Dawn M. Tilbury
Associate Professor of Mechanical Engineering
University of Michigan
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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

University of Michigan, Associate Professor, Mechanical Engineering, July 2001 – present.
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.
University of Michigan, Assistant Professor, Mechanical Engineering, January 1995 – June 2001.

Selected Honors and Awards

ASME Dynamic Systems and Control Division Education Award, 2003.
Distinguished Engineering Alumnus Award, Outstanding Young Leader, University of California Engineering Alumni Association, 2003.
ME Teaching Incentive Award, 2003.
IEEE Senior Member, 2002.
Best paper award, NOMS (Network Operations and Management Symposium), Florence, April 2002. Joint with Y. Diao, N. Gandhi, J. Hellerstein, S. Parekh.
ME Outstanding Faculty Award, 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. "Delays in Control over Communication Networks: Characterization, Impact, and Reduction Strategies," Workshop on Networked Embedded Sensing and Control, Notre Dame, October 2005.
2. "Reconfigurable Logic Control for High Volume Manufacturing Systems," American Control Conference, Anchorage, May 2002.

Books

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

2. W. C. Messner and D. M. Tilbury, *Control Tutorials for MATLAB and Simulink: A Web-based Approach*, CD-ROM textbook supplement, Addison-Wesley, 1998. The earlier version "Control Tutorials for Matlab" was installed at more than 80 sites around the world, including http://www.engin.umich.edu/group/ctm/

Summary of Research Contributions

As a faculty member at the University of Michigan, Professor Tilbury has maintained an ongoing dialog with industry representatives to understand what are the key challenges they are facing in the control systems domain. Working together with her students and colleagues, she has framed research questions that address important challenges from industry, obtained funding for this research, and documented the research results in conference and journal publications.

Professor Tilbury first started working on manufacturing control problems in 1996, when the NSF Engineering Research Center for Reconfigurable Manufacturing Systems (ERC/RMS) was established at the University of Michigan. To make manufacturing control systems reconfigurable, new approaches to develop logic control were needed. Professor Tilbury and her students have done in-depth studies about the current practice of logic control design [17] and developed new frameworks and methodologies for writing logic controllers [8,12,22,25]. These new methods can automatically generate control code directly from a specification, and guarantee certain properties about the resulting code, thereby reducing the time to develop, debug, and reconfigure the system-level logic controllers. These logic controllers are currently running on the Reconfigurable Factory Testbed at the ERC/RMS.

Another important challenge in manufacturing control systems is the use of networks to carry control data. When control data is sent over a network, the inevitable time delays can negatively impact the control performance. Professor Tilbury and her students have characterized the delays present in industrially-standard networks [10,13], modeled and analyzed the impact of these delays on control performance [9,13,16], and developed novel approaches for improving the performance of networked control systems using standard networks [14,21]. Professor Tilbury's group has shown experimentally that, when the network is not overloaded, most of the delay is at the software/firmware interface between the node and the network, and not on the network itself [13]. To minimize the effects of network delays on control performance, the network traffic should be reduced, for example by using state estimators [14] or multi-sample packets [21]. An extensive networks testing lab at the ERC/RMS has recently been used to experimentally characterize industrial Ethernet solutions at the request of General Motors.

Professor Tilbury also worked with a group at IBM to apply control theory to computing systems [15,20]. The challenge was to come up with a suitable model of the system that would be appropriate for control. Simple controllers were designed that would not require excessive computation and negatively impact the performance of the computing system. To broaden the audience for feedback control approaches in the computer science community, the team wrote an introductory textbook on this topic. The book is written entirely from a discrete-time perspective, since computing systems are inherently discrete time.

Professor Tilbury continues to work extensively in the areas of logic control and networked control with applications to manufacturing systems. In addition, as an extension of the networked control work, she has recently been investigating cooperative control, with a focus on how uncertainty affects cooperation. She has also begun collaborating with a multidisciplinary team (including psychology, medicine, and kinesiology) to understand how feedback control models can be used to describe physiologic and behavioral responses to emotion regulation. Through these activities, she continues to look for new challenges in the application of control system models and methods to practical problems.

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 Technology in 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," accepted for publication in *IEEE Proceedings*, December 2005. 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," accepted for publication in *IEEE Transactions on Automation Science and Engineering,* May 2006.

Submitted Journal Articles

1. S. Lee and D. M. Tilbury, "Deadlock-Free Resource Allocation Control for a Reconfigurable Manufacturing System with Serial-Parallel Configuration," conditionally accepted for publication in *IEEE Transactions on Systems, Man, and Cybernetics–C,* October 2006. Revised version submitted November 2006.
2. M. R. Lucas and D. M. Tilbury, "A Method for Comparing Logic Control Design Methodologies for the Automotive Manufacturing Industry," submitted to *Computers in Industry,* August 2006.
3. A. A. Khan, J. R. Moyne, and D. M. Tilbury, "Predictive Inspection Based Control using Diagnostic Data for Manufacturing Processes," submitted to *Journal of Manufacturing Science and Engineering,* September 2006.

Invited Discussion Article

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.

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.

Patent

"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.

Grants and Contracts received since 2001

1. IREE Supplement to "Modular Verification of Logic Controllers," NSF-CMS, Sept. 2006–Aug. 2008, $15,000. Dawn Tilbury, PI.
2. "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.
3. "Gift for Research on Industrial Control," National Instruments, $19,740, March 2006.
4. "Modular Verification of Logic Controllers," NSF-CMS, Sept. 2005–Aug. 2008, $239,947, Dawn Tilbury, PI.
5. "Emotion Regulation as a Complex System," NSF-HSD, Sept. 2005–Aug. 2008, $708,627, Twila Tardif, PI; Rosa Angulo-Barroso, Barbara Felt, Sheryl Olson and Dawn Tilbury, co-PIs.
6. "Workshop on Feedback Control of Computing Systems," NSF-CISE, May 2005–April 2006, $10,000, Dawn Tilbury, PI.
7. "Gift for Research on Industrial Control," National Instruments, $45,000, December 2004.
8. "Distributed Control Networks," Subcontract from NSF-ERC for Reconfigurable Manufacturing Systems at the University of Michigan, Yoram Koren, Director, Sept. 2002 – Aug. 2007, $536,823, James Moyne, PI and Dawn Tilbury, co-PI.
9. "Modular Logic Control," Subcontract from NSF-ERC for Reconfigurable Machining Systems at the University of Michigan, Yoram Koren, Director, Sept. 2002 – Aug. 2007, $435,875, Dawn Tilbury, PI.
10. "Feedback Control of Dynamic Computing Systems," NSF CCR-ITR, Sept. 2002–Aug. 2005, $350,000, Dawn Tilbury, PI and Brian Noble, co-PI.

Grants and Contracts received before 2001

1. "Partnership in Flexible and Reconfigurable Logic Control for Manufacturing," PER Supplement to NSF-ERC for Reconfigurable Machining Systems, Oct. 2001–Sept. 2002, $99,886, Yoram Koren, PI and Dawn Tilbury, co-PI.
2. "Reconfigurable Factory Testbed," Subcontract from NSF-ERC for Reconfigurable Manufacturing Systems at the University of Michigan, Yoram Koren, Director, Sept. 2000 – Aug. 2007, $1,203,141, Dawn Tilbury, PI and James Moyne, co-PI.
3. "Workshop on Logic Control for Manufacturing Systems," NSF ENG-CMS, Aug. 2000 – Feb. 2001, $12,000, Dawn Tilbury, PI and Pramod Khargonekar, co-PI.
4. "Generic, Adaptive Control for Distributed Computing Systems," IBM, Dec. 1999 – Aug. 2001, $80,092, Dawn Tilbury, PI.
5. "CAREER: Integration of Planning and Control for Nonlinear Systems," NSF ENG-CMS, Sept. 1999 – Aug. 2005, $200,000, Dawn Tilbury, PI.
6. "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.
7. "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.
8. "Reconfigurable Distributed Real-Time Control for Manufacturing Systems," Subcontract from NSF-ERC for Reconfigurable Machining Systems at the University of Michigan, Yoram Koren, Director, Jan. 1997 – Dec. 1997, $92,258, Nandit Soparkar, EECS, PI, and Dawn Tilbury, co-PI.
9. "Modular Control Design for Reconfigurability," Subcontract from NSF-ERC for Reconfigurable Machining Systems at the University of Michigan, Yoram Koren, Director, Sept. 1996 – Aug. 2002, $692,302, Dawn Tilbury, PI, Pramod Khargonekar, EECS, co-PI.
10. "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.

Ph. D. Students Supervised

Emanuel Almeida, Ph.D. Summer 2006.
Seungjoo Lee, Ph.D. Fall 2005.
Eric Endsley, Ph.D. Winter 2004.
Morrison Lucas, Ph.D. Summer 2003.
Feng-Li Lian, Ph.D. Winter 2001. Co-chair with J. Moyne, EECS.
Sung K. Kim, Ph.D. Winter 2001.
John Yook, Ph.D. Fall 2000.
Euisu Park, Ph.D. Fall 1999. Co-chair with P. Khargonekar, EECS.

Daniel Georgiev, Ph.D candidate, expected graduation 2007. Co-chair with P. Kabamba, AERO.
William Harrison, Ph.D. pre-candidate, expected graduation 2009.
Richard Hill, Ph.D. candidate, expected graduation 2008. Co-chair with S. Lafortune, EECS.
Aftab Khan, Ph.D. candidate, expected graduation 2007. Co-chair with J. Moyne, EECS.

Master's Students Supervised

Jonathan Parrott, M.S. December 2005. Co-chair with J. Moyne.
Bradley Triden, M.S. December 2005. Co-chair with J. Moyne.
Niresh Agrawal, M.S. EECS May 2004. Co-chair with J. Moyne.

Stephanie Pollice, M.S. May 2003.
Paul Otanez, M.S., August 2002. Co-chair with J. Moyne.
Neha Gandhi, M.S. December 2001.
Chandra Gollapudi, M.Eng. December 2001.

Namrata Arora, M.S. EECS expected May 2007. Co-chair with J. Moyne.
Shyam Gala, M.S. EECS expected May 2007. Co-chair with J. Moyne.
Naveen Kalappa, M.Eng. expected May 2007. Co-chair with J. Moyne.
Krishnakumar Ramamoorthy, M.S. EECS expected May 2007.
Kyle Schroeder, M.S. expected May 2008. Co-chair with J. Moyne.

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.

Service to Government or Professional Organizations

DARPA Study Groups

Defense Science Study Group (DSSG), 2004–2005.
Information Science and Technology (ISAT), 2005–2008. Co-chair of an Incubator Study on "Integrating the Virtual and Real," 2007.

Conference/Workshop Organization

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

CDC 2006, Program Committee Member
CDC–ECC (Joint conference), Associate Editor, 2005.
IEEE *Control Systems Magazine*, Associate Editor, 2002–present.
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

IEEE Control Systems Society, Board of Governors (elected), 2005–2008.
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

Rackham Distinguished Dissertation Award Selection Committee, 2004.

Dean's Advisory Committee on Women Faculty, 2004–present.

CoE Committee on Interdisciplinary Support, 2002–2003.

ME Faculty Search Committee, member 2005–2006; chair 2006–2007.
ME Advisory Committee, 2002, 2003–2005, 2006–2008.
ME Undergraduate Committee, 2004–present.
ME Graduate Committee, 2002–2003.

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.
ME 395, Mechanical Engineering Laboratory I: Winter 1999, Winter 2000, Fall 2002, Winter 2004, Winter 2005, Winter 2006.
ME 461, Automatic Control Systems: Winter 1995, Winter 1996, Fall 1998, Fall 1999, Fall 2005. Introduced an innovative tutorial on the WWW to illustrate the use of Matlab for solving control analysis and design problems.
ME 540/Aero 540, Introduction to Dynamics: Fall 2004.
ME 564/EECS 560/Aero 550, Linear Systems Theory: Fall 1996, Fall 1998, Fall 2000.
ME 561/EECS 561/Aero 571, Design of Digital Control Systems: Winter 1997.
ME 567/EECS 567, Introduction to Robotics, Winter 2007.
ME 662/EECS 662/Aero 672, Advanced Nonlinear Control: Fall 1995.

Conference Papers published since 2001

1. S. Parekh, N. Gandhi, J. Hellerstein, D. M. Tilbury, T. S. Jayram, and J. Bigus, "Using Control Theory to Achieve Service Level Objectives in Performance Management," in *Proceedings of the IFIP/IEEE International Symposium on Integrated Network Management,* May 2001.
2. N. Gandhi, S. Parekh, D. M. Tilbury, and J. Hellerstein, "Feedback Control of a Lotus Notes Server: Modeling and Control Design," in *Proceedings of the American Control Conference,* Arlington, VA, pp. 3000–3005, June 2001.
3. S. K. Kim and D. M. Tilbury, "Trajectory Generation for a Class of Nonlinear Systems with Input and State Constraints," in *Proceedings of the American Control Conference,* Arlington, VA, pp. 4908–4913, June 2001.
4. F.-L. Lian, J. M. Moyne, and D. M. Tilbury, "Analysis and Modeling of Networked Control Systems: MIMO Case with Multiple Time Delays," in *Proceedings of the American Control Conference,* Arlington, VA, pp. 4306–4312, June 2001.
5. F.-L. Lian, J. R. Moyne, and D. M. Tilbury, "Time Delay Modeling and Sample Time Selection for Networked Control Systems," in *Proceedings of the ASME–IMECE Dynamic Systems and Control Division,* New York, November 2001.
6. C. Gollapudi and D. M. Tilbury, "Logic Control Design and Implementation for a Machining Line Testbed using Petri Nets," in *Proceedings of the ASME–IMECE Dynamic Systems and Control Division*, November 2001.
7. N. Gandhi, J. L. Hellerstein, S. Parekh, and D. M. Tilbury, "Managing the Performance of Lotus Notes: A Control Theoretic Approach," in *Proceedings of the Computer Measurement Group (CMG),* December 2001.
8. Y. Diao, N. Gandhi, J. Hellerstein, S. Parekh, and D. M. Tilbury, "Using MIMO Feedback Control to Enforce Policies for Interrelated Metrics with Application to the Apache Web Server," in *Proceedings of the Network Operations and Management Symposium (NOMS),* pp. 219–234, April 2002. Best paper award.

9. N. Gandhi, D. M. Tilbury, Y. Diao, J. Hellerstein, and S. Parekh, "MIMO Control of an Apache Web Server: Modeling and Controller Design," in *Proceedings of the American Control Conference*, Anchorage, Alaska, pp. 4922–4927, May 2002.
10. F.-L. Lian, J. R. Moyne, D. M. Tilbury, "Timing Analysis and Optimal Controller Design for a Class of Networked Control Systems with Distributed Constant Delays in *Proceedings of the American Control Conference*, Anchorage, Alaska, pp. 3009–3014, May 2002.
11. M. R. Lucas and D. M. Tilbury, "Quantitative and Qualitative Comparison of PLC Programs for a Small Testbed with a Focus on Human Issues," in *Proceedings of the American Control Conference*, Anchorage, Alaska, pp. 4165–4171, May 2002.
12. P. G. Otanez, J. R. Moyne, and D. M. Tilbury, "Using Deadbands to Reduce Communication in Networked Control Systems," in *Proceedings of the American Control Conference*, Anchorage, Alaska, pp. 3015–3020, May 2002.
13. S. S. Shah, E. W. Endsley, M. R. Lucas, and D. M. Tilbury, "Reconfigurable Logic Control using Modular Finite State Machines: Design, Verification, Implementation, and Error Handling," in *Proceedings of the American Control Conference,* Anchorage, Alaska, pp. 4153–4158, May 2002.
14. P. G. Otanez, J. T. Parrott, J. R. Moyne, and D. M. Tilbury, "The Implications of Ethernet as a Control Network," in *Proceedings of the Global Powertrain Congress,* Ann Arbor, September 2002.
15. S. Pollice, E. W. Endsley, and D. M. Tilbury, "Logic Control Using Modular FSMs: An Evaluation of Code Re-Use", in *Proceedings of the 2nd IFAC Conference on Mechatronic Systems,"* Berkeley, California, pp. 587–592, December 2002.
16. F.-L. Lian, J. K. Yook, P. Otanez, D. M. Tilbury, and J. R. Moyne, "Design of sampling and transmission rates for achieving control and communication performance in networked agent systems," in *Proceedings of the American Control Conference,"* Denver, pp. 3329–3334, June 2003.
17. J. Moyne, J. Korsakas, C. Milas, T. Hobrla, T. Hong, H. Kim, J. Priskorn, K. Sukerkar, H. Wijaya, N. Agarwal and D. Tilbury, "A Software Infrastructure for Reconfigurable Manufacturing Systems," in *Proceedings of the CIRP International Conference on Reconfigurable Manufacturing Systems,"* Ann Arbor, Michigan, August 2003.
18. M. R. Lucas and D. M. Tilbury, "Comparing Industrial Logic Design Methods used in the Automotive Industry," in *Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics,"* Washington, DC, pp. 530–537, October 2003.
19. S. Lee and D. M. Tilbury, "An Application of Supervisory Control Methods for a Serial/Parallel Multi-Part Flow Line: Modelling and Deadlock Analysis, in *Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics,* Washington, DC, pp. 3402–3407, October 2003.
20. D. Bossi, E. Carpanzano, V. Cattaneo Della Volta, and D. Tilbury, "Sviluppo Modulare del Controllo Logico per Sistemi Manifatturieri Riconfigurabili Tramite Reti di Petri e SFC," in *Proceedings of the 47th Convegno Nazionale ANIPLA: Automazione per l'efficienza e la competitivita' d'impresa*, Brescia, Italy, November 2003. In Italian.
21. J. R. Moyne, D. M. Tilbury, K. Sukerkar, and H. Wijaya, "An Integrated Distributed Software System for Reconfigurable Manufacturing," in *Proceedings of the International Workshop on Advanced Manufacturing Technologies,* London, ON, June 2004.
22. M. R. Lucas and D. M. Tilbury, "The Practice of Industrial Logic Design," in *Proceedings of the American Control Conference*, Boston, pp. 1350–1355, June 2004.

23. E. Carpanzano, A. Cataldo, and D. M. Tilbury, "Structured Design of Reconfigurable Logic Control Functions through SFC," in *Proceedings of the American Control Conference,* Boston, pp. 4467–4471, June 2004.
24. D. Georgiev and D. M. Tilbury, "Packet Based Control," in *Proceedings of the American Control Conference,* Boston, pp. 329–336, June 2004.
25. J. R. Moyne, J. Korsakas, and D. M. Tilbury, "Reconfigurable Factory Testbed (RFT): A Distributed Testbed for Reconfiguable Manufacturing Systems," in *Proceedings of the Japan-USA Symposium on Flexible Automation,* Denver, Paper #UL_043, July 2004.
26. E. W. Endsley and D. M. Tilbury, "Modular Finite State Machines for Logic Control," in *Preprints of the IFAC Workshop on Discrete Event Systems,* J. Zaytoon, V. Carre-Menetrier, C. Cassandras, and X. Cao, editors, Reims, France, pp. 403–408, September 2004.
27. E. Almeida and D. M. Tilbury, "Automatic Logic Generation for Reconfigurable Cell-Based Manufacturing Systems," in *Preprints of the IFAC Workshop on Discrete Event Systems,* J. Zaytoon, V. Carre-Menetrier, C. Cassandras, and X. Cao, editors, Reims, France, pp. 31–36, September 2004.
28. A. Khan, N. K. Agarwal, D. M. Tilbury, and J. R. Moyne, "The Impact of Random Device Processing Delays on Networked Control System Performance," presented at the 42nd Allerton Conference on Communication, Control, and Computing, Allerton, Illinois, September 2004.
29. J. P. Lynch, S. Seth, and D. M. Tilbury, "Feasibility of Wirelessly Networked Distributed Controllers for Real-Time Structural Control, presented at the 42nd Allerton Conference on Communication, Control, and Computing, Allerton, Illinois, September 2004.
30. E. W. Endsley and D. M. Tilbury, "Modular Verification of Modular Finite State Machines," in *Proceedings of the IEEE Conference on Decision and Control,* The Bahamas, pp. 972–979, December 2004.
31. J. R. Moyne, D. M. Tilbury, and H. Wijaya, "An Event-Driven Resource-Based Approach to High-Level Reconfigurable Logic Control and its Application to a Reconfigurable Factory Testbed," in *Proceedings of the CIRP International Conference on Reconfigurable Manufacturing Systems,* Ann Arbor, May 2005.
32. S. Seth, J. P. Lynch, and D. M. Tilbury, "Wirelessly Networked Distributed Controllers for Real-Time Control of Civil Structures," *Proceedings of the American Control Conference,* pp. 2946–2952, Portland, OR, June 2005.
33. E. T. Almeida, J. L. Luntz, and D. M. Tilbury, "Modular Finite State Machines Implemented as Event-Condition Action Systems, *Preprints of the IFAC World Congress,* Prague, July 2005.
34. J. P. Lynch and D. M. Tilbury, "Implementation of a Decentralized Control Algorithm Embedded Within a Wireless Active Sensor," *Proceedings of the Asia-Pacific Network of Centers for Research in Smart Structures Technology,* Gyeong-ju, Korea, July 2005.
35. A. Khan, J. R. Moyne, and D. M. Tilbury, "Utilizing In-Situ Diagnostics to Enable Manufacturing Process Control Through Predictive Inspection," *Proceedings of the AEC/APC IVII Symposium*, Indian Wells, CA, September 2005. Best student paper award.
36. J. E. Luntz, J. R. Moyne, and D. M. Tilbury, "On-Line Control Reconfiguration at the Machine and Cell Levels: Case Studies from the Reconfigurable Factory Testbed," *Proceedings of the IEEE Conference on Emerging Technologies and Factory Automation,* vol. 1, pp. 641–648, Catania, Italy, September 2005.
37. A. Khan, J. R. Moyne, and D. M. Tilbury, "Predictive Inspection Based Process Control in End Milling Operations," *Proceedings of the ASME–IMECE, Manufacturing Division,* Paper number IMECE2005–82018, Orlando, FL, November 2005.

38. S. Lee and D. M. Tilbury, "A Controller Design Method for the Operation Sequences of a Flexible Manufacturing Cell Including Error Handling and Recovery," *Proceedings of the Joint IEEE Conference on Decision and Control and European Control Conference,* pp. 8355–8360, Seville, Spain, December 2005.
39. H. Wijayah, K. Sukerkar, S. Gala, N. Arora, J. Moyne, D. Tilbury, and J. Luntz, "Reconfigurable Factory-Wide Resource-Based Systems Integration for Control," *Proceedings of the IEEE Electro-Information Technology Conference,* pp. 125–130, East Lansing, MI, May 2006.
40. D. Georgiev, P. T. Kabamba, and D. M. Tilbury, "On the Relationship Between Decision Uncertainty and Interaction Level: A New Model for Team Interaction," *Proceedings of the American Control Conference,* pp. 3111–3117, Minneapolis, June 2006.
41. J. T. Parrott, J. R. Moyne, and D. M. Tilbury, "Experimental Determination of Network Quality of Service in Ethernet: UDP, OPC, and VPN," *Proceedings of the American Control Conference,* pp. 4864–4869, Minneapolis, June 2006.
42. R. C. Hill and D. M. Tilbury, "Introducing DES into an Undergraduate Controls Curriculum," *Proceedings of the American Society of Engineering Education Conference,* paper 2006–675, Chicago, June 2006.
43. J. Luntz, E. E. Almeida, D. M. Tilbury, J. R. Moyne, and K. Hargrove, "The Distributed Reconfigurable Factory Testbed (DRFT): A Collaborative Cross-University Manufacturing Systems Testbed," *Proceedings of the American Society of Engineering Education Conference,* paper 2006–2513, Chicago, June 2006.
44. R. C. Hill and D. M. Tilbury, "Modular Supervisory Control of DES with Abstraction and Incremental Hierarchical Construction," *Proceedings of the Workshop on Discrete Event Systems (WODES),* pp. 399–406, Ann Arbor, July 2006.
45. N. Arora, S. Gala, B. Lee, J. Luntz, J. Moyne, and D. Tilbury, "A 'Controls Workflow Management HMI to Configure and Maintain an Event-Based Control System," *Proceedings of the Workshop on Discrete Event Systems (WODES),* pp. 463–464, Ann Arbor, July 2006.
46. E. W. Endsley, E. E. Almeida, K. D. Ramamoorthy, and D. M. Tilbury, "MFSMTools: Software for the Development, Verification, and Execution of Modular Finite State Machines," *Proceedings of the Workshop on Discrete Event Systems (WODES),* pp. 467–468, Ann Arbor, July 2006.
47. N. Kalappa, K. Acton, M. Antolovic, S. Mantri, J. Parrott, J. Luntz, J. Moyne, and D. Tilbury, "Experimental Determination of Real-Time Peer to Peer Communication Characteristics of Ethernet/IP," *Proceedings of the IEEE Conference on Emerging Technologies and Factory Automation,* pp. 1061–1064, Prague, September 2006.
48. M. Antolovic, K. Acton, N. Kalappa, S. Mantri, J. Parrott, J. Luntz, J. Moyne, and D. Tilbury, "PLC Communication Using PROFINET: Experimental Results and Analysis," *Proceedings of the IEEE Conference on Emerging Technologies and Factory Automation,* pp. 473–476, Prague, September 2006.
49. E. E. Almeida, J. E. Luntz, and D. M. Tilbury, "Reconfigurable Logic Control Using IEC 61499 Function Blocks," *Proceedings of the IEEE Conference on Emerging Technologies and Factory Automation,* pp. 981–984, Prague, September 2006.
50. B. Triden, S. Mantri, K. Schroeder, A. Thomas, J. Moyne, and D. Tilbury, "Dedicated vs. Shared Networks for Safety and Controls: An Analysis of the Tradeoffs Involved," *Proceedings of the IEEE Conference on Emerging Technologies and Factory Automation,* pp. 341–347, Prague, September 2006.
51. M. Ang, R. Harrison, J. Lee, L. Lee, S. Lee, and D. Tilbury, "A comparison study of automatic logic control generation tools for industrial manufacturing control systems," submitted to

International Conference on Changeable, Agile, Reconfigurable, and Virtual Production (CARV), January 2007.