

## Zhi-Hong Mao

Associate Professor and William Kepler Whiteford Faculty Fellow  
Department of Electrical and Computer Engineering  
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### Research Interests

- Human-in-the-loop control systems
- Networked and large-scale control systems: transportation systems and electric power systems
- Neural control and learning

### Education

- Ph.D. in Electrical and Medical Engineering, Massachusetts Institute of Technology, Cambridge, 9/2005 (or as Ph.D. in Medical Engineering and Medical Physics, Harvard-MIT Division of Health Sciences and Technology, Cambridge, 6/2006)
- S.M. in Aeronautics and Astronautics, Massachusetts Institute of Technology, Cambridge, 9/2000
- M.Eng. with Honors in Intelligent Control and Pattern Recognition, Tsinghua University, Beijing, China, 6/1998
- Dual Bachelor's Degrees with Honors in Automatic Control and Mathematics, Tsinghua University, Beijing, China, 7/1995

### Professional Experience

- Associate Professor with tenure, University of Pittsburgh, 9/2011–present
- Assistant Professor, University of Pittsburgh, 9/2005–8/2011

### Teaching

- ECE 1673: Linear Control Systems, Spring 2006–2013, 2015–2017
- ECE/ME 2646: Linear System Theory, Fall 2006–2017
- ECE 2680: Adaptive Control, Fall 2008, 2010, 2012, Spring 2014–2015, Fall 2016
- ECE 3650: Optimal Control, Fall 2009, 2011, 2013–2015, 2017
- BioE 2696/ECE 2695: Control Theory in Neuroscience, Spring 2009–2012 (with Aaron Batista)
- ECE 1563: Signal Processing Laboratory, Spring 2011 (with Amro El-Jaroudi)
- ECE/COE 1896: Senior Design Project, Spring 2013

### Research Grants

1. *[To be awarded] National Institutes of Health (R01), Subcontract with UPMC Department of Neurological Surgery: Automatic recognition of diet, physical activity and sedentary behavior using a smart wearable device, 12/2017–11/2021. Role: Subcontract PI. (PI: Mingui Sun)*
2. *Electric Power Research Institute (EPRI): Inverter testing and modeling research, \$79K, 1/2016–12/2016. Role: Co-PI. (PI: Thomas McDermott)*
3. *National Institutes of Health (R01 EB013174-03), Subcontract with UPMC Department of Neurological Surgery: Biomimetic self-adhesive dry EEG electrodes, \$16K (subcontract), 1/2016–7/2016. Role: Subcontract PI. (PI: Mingui Sun)*

4. *National Science Foundation (CNS-1544578)*: CPS: Synergy: Collaborative Research: Design and control of high-performance provably-safe autonomy-enabled dynamic transportation networks, \$213K (Pitt), 9/2015–8/2018. Role: PI. (Collaborating Institute—Lead: Massachusetts Institute of Technology; PI: Sertac Karaman)
5. *Air Force Research Laboratory*: Algorithms and applications for cognitive computing systems, \$282K, 8/2015–2/2018. Role: PI. (Founding PI: Yiran Chen)
6. *Air Force Research Laboratory*: The design of neuromorphic controller system built with memristor crossbars, \$715K, 2/2015–9/2017. Role: Co-PI. (PI: Hai Li)
7. *National Science Foundation (CNS-1422057)*: CSR: Small: OREO: Tri-layer optimization for power efficient OLED display, \$250K, 9/2014–8/2018. Role: PI. (Founding PI: Yiran Chen)
8. *Air Force Research Laboratory*: Neuromorphic computing engine with resistive crossbar architecture, \$118K, 9/2014–4/2015. Role: Senior Personnel. (PI: Hai Li)
9. *Henry L. Hillman Foundation*: DC-AMPS (Direct Current Architecture for Modern Power Systems), \$400K, 7/2014–6/2015. Role: Co-PI. (PI: Gregory Reed)
10. *Siemens Energy, Inc.*: Integration of renewables with HVDC under weak AC grid conditions, \$125K, 10/2013–9/2014. Role: Co-PI. (PI: Gregory Reed)
11. *Pitt-Ohio Express, Inc.*: Solar energy integration study for the Harmarville operational facility, \$50K, 8/2013–10/2014. Role: Co-PI. (PI: Gregory Reed)
12. *Central Research Development Fund, University of Pittsburgh*: Neurobiologically inspired intelligent control for the power grid, \$16K, 7/2013–6/2015. Role: PI
13. *FirstEnergy Corporation*: Electric power distribution modeling and simulation for feeder analytics and distributed energy resource integration, \$125K, 6/2013–8/2014. Role: Co-PI. (PI: Gregory Reed)
14. *National Collegiate Inventors and Innovators Alliance*: eButton: a wearable electronic device for dementia care, \$5K, 4/2013–12/2013. Role: Co-I. (PI: Mingui Sun)
15. *Mitsubishi Electric Corporation*: HVDC technology development, \$235K, 4/2013–8/2014. Role: Co-PI. (PI: Gregory Reed)
16. *National Science Foundation (CNS-1311706)*: CAREER: STT-RAM based memory hierarchy and management in embedded systems, \$450K, 9/2012–8/2018. Role: Senior Personnel. (PI: Hai Li)
17. *National Institutes of Health (R01 CA165255-01), Subcontract with UPMC Department of Neurological Surgery*: Wearable eButton for evaluation of energy balance with environmental context and behavior, \$203K (subcontract), 9/2012–8/2016. Role: Subcontract PI. (PI: Mingui Sun)
18. *National Energy Technology Laboratory–Regional University Alliance, Department of Energy*: Grid technologies collaborative, \$850K, 1/2012–12/2013. Role: Co-PI. (PI: Gregory Reed)
19. *National Institutes of Health (U54 EB007954-05), Subcontract with University of Cincinnati under POC-CENT (Point of Care Center for Emerging Neurotechnologies)*: Development and evaluation of a novel wireless EEG monitoring sensor, \$174K (subcontract), 7/2011–6/2014. Role: Subcontract Co-I. (Subcontract PI: Wenyan Jia; PI: Fred Beyette, University of Cincinnati)
20. *ABB, Inc.–Corporate Research Center*: Medium Voltage Direct Current (MVDC) technology development, \$155K, 1/2011–12/2013. Role: Co-PI. (PI: Gregory Reed)
21. *Commonwealth of Pennsylvania–Ben Franklin Technology Development Authority*: Interfaces of electric power and energy research commercialization program, \$600K, 1/2011–12/2012. Role: Co-PI. (PI: Gregory Reed)
22. *National Science Foundation (CMMI-0953449)*: CAREER: Evaluating capabilities of neural control in human-machine interaction, \$400K, 7/2010–6/2015. Role: PI
23. *National Science Foundation (CNS-0964079)*: CSR: Medium: Collaborative Research: Static pipelining, an approach for ultra-low power embedded processors, \$400K (Pitt), 5/2010–4/2014. Role: PI. (Founding PI at Pitt: Allen Cheng. Collaborating Institute—Lead: Florida State University; PI: David Whalley)

24. *Westinghouse Electric Company*: Smart grid interface control methodology development for integrated green energy resource management, \$200K, 1/2010–12/2010. Role: Co-PI. (PI: Gregory Reed)
25. *National Energy Technology Laboratory, Department of Energy*: Adaptive dynamic programming for optimization of fossil-energy power generation systems, \$171K, 6/2009–9/2011. Role: PI
26. *Commonwealth of Pennsylvania–Ben Franklin Technology Development Authority*: Future directions in energy research–technology interfaces of electric power, nuclear, mining engineering, \$700K, 1/2009–12/2010. Role: Co-PI. (PIs: Brian Gleeson and Gregory Reed)
27. *Bechtel Marine Propulsion Corporation*: Wireless sensing and control technology, \$58K, 1/2009–8/2010. Role: PI
28. *Health Future Foundation*: System identification and modeling approach to characterizing rigidity in Parkinson's disease, \$20K, 7/2008–6/2010. Role: Co-I. (PI: Rui-Ping Xia, Creighton University)
29. *U.S. Army SBIR Phase II, Subcontract with Energid Technologies*: Smart codec with telesurgery capabilities, \$40K (subcontract), 12/2007–11/2009. Role: Subcontract PI. (Subcontract Co-PI: Heung-No Lee; PI: David Askey, Energid Technologies)
30. *National Science Foundation (CMMI-0727256)*: Dimensionality reduction in the control of the human hand, \$195K, 9/2007–8/2010. Role: PI. (Co-PIs: Mingui Sun and Heung-No Lee)
31. *National Institutes of Health (U01 HL91736-01), Subcontract with UPMC Department of Neurological Surgery*: A unified sensor system for ubiquitous assessment of diet and physical activity, \$296K (subcontract), 8/2007–5/2013. Role: Subcontract PI. (PI: Mingui Sun)
32. *Central Research Development Fund, University of Pittsburgh*: Robot task learning inspired by human procedural learning, \$15K, 7/2006–6/2008. Role: PI

## Publications

### *Refereed Journal Publications*

- [J1] Q. Fu, J. Zhu, Z.-H. Mao, G. Zhang, and T. Chen. Online condition monitoring of onboard traction transformer core based on core losses calculation model. *IEEE Transactions on Industrial Electronics*, accepted for publication, 2017.
- [J2] S. Mao, H. Wang, C. Zhu, Z.-H. Mao, and M. Sun. Simultaneous wireless power transfer and data communication using synchronous pulse-controlled load modulation. *Measurement* 109, 316-325, October 2017.
- [J3] J. Xie, P. K. Meher, M. Sun, Y. Li, B. Zeng, and Z.-H. Mao. Efficient FPGA implementation of low-complexity systolic Karatsuba multiplier over  $GF(2^m)$  based on NIST polynomials. *IEEE Transactions on Circuits and Systems I: Regular Papers* 64(7), 1815-1825, July 2017.
- [J4] P. M. Vasandani, B. Gattu, J. Wu, Z.-H. Mao, W. Jia, and M. Sun. Triboelectric nanogenerator using microdome-patterned PDMS as a wearable respiratory energy harvester. *Advanced Materials Technologies* 2(6), Article No. 1700014, doi: 10.1002/admt.201700014, June 2017.
- [J5] R. Xia, A. Muthumani, Z.-H. Mao, and D. Powell. Quantification of neural reflex and muscular intrinsic contributions to parkinsonian rigidity. *Experimental Brain Research* 234(12), 3587-3595, December 2016.
- [J6] P. M. Vasandani, Z.-H. Mao, W. Jia, and M. Sun. Design of simulation experiments to predict triboelectric generator output using structural parameters. *Simulation Modeling Practice and Theory* 68, 95-107, November 2016.
- [J7] R. Khanna, A. Barchowsky, A. A. Amrhein, W. E. Stanchina, G. F. Reed, and Z.-H. Mao. A linear model for characterizing transient behavior in wide bandgap semiconductor-based switching circuits. *International Journal of Automation and Power Engineering* 5, 1-16, doi: 10.14355/ijape.2016.05.001, 2016.

- [J8] V. Patel, M. Burns, Z.-H. Mao, N. E. Crone, and R. Vinjamuri. Linear and nonlinear synergies in grasping hand. *Journal of Bioengineering and Biomedical Science* 5(3), Article No. 163, doi: 10.4172/2155-9538.1000163 (8 pages), August 2015.
- [J9] J. Xie, P. K. Meher, and Z.-H. Mao. High-throughput digit-level systolic multiplier over  $GF(2^m)$  based on irreducible trinomials. *IEEE Transactions on Circuits and Systems II: Express Briefs* 62(5), 481-485, May 2015.
- [J10] J. Xie, P. K. Meher, and Z.-H. Mao. Low-latency high-throughput systolic multipliers over  $GF(2^m)$  for NIST recommended pentanomials. *IEEE Transactions on Circuits and Systems I: Regular Papers* 62(3), 881-890, March 2015.
- [J11] M. Sun, L. E. Burke, T. Baranowski, J. D. Fernstrom, H. Zhang, H.-C. Chen, Y. Bai, Y. Li, C. Li, Y. Yue, R. J. Scabassi, Z.-H. Mao, and W. Jia. An exploratory study on a chest-worn computer for evaluation of diet, physical activity and lifestyle. *Journal of Healthcare Engineering* 6(1), 1-22, March 2015.
- [J12] J. Xie, P. K. Meher, and Z.-H. Mao. High-throughput finite field multipliers using redundant basis for FPGA and ASIC implementations. *IEEE Transactions on Circuits and Systems I: Regular Papers* 62(1), 110-119, January 2015.
- [J13] M. F. Lupu, M. Sun, F.-Y. Wang, and Z.-H. Mao. Information-transmission rates in manual control of unstable systems with time delays. *IEEE Transactions on Biomedical Engineering* 62(1), 342-351, January 2015.
- [J14] F. Zhu, S. Chen, Z.-H. Mao, and Q. Miao. Parallel public transportation system and its application in evaluating evacuation plans for large-scale activities. *IEEE Transactions on Intelligent Transportation Systems* 15(4), 1728-1733, August 2014.
- [J15] R. Vinjamuri, V. Patel, M. Powell, Z.-H. Mao, and N. Crone. Candidates for synergies: linear discriminants vs. principal components. *Computational Intelligence and Neuroscience*, Volume 2014, Article ID 373957, doi: 10.1155/2014/373957 (10 pages), July 2014.
- [J16] S. Huang, E. Feron, G. F. Reed, and Z.-H. Mao. Compact configuration of aircraft flows at intersections. *IEEE Transactions on Intelligent Transportation Systems* 15(2), 771-783, April 2014.
- [J17] R. Khanna, Q. Zhang, W. E. Stanchina, G. F. Reed, and Z.-H. Mao. Maximum power point tracking using model reference adaptive control. *IEEE Transactions on Power Electronics* 29(3), 1490-1499, March 2014.
- [J18] Q. Xu, H. Wang, Z. Gao, Z.-H. Mao, J. He, and M. Sun. A novel mat-based system for position-varying wireless power transfer to biomedical implants. *IEEE Transactions on Magnetics* 49(8), 4774-4779, August 2013.
- [J19] Q. Xu, Z. Gao, H. Wang, J. He, Z.-H. Mao, and M. Sun. Batteries not included: a mat-based wireless power transfer system for implantable medical devices as a moving target. *IEEE Microwave Magazine* 14(2), 63-72, March/April 2013.
- [J20] M. F. Lupu, M. Sun, R. Xia, and Z.-H. Mao. Rate of information transmission in human manual control of an unstable system. *IEEE Transactions on Human-Machine Systems* 43(2), 259-263, March 2013.
- [J21] G. F. Reed, B. M. Grainger, A. R. Sparacino, E. Taylor, and Z.-H. Mao. Ship to grid: medium-voltage DC concepts in theory and practice. *IEEE Power and Energy Magazine* 10(6), 70-79, November/December 2012.
- [J22] H. Kim, D. S. Har, Z.-H. Mao, M. Sun, and H.-N. Lee. Efficient joint source-channel decoding of multi-state Markov sequences. *IET Communications* 6(9), 1038-1044, June 2012.
- [J23] C.-C. Chang, T.-Y. Kuo, Y.-C. Lo, H.-N. Lee, D. Askey, and Z.-H. Mao. User-satisfaction based bandwidth allocation for transmission of multiple sources of human perceptual data. *Journal of the Franklin Institute* 349(3), 879-890, April 2012.
- [J24] F. Zhang, J. Liu, Z.-H. Mao, and M. Sun. Mid-range wireless power transfer and its application to body sensor networks. *Open Journal of Applied Sciences* 2(1), 35-46, March 2012.

- [J25] R. Xia and Z.-H. Mao. Progression of motor symptoms in Parkinson's disease. *Neuroscience Bulletin* 28(1), 39-48, February 2012.
- [J26] Y. Ma, J. Yang, L. Hui, Y. Li, Z.-H. Mao, and M. Sun. Novel hand motion tracking system. *Journal of Xidian University* 39(1), 79-85, 2012. (in Chinese)
- [J27] M. F. Lupu, E. Feron, and Z.-H. Mao. Influence of aircraft maneuver preference variability on airspace usage. *IEEE Transactions on Intelligent Transportation Systems* 12(4), 1446-1461, December 2011.
- [J28] Y. Sun, P. J. Hawrylak, Z.-H. Mao, and M. H. Mickle. A novel software radio defined passive RFID reading system with real-time collision resolution. *International Journal of Ad Hoc and Ubiquitous Computing* 8(4), 261-270, 2011.
- [J29] R. Vinjamuri, D. J. Weber, Z.-H. Mao, J. L. Collinger, A. D. Degenhart, J. W. Kelly, M. L. Boninger, E. C. Tyler-Kabara, and W. Wang. Towards synergy based brain machine interfaces. *IEEE Transactions on Information Technology in Biomedicine* 15(5), 726-736, September 2011.
- [J30] H. Zhang, L. Li, W. Jia, J. D. Fernstrom, R. J. Scabassi, Z.-H. Mao, and M. Sun. Physical activity recognition based on motion in images acquired by a wearable camera. *Neurocomputing* 74(12-13), 2184-2192, June 2011.
- [J31] F. Zhang, S. A. Hackworth, W. Fu, C. Li, Z.-H. Mao, and M. Sun. Relay effect of wireless power transfer using strongly coupled magnetic resonances. *IEEE Transactions on Magnetics* 47(5), 1478-1481, May 2011.
- [J32] Y. Ma, Z.-H. Mao, W. Jia, C. Li, J. Yang, and M. Sun. Magnetic hand tracking for human-computer interface. *IEEE Transactions on Magnetics* 47(5), 970-973, May 2011.
- [J33] H.-N. Lee, S.-Y. Chung, C. Fragouli, and Z.-H. Mao. Network coding for wireless networks. *EURASIP Journal on Wireless Communications and Networking*, Volume 2010, Article ID 359475, doi: 10.1155/2010/359475 (2 pages), 2010. (Special Issue Editorial)
- [J34] L.-J. Zhang, Z. Shan, and Z.-H. Mao. An optimal-control based decision-making model and consulting methodology for services enterprises. *IEEE Transactions on Engineering Management* 57(4), 607-619, November 2010.
- [J35] M. H. Mahmood, C.-C. Chang, D. Jung, Z.-H. Mao, H. Lim, and H.-N. Lee. Throughput behavior of link adaptive 802.11 DCF with MUD capable access node. *AEU International Journal of Electronics and Communications* 64(11), 1031-1041, November 2010.
- [J36] C.-C. Chang, Z.-H. Mao, and H.-N. Lee. A fast BER evaluation method for LDGM codes. *Journal of the Franklin Institute* 347(7), 1368-1373, September 2010.
- [J37] R. Vinjamuri, M. Sun, C.-C. Chang, H.-N. Lee, R. J. Scabassi, and Z.-H. Mao. Temporal postural synergies of the hand in rapid grasping tasks. *IEEE Transactions on Information Technology in Biomedicine* 14(4), 986-994, July 2010.
- [J38] Y. Ma, W. Jia, C. Li, J. Yang, Z.-H. Mao, and M. Sun. Magnetic hand motion tracking system for human-machine interaction. *Electronics Letters* 46(9), 621-623, April 2010.
- [J39] Y. Sun, P. J. Hawrylak, Z.-H. Mao, and M. H. Mickle. Collision resolution in ISO 18000-6c passive RFID. *Applied Computational Electromagnetics Society (ACES) Journal* 25(3), Special Issue: Computational and Experimental Techniques for RFID Systems and Applications, 239-262, March 2010.
- [J40] R. Vinjamuri, M. Sun, C.-C. Chang, H.-N. Lee, R. J. Scabassi, and Z.-H. Mao. Dimensionality reduction in control and coordination of the human hand. *IEEE Transactions on Biomedical Engineering* 57(2), 284-295, February 2010.
- [J41] C.-C. Chang, Z.-H. Mao, and H.-N. Lee. MB iterative decoding algorithm on systematic LDGM codes: performance evaluation. *Signal Processing* 90(1), 373-377, January 2010.

- [J42] J. H. Yang, Z.-H. Mao, L. Tijerina, T. Pilutti, J. Coughlin, and E. Feron. Detection of driver fatigue caused by sleep deprivation. *IEEE Transactions on Systems, Man, and Cybernetics–Part A* 39(4), 694-705, July 2009. (IEEE SMC Society Andrew P. Sage Best Transactions Paper Award, 2010)
- [J43] Z.-H. Mao, H.-N. Lee, R. J. Sclabassi, and M. Sun. Information capacity of the thumb and the index finger in communication. *IEEE Transactions on Biomedical Engineering* 56(5), 1535-1545, May 2009.
- [J44] R. Vinjamuri, D. J. Crammond, D. Kondziolka, H.-N. Lee, and Z.-H. Mao. Extraction of sources of tremor in hand movements of patients with movement disorders. *IEEE Transactions on Information Technology in Biomedicine* 13(1), 49-56, January 2009.
- [J45] K. Treleaven and Z.-H. Mao. Conflict resolution and traffic complexity of multiple intersecting flows of aircraft. *IEEE Transactions on Intelligent Transportation Systems* 9(4), 633-643, December 2008.
- [J46] Z.-H. Mao, D. Dugail, and E. Feron. Space partition for conflict resolution of intersecting flows of mobile agents. *IEEE Transactions on Intelligent Transportation Systems* 8(3), 512-527, September 2007.
- [J47] Z.-H. Mao and S. G. Massaquoi. Dynamics of winner-take-all competition in recurrent neural networks with lateral inhibition. *IEEE Transactions on Neural Networks* 18(1), 55-69, January 2007.
- [J48] Z.-H. Mao, D. Dugail, E. Feron, and K. Bilimoria. Stability of intersecting aircraft flows using heading change maneuvers for conflict avoidance. *IEEE Transactions on Intelligent Transportation Systems* 6(4), 357-369, December 2005.
- [J49] S. Jo, J. Yin, and Z.-H. Mao. Random neural networks with state-dependent firing neurons. *IEEE Transactions on Neural Networks* 16(4), 980-983, July 2005.
- [J50] E. Gelenbe, Z.-H. Mao, and Y.-D. Li. Function approximation by random neural networks with a bounded number of layers. *Differential Equations and Dynamical Systems* 12(1 and 2), 143-170, 2004.
- [J51] Z.-H. Mao, E. Feron, and K. Bilimoria. Stability and performance of intersecting aircraft flows under decentralized conflict avoidance rules. *IEEE Transactions on Intelligent Transportation Systems* 2(2), 101-109, June 2001.
- [J52] E. Frazzoli, Z.-H. Mao, J.-H. Oh, and E. Feron. Resolution of conflicts involving many aircraft via semidefinite programming. *AIAA Journal of Guidance, Control and Dynamics* 24(1), 79-86, February 2001.
- [J53] E. Gelenbe, Z.-H. Mao, and Y.-D. Li. Function approximation by spiked random networks. *IEEE Transactions on Neural Networks* 10(1), 3-9, January 1999.
- [J54] Z.-H. Mao, Y.-D. Li, and Z. Sun. Comments on “fuzzy systems approximation by frames (SISO case)”. *Fuzzy Sets and Systems* 100, 373-375, November 1998.
- [J55] Z.-H. Mao, X. Zhang, and Y.-D. Li. On universal approximation capability of fuzzy systems. *Science in China (Series E, English version)* 41(1), 6-12, February 1998.
- [J56] T. Zhang, Z.-H. Mao, and S. Xia. A method to extract numeral string overlapping borders. *Chinese Information Journal* 12(2), 25-30, 1998. (in Chinese)
- [J57] Z.-H. Mao and Y. Lin. Extended random neural network model and its probability structure features. *Journal of Tsinghua University* 38(3), 100-103, 1998. (in Chinese)
- [J58] Z.-H. Mao, Y.-D. Li, and X. Zhang. Approximation capability of fuzzy systems using translations and dilations of one fixed function as membership functions. *IEEE Transactions on Fuzzy Systems* 5(3), 468-473, August 1997.
- [J59] L.-J. Zhang, Z.-H. Mao, and Y.-D. Li. Mathematical analysis of mutation operator in genetic algorithms and its improved strategy. *Journal of Electronics* 14(2), 154-158, April 1997.

### *Book Chapters*

- [B1] K. Nixon, Y. Chen, Z.-H. Mao, and K. Li. User classification and authentication for MOBILE device based on gesture recognition. In *Network Science and Cybersecurity* (Editor: R. E. Pino), Springer, 125-135, 2014.
- [B2] R. Vinjamuri, W. Wang, M. Sun, and Z.-H. Mao. Application of linear and nonlinear dimensionality reduction methods. In *Principal Component Analysis* (Editor: P. Sanguansat), InTech–Open Access Publisher, Chapter 6, 107-128, 2012.
- [B3] E. Gelenbe, Z.-H. Mao, and Y.-D. Li. Deterministic computation with random G-networks. In *Fundamental Concepts in Computer Science* (Editors: E. Gelenbe and J.-P. Kahane), Imperial College Press, Chapter 4, 71-96, 2009.
- [B4] S. Jo and Z.-H. Mao. Basal ganglionic learning applied to control of an underactuated system. In *Neurocomputing Research Developments* (Editor: H. A. Svensson), Nova Science Publisher, Chapter 7, 181-200, 2008.

### *Refereed Conference Publications*

- [C1] K.-J. Wang, L. Zhang, B. Luan, H.-W. Tung, Q. Liu, J. Wei, M. Sun, and Z.-H. Mao. Brain-computer interface combining eye saccade two-electrode EEG signals and voice cues to improve the maneuverability of wheelchair. *Proceedings of the 15th IEEE/RAS-EMBS International Conference on Rehabilitation Robotics (ICORR 2017)*, London, UK, 1073-1078, July 2017.
- [C2] A. Barchowsky, J. P. Kozak, M. R. Hontz, W. E. Stanchina, G. F. Reed, Z.-H. Mao, and R. Khanna. Analytical and experimental optimization of external gate resistance for safe rapid turn on of normally off GaN HFETs. *Proceedings of the IEEE Applied Power Electronics Conference (APEC 2017)*, Tampa, FL, USA, 1958-1963, March 2017.
- [C3] L. Zhang, H. Chen, K.-J. Wang, and Z.-H. Mao. Internet of brain: decoding human intention and coupling EEG signals with Internet services. *Proceedings of the 9th International Conference on Services Science (ICSS 2016)*, Chongqing, China, 172-179, October 2016.
- [C4] K.-J. Wang, M. Sun, and Z.-H. Mao. Human-robot mutual force borrowing and seamless leader-follower role switching by learning and coordination of interactive impedance. *Proceedings of the 2016 International Symposium on Wearable Robotics (WeRob 2016)*, La Granja, Segovia, Spain, published in *Wearable Robotics: Challenges and Trends*, Volume 16 of the Series Biosystems and Biorobotics, 427-432, October 2016.
- [C5] A. H. Dallal, Y. Chen, D. J. Weber, and Z.-H. Mao. Dictionary learning for sparse representation and classification of neural spikes. *Proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2016)*, Orlando, FL, USA, 3486-3489, August 2016.
- [C6] X. Xie, H. Xu, G. Yang, Z.-H. Mao, W. Jia, and M. Sun. Reuse of WiFi information for indoor monitoring of the elderly. *Proceedings of the IEEE 17th International Conference on Information Reuse and Integration (IRI 2016)*, Pittsburgh, PA, USA, 261-264, July 2016.
- [C7] B. M. Grainger, Q. Zhang, G. F. Reed, and Z.-H. Mao. Modern controller approaches for stabilizing constant power loads within a DC microgrid while considering system delays. *Proceedings of the 7th IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG 2016)*, Vancouver, Canada, doi: 10.1109/PEDG.2016.7527001 (6 pages), June 2016.
- [C8] K.-J. Wang, M. Sun, R. Xia, and Z.-H. Mao. Human-robot symbiosis framework for exoskeleton devices. *Proceedings of 2016 IEEE International Conference on Industrial Technology (ICIT 2016)*, Taipei, Taiwan, 1500-1506, March 2016.

- [C9] K. Nixon, X. Chen, Z.-H. Mao, and Y. Chen. SlowMo—enhancing mobile gesture-based authentication schemes via sampling rate optimization. Proceedings of the 21st Asia and South Pacific Design Automation Conference (ASP-DAC 2016), Macau, China, 462-467, January 2016.
- [C10] W. Jia, Y. Li, Y. Bai, Z.-H. Mao, M. Sun, and Q. Zhao. Estimation of heart rate from a chest-worn inertial measurement unit. Proceedings of 2015 International Symposium on Bioelectronics and Bioinformatics (ISBB 2015), Beijing, China, 148-151, October 2015.
- [C11] K.-J. Wang, M. Sun, L. Zhang, and Z.-H. Mao. Mastering human-robot interaction control techniques using Chinese Tai Chi Chuan: mutual learning, intention detection, impedance adaptation, and force borrowing. Proceedings of the 5th International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EpiRob), Providence, RI, USA, 104-105, August 2015.
- [C12] B. M. Grainger, G. F. Reed, and Z.-H. Mao. Model reference controller design for stabilizing constant power loads in an offshore medium voltage DC microgrid. Proceedings of the 16th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2015), Vancouver, Canada, doi: 10.1109/COMPEL.2015.7236495 (8 pages), July 2015.
- [C13] P. Vasandani, H. Wang, Z.-H. Mao, and M. Sun. Preliminary study on triboelectric generator harvesting energy from breathing motion. Proceedings of the IEEE 41st Annual Northeast Bioengineering Conference (NEBEC 2015), Troy, NY, USA, doi: 10.1109/NEBEC.2015.7117132 (2 pages), April 2015.
- [C14] Y. Li, W. Jia, B. Luan, Z.-H. Mao, H. Zhang, and M. Sun. A FPGA implementation of JPEG baseline encoder for wearable devices. Proceedings of the IEEE 41st Annual Northeast Bioengineering Conference (NEBEC 2015), Troy, NY, USA, doi: 10.1109/NEBEC.2015.7117173 (2 pages), April 2015.
- [C15] Y. Li, W. Jia, T. Yu, B. Luan, Z.-H. Mao, H. Zhang, and M. Sun. A low power, parallel wearable multi-sensor system for human activity evaluation. Proceedings of the IEEE 41st Annual Northeast Bioengineering Conference (NEBEC 2015), Troy, NY, USA, doi: 10.1109/NEBEC.2015.7117174 (2 pages), April 2015.
- [C16] K.-J. Wang, M. Sun, R. Xia, and Z.-H. Mao. Co-adaptive optimal control framework for human-robot physical symbiosis. Proceedings of the 10th Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI 2015) Extended Abstracts, Portland, OR, USA, 241-242, March 2015.
- [C17] Y. Bai, W. Jia, H. Zhang, Z.-H. Mao, and M. Sun. Landmark-based indoor positioning for visually impaired individuals. Proceedings of the 12th IEEE International Conference on Signal Processing (ICSP 2014), Hangzhou, China, 668-671, October 2014.
- [C18] R. Wang, W. Jia, Z.-H. Mao, R. J. Scلابassi, and M. Sun. Cuff-free blood pressure estimation using pulse transit time and heart rate. Proceedings of the 12th IEEE International Conference on Signal Processing (ICSP 2014), Hangzhou, China, 115-118, October 2014.
- [C19] M. Sun, L. E. Burke, Z.-H. Mao, Y. Chen, H.-C. Chen, Y. Bai, Y. Li, C. Li, and W. Jia. eButton: A wearable computer for health monitoring and personal assistance. Proceedings of the 51st Design Automation Conference (DAC 2014), San Francisco, CA, USA, doi: 10.1145/2593069.2596678 (6 pages), June 2014.
- [C20] Y. Bai, W. Jia, Z.-H. Mao, and M. Sun. Automatic eating detection using a proximity sensor. Proceedings of the IEEE 40th Annual Northeast Bioengineering Conference (NEBEC 2014), Boston, MA, USA, doi: 10.1109/NEBEC.2014.6972716 (2 pages), April 2014.
- [C21] Y. Bai, L. Krishnamurti, W. Jia, Z.-H. Mao, and M. Sun. An electronic six-minute walk test platform for clinical applications. Proceedings of the IEEE 40th Annual Northeast Bioengineering Conference (NEBEC 2014), Boston, MA, USA, doi: 10.1109/NEBEC.2014.6972715 (2 pages), April 2014.
- [C22] B. M. Grainger, G. F. Reed, T. E. McDermott, Z.-H. Mao, V. Kounev, and D. Tipper. Analysis of an offshore medium voltage DC microgrid environment—Part I: Power sharing controller design.



- Proceedings of the 2014 IEEE PES Transmission and Distribution (T&D) Conference and Exposition, Chicago, IL, USA, doi: 10.1109/TDC.2014.6863405 (5 pages), April 2014.
- [C23] Z. Li, W. Jia, Z.-H. Mao, J. Li, H.-C. Chen, W. Zuo, K. Wang, and M. Sun. Anthropometric body measurements based on multi-view stereo image reconstruction. Proceedings of the 35th International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2013), Osaka, Japan, 366-369, July 2013.
- [C24] Y. Bai, W. Jia, H. Zhang, Z.-H. Mao, and M. Sun. Helping the blind to find the floor of destination in multistory buildings using a barometer. Proceedings of the 35th International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2013), Osaka, Japan, 4738-4741, July 2013.
- [C25] B. Liu, M. Hu, T. Huang, H. Li, Z.-H. Mao, W. Zhang, and Y. Chen. Digital-assisted noise-eliminating training for memristor crossbar-based analog neuromorphic computing engine. Proceedings of the 50th Design Automation Conference (DAC 2013), Austin, TX, USA, Article No. 7 (6 pages), June 2013.
- [C26] R. Khanna, A. Amrhein, W. E. Stanchina, G. F. Reed, and Z.-H. Mao. An analytical model for evaluating the influence of device parasitics on  $C_{dv}/dt$  induced false turn-on in SiC MOSFETs. Proceedings of the IEEE Applied Power Electronics Conference (APEC 2013), Long Beach, CA, USA, 518-525, March 2013. (APEC Technical Presentation Award)
- [C27] K. Nixon, X. Chen, Z.-H. Mao, K. Li, and Y. Chen. Mobile user classification and authorization based on gesture usage recognition. Proceedings of the 18th Asia and South Pacific Design Automation Conference (ASP-DAC 2013), Yokohama, Japan, 384-389, January 2013.
- [C28] G. F. Reed, B. M. Grainger, A. R. Sparacino, E. J. Taylor, M. J. Korytowski, and Z.-H. Mao. Medium voltage DC technology developments, applications, and trends. CIGRE US National Committee (USNC) 2012 Grid of the Future Symposium, Kansas City, MO, USA, October 2012.
- [C29] S. Huang, E. Feron, and Z.-H. Mao. Optimal configuration for intersecting flows of aircraft. Proceedings of the 15th International IEEE Conference on Intelligent Transportation Systems (ITSC 2012), Anchorage, Alaska, USA, 1447-1452, September 2012.
- [C30] M. F. Lupu, M. Sun, and Z.-H. Mao. Information rate of human manual control in unstable systems. Proceedings of the 20th European Signal Processing Conference (EUSIPCO 2012), Bucharest, Romania, 1811-1815, August 2012.
- [C31] H. Wang, Z.-H. Mao, Q. Xu, and M. Sun. Relay effect on wireless power transfer using resonant coupling. Proceedings of the IEEE 38th Annual Northeast Bioengineering Conference (NEBEC 2012), Philadelphia, PA, USA, 428-429, March 2012.
- [C32] Y. Bai, C. Li, Y. Yue, W. Jia, J. Li, Z.-H. Mao, and M. Sun. Designing a wearable computer for lifestyle evaluation. Proceedings of the IEEE 38th Annual Northeast Bioengineering Conference (NEBEC 2012), Philadelphia, PA, USA, 93-94, March 2012.
- [C33] M. F. Lupu, M. Sun, and Z.-H. Mao. Bandwidth limitations in human control tasks. Proceedings of the 2nd IASTED (International Association of Science and Technology for Development) International Conference on Robotics (Robo 2011), Pittsburgh, PA, USA, doi: 10.2316/P.2011.752-031 (6 pages), November 2011.
- [C34] L. Li, H. Zhang, W. Jia, Z.-H. Mao, Y. You, and M. Sun. Indirect activity recognition using a target-mounted camera. Proceedings of the 4th International Congress on Image and Signal Processing (CISP 2011), Shanghai, China, 487-491, October 2011.
- [C35] T. Hand, Z.-H. Mao, and E. Feron. Stability of spatially distributed, intersecting aircraft flows under sequential conflict resolution schemes. Proceedings of 2011 American Control Conference (ACC 2011), San Francisco, CA, USA, 2168-2173, June-July 2011.
- [C36] H. Xu, I. Umez-Eronini, Z.-H. Mao, and A. K. Jones. Towards improving renewable resource utilization with plug-in electric vehicles. Proceedings of 2011 IEEE PES Innovative Smart Grid

- Technologies (ISGT) Conference, Anaheim, CA, USA, doi: 10.1109/ISGT.2011.5759189 (6 pages), January 2011.
- [C37] M. F. Lupu, E. Feron, and Z.-H. Mao. Traffic complexity of intersecting flows of aircraft under variations of pilot preferences in maneuver choice. Proceedings of the 49th IEEE Conference on Decision and Control (CDC 2010), Atlanta, GA, USA, 1189-1194, December 2010.
- [C38] M. F. Lupu, M. Sun, D. Askey, R. Xia, and Z.-H. Mao. Human strategies in balancing an inverted pendulum with time delay. Proceedings of the 32nd International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2010), Buenos Aires, Argentina, 5246-5249, August-September 2010.
- [C39] R. O'Connor, G. Reed, Z.-H. Mao, and A. K. Jones. Improving renewable resource utilization through integrated generation management. Proceedings of 2010 IEEE PES General Meeting, Minneapolis, MN, USA, doi: 10.1109/PES.2010.5589530 (6 pages), July 2010.
- [C40] R. Xia, M. Radovic, A. J. Threlkeld, and Z.-H. Mao. System identification and modeling approach to characterizing rigidity in Parkinson's disease: neural and non-neural contributions. Proceedings of the 4th International Conference on Bioinformatics and Biomedical Engineering (iCBBE 2010), Chengdu, China, Paper No. 40046, doi: 10.1109/ICBBE.2010.5514861 (4 pages), June 2010.
- [C41] Y. Ma, Z.-H. Mao, W. Jia, C. Li, J. Yang, and M. Sun. Magnetic hand tracking for human-computer interface. Proceedings of the 14th Biennial IEEE Conference on Electromagnetic Field Computation (CEFC 2010), Chicago, IL, USA, Paper No. CEFC2010-1745, doi: 10.1109/CEFC.2010.5481499 (1 page), May 2010.
- [C42] G. F. Reed, B. M. Grainger, H. Bassi, E. Taylor, Z.-H. Mao, and A. K. Jones. Analysis of high capacity power electronic technologies for integration of green energy management. Proceedings of IEEE PES Transmission and Distribution (T&D) Conference and Exposition, New Orleans, LA, USA, Paper No. 2010TD0379, doi: 10.1109/TDC.2010.5484374 (10 pages), April 2010.
- [C43] J. Nie, J. D. Fernstrom, R. J. Scلابassi, M. H. Fernstrom, Z. Wei, L. Li, W. Zhang, W. Jia, Z.-H. Mao, and M. Sun. Automatic detection of dining plates in digital video. Proceedings of the IEEE 36th Annual Northeast Bioengineering Conference (NEBEC 2010), New York City, NY, USA, Paper No. ABS-095, doi: 10.1109/NEBC.2010.5458190 (2 pages), March 2010.
- [C44] R. Vinjamuri, M. Sun, D. J. Weber, W. Wang, D. Crammond, and Z.-H. Mao. Quantizing and characterizing the variance of hand postures in a novel transformation task. Proceedings of the 31st International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2009), Minneapolis, MN, USA, 5312-5315, September 2009.
- [C45] L.-J. Zhang, Z.-H. Mao, and N. Zhou. Design quality analytics of traceability enablement in service-oriented solution design environment. Proceedings of the 7th IEEE International Conference on Web Services (ICWS 2009), Los Angeles, CA, USA, 944-951, July 2009.
- [C46] R. Vinjamuri, M. Sun, D. Crammond, R. Scلابassi, and Z.-H. Mao. Inherent bimanual postural synergies in hands. Proceedings of the 30th International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2008), Vancouver, British Columbia, Canada, 5093-5096, August 2008.
- [C47] R. Vinjamuri, Z.-H. Mao, R. Scلابassi, and M. Sun. Time-varying synergies in velocity profiles of finger joints of the hand during reach and grasp. Proceedings of the 29th International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2007) in conjunction with the Biennial Conference of the French Society of Biological and Medical Engineering, Lyon, France, 4846-4849, August 2007.
- [C48] R. Vinjamuri, Z.-H. Mao, R. Scلابassi, and M. Sun. Limitations of surface EMG signals of extrinsic muscles in predicting postures of human hand. Proceedings of the 28th International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2006), New York City, NY, USA, 5491-5494, September 2006.

- [C49] R. Vinjamuri, Z.-H. Mao, R. Scabassi, and M. Sun. A novel architecture for the design of prosthetic and robotic hands. Proceedings of the IEEE 32nd Annual Northeast Bioengineering Conference (NEBEC 2006), Easton, PA, USA, 163-164, April 2006.
- [C50] E. Gelenbe, Z.-H. Mao, and Y.-D. Li. Function approximation by random neural networks with a bounded number of layers. Proceedings of the 17th European Simulation Multiconference, Nottingham, UK, 5-24, June 2003.
- [C51] D. Dugail, Z.-H. Mao, and E. Feron. Stability of intersecting aircraft flows under centralized and decentralized conflict avoidance rules. Proceedings of AIAA Guidance, Navigation, and Control Conference, Montreal, Canada, Paper No. AIAA-2001-4296 (7 pages), August 2001.
- [C52] Z.-H. Mao and E. Feron. Stability and performance of intersecting aircraft flows under sequential conflict resolution. Proceedings of 2001 American Control Conference (ACC 2001), Arlington, VA, USA, vol. 2, 722-729, June 2001.
- [C53] Z.-H. Mao, E. Feron, and K. Bilimoria. Stability of intersecting aircraft flows under decentralized conflict avoidance rules. Proceedings of AIAA Guidance, Navigation and Control Conference, Denver, CO, USA, Paper No. AIAA-2000-4271 (11 pages), August 2000.
- [C54] K. Bilimoria, H. Q. Lee, Z.-H. Mao, and E. Feron. Comparison of centralized and decentralized conflict resolution strategies for multiple-aircraft problems. Proceedings of AIAA Guidance, Navigation, and Control Conference, Denver, CO, USA, Paper No. AIAA-2000-4268 (10 pages), August 2000.
- [C55] E. Gelenbe, Z.-H. Mao, and Y.-D. Li. Approximation by random networks with bounded number of layers. Proceedings of IEEE Workshop on Neural Networks for Signal Processing, Madison, WI, USA, 166-175, August 1999.
- [C56] E. Gelenbe, Z.-H. Mao, and Y.-D. Li. Approximation with spiked random networks. Proceedings of the 37th IEEE Conference on Decision and Control (CDC 1998), Tampa, FL, USA, vol. 1, 523-528, December 1998.
- [C57] L.-J. Zhang, Z.-H. Mao, and Y.-D. Li. Mathematical analysis of crossover operator in genetic algorithm and its improved strategy. Proceedings of IEEE International Conference on Evolutionary Computing, Australia, 412-417, November-December 1995.
- [C58] L.-J. Zhang, Z.-H. Mao, and Y.-D. Li. Mathematical analysis of mutation operator in genetic algorithms and its improved strategy. Proceedings of International Conference on Neural Information Processing, China, vol. 1, 267-270, 1995.
- [C59] L.-J. Zhang, Z.-H. Mao, and Y.-D. Li. An improved genetic algorithm based on combinatorial theory and fuzzy reasoning and its applications. Proceedings of International Conference on Neural Information Processing, Korea, 180-185, 1994.

#### *Other Conference Publications*

- [C60] M. Sun, L. E. Burke, T. Baranowski, Z.-H. Mao, and W. Jia. Lifestyle-logging with the eButton—results from dietary and physical activity assessment studies. International Society of Behavioral Nutrition and Physical Activity (ISBNPA) Annual Meeting, Cape Town, South Africa, June 2016. (Abstract)
- [C61] K.-J. Wang, L. Zhang, M. Sun, and Z.-H. Mao. Awakening the force: decoding human intention through the coupling of EEG signal and saccade movement to control wearable devices. The 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI 2016) Workshop on Intention Recognition in Human-Robot Interaction, Christchurch, New Zealand, March 2016.
- [C62] R. Xia, A. Muthumani, Z.-H. Mao, and D. Powell. Natural history of rigidity in Parkinson's disease. Society for Neuroscience Annual Meeting, Chicago, IL, USA, October 2015. (Abstract)

- [C63] R. Xia, D. Powell, and Z.-H. Mao. Comparison of progression rate between neural and non-neural rigidity components in Parkinson's disease. Society for Neuroscience Annual Meeting, Washington, DC, USA, November 2014. (Abstract)
- [C64] Y. Bai, N. Marco, W. Jia, H. Zhang, Z.-H. Mao, J. Zgibor, L. Burke, S. Albert, A. Newman, and M. Sun. Electronic platform for automatic short performance physical battery (SPPB) test. Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, USA, October 2014. (Abstract)
- [C65] Z.-H. Mao. Information-transmission rates in neural control of unstable systems. The 5th Annual World Congress of NeuroTalk, Nanjing, China, May 2014. (Abstract)
- [C66] Z.-H. Mao. Control theoretic methods in computational neuroscience. The 5th Annual World Congress of NeuroTalk, Nanjing, China, May 2014. (Abstract)
- [C67] K. Nixon, X. Chen, Z.-H. Mao, K. Li, and Y. Chen. The invisible shield: user classification and authentication for mobile device based on gesture recognition. Design Automation Conference (DAC 2013), Austin, TX, USA, June 2013. (Work-in-progress abstract)
- [C68] C.-C. Chang, H.-N. Lee, D. Askey, and Z.-H. Mao. User-satisfaction based bandwidth allocation for transmission of multiple sources of human perceptual data. The 1st International Conference on Engineering and Technology Innovation, Kenting, Taiwan, November 2011. (Abstract)
- [C69] M. F. Lupu, M. Sun, and Z.-H. Mao. Information capacity of human manual control of unstable systems. NSF Engineering Research and Innovation Conference, Atlanta, GA, USA, January 2011.
- [C70] R. Vinjamuri, D. Weber, J. Collinger, A. Degenhart, J. Kelly, E. Tyler-Kabara, M. Boninger, Z.-H. Mao, and W. Wang. Towards synergy based brain machine interfaces. Society for Neuroscience Annual Meeting, San Diego, CA, USA, November 2010. (Abstract)
- [C71] Y. Ma, W. Jia, C. Li, J. Yang, Z.-H. Mao, and M. Sun. A magnetic hand motion tracking system for human-machine interaction. The 11th Joint MMM (Magnetism and Magnetic Materials)-Intermag Conference, Washington, DC, USA, January 2010. (Digest)
- [C72] R. Vinjamuri, M. Sun, and Z.-H. Mao. A framework for extracting kinematic synergies of hand movement. NSF Engineering Research and Innovation Conference, Honolulu, HI, USA, June 2009.
- [C73] R. Vinjamuri, M. Sun, R. Scabassi, and Z.-H. Mao. Temporal variation of postural synergies of the human hand during grasping. The 16th International Conference on Mechanics in Medicine and Biology, Pittsburgh, PA, USA, July 2008.
- [C74] R. Vinjamuri, D. Crammond, D. Kondziolka, and Z.-H. Mao. Extraction of neural sources from kinematic profiles of hand movement. NSF Engineering Research and Innovation Conference, Knoxville, TN, USA, January 2008.
- [C75] J. H. Yang, Z.-H. Mao, T. Pilutti, L. Tijerina, and E. Feron. Detection of human drowsiness in simulated driving: experimental design and preliminary results. The 4th Annual STISIM Drive User Group Meeting, Cambridge, MA, USA, October 2006.
- [C76] T. M. Ngo, Z.-H. Mao, and S. G. Massaquoi. Procedural learning of fourth order sequential dependencies. Society for Neuroscience Annual Meeting, Atlanta, GA, USA, November 2006. (Abstract)
- [C77] Z.-H. Mao and S. G. Massaquoi. Dynamics of winner-take-all competition in striatal networks and their role in Parkinsonian rest tremor and rigidity. Society for Neuroscience Annual Meeting, Washington DC, USA, November 2005. (Abstract)
- [C78] Z.-H. Mao and S. G. Massaquoi. A multi-input multi-output adaptive switching (MIMOAS) model of frontocortical and basal ganglionic interaction in procedural learning. Society for Neural Control of Movement Annual Meeting, Key Biscayne, FL, USA, April 2005. (Abstract)
- [C79] Z.-H. Mao, E. J. Lim, and S. G. Massaquoi. A model of "lower" cortico-basal ganglia-thalamocortical circuit function and dysfunction. Society for Neuroscience Annual Meeting, Orlando, FL, USA, November 2002. (Abstract)

## Invited Presentations

1. Information transmission and learning in human-machine interaction, Tsinghua University, Beijing, China, 10/15/2016
2. Adaptive control with random G-networks, Imperial College London, UK, 9/22/2015
3. Information-transmission rates in neural control of unstable systems (with William Stanchina), Carnegie Mellon University, Pittsburgh, PA, USA, 2/11/2015
4. Information-transmission rates in neural control of unstable systems, the 5th Annual World Congress of NeuroTalk, Nanjing, China, 5/17/2014
5. Control theoretic methods in computational neuroscience, the 5th Annual World Congress of NeuroTalk, Nanjing, China, 5/17/2014
6. Control theory in neuroscience, Department of Electrical and Computer Engineering, Undergraduate Seminar, University of Pittsburgh, PA, USA, 4/1/2013
7. Tutorial: entropy and information theory, Department of Neurological Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 6/12/2012
8. Control-theoretic approaches for the study of neural control of movement, Department of Neurological Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 5/25/2012
9. The neural system for motor control, Carnegie Mellon University, Pittsburgh, PA, USA, 11/10/2011
10. Dimensionality reduction in control and coordination of the human hand, Rutgers, State University of New Jersey, USA, 3/9/2011
11. Traffic complexity of intersecting flows of aircraft under variations of pilot preferences in maneuver choice, Invited Session on Air Traffic Control Systems Theory, the 49th IEEE Conference on Decision and Control, Atlanta, GA, USA, 12/15/2010
12. Dimensionality reduction in control and coordination of the human hand, International Workshop on Biomedical System Design, San Jose, CA, USA, 11/11/2010
13. Dimensionality reduction in control and coordination of the human hand, Joint Seminar of Department of Bioengineering, Musculoskeletal Research Center, Department of Orthopaedic Surgery, and McGowan Institute for Regenerative Medicine, University of Pittsburgh, PA, USA, 9/30/2010
14. Introduction to control theory and applications, Department of Electrical and Computer Engineering, Undergraduate Seminar, University of Pittsburgh, PA, USA, 9/13/2010
15. Dimensionality reduction in control and coordination of the human hand, Stony Brook University (State University of New York at Stony Brook), NY, USA, 7/16/2010
16. Dimensionality reduction in control and coordination of the human hand, Georgia Institute of Technology, Atlanta, GA, USA, 4/24/2009
17. Conflict resolution and traffic complexity of intersecting flows of aircraft, Department of Civil and Environmental Engineering, University of Pittsburgh, PA, USA, 10/26/2007
18. Minimizing the impact of network latency in telesurgery, Energid Technologies Corporation, Cambridge, MA, USA, 10/2/2007
19. The  $I_1$ -magic, Department of Neurological Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 3/12/2007
20. Neural control of hand movement, IEEE Research Workshop, Pittsburgh, PA, USA, 11/10/2006
21. Basic concepts and principles of automatic control and neurocontrol, IEEE Engineering in Medicine and Biology Society, Pittsburgh, PA, USA, 11/9/2006
22. Modeling the role of the basal ganglia in motor control and learning, University of California, Los Angeles, CA, USA, 6/5/2006
23. Research in human motor control, Undergraduate Seminar, Department of Electrical and Computer Engineering, University of Pittsburgh, PA, USA, 9/19/2005

24. Dynamics of winner-take-all competition in recurrent neural networks with lateral inhibition, Graduate Seminar, Department of Electrical and Computer Engineering, University of Pittsburgh, PA, USA, 9/7/2005

## **Mentoring**

### *Ph.D. Students Advised/Co-Advised*

1. Prof. Ahmed Dallal, Ph.D. in Electrical and Computer Engineering, 9/2013–7/2017 (co-advisor: Yiran Chen). Dissertation: Safety and convergence analysis of intersecting aircraft flows under decentralized collision avoidance. First employment: Assistant Professor at University of Pittsburgh
2. Prof. Laura Wieserman, Ph.D. in Electrical Engineering, 9/2013–12/2016 (major advisor: Thomas McDermott). Dissertation: Developing a transient photovoltaic inverter model in OpenDSS using the Hammerstein-Wiener mathematical structure. First employment: Assistant Professor at University of Pittsburgh (Johnstown)
3. Dr. Qin hao Zhang, Ph.D. in Electrical Engineering, 1/2013–12/2015 (co-advisor: Gregory Reed). Dissertation: Adaptive control for solar power based DC microgrid system development. First employment: Bombardier
4. Dr. Shimeng Huang, Ph.D. in Electrical Engineering, 5/2010–8/2014 (defended in 7/2015) (co-advisor: Gregory Reed). Dissertation: Coordinated control of VSC based multi-terminal DC (VSC-MTDC) power grid. First employment: ANSYS
5. Prof. Jiafeng Xie, Ph.D. in Electrical Engineering, 5/2013–12/2014 (co-advisor: Pramod Kumar Meher, Nanyang Technological University, Singapore). Dissertation: Novel single and hybrid finite field multipliers over  $GF(2^M)$  for emerging cryptographic systems. First employment: Assistant Professor at Wright State University
6. Prof. Ibrahim Atawi, Ph.D. in Electrical Engineering, 1/2010–4/2013. Dissertation: An advanced distributed control design for wide-area power system stability. First employment: Assistant Professor, now Dean of College of Engineering, University of Tabuk, Saudi Arabia
7. Dr. Mircea Lupu, Ph.D. in Electrical Engineering, 1/2010–4/2013. Dissertation: Human manual control as an information processing channel. First employment: Emerson Process Management Corporation and Adjunct Professor at University of Pittsburgh
8. Dr. Ang Li, Ph.D. in Electrical Engineering, 9/2010–12/2012 (co-advisor: Gregory Reed). Dissertation: Control system model for analysis of electricity market bidding process. First employment: Siemens Power Technologies International, now Constellation Energy
9. Prof. Ramana Vinjamuri, Ph.D. in Electrical Engineering, 9/2005–8/2008. Dissertation: Dimensionality reduction in control and coordination of the human hand. First employment: Postdoctoral Fellow at University of Pittsburgh Medical Center, now Assistant Professor at Stevens Institute of Technology

### *Ph.D. Students in Progress*

1. Hashim Al Hassan (major advisor: Brandon Grainger)
2. Thamer Alharbi
3. Bojian Cao
4. Eduardo Dos Santos Diniz (co-advisor: Mingui Sun)
5. Brandon Jennings (co-advisor: Ahmed Dallal)
6. Jianan Jian (co-advisor: Bo Zeng)
7. Ker-Jiun Wang
8. Chunpeng Wu (major advisor: Yiran Chen)

### *Research-Track M.S. Students Advised/Co-Advised*

1. Jian-Yu Shen, M.S. in Computer Engineering, 1/2017–4/2017. Thesis: Optimizing power consumption for heart rate monitor application on Android platform. First employment: Amazon
2. Brian Doll, M.S. in Electrical Engineering, 1/2014–4/2015 (major advisor: Nitin Sharma). Thesis: Optimization of neuromuscular electrical stimulation to reduce muscle fatigue during isometric contractions. First employment: Westinghouse
3. Sinan Yigit, M.S. in Electrical Engineering, 5/2013–8/2014 (co-advisor: Gregory Reed). Thesis: Optimal controller design for more-electric aircraft power systems. First employment: Ph.D. student at Texas A&M University
4. Xiao Li, M.S. in Electrical Engineering, 1/2012–8/2013. Thesis: Stability analysis and control design for hybrid AC-DC more-electric aircraft power systems. First employment: State Grid Corporation of China
5. Qin hao Zhang, M.S. in Electrical Engineering, 9/2011–12/2012. Thesis: Maximum power point tracking in photovoltaic systems using model reference adaptive control. First employment: Ph.D. student with me
6. Jean-Marc Coulomb, M.S. in Electrical Engineering, 9/2011–12/2012 (co-advisor: Gregory Reed). Thesis: Stability analysis and optimal control for AC-DC power system with constant power load. First employment: Electricite de France
7. Benoit de Courreges D’Ustou, M.S. in Electrical Engineering, 9/2011–12/2012 (co-advisor: Gregory Reed). Thesis: Optimal control design for multiterminal HVDC. First employment: Electricite de France
8. Shama Huda, M.S. in Electrical Engineering, 9/2010–12/2011. Thesis: Robust low-rank matrix factorization with missing data by minimizing  $L_1$  loss applied to collaborative filtering. First employment: Philips Respironics
9. Robert O’Connor, M.S. in Electrical Engineering, 9/2008–12/2010 (co-advisor: Gregory Reed). Thesis: Benefits of spatial smoothing for the integration of wind power. First employment: Ph.D. student at Aachen Institute for Advanced Study in Computational Science (AICES), RWTH Aachen, Germany
10. Ang Li, M.S. in Electrical Engineering, 9/2008–8/2010. Thesis: Comparison between model predictive control and PID control for water-level maintenance in a two-tank system. First employment: Ph.D. student with me
11. Mircea Lupu, M.S. in Electrical Engineering, 9/2008–12/2009. Thesis: Human strategies in the control of time critical unstable systems. First employment: Ph.D. student with me
12. James Cavanaugh, M.S. in Electrical Engineering, 9/2008–12/2009. Thesis: The effect of time delay on the human ability to control unstable systems. First employment: Bechtel Plant Machinery
13. Sushant Tare, M.S. in Electrical Engineering, 9/2007–4/2009. Thesis: Estimation of stretch reflex contributions of wrist using system identification and quantification of tremor in Parkinson’s disease patients. First employment: ATI Allegheny Ludlum
14. Kyle Treleaven, M.S. in Electrical Engineering, 1/2007–12/2007. Thesis: Conflict resolution and traffic complexity of multiple intersecting flows of aircraft. First employment: Ph.D. student at Massachusetts Institute of Technology
15. Christopher Sprague, M.S. in Electrical Engineering, 9/2006–12/2007. Thesis: System identification of wrist stiffness in Parkinson’s disease patients. First employment: Bechtel Marine Propulsion

### *Research-Track M.S. Students in Progress*

1. Valentin Paquin

### *M.B.A./M.S. Joint Degree Students Advised*

1. Andrew Snyder, graduated in 8/2015 (M.B.A. advisor: Rabikar Chatterjee)
2. Nicholas Patino, graduated in 12/2014 (M.B.A. advisor: Rabikar Chatterjee)
3. Jonathan Baisch, graduated in 4/2013 (M.B.A. advisor: Rabikar Chatterjee)
4. B. Alexander Huber, graduated in 4/2013 (M.B.A. advisor: Rabikar Chatterjee)

### *Professional-Track M.S. Students Advised*

1. Jingyu Wu, graduated in 4/2017
2. Xiong Qin, graduated in 4/2016
3. Yue Wang, graduated in 4/2016
4. Zhenyu Zhang, graduated in 4/2016
5. David Bobish, graduated in 12/2015
6. John Cosnek, graduated in 8/2015
7. Jared Niehenke, graduated in 8/2015
8. Benjamin Skrypski, graduated in 8/2015
9. Chaoyuan Ma, graduated in 4/2015
10. Sining Wang, graduated in 4/2015
11. Siyue Cheng, graduated in 12/2014
12. Chuhan Min, graduated in 12/2014
13. Jessica Burger, graduated in 4/2014
14. Bingyang Hu, graduated in 4/2014
15. Nathan Rabenold, graduated in 4/2014
16. Yiwon Fan, graduated in 12/2013
17. Denis Cunningham, graduated in 8/2013
18. Daniel Stough, graduated in 12/2012
19. Samuel Taggart, graduated in 12/2012
20. Nicholas Cormas, Jr., graduated in 12/2011
21. Thomas Barch, graduated in 12/2011
22. Nicholas Alexiades, graduated in 12/2010
23. Justin Mason, graduated in 12/2009
24. Scott Szymanski, graduated in 12/2009
25. R. Benjamin Allums, graduated in 8/2009
26. Erica Reinsel, graduated in 8/2009

### *Ph.D. Dissertation Committees (Total 75)*

- Arnab Bhattacharya (2017), Aidong Yan (2017), Sicheng Li (2017), Wen-Chyi Lin (2017), Michael Rothfuss (2017), Bo Luan (2017), Pei Liu (2017), Kara Bocan (2017), Naji Alibeji (2017), Ismail Bayram (2017), Ali Alsuwaiyan (2017), Enes Eken (2017), Paresch Vasandani (2017), Fei Lan (2017), Ansel Barchowsky (2017), Randy Lee (2017), Poovaiyah Palangappa (2017), Jason Pickel (2016), Andrew Whitford (2016), Xiang Chen (2016), Beiye Liu (2016), Mengjie Mao (2016), Iva Jestrovic (2016), Nicholas Kirsch (2016), Ari Pritchard-Bell (2016), David Loucks (2015), Robert Rasmussen (2015), Joshua Dudik (2015), Hao Wang (2015), Brandon Hamschin (2015), Wujie Wen (2015), Yujuan Zhao (2015), Luke Solomon (2015), Vikram Gomatam (2015), Patrick Sadtler (2014), Matthew Korytowski (2014), Lina Xu (2014), Yicheng Bai (2014), Minmin Zhang (2014), Brandon Grainger (2014), Emmanuel Taylor (2014), Danielle Bond (2014), Dinghuan Zhu (CMU, 2014), Azime Can-Cimino (2014), Raghav Khanna (2014), Jiyong Huang (2013), Robert Kerestes (2013), Yong Li (2013), Xiangyu



Luo (2013), Qixing Liu (CMU, 2013), SangHyun Byun (2013), Hussain Bassi (2013), Osama Alkishriwo (2013), Ya-Ping Wang (2012), Samuel Dickerson (2012), Qian Chen (2012), Xiaoyu Liu (2011), Shugong Wang (2011), Seda Senay (2011), Brian Bucci (2011), Ning Yao (2010), Massimo Cenciarini (2010), Zhanpeng Jin (2010), John Kalafut (2010), Steven Hackworth (2010), Angela Beauford (2009), Yuan Sun (2009), Jian Xu (2009), Gregory Okopal (2009), Tolga Ozkurt (2009), Cheng-Chun Chang (2008), Arash Mahboobin (2007), Ji Hyun Yang (MIT, 2007), Xiaofei Song (2007), and Kazutaka Takahashi (MIT, 2007)

#### *M.S. Thesis Committees (Total 67)*

- Ziyue Sun (2017), Donald Kline (2017), Cedrine Rebrion (2017), Christopher Scioscia (2017), Abdulkarim Alorf (2017), Amanda Erhard (2017), Jiachen Mao (2017), Chang Song (2017), Andrew Bulman (2017), Lucie Broyde (2017), Hsin-Pai Cheng (2016), Matthew Sybeldon (2016), Malia Kelsey (2016), Etienne Zahnd (2016), Alvaro Cardoza (2016), Qiang Zhong (2016), Tianyi Qiu (2016), Xiaocong Du (2016), Kent Nixon (2016), Cedric Ofakem (2015), Stephen Whaite (2015), Xue Wang (2015), Zachary Splain (2015), Antoine Dumortier (2015), Arthur Gatouillat (2015), Stephen Abate (2015), Augustin Cremer (2015), Othman Muheialdin (2015), Ansel Barchowsky (2014), Patrick Lewis (2014), Heloise Bleton (2014), Enes Eken (2014), Beiye Liu (2014), Hashim Al Hassan (2014), Oreste Scioscia (2013), Iva Jestrovic (2013), Troy Hand (Georgia Tech, 2013), Bo Luan (2013), Joshua Dudik (2013), Hanrui Huang (2013), Haifeng Xu (2012), Adam Sparacino (2012), Bin Mao (2012), Emmanuel Taylor (2012), Hsin-Ju Chen (2012), Yiwen Xu (2012), Nicholas Franconi (2012), Chengliu Li (2011), Hao Wang (2011), Quan Tao (2011), Robert Kerestes (2011), Shuang Su (2011), Vikram Thiruneermalai Gomatam (2011), Matthew Korytowski (2011), Brandon Grainger (2011), Zhengnan Zhang (2010), Joshua Stachel (2010), Raghav Khanna (2010), Joseph Oresko (2010), Shimeng Huang (2010), Michael Rothfuss (2010), Yaofeng Yue (2010), Jason Pickel (2009), Kingsley Adeoyo (2009), Kirsten McCane (2009), Mir Mahmood (2008), and Douglas McConahy (2007)

#### *Graduate Independent Engineering Projects Advised (Total 67, not including those of my research-track students)*

- Xinian Bo (Fall 2017), Fangyi Chen (Fall 2017), Zihang Huang (Fall 2017), Kaiwen You (Fall 2017), Hsiao-Wei Tung (Spring 2017), Gaoxiang Zhou (Spring 2017), Dan Wang (Spring 2016), Fulei Wang (Spring 2016), Yue Wang (Spring 2016), Haokai Xu (Spring 2016), Guifang Yan (Spring 2016), Xiong Qin (Fall 2015), Zhenyu Zhang (Fall 2015), Jordan Ott (Summer 2015), Brennan Vazquez (Summer 2015), Chaoyuan Ma (Spring 2015), Siyue Cheng (Fall 2014), Matthew Korytowski (Fall 2014 and Spring 2012), Dongqi Liu (Fall 2014), Cedric Ofakem (Fall 2014), Xiaochen Zhang (Fall 2014), Brian Fejka (Summer 2014), Ansel Barchowsky (Spring 2014), Rakshit Kota (Spring 2014), Weiqing Lu (Spring 2014), Sining Wang (Spring 2014), Da Zheng (Spring 2014), Bingyang Hu (Fall 2013), Sinan Yigit (Fall 2013), Kalhan Bhan (Spring 2013), Heyuxuan Chen (Spring 2013), Yiwen Fan (Spring 2013), Jason Harchick (Spring 2013), Rui Hou (Spring 2013), Wang Yao (Spring 2013), Robert Kerestes (Fall 2012 and Spring 2012), Shishir Juluri (Fall 2012), Nicholas Anthony (Spring 2012), Mohamed Diallo (Spring 2012), Matiws Gebre (Spring 2012), Noah Gerber (Spring 2012), Richard Kephart (Spring 2012), Rinol Pereira (Spring 2012), Himanshu Ropia (Spring 2012 and Fall 2011), Samuel Taggart (Fall 2011), Wenchao Xie (Fall 2011), Adam Balawejder (Summer 2011 and Summer 2010), Denis Cunningham (Summer 2011), Jingyu Dong (Summer 2011), Clifford Luzier (Summer 2011), Chun Xie (Spring 2011), Beiru Zhang (Spring 2011), Ruchi Singh (Fall 2010), Ryan Marino (Fall 2010), Shuang Su (Fall 2010), Thomas Barch (Summer 2010), Andrew Tomaswich (Spring 2010), Jar-Min Lin (Spring 2010), Jordan Negley (Spring 2010), R. Benjamin Allums (Summer 2009), Areej Sajjad (Spring 2009), and Nicholas Alexiades (Summer 2009 and Summer 2008)

### *Graduate Internship Projects Advised (Total 24)*

- Guangting Wang (Summer 2017), Zhongda Yang (Summer 2017), Guifang Yan (Summer 2017), Wendy Wang (Spring 2017), Yue Wang (Fall 2016), Bin Wu (Summer 2016), Haokai Xu (Summer 2016), Hongyu Wu (Spring 2016), Xin Wei (Spring 2016 and Fall 2015), Ying Fang (Spring 2016 and Fall 2015), Di Zhu (Fall 2015), Qian Wang (Summer 2015), Runyan Lu (Summer 2015), Sining Wang (Summer 2015), Qian Xie (Summer 2015), David Hu (Spring 2015), Liying Chen (Spring 2015), Yu Chen (Spring 2015), Xiacong Du (Spring 2015), Xiong Qin (Spring 2015), Fangyi Ren (Spring 2015), Chang-Feng Liu (Summer 2013), Yue Xu (Summer 2013), and Jian Zeng (Fall 2012)

### *Undergraduate Independent Engineering Projects Advised (Total 25)*

- Fahad Alkanaa (Summer 2017), Joshua Hinnebusch (Summer 2017), Dan Ferris (Spring 2017), Michael Ghaben (Spring 2017), Barbara Delgado (Summer 2014), Benjamin Baum (Summer 2013), Brent Hummel (Fall 2012), Benjamin Dunkelberger (Summer 2012), James Perkins (Summer 2012), Vernon Smith (Summer 2012), Hezi Touaf (Summer 2012), Adam Krug (Summer 2011), John Hill IV (Spring 2010, Fall 2009, and Spring 2009), Thomas Cox (Spring 2009), Perry Servedio (Fall 2008), Jay Johnson (Fall 2008), Julie Kleinman (Fall 2008), Jeffrey Gordon (Fall 2007 and Summer 2007), Ephorm Freeman III (Summer 2007), Aaron Hughes (Spring 2007 and Fall 2006), and Michael Iezzi (Fall 2006)

### *Undergraduate Research Internship Projects Advised (Total 8)*

- Michael Urich (Summer and Spring 2016), Lidong Cai (Summer 2015), Hamed Safaeian (Summer 2012), Alvaro Cardoza (Summer 2011), Stephen Albert (Fall 2010), Michael Sobczak (Summer 2010), Michael West (Summer 2008), and Brian Dicks (Summer 2007)

### *Senior Design Projects Advised*

1. Nicholas Davis, Joseph Lynch, and Justin Whited, Fall 2017 (co-advisor: Yan Fang)
2. Taeyoung Lee, Ryan Matthews, and Michael Rukavina, Fall 2017 (co-advisor: Ahmed Dallal)
3. John Maas III, Tanner Slonceski, and Yueqing Zhang, Summer 2017
4. Alexander Cheng, Dominic Edwards, and Josh Hinnebusch, Spring 2017
5. Fahad Alkanaa and Mitch Anglemyer, Spring 2017
6. Eric Bucklen, Rafid Lateef, and Damian Link, Fall 2015 (co-advisor: Nitin Sharma)
7. Barbara Delgado and Brendan Rodgers, Summer 2015
8. John Abraham and Brandon Bock, Spring 2015
9. Benjamin Baum and Ian Steck, Spring 2013 (co-advisor: David Descutner)
10. Robert Lemmon and Sean Schellinger, Fall 2012
11. Opubo Agiobenebo, Spring 2012
12. Sean Kelly and Brendan Roberts, Fall 2011
13. Jenya DeBenedetti, Dan Rosenberry, and Jeremy Sawyer, Spring 2011
14. Daniel Campo, Chris Lippert, and Jessica Stein, Fall 2010 (co-advisor: Gregory Reed)
15. Frank Cousart, Matthew Perich, and Mark Ressler, Spring 2010 (co-advisor: Gregory Reed)
16. Keith Bates and Kevin Douglas, Summer 2009
17. Seth Ammer and Thaddeus Czauski, Spring 2009
18. Jason Jones, Robert McBeth, Kris Nickel, and Albert Oduho, Fall 2008
19. Brian De Paul, Joshua Laskey, and David Thurston, Fall 2007
20. Aaron Hughes and David Huppman, Fall 2007

21. Brian Antoniazzi, Robert Francis, and Pranesh Patel, Spring 2007

#### *Visiting Students Advised*

1. Yinghui Zhao, Ph.D. student, Xi'an Jiaotong University, Shaanxi, China, 10/2017–3/2018
2. Jianmin Dong, Ph.D. student, Xi'an Jiaotong University, Shaanxi, China, 9/2017–2/2019
3. Datian Peng, Ph.D. student, Xi'an Jiaotong University, Shaanxi, China, 11/2016–2/2019
4. Longzhao Sun, Ph.D. student, Shanghai Jiao Tong University, Shanghai, China, 9/2016–9/2017
5. Vojislav Bogdanovic, B.S. student, University of Belgrade, Serbia, Summer 2016
6. Haitao Sun, M.S. student, Carnegie Mellon University, Spring 2016
7. Xuan Xie, Ph.D. student, Beijing Jiaotong University, Beijing, China, 9/2015–9/2016
8. Tianjian Yu, Ph.D. student, Central South University, Hunan, China, 3/2015–11/2016
9. Yating Chen, Ph.D. student, Central South University, Hunan, China, 11/2014–11/2016
10. Jiafeng Li, Ph.D. student, Beihang University (a.k.a. Beijing University of Aeronautics and Astronautics), Beijing, China, 9/2014–10/2015
11. Jiaojiao Zhu, Ph.D. student, Central South University, Hunan, China, 9/2014–9/2015
12. Zhi Liu, Ph.D. student, Central South University, Hunan, China, 12/2013–12/2014
13. Haitian Zhai, Ph.D. student, Northwestern Polytechnical University, Shaanxi, China, 9/2012–8/2014
14. Ker-Jiun Wang, M.S. student, Carnegie Mellon University, Summer 2012
15. Yongquan Yang, Ph.D. student, Ocean University of China, Shandong, 9/2010–8/2011
16. Michael Budram, Pre-Ph.D. Scholar, University of Maryland, Baltimore County, Summer 2010
17. Troy Hand, M.S. student, Georgia Institute of Technology, Summer 2010
18. Zhe Shan, Ph.D. student, Pennsylvania State University (summer intern at IBM), Summer 2009
19. Antoine Delorme, undergraduate student, Ecole des Mines de Nantes, France, Spring 2007

#### *Visiting Scholars Hosted*

1. Dr. Zhongmin Cai, Professor, Xi'an Jiaotong University, Shaanxi, China, 9/2017–8/2018
2. Dr. Jianhua Xu, Professor, Nanjing Normal University, Jiangsu, China, 7/2017–8/2017
3. Dr. Ying Sun, Associate Professor, Hebei University of Technology, Tianjin, China, 1/2016–12/2016
4. Dr. Guang Yang, Lecturer, Beijing Jiaotong University, Beijing, China, 9/2015–9/2016
5. Dr. Jose Manoel Fernandes, Professor, Universidade Federal do Parana, Centro, Curitiba, Brazil, 7/2015–6/2017
6. Dr. Xuren Wang, Associate Professor, Capital Normal University, Beijing, China, 3/2015–2/2016
7. Dr. Wanhui Wen, Associate Professor, Southwest University, Chongqing, China, 12/2014–12/2015
8. Dr. Qi Zhao, Associate Professor, Beihang University (a.k.a. Beijing University of Aeronautics and Astronautics), Beijing, China, 9/2014–8/2015
9. Dr. Ming Li, Associate Professor, Wuhan Textile University, Hubei, China, 8/2014–8/2015
10. Dr. Pengzhan Chen, Associate Professor, East China Jiaotong University, Jiangxi, China, 9/2012–9/2013

#### *High-School Students Advised*

1. Anna Zhang, Horace Greeley High School, Chappaqua, NY, 9/2017–present
2. Lan Zhang, Horace Greeley High School, Chappaqua, NY, 2/2014–4/2017

## University Services

### *Swanson School of Engineering*

- Member, George Washington Prize Committee, 2017
- Member, Academic Affairs Committee, 2013–2015
- Member, Outstanding Educator Award Committee, 2010–2013
- Chair, Outstanding Educator Award Committee, 2010

### *Department of ECE*

- Chair, Student Advising Committee, 2017–present
- Chair, Department Technical Area Committee on Signals and Systems, 2015–present
- Member, Graduate Committee, 2015–present
- Representative of ECE Department to interface with OMET (Office of Measurement and Evaluation of Teaching), 2016–present
- Member, Faculty Search Committee, 2008, 2010, 2012, 2013, 2014, 2016, and 2017
- Member, Undergraduate Lab Committee, 2014–2015
- Member, Electrical Engineering Curriculum Review and Revision Committee, 2011–2012
- Member, Undergraduate Curriculum and Program Committee, 2006–2008

## Professional Activities

### *Professional Society Activities*

- Senior Member, IEEE
- Senior Member, American Institute of Aeronautics and Astronautics (AIAA)
- Member, Society for Neuroscience
- Member, Technical Committee on Human-Computer Interaction, IEEE Systems, Man and Cybernetics Society, 2/2013–present
- Member, Technical Committee on Smart Grids (TC-SG), IEEE Control Systems Society (CSS), 8/2011–present (Subcommittee on Renewable Energy, 6/2014–present; Subcommittee on Microgrids, 3/2014–present)
- Co-Chair, Pittsburgh Chapter of IEEE EMBS, 1/2006–5/2012
- Co-Chair, Pittsburgh Joint Chapter of IEEE Signal Processing Society and Control Systems Society, 9/2010–12/2012

### *Services for Journals*

- Associate Editor, IEEE Transactions on Human-Machine Systems, 2/2013–present
- Associate Editor, IEEE Transactions on Intelligent Transportation Systems, 7/2011–present
- Guest Co-Editor (with Ramana Vinjamuri), Frontiers in Bioengineering and Biotechnology, Section: Bionics and Biomimetics, Special Topic on Applications of Synergies in Human Machine Interfaces, 2015
- Guest Co-Editor (with Heung-No Lee), EURASIP Journal on Wireless Communications and Networking, Special Issue on Network Coding for Wireless Networks, 2010
- Member of Editorial Review Board, International Journal of Web Services Research, 3/2007–2/2008
- Reviewer for
  - 1) AIAA Journal of Aircraft
  - 2) AIAA Journal of Guidance, Control and Dynamics

- 3) Annual Reviews in Control
- 4) ASME Journal of Vibration and Acoustics
- 5) Automatica
- 6) Biomedical Signal Processing and Control
- 7) Computer Journal
- 8) Frontiers in Bioengineering and Biotechnology, Section: Bionics and Biomimetics
- 9) IEEE Transactions on Automatic Control
- 10) IEEE Transactions on Automation Science and Engineering
- 11) IEEE Transactions on Biomedical Engineering
- 12) IEEE Transactions on Circuits and Systems–Part I
- 13) IEEE Transactions on Computers
- 14) IEEE Transactions on Control Systems Technology
- 15) IEEE Transactions on Fuzzy Systems
- 16) IEEE Transactions on Intelligent Transportation Systems
- 17) IEEE Transactions on Neural Networks (before 2011)
- 18) IEEE Transactions on Neural Networks and Learning Systems
- 19) IEEE Transactions on Power Electronics
- 20) IEEE Transactions on Systems, Man and Cybernetics–Part A
- 21) IEEE Transactions on Systems, Man and Cybernetics–Part B
- 22) IEEE Transactions on Vehicular Technology
- 23) IEEE/ASME Transactions on Mechatronics
- 24) International Journal of Control
- 25) International Journal of Intelligent Robotics and Applications
- 26) International Journal of Web Services Research
- 27) Journal of Optimization Theory and Applications
- 28) Operations Research and Decision Theory
- 29) Physics Letters A
- 30) Transportation Research–Part C

### *Services for Conferences*

- Member of Technical Program Committee, the 20th International IEEE Conference on Intelligent Transportation Systems (ITSC 2017), Yokohama, Kanagawa, Japan, 10/16–10/19/2017
- Program Chair, the 6th IEEE International Conference on AI and Mobile Services (AIMS 2017), Honolulu, HI, USA, 6/25–6/30/2017
- Associate Editor, the 19th International IEEE Conference on Intelligent Transportation Systems (ITSC 2016), Rio de Janeiro, Brazil, 11/1–11/4/2016
- Member of Program Committee, Robotics Science and Systems (RSS) 2016 Workshop on Planning for Human-Robot Interaction: Shared Autonomy and Collaborative Robotics, Ann Arbor, MI, USA, 6/18–6/19/2016
- Member of Technical Program Committee, 2015 IEEE International Conference on Vehicular Electronics and Safety (ICVES 2015), Yokohama, Japan, 11/5–11/7/2015
- Associate Editor, the 18th International IEEE Conference on Intelligent Transportation Systems (ITSC 2015), Canary Islands, Spain, 9/15–9/18/2015
- Associate Editor and Member of the International Program Committee, the 17th International IEEE Conference on Intelligent Transportation Systems (ITSC 2014), Qingdao, China, 10/8–10/11/2014
- Co-Chair of Ph.D. Symposium, joint conferences of (i) the 10th IEEE International Conference on Services Computing, (ii) the 11th IEEE International Conference on Web Services, (iii) the 9th IEEE

World Congress on Services, (iv) the 6th IEEE International Conference on Cloud Computing, (v) the 2nd IEEE International Congress on Big Data, and (vi) the 2nd IEEE International Conference on Mobile Services, Santa Clara, CA, USA, 6/27–7/2/2013

- Session Chair, the 15th International IEEE Conference on Intelligent Transportation Systems (ITSC 2012), Anchorage, AK, USA, 9/16–9/19/2012
- Co-Chair of Ph.D. Symposium, joint conferences of (i) the 9th IEEE International Conference on Services Computing, (ii) the 10th IEEE International Conference on Web Services, (iii) the 8th IEEE World Congress on Services, (iv) the 5th IEEE International Conference on Cloud Computing, (v) the 1st IEEE International Congress on Big Data, and (vi) the 1st IEEE International Conference on Mobile Services, Honolulu, HI, USA, 6/24–6/29/2012
- Co-Chair of Ph.D. Symposium, joint conferences of (i) the 8th IEEE International Conference on Services Computing, (ii) the 9th IEEE International Conference on Web Services, (iii) the 7th IEEE World Congress on Services, and (iv) the 4th IEEE International Conference on Cloud Computing, Washington, DC, USA, 7/4–7/9/2011
- Associate Editor and Member of Program Committee, 2010 IEEE Conference on Decision and Control, Atlanta, GA, USA, 12/15–12/17/2010
- Chair of Ph.D. Symposium, joint conferences of (i) the 7th IEEE International Conference on Services Computing, (ii) the 8th IEEE International Conference on Web Services, (iii) the 6th IEEE World Congress on Services, and (iv) the 3rd IEEE International Conference on Cloud Computing, Miami, FL, USA, 7/5–07/10/2010
- Associate Editor, American Control Conference, Baltimore, MD, USA, 6/30–7/2/2010
- Member of Program Committee, the 2nd ROBOCOMM, Odense, Denmark, 3/31–4/2/2009
- Chair of Work-in-Progress Program, IEEE International Conference on Services Computing, Honolulu, HI, USA, 7/8–7/11/2008
- Member of Program Committee, the 1st ROBOCOMM, Athens, Greece, 9/10–9/12/2007
- Co-Chair of Work-in-Progress Program, IEEE International Conference on Services Computing, Salt Lake City, UT, USA, 7/7–7/13/2007
- Chair of Work-in-Progress Program, IEEE International Conference on Services Computing, Chicago, IL, USA, 9/17–9/22/2006
- Reviewer for
  - 1) IEEE International Conference on Intelligent Transportation Systems, 2016
  - 2) IEEE Conference on Automation Science and Engineering, 2016
  - 3) IEEE International Conference on Intelligent Transportation Systems, 2014
  - 4) IEEE International Conference on Automation Science and Engineering, 2013
  - 5) IEEE International Conference on Robotics and Automation, 2011
  - 6) IEEE/RSJ International Conference on Intelligent Robots and Systems, 2011
  - 7) IEEE Conference on Decision and Control, 2011
  - 8) IEEE International Conference on Services Computing, 2011
  - 9) IEEE Conference on Decision and Control, 2010
  - 10) IEEE International Conference on Services Computing, 2010
  - 11) ROBOCOMM, 2009
  - 12) IEEE International Conference on Services Computing, 2008
  - 13) IEEE Multi-Conference on Systems and Control, 2008
  - 14) ROBOCOMM, 2007
  - 15) IEEE International Conference on Services Computing, 2007
  - 16) IEEE International Conference on Services Computing, 2006

### *Grant Review Activities*

- Proposal Review Panelist, NSF Division of Electrical, Communications and Cyber Systems (ECCS), 5/2016
- Proposal Review Panelist, NSF Division of Computer and Network Systems (CNS), 7/2015
- Proposal Review Panelist, NSF Division of Civil, Mechanical and Manufacturing Innovation (CMMI), 6/2014
- Reviewer, University of Pittsburgh Internal Small Grant Program, 5/2014
- Reviewer, Research Grant Council of Hong Kong, 4/2013
- Proposal Review Panelist, NSF CAREER Program, 10/2012
- Proposal Review Panelist, NSF Division of Electrical, Communications and Cyber Systems (ECCS), 2/2012
- Reviewer, University of Pittsburgh Internal Small Grant Program, 6/2011
- Reviewer, Air Force Office of Scientific Research (AFOSR), 12/2010
- Proposal Review Panelist, NSF Division of Civil, Mechanical and Manufacturing Innovation (CMMI), 9/2009
- Proposal Review Panelist, NSF Division of Civil, Mechanical and Manufacturing Innovation (CMMI), 4/2009
- Proposal Review Panelist, NSF Division of Information and Intelligent Systems (IIS), 4/2009
- Reviewer, Air Force Office of Scientific Research (AFOSR), 12/2008

### *Other Panel Activities*

- Panelist, NSF/DSC Workshop on Frontiers in Dynamic Systems and Control, 11/2011
- Panelist, NSF CMMI Workshop on Neuromechanical Engineering, 9/2009

### **Honors and Awards**

- Chancellor's Distinguished Teaching Award, University of Pittsburgh, 2016
- William Kepler Whiteford Faculty Fellowship, University of Pittsburgh, 2015–2019 (renewed)
- Outstanding Service Award as Associate Editor, IEEE Transactions on Intelligent Transportation Systems, 2013
- Coauthored a paper (with Raghav Khanna, Andrew Amrhein, William Stanchina, and Gregory Reed) winning APEC Technical Presentation Award (presenter: Raghav Khanna) in IEEE Applied Power Electronics Conference, 3/2013
- William Kepler Whiteford Faculty Fellowship, University of Pittsburgh, 2012–2015
- Certificate of Appreciation for Outstanding Service, IEEE Computer Society, 2011
- Andrew P. Sage Best Transactions Paper Award (with Ji Hyun Yang, Louis Tijerina, Tom Pilutti, Joseph Coughlin, and Eric Feron), IEEE Systems, Man and Cybernetics Society, 2010
- Faculty Early Career Development (CAREER) Award, National Science Foundation, 2010
- Certificate of Appreciation for Outstanding Service, IEEE Computer Society, 2010
- Outstanding Educator Award, Swanson School of Engineering, University of Pittsburgh, 2009
- Faculty Honor Roll Award for Outstanding Teaching in Electrical and Computer Engineering, voted by undergraduate students, University of Pittsburgh, 2007
- Certificate of Appreciation for Outstanding Service, IEEE Computer Society, 2006
- Medical Engineering and Medical Physics Fellowship, Harvard-MIT Division of Health Sciences and Technology, 2003
- Zakhartchenko Fellowship, Massachusetts Institute of Technology, 2001 and renewed in 2002

- David and Beatrice Yamron Fellowship, Harvard-MIT Division of Health Sciences and Technology, 2000
- Outstanding Thesis Award, Tsinghua University, 1999
- Outstanding M.Eng. Graduate, Tsinghua University, 1998
- Tsinghua Top Grade Scholarship (highest honor for students of Tsinghua University), 1997
- Outstanding B.Eng. Graduate, Tsinghua University, 1995
- Second Prize, National Electronics Design Contest (College Students), China, 1994
- IBM Scholarship, 1994
- First Prize, National Mathematical Contest in Modeling (College Students), China, 1993