Qing Hui

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Education

- Ph.D. in Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA, 08/2008
  Dissertation: *Nonlinear Dynamical Systems and Control for Large-Scale, Hybrid, and Network Systems*, Advisor: Professor Wassim M. Haddad
- M.S. in Applied Mathematics, Georgia Institute of Technology, Atlanta, GA, 12/2005
  MS Project: *Thermodynamic Stabilization via Energy Dissipating Hybrid Controllers*, Advisor: Professor Wassim M. Haddad and Professor Shui-Nee Chow
- M.Eng. in Automotive Engineering, Tsinghua University, Beijing, China, 07/2002
  Thesis: *On Nonlinear Idle Speed Control Methodologies for Gasoline Engines*, Advisor: Professor Minggao Ouyang
- B.Eng. in Aerospace Engineering, National University of Defense Technology, Changsha, China, 07/1999

Research Interests

Network robustness and vulnerability analysis, consensus, synchronization and control of network systems, network optimization, network interdependency and cascading failures, network threat detection, swarm optimization, hybrid systems, biomedical systems, software and hardware acceleration based control design, and high performance scientific computing

Teaching Experiences

- University of Nebraska-Lincoln: ELEC 498/898 Advanced Linear Control, ELEC 996 Nonlinear Analysis and Control, ELEC 444/844 Linear Control Systems, ELEC 361 Advanced Electronics and Circuits, ELEC 996 Human-in-the-Loop Modeling and Control, ELEC 216 Electronics and Circuits II
- Texas Tech University: ME 4334 Feedback Control of Dynamic Systems, MATH/ME 5312 Control Theory I, MATH/ME 5313 Control Theory II, ME 5311 Advanced Dynamics, ME 5314 Nonlinear Dynamics

Professional Experiences

Faculty Fellow February 2019–2021, University of Nebraska Public Policy Center. The main research interests are:

- Individual human and social decision making under stress
- human-in/on-the-loop modeling and control
- Cognitive artificial intelligence modeling and analysis

Associate Professor August 2015–present, Laboratory for Engineering Network Systems (LENS), Department of Electrical and Computer Engineering, University of Nebraska-Lincoln, Lincoln, NE. The research was sponsored under grants from the Defense Threat Reduction Agency. The main research interests are:

- Thermostabilization design for robustness and resilience in complex systems

- A human interactive heterogeneous supercomputing network via intelligent mobile autonomous and semiautonomous systems
- Model-based and data-driven fault detection and diagnosis methods for large-scale distributed hybrid networks

Associate Professor September 2014–August 2015, Control Science and Engineering Lab, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX. The research was sponsored under grants from the Defense Threat Reduction Agency and the National Science Foundation. The main research interests are:

- Cluster stabilization and cascade stabilization of cyber-physical network systems
- Multiagent coordination optimization based model predictive control for power system inter-area oscillation attenuation
- Novel response surface and design of experiment algorithms for detecting and locating multiple spatial-temporal radial sources via mobile sensors
- Fast observation, estimation, and control of large-scale geographic physical networks using software and hardware acceleration based computing methods
- Optimal uncertainty quantification for safety verification/observability analysis of nonsmooth systems

Assistant Professor August 2008–August 2014, Control Science and Engineering Lab, Department of Mechanical Engineering, Texas Tech University, Lubbock, TX. The research was sponsored under grants from the Defense Threat Reduction Agency and the Department of Energy. The main research interests were:

- Coordinated control and swarm optimization of large-scale physical network systems
- Modeling, analysis, and algorithm design for threat detection and design experimental systems
- Energy equipartition control and entropy-based optimization for cyber-physical network systems
- Optimal, robust, and adaptive control for resilience of multi-layer and multi-dependent networks
- Cybersecurity control based on hybrid and switched system analysis and control techniques

Graduate Research Assistant August 2002–August 2008, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA. The research was sponsored under grants from the Air Force Office of Scientific Research and the National Science Foundation. The main research interests were:

- Energy-based hybrid control for Euler-Lagrange, port-controlled Hamiltonian, and dissipative dynamical systems
- Analysis and synthesis of compartmental and biomedical systems
- Analysis and control of large-scale interconnected dynamical systems
- Coordinated control of multiagent network systems
- Optimal control of emergency response logistics in the School of Mathematics, Georgia Institute of Technology

Graduate Research and Teaching Assistant September 1999–June 2002, State Key Lab for Automotive Safety and Energy, Department of Automotive Engineering, Tsinghua University, Beijing, China. The research project was control algorithm design and testing for idle speed control of gasoline engines.

Awards and Honors

- Best paper finalist, the 14th IEEE Conference on Industrial Electronics and Applications (ICIEA 2019)

Supervised students

- Mehdi Firouznia, Ph.D., Human-Cognition-in-the-Loop: A Framework to Include Decision Process in Closed Loop Control, August 2019
- Qishuai Liu, Ph.D., Cooperative Learning for the Consensus of Multi-Agent Systems, August 2019
- Chen Peng, Ph.D., Charge Park Vehicle-To-Grid Service: Modeling, Control, and Optimization, August 2019
- Xianlin Zeng, Ph.D., Hybrid Networked Control for Cyber-Physical Network Systems with Applications to Interconnected Power Grids, August 2015
- Haopeng Zhang, Ph.D., Coordinated Resource Allocation and Load Balancing for Network Systems Using Semistability Tools and Multiagent Coordination Optimization, August 2014
- Zhenyi Liu, Ph.D., A Source Localization Method in Unknown Spatial-Temporal Fields and a Constrained Particle Swarm Optimization, August 2014
- Sagar G. Deshpande, M.S., Coordinated Measurements and Estimation Using Quantized Particle Swarm Optimization, May 2012

Reviewer For

- Journals: Applied Mathematics and Computation; Automatica; Communications in Nonlinear Science and Numerical Simulation; Chaos, Solitons and Fractals; European Journal of Control; IEEE/ASME Transactions on Mechatronics; IEEE Transactions on Aerospace and Electronic Systems; IEEE Transactions on Automatic Control; IEEE Transactions on Automation Science and Engineering; IEEE Transactions on Circuits and Systems-Part I; IEEE Transactions on Control of Network Systems; IEEE Transactions on Control Systems Technology; IEEE Transactions on Cybernetics; IEEE Transactions on Industrial Informatics; IEEE Transactions on Information Forensics and Security; IEEE Transactions on Network Science and Engineering; IEEE Transactions on Neural Networks and Learning Systems; IEEE Transactions on Robotics; IET Control Theory & Applications; Information Sciences; International Journal of Adaptive Control and Signal Processing; International Journal of Control; International Journal of Robotics Research; International Journal of Robust and Nonlinear Control; International Journal of Systems Science; International Journal of Vehicle Autonomous Systems; ISA Transactions; Journal of Dynamic Systems, Measurement, and Control; Neurocomputing; Nonlinear Analysis; Nonlinearity; Optimal Control, Applications and Methods; PLOS ONE; Robotica; SIAM Journal on Control and Optimization; Soft Computing; Systems and Control Letters
- Books: Springer; Mathematical Review; Wiley
- Grants: U.S. Civilian Research & Development Foundation (CRDF Global); Romanian National Council for Development and Innovation; Competitive Research Grants for King Abdullah University of Science and Technology

Academic Activities

- Program Committee, 2010 IEEE International Conference on Systems, Man, and Cybernetics.
- Program Committee, 2011 American Control Conference.
- Panelist, National Science Foundation, 2018.

University Services

- TTU ME Undergraduate Scholarship Committee.
- TTU COE Faculty Research Awards Committee.
- UNL Experimental Program to Stimulate Competitive Research (EPSCoR) Committee.

Professional Societies

- Institute of Electrical and Electronics Engineers
- Society for Industrial and Applied Mathematics
- American Society of Mechanical Engineers

Research Projects

External:

- Multiagent Swarm Based Application Software Development for Optimal Defense Strategy Synthesis of Geospatial Physical Networks in Networked Environments, Defense Threat Reduction Agency, HDTRA1-13-1-0048, $952,190, 08/30/13-08/29/18, PI.
- Balanced Coordinated Algorithms for Damage Mitigation and Resource Allocation in Network Systems, Defense Threat Reduction Agency, HDTRA1-10-1-0090, $712,917, 08/01/10-08/29/16, PI at TTU; HDTRA1-15-1-0070, $75,000, 09/1/15-08/31/16, PI at UNL.
- Cybersecurity of Industrial Control Systems, National Science Foundation, DGE 1438921, $300,020 07/01/15-06/30/17, co-PI.
- Global Laboratory for Energy Asset Management & Microgrid (GLEAMM), Texas Emerging Technology Fund, $13,000,000, 01/01/15-12/31/19, co-PI.
- An Innovative Interdisciplinary Cybersecurity Education Program for Protecting Critical Infrastructure, National Science Foundation, DUE 1241735, $29,997, 10/01/12-09/30/14, co-PI.

- Development of Real Time Simulator for Smart Grid Systems Integrated with Distributed Renewable Energy Sources, National Science Foundation, ECCS 1040161, $40,000, 10/01/10-09/30/13, co-PI.
- Midsize Wind Turbine Designed and Manufactured in the USA, U.S. Department of Energy, DE-EE0004415, $120,000, 10/01/10-09/30/12, co-PI.

Internal:

- Enhanced Radiographic Training using Augmented Reality and Deep Learning, University of Nebraska Collaboration Initiative, $19,955, 07/01/19-06/30/20, co-PI.
- Experimental Data Collection and Model Verification for Multi-Cue Multi-Choice Tasks Under Stressful Conditions, UNL ORED, $3,996, 02/25/19-05/31/19, PI.

Publications

Books

1. W. M. Haddad, V. Chellaboina, and **Q. Hui**, *Nonnegative and Compartmental Dynamical Systems*, Princeton, NJ: Princeton University Press, 2010.

Journal Papers

1. M. Firouznia and **Q. Hui**, "On Performance Gauge of Average Multi-Cue Multi-Choice Decision Making: A Converse Lyapunov Approach," *IEEE/CAA Journal of Automatica Sinica*, to appear.

2. C. Peng, Y. Zhou, and **Q. Hui**, "Distributed Fault Diagnosis of Networked Dynamical Systems with Time-Varying Topology," *Journal of the Franklin Institute*, to appear.

3. Y. Liu, F. Guo, X. He, and **Q. Hui**, "Boundary Control for an Axially Moving System with Input Restriction Based on Disturbance Observers," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 49, no. 11, pp. 2242-2253, 2019.

4. Y. Liu, Y. Fu, W. He, and **Q. Hui**, "Modeling and Observer-Based Vibration Control of a Flexible Spacecraft With External Disturbances," *IEEE Transactions on Industrial Electronics*, vol. 66, no. 11, pp. 8648-8658, 2019.

5. H. Zhang and **Q. Hui**, "Many Objective Cooperative Bat Searching Algorithm," *Applied Soft Computing*, vol. 77, pp. 412-437, 2019.

6. Z. Zhang, W. Qiao, and **Q. Hui**, "Power System Stabilization Using Energy-Dissipating Hybrid Control ," *IEEE Transactions on Power Systems*, vol. 34, no. 1, pp. 215-224, 2019.

7. H. Zhang and **Q. Hui**, "Parallel Multiagent Coordination Optimization Algorithm: Implementation, Evaluation, and Applications," *IEEE Transactions on Automation Science and Engineering*, vol. 14, no. 2, pp. 984-995, 2017.

8. Z. Liu, P. Smith, T. Park, A. A. Trindade, and **Q. Hui**, "Automated Contaminant Source Localization in Spatio-Temporal Fields: A Response Surface and Experimental Design Approach," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 47, no. 3, pp. 569-583, 2017.

9. **Q. Hui**, "Further Results on Paracontracting Matrices and Correction to 'Optimal Semistable Control in *Ad Hoc* Network Systems: A Sequential Two-Stage Approach'," *IEEE Transactions on Automatic Control*, vol. 60, no. 12, pp. 3305-3309, 2015.

10. X. Zeng and **Q. Hui**, "Energy-Event-Triggered Hybrid Supervisory Control for Cyber-Physical Network Systems," *IEEE Transactions on Automatic Control*, vol. 60, no. 11, pp. 3083-3088, 2015.

11. **Q. Hui**, H. Zhang, and Z. Liu, "On Robust and Optimal Imperfect Information State Equipartitioning for Network Systems," *Journal of the Franklin Institute*, vol. 352, no. 9, pp. 3410-3446, 2015.

12. **Q. Hui** and H. Zhang, "Optimal Balanced Coordinated Network Resource Allocation Using Swarm Optimization," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 45, no. 5, pp. 770-787, 2015.

13. A. L'Afflitto, W. M. Haddad, and **Q. Hui**, "Optimal Control for Linear and Nonlinear Semistabilization," *Journal of the Franklin Institute*, vol. 352, no. 3, pp. 851-881, 2015.

14. X. Zeng, Z. Liu, and **Q. Hui**, "Energy Equipartition Stabilization and Cascading Resilience Optimization for Geospatially Distributed Cyber-Physical Network Systems," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 45, no. 1, pp. 25-43, 2015.

15. W. M. Haddad, **Q. Hui**, and J. M. Bailey, "Human Brain Networks: Spiking Neuron Models, Multistability, Synchronization, Thermodynamics, Maximum Entropy Production, and Anesthetic Cascade Mechanisms," *Entropy*, vol. 16, no. 7, pp. 3939-4003, 2014.

16. W. M. Haddad, S. G. Nersesov, **Q. Hui**, and M. Ghasemi, "Formation Control Protocols for Nonlinear Dynamical Systems via Hybrid Stabilization of Sets," *ASME Journal of Dynamic Systems, Measurement, and Control*, vol. 136, no. 5, Article ID 051020, 13 pages, 2014.

17. J. Shen, J. Hu, and **Q. Hui**, "Semistability of Switched Linear Systems with Application to PageRank Algorithms," *European Journal of Control*, vol. 20, no. 3, pp. 132-140, 2014.

18. **Q. Hui**, W. M. Haddad, J. M. Bailey, and T. Hayakawa, "A Stochastic Mean Field Model for an Excitatory and Inhibitory Synaptic Drive Cortical Neuronal Network," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 25, no. 4, pp. 751-763, 2014.

19. X. Zeng, **Q. Hui**, W. M. Haddad, T. Hayakawa, and J. M. Bailey, "Synchronization of Biological Neural Network Systems with Stochastic Perturbations and Time Delays," *Journal of the Franklin Institute*, vol. 351, no. 3, pp. 1205-1225, 2014.

20. Y. Tang, X. Luo, **Q. Hui**, and R. K. C. Chang, "Modeling the Vulnerability of Feedback-Control Based Internet Services to Low-Rate DoS Attacks ," *IEEE Transactions on Information Forensics and Security*, vol. 9, no. 3, pp. 339-353, 2014.

21. **Q. Hui** and J. M. Berg, "Semistability Theory for Spatially Distributed Systems," *Systems and Control Letters*, vol. 62, no. 10, pp. 862-870, 2013.

22. J. M. Berg, D. H. S. Maithripala, **Q. Hui**, and W. M. Haddad, "Thermodynamics-Based Control of Network Systems," *ASME Journal of Dynamic Systems, Measurement, and Control*, vol. 135, no. 5, Article ID 051003, 11 pages, 2013.

23. **Q. Hui**, "Convergence and Stability Analysis for Iterative Dynamics with Application to Compartmental Networks: A Trajectory Distance Based Lyapunov Approach," *Journal of the Franklin Institute*, vol. 350, no. 4, pp. 679-697, 2013.

24. **Q. Hui**, "Optimal Semistable Control in Ad Hoc Network Systems: A Sequential Two-Stage Approach," *IEEE Transactions on Automatic Control*, vol. 58, no. 3, pp. 779-784, 2013.

25. **Q. Hui**, "Semistability of Nonlinear Systems Having a Connected Set of Equilibria and Time-Delays," *IEEE Transactions on Automatic Control*, vol. 57, no. 10, pp. 2615-2620, 2012.

26. **Q. Hui**, "Distributed Semistable LQR Control for Discrete-Time Dynamically Coupled Systems," *Journal of the Franklin Institute*, vol. 349, no. 1, pp. 74-92, 2012.

27. **Q. Hui**, "Optimal Distributed Linear Averaging," *Automatica*, vol. 47, no. 12, pp. 2713-2719, 2011.

28. W. M. Haddad, **Q. Hui**, and V. Chellaboina, " $\mathcal{H}_2$ Optimal Semistable Control for Linear Dynamical Systems: An LMI Approach," *Journal of the Franklin Institute*, vol. 348, no. 10, pp. 2898-2910, 2011.

29. **Q. Hui**, "Quantized Near-Consensus via Quantized Communication Links," *International Journal of Control*, vol. 84, no. 5, pp. 931-946, 2011.

30. **Q. Hui**, W. M. Haddad, and J. M. Bailey, "Multistability, Bifurcations, and Biological Neural Networks: A Synaptic Drive Firing Model for Cerebral Cortex Transition in the Induction of General Anesthesia," *Nonlinear Analysis: Hybrid Systems*, vol. 5, no. 3, pp. 554-572, 2011.

31. E. Moulay and **Q. Hui**, "Conley Index Condition for Asymptotic Set Stability," *Nonlinear Analysis: Theory, Methods, and Applications*, vol. 74, no. 13, pp. 4503-4510, 2011.

32. **Q. Hui**, "Optimal Semistable Control for Continuous-Time Linear Systems," *Systems and Control Letters*, vol. 60, no. 4, pp. 278-284, 2011.

33. **Q. Hui**, "Semistability and Robustness Analysis for Switched Systems," *European Journal of Control*, vol. 17, no. 1, pp. 73-88, 2011.

34. **Q. Hui**, "Finite-Time Rendezvous Algorithms for Mobile Autonomous Agents," *IEEE Transactions on Automatic Control*, vol. 56, no. 1, pp. 207-211, 2011.

35. **Q. Hui**, W. M. Haddad, and S. P. Bhat, "Finite-Time Semistability, Filippov Systems, and Consensus Protocols for Nonlinear Dynamical Networks with Switching Topologies," *Nonlinear Analysis: Hybrid Systems*, vol. 4, no. 3, pp. 557-573, 2010.

36. **Q. Hui**, "Hybrid Consensus Protocols: An Impulsive Dynamical System Approach," *International Journal of Control*, vol. 83, no. 6, pp. 1107-1116, 2010.

37. **Q. Hui**, W. M. Haddad, and S. P. Bhat, "On Robust Control Algorithms for Nonlinear Network Consensus Protocols," *International Journal of Robust and Nonlinear Control*, vol. 20, no. 3, pp. 269-284, 2010.

38. **Q. Hui**, W. M. Haddad, and S. P. Bhat, "Semistability, Finite-Time Stability, Differential Inclusions, and Discontinuous Dynamical Systems Having a Continuum of Equilibria," *IEEE Transactions on Automatic Control*, vol. 54, no. 10, pp. 2465-2470, 2009.

39. W. M. Haddad and **Q. Hui**, "Dissipativity Theory for Discontinuous Dynamical Systems: Basic Input, State, and Output Properties, and Finite-Time Stability of Feedback Interconnections," *Nonlinear Analysis: Hybrid Systems*, vol. 3, pp. 551-564, 2009.

40. **Q. Hui** and W. M. Haddad, "Semistability of Switched Dynamical Systems. Part I: Linear System Theory," *Nonlinear Analysis: Hybrid Systems*, vol. 3, pp. 343-353, 2009.

41. **Q. Hui** and W. M. Haddad, "Semistability of Switched Dynamical Systems. Part II: Nonlinear System Theory," *Nonlinear Analysis: Hybrid Systems*, vol. 3, pp. 354-362, 2009.

42. **Q. Hui** and W. M. Haddad, "$\mathcal{H}_2$ Optimal Semistable Stabilization for Discrete-Time Dynamical Systems with Applications to Network Consensus," *International Journal of Control*, vol. 82, no. 3, pp. 456-469, 2009.

43. W. M. Haddad and **Q. Hui**, "Complexity, Robustness, Self-Organization, Swarms, and System Thermodynamics," *Nonlinear Analysis: Real World Applications*, vol. 10, no. 1, pp. 531-543, 2009.

44. S. G. Nersesov, W. M. Haddad, and **Q. Hui**, "Finite-Time Stabilization of Nonlinear Dynamical Systems via Control Vector Lyapunov Functions," *Journal of the Franklin Institute*, vol. 345, no. 7, pp. 819-837, 2008.

45. **Q. Hui**, W. M. Haddad, and S. P. Bhat, "Finite-Time Semistability and Consensus for Nonlinear Dynamical Networks," *IEEE Transactions on Automatic Control*, vol. 53, no. 8, pp. 1887-1900, 2008.

46. W. M. Haddad and **Q. Hui**, "Energy Dissipating Hybrid Control for Impulsive Dynamical Systems," *Nonlinear Analysis: Theory, Methods and Applications*, vol. 69, no. 10, pp. 3232-3248, 2008.

47. **Q. Hui** and W. M. Haddad, "Distributed Nonlinear Control Algorithms for Network Consensus," *Automatica*, vol. 44, no. 9, pp. 2375-2381, 2008.

48. V. Chellaboina, W. M. Haddad, **Q. Hui**, and J. Ramakrishnan, "On System State Equipartitioning and Semistability in Network Dynamical Systems with Arbitrary Time-Delays," *Systems and Control Letters*, vol. 57, no. 8, pp. 670-679, 2008.

49. W. M. Haddad, V. Chellaboina, **Q. Hui**, and T. Hayakawa, "Neural Network Adaptive Control for Discrete-Time Nonlinear Nonnegative Dynamical Systems," *Advances in Difference Equations*, vol. 2008, Article ID 868425, 29 pages, 2008.

50. W. M. Haddad, V. Chellaboina, **Q. Hui**, and S. G. Nersesov, "Energy- and Entropy-Based Stabilization for Lossless Dynamical Systems via Hybrid Controllers," *IEEE Transactions on Automatic Control*, vol. 52, no. 9, pp. 1604-1614, 2007.

51. W. M. Haddad, **Q. Hui**, V. Chellaboina, and S. G. Nersesov, "Hybrid Decentralized Maximum Entropy Control for Large-Scale Dynamical Systems," *Nonlinear Analysis: Hybrid Systems*, vol. 1, no. 2, pp. 244-263, 2007.

52. **Q. Hui**, W. M. Haddad, V. Chellaboina, and T. Hayakawa, "Adaptive Control of Mammillary Drug Delivery Systems with Actuator Amplitude Constraints and System Time Delays," *European Journal of Control*, vol. 11, no. 6, pp. 586-600, 2005.

53. W. M. Haddad, **Q. Hui**, S. G. Nersesov, and V. Chellaboina, "Thermodynamic Modeling, Energy Equipartition, and Nonconservation of Entropy for Discrete-Time Dynamical Systems," *Advances in Difference Equations*, vol. 2005, no. 3, pp. 275-318, 2005.

54. W. M. Haddad, V. Chellaboina, **Q. Hui**, and S. G. Nersesov, "Vector Dissipativity Theory for Large-Scale Impulsive Dynamical Systems," *Mathematical Problems in Engineering*, vol. 2004, no. 3, pp. 225-262, 2004.

55. W. M. Haddad, **Q. Hui**, V. Chellaboina, and S. G. Nersesov, "Vector Dissipativity Theory for Discrete-Time Large-Scale Nonlinear Dynamical Systems," *Advances in Difference Equations*, vol. 2004, no. 1, pp. 37-66, 2004.

56. **Q. Hui** and M. Ouyang, "Adaptive Variable Structure Controllers and Application to Engine Idle Speed Control Simulation," *Chinese Journal of Mechanical Engineering (English Edition)*, vol. 16, no. 2, pp. 171-174, 2003.

Book Chapter Papers

1. V. Chellaboina, W. M. Haddad, J. Ramakrishnan, and **Q. Hui**, "Direct Adaptive Control of Nonnegative and Compartmental Dynamical Systems with Time Delay," in *Biology and Control Theory: Current Challenges*, I. Queinnec, S. Tarbouriech, G. Garcia, and S.-I. Niculescu, Eds., Springer-Verlag, pp. 291-316, 2007.

2. J. Cheng, Q. Liu, **Q. Hui**, and F. Choobineh, "The Joint Optimization of Critical Interdependent Infrastructure of an Electricity-Water-Gas System," in *Systems Engineering in Context*, S.C. Adams, P. A. Beling, J. H. Lambert, and W. T. Scherer, Eds., Springer-Verlag, 2019.

Conference Papers

1. H. Zhang and **Q. Hui**, "A Coupled Spring Forced Bat Searching Algorithm: Design, Analysis and Evaluation," *2020 American Control Conference*, Denver, CO, June 2020.

2. E. Bernuau, E. Moulay, P. Coirault, and **Q. Hui**, "Topological Properties for Compact Stable Attractors in $\mathbb{R}^n$," *2019 SIAM Conference on Control and Its Applications*, Chengdu, China, June 2019.

3. Q. Liu, E. Moulay, P. Coirault, and **Q. Hui**, "Deep Learning Based Formation Control for the Multi-Agent Coordination," *16th IEEE International Conference on Networking, Sensing and Control*, Banff, Canada, May 2019.

4. F. Isfoula, E. Bernuau, E. Moulay, P. Coirault, Q. Liu, and **Q. Hui**, "Practical Consensus Tracking of Multi-Agent Systems with Linear Controllers," *2019 European Control Conference*, Napoli, Italy, June 2019.

5. Q. Liu and **Q. Hui**, "B-Splines-Based Fuzzy C-Means to Maximizing Overlap Areas for Interconnected Power Systems," *14th IEEE Conference on Industrial Electronics and Applications*, Xi'an, China, June 2019.

6. M. Firouznia and **Q. Hui**, "Human-in-the-Loop Approach in Thermostatically Controlled Loads," *2019 American Control Conference*, Philadelphia, PA, July 2019.

7. Q. Liu and **Q. Hui**, "The Formation Control of Mobile Autonomous Multi-Agent Systems Using Deep Reinforcement Learning," *13th Annual IEEE International Systems Conference*, Orlando, FL, April 2019.

8. M. Firouznia, C. Peng, and **Q. Hui**, "Toward Building a Human-Cognition-in-the-Loop Supervisory Control System for Humanized Decison-Making," *13th Annual IEEE International Systems Conference*, Orlando, FL, April 2019.

9. J. Cheng, Q. Liu, **Q. Hui**, and F. Choobineh, "The Joint Optimization of Critical Interdependent Infrastructure of an Electricity-Water-Gas System," *16th Annual Conference on Systems Engineering Research*, Charlottesville, VA, May 2018.

10. Q. Liu and **Q. Hui**, "The Bat-Inspired Consensus Protocols with Differential Privacy," *14th IEEE International Conference on Control and Automation*, Anchorage, AK, June 2018.

11. Y. Zhou, C. Peng, and **Q. Hui**, "A Spiking Neural Dynamical Drift-Diffusion Model on Collective Decision Making with Self-Organized Criticality," *2018 American Control Conference*, Milwaukee, WI, June 2018.

12. C. Peng, Y. Zhou, and **Q. Hui**, "Distributed Fault Diagnosis with Shared-Basis and B-Splines-Based Matched Learning," *13th IEEE Conference on Automation Science and Engineering*, Xi'an, China, August 2017.

13. Q. Liu and **Q. Hui**, "Hybrid Stability Analysis via Extended Small-Gain Theorem for Networked Cyber-Physical Systems with Transmission Delay," *13th IEEE Conference on Automation Science and Engineering*, Xi'an, China, August 2017.

14. Q. Liu and **Q. Hui**, "The Convergence Analysis of Bat-Inspired Consensus Protocols with Nonlinear Dynamics," *13th IEEE Conference on Automation Science and Engineering*, Xi'an, China, August 2017.

15. H. Zhang and **Q. Hui**, "Cooperative Bat Searching Algorithm: A Combined Perspective from Multiagent Coordination and Swarm Intelligence," *13th IEEE Conference on Automation Science and Engineering*, Xi'an, China, August 2017.

16. Y. Jiang and **Q. Hui**, "Kalman Filter with Diffusion Strategies for Detecting Power Grid False Data Injection Attacks," *2017 IEEE International Conference on Electro Information Technology*, Lincoln, NE, May 2017.

17. H. Zhang, **Q. Hui**, and Q. Liu, "Bio-Inspired Consensus under Suggested Convergence Direction," *2017 American Control Conference*, Seattle, WA, May 2017.

18. M. Firouznia and **Q. Hui**, "Modeling Stochastic Noise in Neural Networks: A Survey," *2017 American Control Conference*, Seattle, WA, May 2017.

19. **Q. Hui**, W. Qiao, and C. Peng, "Neuromorphic-Computing-Based Feedback Control: A Cognitive Supervisory Control Framework," *The 55th IEEE Conference on Decision and Control*, Las Vegas, NV, December 2016.

20. Q. Liu and **Q. Hui**, "A Hybrid ACO Algorithm Based on Bayesian Factorizations and Reinforcement Learning for Continuous Optimization," *2016 IEEE Congress on Evolutionary Computation*, Vancouver, Canada, July 2016.

21. C. Peng and **Q. Hui**, "Comparison of Differential Grouping and Random Grouping Methods on εCCPSO for Large-Scale Constrained Optimization," *2016 IEEE Congress on Evolutionary Computation*, Vancouver, Canada, July 2016.

22. **Q. Hui** and C. Peng, "Strong Semistabilizability and Partial Semistabilizability with Applications to Semistabilization Analysis of Multi-Layer Networks," *2016 European Control Conference*, Aalborg, Denmark, June 2016.

23. C. Peng and **Q. Hui**, "Real-Time Distributed Decomposition for Large-Scale Distributed Fault Diagnosis over Dynamic Graphs," *2016 American Control Conference*, Boston, MA, July 2016.

24. **Q. Hui** and C. Peng, "Randomized Target Search and Its Convergence in Dynamic Multi-Layer Networks," *2016 American Control Conference*, Boston, MA, July 2016.

25. **Q. Hui** and H. Zhang, "Global Convergence Analysis of Swarm Optimization Using Paracontraction and Semistability Theory," *2016 American Control Conference*, Boston, MA, July 2016.

26. X. Zeng and **Q. Hui**, "A Hybrid Controller Design for Complex Network Systems with Hybrid Automaton-Based Convergence Analysis," *2016 IEEE International Systems Conference*, Orlando, FL, April 2016.

27. J. Cheng and **Q. Hui**, "Motion Planning for AmigoBot with Line-Segment-Based Map and Voronoi Diagram," *2016 IEEE International Systems Conference*, Orlando, FL, April 2016.

28. C. Peng and **Q. Hui**, "ε Constrained CCPSO with Different Improvement Detection Techniques for Large-Scale Constrained Optimization," *The 49th Hawaii International Conference on System Sciences*, pp. 1711-1718, Kauai, HI, January 2016.

29. X. Zeng and **Q. Hui**, "Partial Cluster Stabilization and Partial Cascade Stabilization of Physical Networks," *The 5th IFAC Conference on Analysis and Design of Hybrid Systems*, Atlanta, GA, October 2015.

30. H. Zhang and **Q. Hui**, "New Multiagent Coordination Optimization Algorithms for Mixed-Binary Nonlinear Programming with Control Applications," *2014 IEEE Symposium on Computational Intelligence in Control and Automation*, Orlando, FL, December 2014.

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