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## **Education**

**Ph.D.** Electrical Engineering, University of California, Berkeley, CA, Sept 1994. Nonlinear control theory.

**MA** Mathematics, University of California, Berkeley, CA, May 1989. Differential equations, real analysis.

**MS** Electrical and Computer Engineering, University of Connecticut, Storrs, CT, Aug 1987. Control systems.

**BS** Electrical and Computer Engineering, University of Connecticut, Storrs, CT, May 1985. Control systems. Magna Cum Laude.

**MBA**, Foster School of Business, University of Washington, Seattle, WA, June 2010.

## **Professional experience**

University of Washington, Department of ECE, Seattle, WA 98195.  
Research Professor, 2018 – present; Research Associate Professor, 2013 – 2018; Research Assistant Professor, 2003 – 2013; Affiliate Assistant Professor, 2000 – 2003.

U.S. Army Research Office, Research Triangle Park, NC.  
Program Manager, 1994 – 2000.

Duke University, Electrical and Computer Engineering Department, Durham, NC.  
Adjunct Assistant Professor, 1994 – 2001.

## **Honors and awards**

- IEEE Fellow, 2017
- Distinguished Member Award, IEEE Control Systems Society, 2017
- Distinguished Lecturer, IEEE Control Systems Society, 2014-2017
- Certificate of Recognition for Significant Research in Cyber Security, Science of Security, 2015
- Best Paper Award, International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt, IEEE), 2012, 2014
- Recognition Award, IEEE Control Systems Society, 2007
- Chair's Award, UW Department of Electrical Engineering, 2003
- ADVANCE Fellow Award, National Science Foundation, 2002
- Mentor of the Year Award, UW, Women in Science and Engineering, 2002
- US Army Superior Civilian Service Award, 2000
- Eta Kappa Nu, inducted 1985, Beta Omega Chapter: University of Connecticut

## Journal publications

1. [Z. Liu](#), A. Clark, L. Bushnell, D. Kirschen, and R. Poovendran, "Controlled Islanding via Weak Submodularity," *IEEE Transactions on Power Systems*, pp. 1-11 (Nov 2018). DOI 10.1109/TPWRS.2018.2881163
2. A. Clark, [P. Lee](#), B. Alomair, L. Bushnell, and R. Poovendran, "Combinatorial Algorithms for Control of Biological Regulatory Networks," *IEEE Transactions on Control of Network Systems*, Special Issue on Approaches to Control Biological and Biologically Inspired Networks, 5:2, pp. 748-759 (June 2018). DOI 10.1109/TCNS.2017.2781366
3. [P. Lee](#), A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Adaptive Mitigation of Multi-Virus Propagation: A Passivity-Based Approach," *IEEE Transactions on Control of Network Systems*, 5:1, pp. 583-596 (March 2018), DOI 10.1109/TCNS.2016.2633791
4. [Z. Liu](#), A. Clark, [P. Lee](#), L. Bushnell, D. Kirschen, and R. Poovendran, "Submodular Optimization for Voltage Control," *IEEE Transactions on Power Systems*, 33:1, pp. 502-513 (Jan 2018), DOI: 10.1109/TPWRS.2017.2691320
5. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Submodularity in Input Node Selection for Networked Linear Systems," *IEEE Control Systems Magazine*, 37:6, pp. 52-74 (Dec 2017), DOI: 10.1109/MCS.2017.2743518.
6. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Towards Synchronization in Networks with Nonlinear Dynamics: A Submodular Optimization Framework," *IEEE Transactions on Automatic Control*, 62:10, pp. 5055-5068 (Oct 2017). DOI: 10.1109/TAC.2017.2680739
7. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Input Selection for Performance and Controllability of Structured Linear Descriptor Systems," *SIAM Journal on Control and Optimization* 55:1, pp. 457-485 (Feb 2017). DOI: 10.1137/140999888
8. [P. Lee](#), A. Clark, L. Bushnell, and R. Poovendran, "A Passivity Framework for Modeling and Mitigating Wormhole Attacks on Networked Control Systems," *IEEE Transactions on Automatic Control Special Issue on Control of Cyber-Physical Systems*, 59:12, pp. 3224 - 3237 (Dec 2014). DOI: 10.1109/TAC.2014.2351871 [[35 citations](#), Google Scholar 11/28/18]
9. [A. Clark](#), B. Alomair, L. Bushnell, and R. Poovendran, "Minimizing Convergence Error in Multi-Agent Systems via Leader Selection: A Supermodular Optimization Approach," *IEEE Transactions on Automatic Control*, 59:6 (June 2014). DOI: 10.1109/TAC.2014.2303236 [[61 citations](#), Google Scholar 11/28/18]
10. [A. Clark](#), L. Bushnell, and R. Poovendran, "A Supermodular Optimization Framework for Leader Selection under Link Noise in Linear Multi-Agent Systems," *IEEE Transactions on Automatic Control*, 59:2 (Feb 2014). DOI: 10.1109/TAC.2013.2281473 [[88 citations](#), Google Scholar 11/28/18]
11. [T. Bonaci](#), [P. Lee](#), L. Bushnell, and R. Poovendran, "A Convex Optimization Approach for Clone Detection in Wireless Sensor Networks," *Elsevier Pervasive and Mobile Computing* (May 2012).
12. K. Sampigethaya, S. Lintelman, R. Robinson, M. Li, L. Bushnell, and R. Poovendran, "Secure wireless collection and distribution of commercial airplane health data," *IEEE Aerospace and Electronic Systems Magazine*, 24:7, pp. 14-20 (July 2009). [[35 citations](#), Google Scholar 11/28/18]
13. [T. Pham](#), [T. Green](#), [J. Chen](#), [P. Truong](#), [A. Vaidya](#), and L. Bushnell, "A Salinity Sensor System for Estuary Studies," *Applied Math Journal: Networks and Heterogeneous Media*, **4:2**, pp. 381 - 392 (**June 2009**).
14. [S. McKennoch](#), T. Voegtlin, and L. Bushnell, "Spike-Timing Error BackProp in Theta Neuron Networks," *Neural Computation*, 21:1, pp. 9-45 (Jan 2009).
15. [K. Sampigethaya](#), R. Poovendran, and L. Bushnell, "Secure operation, control and maintenance of future e-Enabled Airplane," *Proceedings of the IEEE*, vol. 96, pp. 1992-2007 (Dec 2008). [[54 citations](#), Google Scholar 11/28/18]

16. Y. Hong, G. Chen, and L. Bushnell, "Distributed Observers Design for Leader-Following Control of Multi-Agent Networks," *Automatica*, 44:3, pp. 846-850 (March 2008). arXiv.1801.00258 [**886 citations**, Google Scholar 11/28/18]
17. G. Walsh, H. Ye, and L. Bushnell, "Stability Analysis of Network Control Systems," *IEEE Transactions on Control Systems Technology*, 10:3, pp. 438-446 (May 2002). [**2,186 citations**, Google Scholar 11/28/18]
18. G. Walsh, O. Beldiman, and L. Bushnell, "Error Encoding Algorithms for Networked Control Systems," *Automatica*, Vol. 38:2, pp. 261 – 267 (Feb 2002). [**138 citations**, Google Scholar 11/28/18]
19. H. Ye, G. Walsh, and L. Bushnell, "Real-time Mixed-traffic Wireless Networks," *IEEE Transactions on Industrial Electronics*, 48:5, pp. 883-890 (Oct 2001). [**124 citations**, Google Scholar 11/28/18]
20. H.O. Wang, D.S. Chen, and L. Bushnell, "Dynamic Feedback Control of Bifurcations," *Journal of Latin American Applied Research*, 31:3, pp. 219 - 225 (July 2001).
21. G. Walsh, O. Beldiman, and L. Bushnell, "Asymptotic Behavior of Nonlinear Networked Control Systems," *IEEE Transactions on Automatic Control*, 46:7, pp. 1093-1097 (July 2001). [**521 citations**, Google Scholar 11/28/18]
22. J. Li, H.O. Wang, L. Bushnell, Y. Hong, and K. Tanaka, "A Fuzzy Logic Approach to Optimal Control of Nonlinear Systems," *International Journal of Fuzzy Systems*, 2:3, pp. 153-163 (Sept 2000). [**39 citations**, Google Scholar 11/28/18]
23. D. Tilbury, O. Sordalen, L. Bushnell, and S. Sastry, "A Multisteering Trailer System: Conversion into Chained Form Using Dynamic Feedback," *IEEE Transactions on Robotics and Automation*, 11:6, pp. 807-818 (Dec 1995). [**112 citations**, Google Scholar 11/28/18]
24. L. Bushnell, D. M. Tilbury, and S. S. Sastry, "Steering Three-Input Nonholonomic Systems: The Fire Truck Example," *International Journal of Robotics Research*, 14: 4, pp. 366-381 (Aug 1995). [**124 citations**, Google Scholar 11/28/18]
25. G. Walsh, and L. Bushnell, "Stabilization of Multiple Input Chained Form Control Systems," *Systems and Control Letters*, 25:3, pp. 227-234 (June 1995). [**191 citations**, Google Scholar 11/28/18]

### Conference proceedings

1. S. Sagong, X. Ying, R. Poovendran, and L. Bushnell, "Exploring Attack Surfaces of Voltage-Based Intrusion Detection Systems in Controller Area Networks," Embedded Security in Cars (ESCAR) (November 2018).
2. A. Clark, L. Bushnell, and R. Poovendran, "Input Selection for Performance and Controllability of Structured Linear Descriptor Systems," *57<sup>th</sup> IEEE Conference on Decision and Control* (Dec 2018).
3. S. Sagong, X. Ying, A. Clark, L. Bushnell, and R. Poovendran, "Cloaking the Clock: Emulating Clock Skew in Controller Area Networks," *9<sup>th</sup> ACM International Conference on Cyber Physical Systems (ICCPS)*, part of *Cyber Physical Systems (CPS) Week*, <http://arxiv.org/abs/1710.02692>. (April 2018).
4. Z. Liu, Y. Long, A. Clark, P. Lee, L. Bushnell, D. Kirschen, and R. Poovendran, "Minimal Input Selection for Robust Control," *56<sup>th</sup> IEEE Conference on Decision and Control*, pp. 2659-2966, DOI: 10.1109/CDC.2017.8264090 (Dec 2017).
5. A. Clark, Q. Hou, L. Bushnell, and R. Poovendran, "A Submodular Optimization Approach to Leader-Follower Consensus in Networks with Negative Edges," American Control Conference, pp. 1346 - 1352, DOI: 10.23919/ACC.2017.7963139 (May 2017).
6. Z. Liu, A. Clark, P. Lee, L. Bushnell, D. Kirschen and R. Poovendran, "A Submodular Optimization Approach to Controlled Islanding under Cascading Failure," *8<sup>th</sup> ACM International Conference on Cyber Physical Systems (ICCPS)*, part of *Cyber Physical Systems (CPS) Week*, pp. 187-196. DOI: 10.1145/3055004.3055019 (April 2017).

7. Z. Liu, A. Clark, P. Lee, L. Bushnell, D. Kirschen, and R. Poovendran, "MinGen: Minimal Generator Set Selection for Small Signal Stability in Power Systems: A Submodular Framework," *55<sup>th</sup> IEEE Conference on Decision and Control*, pp. 4122-4129, DOI: 10.1109/CDC.2016.7798894 (Dec 2016).
8. P. Lee, A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Distributed Adaptive Patching Strategies Against Malware Propagation: A Passivity Approach," *55<sup>th</sup> IEEE Conference on Decision and Control*, pp. 2587-2594. DOI: 10.1109/CDC.2016.7798652 (Dec 2016).
9. Z. Liu, P. Lee, A. Clark, L. Bushnell, and R. Poovendran, "Towards Scalable Voltage Control in Smart Grid: A Submodular Optimization Approach," *7<sup>th</sup> ACM International Conference on Cyber Physical Systems (ICCPs)*, part of *Cyber Physical Systems (CPS) Week* (April 2016) **Best Paper Award Nominee**.
10. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Input Selection for Disturbance Rejection in Networked Cyber-Physical Systems," *54<sup>th</sup> IEEE Conference on Decision and Control* (Dec 2015).
11. P. Lee, A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "A Host Takeover Game Model for Competing Malwares," *54<sup>th</sup> IEEE Conference on Decision and Control*, pp. 4523 – 4530, (Dec 2015). DOI: 10.1109/CDC.2015.7402926
12. P. Lee, A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Passivity-Based Distributed Strategies for Stochastic Stackelberg Security Games," *Conference on Decision and Game Theory for Security (GameSec)*, LNCS 9406 (Nov 2015). DOI: 10.1007/978-3-319-25594-1\_7
13. A. Clark, K. Sun, L. Bushnell, and R. Poovendran, "A Game-Theoretic Approach to IP Address Randomization in Decoy-Based Cyber Defense," *Conference on Decision and Game Theory for Security (GameSec)* LNCS 9406 (Nov 2015). DOI: 10.1007/978-3-319-25594-1\_1
14. P. Lee, A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Jamming-Based Adversarial Control of Network Flow Allocation: A Passivity Approach," *American Control Conference*, pp. 4710 - 4716 (July 2015). DOI: 10.1109/ACC.2015.7172071
15. P. Lee, A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Passivity Framework for Composition and Mitigation of Multi-Virus Propagation in Networked Systems," *American Control Conference, Invited Session on Security, Privacy and Trust in CPS*, pp. 2453 - 2460 (July 2015). DOI: 10.1109/ACC.2015.7171100
16. T. Pham and L. Bushnell, "Two-Degree-of-Freedom Damping Control of Driveline Oscillations Caused by Pedal Tip-In Maneuver," *American Control Conference* (July 2015).
17. B. Howard and L. Bushnell, "Enhancing Linear System Theory Curriculum with an Inverted Pendulum Robot," *American Control Conference* (July 2015).
18. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Scalable and Distributed Submodular Maximization with Matroid Constraints," *13<sup>th</sup> International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt, IEEE)* (May 2015).
19. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Distributed Online Submodular Maximization in Resource-Constrained Networks," *12<sup>th</sup> International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt, IEEE)* (May 2014), **Best Student Paper Award**.
20. P. Lee, O. Saleh, B. Alomair, L. Bushnell, and R. Poovendran, "Graph-Based Verification and Misbehavior Detection in Multi-Agent Networks," *3<sup>rd</sup> ACM International Conference on High Confidence Networked Systems (HiCoNS)*, part of *Cyber Physical Systems (CPS) Week*, pp. 77-84 (April 2014). DOI: 10.1145/2566468.2566477
21. Q. Zhu and L. Bushnell, "Networked Cyber-Physical Systems: Interdependence, Resilience and Information Exchange," *51<sup>st</sup> Annual Allerton Conference on Communication, Control, and Computing* (Oct 2013).
22. A. Clark, L. Bushnell, and R. Poovendran, "Joint Leader and Link Weight Selection for Fast Convergence in Multi-Agent Systems," *American Control Conference* (June 2013).

23. A. Clark, L. Bushnell, and R. Poovendran, "Joint Leader and Link Weight Selection for Fast Convergence in Multi-Agent Systems," *2<sup>nd</sup> ACM International Conference on High Confidence Networked Systems (HiCoNS)*, part of *2013 Cyber Physical Systems (CPS) Week* (Apr 2013).
24. P. Lee, A. Clark, L. Bushnell, and R. Poovendran, "Modeling and Designing Network Defense Against Control Channel Jamming Attacks: A Passivity-Based Approach," *2<sup>nd</sup> ACM International Conference on High Confidence Networked Systems (HiCoNS)*, part of *2013 Cyber Physical Systems (CPS) Week*, LNCIS 449, pp. 161 – 175 (April 2013). DOI: 10.1007/978-3-319-01159-2\_9
25. Q. Zhu, L. Bushnell, and T. Başar, "Resilient Distributed Control of Multi-Agent Cyber-Physical Systems," *Annual Conference on Information Sciences and Systems (CISS) Workshop on Control of Cyber-Physical Systems*. LNCIS 449, pp. 301 - 316 (March 2013).
26. P. Lee, A. Clark, L. Bushnell, and R. Poovendran, "Modeling and Designing Network Defense against Control Channel Jamming Attacks: A Passivity-Based Approach," *Annual Conference on Information Sciences and Systems (CISS) Workshop on Control of Cyber-Physical Systems*. (March 2013).
27. Q. Zhu, L. Bushnell, and T. Başar, "Game-Theoretic Analysis of Node Capture and Cloning Attack with Multiple Attackers in Wireless Sensor Networks," *51<sup>st</sup> IEEE Conference on Decision and Control* (Dec 2012).
28. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, "Leader Selection in Multi-Agent Systems for Smooth Convergence via Fast Mixing," *51<sup>st</sup> IEEE Conference on Decision and Control* (Dec 2012).
29. A. Clark, L. Bushnell, and R. Poovendran, "On Leader Selection for Performance and Controllability in Multi-Agent Systems", *51<sup>st</sup> IEEE Conference on Decision and Control* (Dec 2012). [[43 citations](#), Google Scholar 11/28/18]
30. A. Clark, L. Bushnell, and R. Poovendran, "A Passivity-based Framework for Composing Attacks on Networked Control Systems," *50<sup>th</sup> Annual Allerton Conference on Communication, Control, and Computing* (Oct 2012).
31. A. Clark, L. Bushnell, and R. Poovendran, "Leader Selection for Minimizing Convergence Error in Leader-follower Systems: A Supermodular Optimization Approach," *10<sup>th</sup> International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt, IEEE)* (May 2012), **Best Paper Award**.
32. A. Clark, L. Bushnell, and R. Poovendran, "Leader Selection Games under Link Noise Injection Attacks," *1<sup>st</sup> ACM International Conference on High Confidence Networked Systems (HiCoNS)*, part of *Cyber Physical Systems (CPS) Week* (April 2012).
33. T. Bonaci, and L. Bushnell, "Node Capture Games: A Game Theoretic Approach to Modeling and Mitigating Node Capture Attacks," *2<sup>nd</sup> Conference on Decision and Game Theory for Security, Decision and Game Theory for Security*, J. Baras, J. Katz, and E. Altman (Eds.): GameSec 2011, LNCS 7037, pp. 44 - 55 (Nov 2011).
34. T. Bonaci, P. Lee, L. Bushnell, and R. Poovendran, "Distributed Clone Detection in Wireless Sensor Networks: An Optimization Approach," *2<sup>nd</sup> IEEE International Workshop on Data Security and Privacy in Wireless Networks (D-SPAN), 12th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks* (June 2011).
35. T. Bonaci, L. Bushnell, and R. Poovendran, "Node Capture Attacks in Wireless Sensor Networks: A System Theoretic Approach," *49<sup>th</sup> IEEE Conference on Decision and Control*, pp. 6765 - 6772 (Dec 2010). [[65 citations](#), Google Scholar 11/28/18]
36. N.Q. Nguyen, and L. Bushnell, "Modeling and LQR Control of Salinity in the Mekong Delta," *49<sup>th</sup> IEEE Conference on Decision and Control*, pp. 3784 - 3789 (Dec 2010).
37. N.Q. Nguyen, and L. Bushnell, "An LQG Optimal Controller for Salinity Regulation in the Mekong Delta," *IEEE MTS/OCEANS*, pp. 1 – 6 (Sept 2010).
38. R.T. Wood, A. Bannazadeh, N.Q. Nguyen, and L. Bushnell, "A Salinity Sensor for Long-term Estuary Studies," *IEEE MTS/OCEANS*, pp. 1 – 6 (Sept 2010).

39. K. Sampigethaya, R. Poovendran, and L. Bushnell, "Assessment and mitigation of cyber exploits in future networked surveillance of aircraft," in *IEEE Aerospace Conf.*, Paper no. 1342 (March 2010).
40. K. Sampigethaya, R. Poovendran, and L. Bushnell, "A framework for securing future e-enabled airplane navigation and surveillance," in *Proc. of AIAA Infotech@Aerospace Conf.*, AIAA-2009-1820 (April 2009).
41. K. Sampigethaya, S. Shetty, T. Davis, M. Li, S. Lintelman, R. Robinson, and L. Bushnell, "Networked CPS View of Future Airspace," position paper, *National Workshop for Research on Transportation CPS: Automotive, Aviation and Rail* (Nov 2008).
42. L. Bushnell, "Salinity Sensors for Hydrology Analysis and Control," *Irrigation Channels and Related Problems Workshop* (Oct 2008).
43. K. Sampigethaya, R. Poovendran, and L. Bushnell, "Security of future e-enabled aircraft ad hoc networks," in *Proc. of 8th AIAA Aviation Technology, Integration, and Operations Conf.*, pp. AIAA-2008-8894 (Sept 2008).
44. K. Sampigethaya, R. Poovendran, L. Bushnell, M. Li, R. Robinson, and S. Lintelman, "Security of wireless sensor network enabled health monitoring for commercial airplanes," in *Proc. of 26th Congress of the Intl. Council for Aeronautical Sciences*, ICAS 2008-11.5.3 (Sept 2008).
45. T. Pham, T. Green, J. Chen, P. Truong, A. Vaidya, and L. Bushnell, "A Salinity Sensor System for Estuaries," *IEEE MTS/OCEAN*, pp. 1 - 6 (Sept 2008).
46. K. Sampigethaya, M. Li, R. Poovendran, R. Robinson, L. Bushnell, and S. Lintelman, "Secure wireless collection and distribution of commercial airplane health data," in *Proc. of AIAA/IEEE Digital Avionics Systems Conf.*, pp. 4.E.6.1-4.E.6.8 (Oct 2007).
47. T.-T. Pham, D. Burnett, L. Handugan, D. Frashure, J. Chen, and L. Bushnell, "A Low Cost, Data-Logging Salinity Sensor," *IEEE MTS/OCEAN*, pp. 1 - 5 (Sept 2007).
48. S. McKennoch, P. Sundaradevan, and L. Bushnell, "Theta Neuron Networks: Robustness to Noise in Embedded Applications," *International Joint Conference on Neural Networks (IJCNN)*, pp. 2330 - 2335 (Aug 2007).
49. S. McKennoch, D. Liu, and L. Bushnell, "Fast Modifications of the SpikeProp Algorithm," *IEEE World Congress on Computational Intelligence (WCCI)*, pp. 3970 - 3977 (July 2006). [[99 citations](#), Google Scholar 11/28/18]
50. S. McKennoch, S. Hoyt, and L. Bushnell, "A Study of Group Size and Communication in an Evolving Fuzzy-Controlled Population," *IEEE International Conference on Fuzzy Systems*, pp. 895 - 900, Vol. 2 (July 2004).
51. L. Bushnell, and A. Crick, "Control Education via Autonomous Robotics," *42<sup>nd</sup> IEEE Conference on Decision and Control*, pp. 3011 - 3017 (Dec 2003).
52. S. Hoyt, D. St. John, D. Wilson, and L. Bushnell, "A Tree Tour with Radio Frequency Identification (RFID) and a Personal Digital Assistant (PDA)," *IEEE Industrial Electronics Conference (IECON)*, pp. 2035 - 2040 (Nov 2003).
53. S. McKennoch, J.-M. McNew, and L. Bushnell, "A Biologically-Inspired Platform for the Evolution of Communication in Multi-Agent Systems," *IEEE International Symposium on Intelligent Control (ISIC)*, pp. 719 - 726 (Oct 2003).
54. H.O. Wang, Y. Hong, and L. Bushnell, "Non-smooth Bifurcation Control: From Fractional Power Control to Trumpet Bifurcation," *40<sup>th</sup> IEEE Conference on Decision and Control*, pp. 2181 - 2186 (Dec 2001).
55. O. Beldiman, L. Bushnell, G.C. Walsh, H.O. Wang, and Y. Hong, "Perturbations in Networked Control Systems," *ASME-IMECE DSCD*, pp. 1 - 6 (Nov 2001).
56. Y. Gu, H.O. Wang, K. Tanaka, and L. Bushnell, "Fuzzy Control of Nonlinear Time-delay Systems: Stability and Design Issues," *American Control Conference*, pp. 4771 - 4776 (June 2001). [[83 citations](#), Google Scholar 11/28/18]
57. Y. Hong, H.O. Wang, and L. Bushnell, "Adaptive Finite-time Control of Nonlinear Systems," *American Control Conference*, pp. 4149 - 4154 (June 2001).

58. Y. Gu, H.O. Wang, Y. Hong, and L. Bushnell, "A Predictive Congestion Control Algorithm for High Speed Communication Networks," *American Control Conference*, pp. 3779 - 3780 (June 2001).
59. Y. Hong, G. Yang, L. Bushnell, and H.O. Wang "Global Finite-time Stabilization: From State Feedback to Output Feedback," *39<sup>th</sup> IEEE Conference on Decision and Control*, pp. 2908 – 2913, Vol. 3 (Dec 2000). [[41 citations](#), Google Scholar 11/28/18]
60. H.O. Wang, [D.S. Chen](#), and L. Bushnell, "Dynamic Feedback Control of Bifurcations," *39<sup>th</sup> IEEE Conference on Decision and Control*, pp. 1619 – 1624, Vol. 2 (Dec 2000).
61. [H. Ye](#), G. Walsh, and L. Bushnell, "Wireless Local Area Networks in the Manufacturing Industry," *American Control Conference*, pp. 2363 - 2367 (June 2000). [[48 citations](#), Google Scholar 11/28/18]
62. [O. Beldiman](#), L. Bushnell, and G. Walsh, "Predictors for Networked Control Systems," *American Control Conference*, pp. 2347 - 2351 (June 2000). [[133 citations](#), Google Scholar 11/28/18]
63. G. Walsh, [O. Beldiman](#), and L. Bushnell, "Error Encoding Algorithms for Networked Control Systems," *38<sup>th</sup> IEEE Conference on Decision and Control*, pp. 4933 - 4938 (Dec 1999).
64. G. Walsh, [O. Beldiman](#), and L. Bushnell, "Asymptotic Behavior of Networked Control Systems," *IEEE Conference on Control Applications*, pp. 1448 - 1453 (Aug 1999). [[123 citations](#), Google Scholar 11/28/18]
65. G. Walsh, [H. Ye](#), and L. Bushnell, "Stability Analysis of Network Control Systems," *American Control Conference*, pp. 2876 - 2880 (June 1999).
66. [O. Beldiman](#), and L. Bushnell, "Stability, Linearization and Control of Switched Systems," *American Control Conference*, pp. 2950 - 2954 (June 1999).
67. [O. Beldiman](#), H.O. Wang, and L. Bushnell, "Trajectory Generation of High-Rise/High-Speed Elevators," *American Control Conference*, pp. 3455 - 3459 (June 1998).
68. L. Bushnell, [O. Beldiman](#), and G. Walsh, "An Equivalence between a Control Network and a Switched Hybrid System," *Springer-Verlag Lecture Notes on Computer Science, International Workshop on Hybrid Systems: Computation and Control* (April 1998).
69. H.O. Wang, [D. Chen](#), and L. Bushnell, "Control of Bifurcations and Chaos in Heart Rhythms," *36<sup>th</sup> IEEE Conference on Decision and Control*, pp. 395 - 400 (Dec 1997).
70. L. Bushnell, "An Obstacle Avoidance Algorithm for a Car Pulling Trailers with Off-Axle Hitching," *34<sup>th</sup> IEEE Conference on Decision and Control*, pp. 3837 - 3842 (Dec 1995).
71. L. Bushnell, B. Mirtich, [A. Sahai](#), and [M. Secor](#), "Off-Tracking Bounds for a Car Pulling Trailers with Kingpin Hitching," *33<sup>rd</sup> IEEE Conference on Decision and Control*, pp. 2944-2949 (Dec 1994). [[43 citations](#), Google Scholar 11/28/18]
72. L. Bushnell, D. Tilbury, and S. Sastry, "Extended Goursat Normal Forms with Applications to Nonholonomic Motion Planning," *32<sup>nd</sup> IEEE Conference on Decision and Control*, pp. 3447-3452 (Dec 1993). [[35 citations](#), Google Scholar 11/28/18]
73. G. Walsh, and L. Bushnell, "Stabilization of Multiple Input Chained Form Control Systems," *32<sup>nd</sup> IEEE Conference on Decision and Control*, pp. 959 - 964 (Dec 1993).
74. L. Bushnell, D. Tilbury, and S. Sastry, "Steering Three-input Chained Form Nonholonomic Systems Using Sinusoids: The Fire Truck Example," *European Control Conference*, pp. 1432–1437 (June 1993).
75. L. Bushnell, V. P. Srin, and L.T. Nguyen, "Systems Integration of the VLSI-PLM Chip," *1<sup>st</sup> International Conference on Systems Integration*, pp. 569 - 579 (April 1990).
76. L. Bushnell, D. Serfaty, and D.L. Kleinman, "Human Information Fusion in a Team," *IEEE International Conference on Systems, Man, and Cybernetics* (Oct 1987).
77. L. Bushnell, D. Serfaty, and D.L. Kleinman, "Human Information Processing in Distributed Command and Control," *JDL Command and Control Research Symposium* (June 1987)
78. D. Serfaty, D.L. Kleinman, and L. Bushnell, "Empirical Investigation of Human Functions in Distributed C3 Systems," *9<sup>th</sup> MIT/ONR Workshop on C3 Systems* (June 1986).

## Books

1. L. Bushnell, R. Poovendran, and T. Başar, Decision and Game Theory for Security, 9th International Conference, GameSec 2018, Proceedings Lecture Notes in Computer Science (LNCS), No. 11199 (2018).
2. A. Clark, B. Alomair, L. Bushnell, and R. Poovendran, “Submodularity in Dynamics and Control of Networked Systems,” Springer, January 2016.

## Patents

1. US 9,052,375 B2, “Method for validating aircraft traffic control data,” (June 9, 2015).

## Editorial publications

1. L. Bushnell and H. Ye, “Networked Control Systems: Architecture and Stability Issues,” *Encyclopedia of Systems and Control*, J. Baillieul and T. Samad (Eds.), DOI 10.1007/978-1-4471-5102-9\_151-1, Springer-Verlag London (2015).
2. D. Abramovitch, and L. Bushnell, “Report on the Fuzzy versus Conventional Control Debate,” *IEEE Control Systems Magazine*, 19:3, pp. 88-91 (June 1999).
3. L. Bushnell, “Historical and Fundamental Developments in Control Systems,” *IEEE Control Systems Magazine*, 15:3, pp. 90-92 (June 1995).
4. X. Hu, Y. Hong, and L. Bushnell (Eds.), Special Issue on “Collective Behavior and Control of Multi-Agent Systems,” *Asian Journal of Control*, 10:2, pp. 129 – 266, 12 Papers (March 2008).
5. D. S. Bernstein, and L. Bushnell, “The History of Control: From Idea to Technology,” Guest Editorial, *IEEE Control Systems Magazine*, 22:2, pp. 21 – 23. Contributing authors: Karl H. Fasol, Stuart Bennett, N. Harris McClamroch, Bozenna Pasik-Duncan, Mark V. Headrick, Danny Abramovitch, Gene Franklin, Dennis Bernstein. (April 2002).
6. L. Bushnell, “Networks and Control,” Guest Editorial, *IEEE Control Systems Magazine*, 21:1, pp. 22-23. Contributing authors: P. R. Kumar, Orhan C. Imer, Sonia Compans, Tamer Başar, R. Srikant, Greg Walsh, Hong Ye, Feng-Li Lian, James R. Moyne, Dawn M. Tilbury, Wei Zhang, Michael S. Branicky, Stephen M. Phillips. (Feb 2001). [**268 citations**, Google Scholar 11/28/18]
7. L. Bushnell (Ed.). “Special Section on Networks and Control,” *IEEE Control Systems Magazine*, 21:1, 22–99 (Feb 2001).
8. L. Bushnell, “On the History of Control Research,” Guest Editor, *IEEE Control Systems Magazine*, 16:3, pp. 14-16. Contributing authors: Stuart Bennett, Arthur E. Bryson, Jr., Derek P. Atherton, Karl J. Åström, Anthony N. Michel, George Zames, Sanjoy K. Mitter, Stephen Kahne. (June 1996).

## Special and invited sessions

1. Co-Organizer with Bozenna Pasik-Duncan, “The Power, Beauty and Excitement of the Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering & Mathematics,” *2018 American Control Conference* (June 2018).
2. Co-Organizer with Bozenna Pasik-Duncan, “Celebrating Women in IFAC,” *2017 IFAC World Congress* (July 2017).
3. Co-Organizer with Bozenna Pasik-Duncan and Sebastian Trimpe, Panel Session on Education, “Preparing Tomorrow’s Scientists and Engineers for the Challenges of the 21<sup>st</sup> Century,” *2017 IFAC World Congress* (July 2017).
4. Co-Organizer with Bozenna Pasik-Duncan and Sebastian Trimpe, Workshop on “Your Research Sharing through Outreach,” *2017 IFAC World Congress* (July 2017).



5. Co-Organizer with Bozenna Pasik-Duncan, “The Power, Beauty and Excitement of the Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering & Mathematics (STEM),” *2017 American Control Conference* (May 2017).
6. Co-Organizer with Bozenna Pasik-Duncan and Sebastian Dormido, “The Power, Beauty, and Excitement of the Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering & Mathematics (STEM),” *2016 IEEE Conference on Decision and Control* (December 2016).
7. Co-Organizer with Antonella Ferrara, Bozenna Pasik-Duncan, and Sandra Hirche, “Empowering Your Potential,” Special Session, *2016 American Control Conference*, (July 2016).
8. Co-Organizer with Bozenna Pasik-Duncan, “The Power, Beauty and Excitement of the Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering & Mathematics (STEM),” Workshop for Middle and High School Teachers and Students, *2016 American Control Conference*, (July 2016).
9. Co-Organizer with Bozenna Pasik-Duncan, “The Second Workshop for Women in Control: After Graduation: Women in Control Around the Globe Take Leadership Roles; A Workshop Dedicated to Honor Maria Elena Valcher, 2015 IEEE CSS President,” *54<sup>th</sup> IEEE Conference on Decision and Control* (Dec 2015).
10. Co-Organizer with Bozenna Pasik-Duncan, “Workshop for Middle and High School Students and Teachers: The Power, Beauty, and Excitement of Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering & Mathematics (STEM) 15<sup>th</sup> Anniversary,” *2015 American Control Conference*, (July 2015).
11. Co-Organizer with Bozenna Pasik-Duncan, “History of Women in Control,” *2013 American Control Conference*, (June 2013).
12. Co-Organizer with Bozenna Pasik-Duncan, “Ideas and technology of Control Systems: The Power and Beauty of a Field that Spans Science, Technology, Engineering and Mathematics (STEM) Workshop for Middle and High School teachers and Students,” *51<sup>st</sup> IEEE Conference on Decision and Control* (Dec 2012).
13. Co-Organizer with T. Başar and R. Poovendran of Invited Session, “Control and Security.” Speakers: Alvaro Cardenas, Manish Jain, Linda Bushnell, Henrik Sandberg, and Lillian Ratliff. *50<sup>th</sup> Annual Allerton Conference on Communication, Control, and Computing* (Oct 2012).
14. Co-Organizer with D. Abramovitch, of Special Plenary Session “Fuzzy vs. Conventional Control.” Speakers: Lotfi Zadeh and Michael Athans. *37<sup>th</sup> IEEE Conference on Decision and Control* (Dec 1998).
15. Organizer of Special History Session, “*Origin of the Calculus of Variations and Optimal Control*” *35<sup>th</sup> IEEE Conference on Decision and Control*. Speakers: Jan Willems, Hector Sussmann, John Doyle, Sergio Bittanti (Dec 1996).
16. Organizer of Special History Session (Part II), *34<sup>th</sup> IEEE Conference on Decision and Control*. Speakers: Karl Åström, Irwin Sandberg, Irena Lasiecka, Roger Brockett, Arthur Krener, Thomas Kailath. (Dec 1995).
17. Organizer of Special History Session (Part I), *33<sup>rd</sup> IEEE Conference on Decision and Control*. Speakers: Petar Kokotovic, Jan Willems, J. Boyd Pearson, Hidenori Kimura, Derek Atherton, George Leitmann, Kumpati Narendra, Bozenna Pasik-Duncan. (Dec 1994).

### **Professional society and other service**

#### **Committee memberships, positions and offices held**

- Treasurer, American Automatic Control Council (AACC), September 2013 – present
- Member of the Technical Board, IFAC, 2017 – present
- Liaison to IFAC Publications Board, 2017 – present
- Member of IFAC Task Force on Diversity & Inclusion, 2018 - present

- Chair, IEEE CSS Women in Control Standing Committee, 2017 – present
- Liaison to IEEE Committee on Women in Engineering, 2013 – present
- Member, IEEE CSS Nominating Committee, 2019 - present
- IEEE CSS Standing Committee on History, Chair 1997 – 2000; Member 1994 – 1996, 2014 - present
- Affiliate Member, International Federation of Automatic Control, 2013 - present
- Advisor and Member, IEEE CSS Women in Control Standing Committee, 1994 – present
- IEEE CSS Board of Governors, Elected Member 1999 – 2001, 2015 – 2017; Appointed Member 2014
- Member, IEEE CSS Technical Committee on Control Education, 2011 – 2017
- Secretary-Administrator, IEEE Control Systems Society, 2001 – 2007
- President, IEEE Student Chapter, UConn, 1984 – 1985
- Member, IEEE Student Chapter, UConn, 1981 - 1985

### **Journal editorship**

- Associate Editor, *IEEE Transactions on Control of Network Systems*, 6/2018 – present
- Associate Editor, *Automatica*, 12/2017 – present
- Series Editor, *Advanced Textbooks in Control and Signal Processing*, Springer, 10/2017 - present
- Associate Editor, *IFAC Symposium on Advances in Control Education*, 2016
- Associate Editor, *IEEE Control Systems Magazine*, 1999 – 2002

### **Conference organizing committee**

- Technical Program Co-Chair, 10<sup>th</sup> ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS), April 2019
- Technical Program Chair, Conference on Decision and Game Theory for Security (GameSec), October 2018
- General Co-Chair, High Confidence Networked Systems (HiCoNS) at Cyber Physical Systems Week (CPS Week), April 2014
- Workshop Chair, American Control Conference (ACC), June 2013
- Program Co-Chair, High Confidence Networked Systems (HiCoNS) at Cyber Physical Systems Week (CPS Week), April 2013
- Technical Program Chair, American Control Conference (ACC), July 2007
- Publicity Chair, American Control Conference (ACC), June 2005
- Publicity Chair, International Conference on Advanced Robotics, July 2005
- Vice-Chair Invited Sessions, IEEE Conference on Control Applications (CCA), 2001
- Vice-Chair Invited Sessions, IEEE Conference on Decision and Control (CDC), Dec 2000
- Vice-Chair Publications, American Control Conference (ACC), June 1999
- Vice-Chair Invited Sessions, American Control Conference (ACC), June 1998

### **Conference technical program committee**

- Technical Program Committee (TPC) of *16th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)* 2018
- American Control Conference (ACC), 2000, 2001, 2003 – 2007, 2013
- ACM High Confidence Networked Systems (HiCoNS), 2013
- IEEE International Symposium on Intelligent Control (ISIC), 2003, 2004
- IEEE Conference on Decision and Control (CDC), 1998

## **Graduate and postgraduate-scholar advisees**

### *Current Ph.D. and M.S. Students*

- Sang Sagong, Ph.D.
- Dinuka Sahabandu, Ph.D.
- Jiwei Wang, M.S.
- Joanna Mazer, M.S.

### *Completed Ph.D. Students*

- Zhipeng Liu, Ph.D., 2018
- Yedi Luo, M.S., 2017
- Phillip Lee, Ph.D., 2016
- Andrew Clark, Ph.D. 2014
- Sam McKennoch, Ph.D. 2007
- Octavian Beldiman, Ph.D. 2001
- Hong Ye, Ph.D. 2001

### *Completed M.S. Students*

- Matthew Jones, 2017
- Sorav Sharma, 2017
- Qiong Lin, 2016
- Sean Rice, M.S. 2016
- Truc Pham, M.S. 2014
- Nguyen Quoc Nghi, M.S., 2010
- Thanh-Tung Pham, M.S. 2008
- Preethi Sundaradevan, M.S. 2008
- David Burnett, M.S. 2007
- Sean Hoyt, M.S. 2005
- Mark Yamagishi, M.S. 2004
- Dong Chen, M.S. 1999
- Octavian Beldiman, M.S. 1998

### *Completed Post-Graduate Scholars*

- Yiguang Hong, Chinese Academy of Science