation of an Intelligent Product Agent Architecture in Manufacturing Systems," *Proceedings of the IEEE Conference on Emerging Technology and Factory Automation (ETFA),* Limassol, Cyprus, September 2017.
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2. S. Vozar and D. M. Tilbury, "Improving UGV Teleoperation Performance Using Novel Visualization Techniques and Manual Interfaces," *Proceedings of the SPIE DSS Conference on Unmanned Systems Technology XIV,* Baltimore, April 2012.
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1. C. Creech, S. K. Jayaraman, L. P. Robert, D. Tilbury, X. J. Yang, A. Pradhan, and K. Tsui, "Trust and Control in Autonomous Vehicle Interactions," presented at the *Morality and Social Trust in Autonomous Robots Workshop at the 2017 Robotics: Science and Systems (RSS) Conference,* Cambridge, MA.
2. X. J. Yang, D. Tilbury, A. Pradhan, L. P. Robert, "Human Autonomous Vehicles Interactions: An Interdisciplinary Approach presented at the *Workshop on the Interacting with Autonomous Vehicles: Learning from other Domains at 36rd ACM Conference on Human Factors in Computing Systems (CHI 2018),* April 21-26, 2018, Montreal.
3. Na Du, L. P. Robert, A. Pradhan, D. Tilbury and X. J. Yang, "A Cross-Cultural Study of Trust Building in Autonomous Vehicles," presented at the *Conference on Autonomous Vehicles in Society: Building a Research Agenda,* May 18-19 2018, East Lansing, MI.
4. S. K. Jayaraman, C. Creech, D. Tilbury, X. J. Yang, A. Pradhan, K. Tsui and L. P. Robert, "Workload in Pedestrians Interacting with Autonomous Vehicles," presented at the *2nd IFAC Conference on Cyber-Physical & Human-Systems*, Dec. 14-15, 2018 Miami.
5. N. Du, J. Ayoub, F. Zhou, A. K. Pradhan, L. Robert, D. Tilbury, E. Pulver, and X. J. Yang, "Effects of driver's emotion on takeover readiness and performance in highly automated driving," presented at the *3rd IAVSD Workshop on Dynamics of Road Vehicles: Connected and Automated Vehicles,* April 28–29, 2019, Ann Arbor, MI.
6. S. K. Jayaraman, D. M. Tilbury, X. J. Yang, A. K. Pradhan, and L. P. Robert, "Hybrid Framework for Improved AV-Pedestrian Predictions, presented at the *3rd IAVSD Workshop on Dynamics of Road Vehicles: Connected and Automated Vehicles,* April 28–29, 2019, Ann Arbor, MI.

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