

Chi HUANG

Curriculum Vitae

Department of Computer Sciences
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Research Interests

- Control and synthesis of networked systems, including complex networks, multi-agent systems, Boolean networks and sensor networks
- Data analysis and data-driven modelling
- Intelligent transportation systems

Education

- 2009.12–2012.11 **PhD**, *Applied Mathematics: Control Theory*, Department of Mathematics, City University of Hong Kong.
Supervisor: Prof. Daniel W.C. Ho
- 2007.12–2009.11 **MPhil**, *Applied Mathematics: Control Theory*, Department of Mathematics, City University of Hong Kong.
Supervisor: Prof. Daniel W.C. Ho
- 2005.09–2007.11 **Master Degree Candidate**, *Pure Mathematics: Topology*, College of Mathematics, Sichuan University.
Supervisor: Prof. Hui Kou
- 2001.09–2005.07 **BSc**, *Information and Computing Science*, School of Science, East China Jiaotong University.

Thesis

- PhD** A study in networked distributed systems with communication constraints
MPhil Synchronization analysis of polytopic complex dynamical networks

Languages

- Chinese **Mothertongue**
English **Intermediate** *Conversationally fluent*

Professional Experience

- 2022.01–present **Professor**, School of Computing and Artificial Intelligence, Southwestern University of Finance and Economics.
Chengdu, China
- 2018.10–2021.12 **Associate Professor**, School of Economic Information and Engineering, Southwestern University of Finance and Economics.
Chengdu, China
- 2016.11–2018.09 **Associate Professor**, College of Data Science, Taiyuan University of Technology.
Shanxi, China

- 2013.08–2016.10 **Associate Professor**, College of Mathematics, Taiyuan University of Technology.
Shanxi, China
- 2012.12–2013.07 **Instructor**, College of Mathematics, Taiyuan University of Technology.
Shanxi, China

Research Experience

- 2019.12 **Visiting Scholar**, Department of Mathematical Sciences, Shibaura Institute of Technology.
Saitama, Japan
- 2018.11–2019.01 **Senior Research Assistant**, Department of Mathematics, City University of Hong Kong.
Hong Kong
- 2018.01–2018.02 **Senior Research Assistant**, Department of Mathematics, City University of Hong Kong.
Hong Kong
- 2017.01–2017.02 **Senior Research Assistant**, Department of Mathematics, City University of Hong Kong.
Hong Kong
- 2016.08 **Visiting Scholar**, Institute of Metals and Technology.
Ljubljana, Slovenia
- 2016.01–2016.02 **Senior Research Assistant**, Department of Mathematics, City University of Hong Kong.
Hong Kong
- 2015.11 **Visiting Scholar**, Department of Mathematical Sciences, Shibaura Institute of Technology.
Saitama, Japan
- 2015.08 **Senior Research Assistant**, Department of Mathematics, City University of Hong Kong.
Hong Kong
- 2014.09–2014.10 **Visiting Scholar**, Department of Mathematical Sciences, Shibaura Institute of Technology.
Saitama, Japan
- 2013.08–2013.10 **Senior Research Assistant**, Department of Mathematics, City University of Hong Kong.
Hong Kong
- 2011.07–2011.10 **Visiting Scholar**, Potsdam Institute for Climate Impact Research (PIK).
Potsdam, Germany

Awards

- 2020 Outstanding Scientific Research Achievement Award (GRANTED BY SOUTHWESTERN UNIVERSITY OF FINANCE AND ECONOMICS)
- 2020 Academic Class A, Guanghua Hundred Talents Program (GRANTED BY SOUTHWESTERN UNIVERSITY OF FINANCE AND ECONOMICS)
- 2019 Academic Class B, Guanghua Hundred Talents Program (GRANTED BY SOUTHWESTERN UNIVERSITY OF FINANCE AND ECONOMICS)
- 2014 Outstanding Reviewer (GRANTED BY ASIAN JOURNAL OF CONTROL)
- 2011 DAAD Scholarship (GRANTED BY GERMAN ACADEMIC EXCHANGE SERVICE)
- 2011 Outstanding Academic Performance Award (GRANTED BY CITY UNIVERSITY OF HONG KONG)
- 2011 Best Paper Award (first prize) at the 8th Asian Control Conference (ASCC 2011)

Invited Talk

- 2020.11.22 The 2nd TCCT Logical Systems Control Symposium
- 2017.04.08 The 2nd SCIENCE CHINA Symposium on Hot Issues in Control Science
- 2015.09.05 School of Mathematics, Anhui Polytechnic University

Editor of Journals

Guest Editor **Abstract and Applied Analysis.**
special issue on Dynamical Analysis and Control for Complex Systems

Referee Experience (as a referee for the following journals)

- Asian Journal of Control
- Complexity
- Frontiers of Information Technology & Electronic Engineering
- IEEE Access
- IEEE Transactions on Automatic Control
- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Cybernetics
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE Transactions on Systems, Man and Cybernetics: Systems
- IET Control Theory & Applications
- Information Sciences
- International Journal of Applied Mathematics & Computer Science
- International Journal of Automation and Computing
- International Journal of Biomathematics
- International Journal of Circuit Theory and Applications
- International Journal of Control
- International Journal of Robust and Nonlinear Control
- International Journal of Systems and Science
- Journal of Advances in Mathematics and Computer Science
- Journal of Control and Decision
- Journal of The Franklin Institute
- Mathematics and Computers in Simulation
- Neural Networks
- Neurocomputing
- Nonlinear Dynamics
- SCIENCE CHINA Information Sciences
- Systems Science and Control Engineering
- Chaos
- IEEE Control Systems Letters
- IET Radar, Sonar & Navigation
- Mathematical Reviews
- Neural Computing and Applications
- Neural Processing Letters
- Nonlinear Analysis: Hybrid Systems
- Physics Letters A
- Systems & Control Letters
- The Journal of Engineering

Professional Activities

Session Chair **The 12th Chinese Conference on Complex Networks.**
October 14-17, 2016, Taiyuan, China

Minisymposium Organizer **8th International Congress on Industrial and Applied Mathematics.**
August 10-14, 2015, Beijing, China

Session Chair **The 8th Asian Control Conference.**
May 15-18, 2011, Kaohsiung, China

Grants

- National Natural Science Foundation of China (Grant no. 61603268)
- Tianyuan Special Funds of the National Natural Science Foundation of China (Grant no. 11326126)
- Foundation Research Project of Shanxi Province (Grant no. 2015021085)
- Research Project Supported by Shanxi Scholarship Council of China (Grant no. 2015-044)
- Postdoctoral Science Foundation of China (Grant no. 2016M601697)

Teaching

Undergraduate

- Spring 2012-13** **Computational Methods** 40 × 2
- Fall 2013-14** **English for Information and Computing Science** 40
- Spring 2013-14** **Advanced Mathematics** 88, **Computational Methods** 40
- Fall 2014-15** **English for Information and Computing Science** 32
- Spring 2014-15** **Computational Methods** 40, **Advanced Mathematics** 88
- Fall 2015-16** **Training for Mathematical software and Mathematical Modeling** 40, **English for Information and Computing Science** 32
- Spring 2015-16** **Linear Algebra** 40 × 2, **Computational Methods** 40
- Fall 2016-17** **Computer Network** 32, **English for Information and Computing Science** 32, **Training for Mathematical software and Mathematical Modeling** 40
- Fall 2017-18** **English for Information and Computing Science** 32, **Training for Mathematical software and Mathematical Modeling** 40
- Spring 2017-18** **Deep Learning** 32
- Spring 2018-19** **Information Theory** 57, **Advanced Mathematics** 90
- Fall 2019-20** **Advanced Mathematics** 90
- Spring 2019-20** **Information Theory** 57
- Spring 2020-21** **Programming in Python (in English)** 57, **Fundamentals of Applied Information Theory** 18, **Information Theory** 57, **Machine Learning** 57
- Fall 2021-22** **Machine Learning** 57
- Spring 2021-22** **Information Theory** 57, **Programming in Python (in English)** 57 × 2, **Machine Learning** 57

Postgraduate

- Spring 2013-14** **English for Mathematics** 40, **Complex Network Theory** 40, **Matrix Theory** 60
- Spring 2014-15** **English for Mathematics** 40, **Complex Network Theory** 40
- Spring 2015-16** **English for Mathematics** 40, **Complex Network Theory** 40
- Fall 2016-17** **Numerical Analysis (in English)** 48, **Machine Learning** 40
- Spring 2016-17** **English for Mathematics** 40, **Complex Network Theory** 40
- Fall 2017-18** **Probability Theory and Mathematical Statistics (in English)** 48, **Deep Learning** 40, **Machine Learning** 40, **Numerical Analysis (in English)** 48
- Spring 2017-18** **English for Mathematics** 40, **Complex Network Theory** 40
- Fall 2019-20** **Matrix Theory** 57
- (Numbers are class hours.)

Publications

Book

- 1 **Chi Huang**, *Collective Behaviors of NDSs with Communication Constraints*. Lambert Academic Publishing, 2016.

Journal paper

- 1 **Chi Huang***, Daniel W.C. Ho, and Jianquan Lu, "Synchronization analysis of a complex network family," *Nonlinear Analysis Series B: Real World Applications*, 11(3):1933-1945, 2010.
- 2 Wenjun Xiong*, Daniel W.C. Ho, and **Chi Huang**, "Pinning synchronization of time-varying polytopic directed stochastic networks," *Physics Letters A*, 374(3):439-447, 2010.
- 3 **Chi Huang***, Daniel W.C. Ho, and Jianquan Lu, "Partial-information-based distributed filtering in two-targets tracking sensor networks," *IEEE Transactions on Circuits and Systems I: Regular papers*, 59(4):820-832, 2012.
- 4 **Chi Huang***, Daniel W.C. Ho, Jianquan Lu, and Jürgen Kurths, "Partial synchronization in stochastic networks with switching communication channels," *Chaos*, 22:023108, 2012.
- 5 Jianquan Lu*, Jürgen Kurths, Jinde Cao, Nariman Mahdavi, and **Chi Huang**, "Synchronization control for nonlinear stochastic dynamical networks: Pinning impulsive strategy," *IEEE Transactions on Neural Networks and Learning Systems*, 23(2):285-292, 2012. (**ESI Highly Cited Paper**)
- 6 **Chi Huang***, Daniel W.C. Ho, Jianquan Lu, and Jürgen Kurths, "Pinning synchronization in T-S fuzzy complex networks with partial and discrete-time couplings," *IEEE Transactions on Fuzzy Systems*, 23(4):1274-1285, 2015.
- 7 **Chi Huang***, Daniel W.C. Ho, and Jianquan Lu, "Partial-information-based synchronization analysis for complex dynamical networks," *The Journal of the Franklin Institute*, 352(9):3458-3475, 2015.
- 8 Guisheng Zhai and **Chi Huang***, "A note on basic consensus problems in multi-agent systems with switching interconnection graphs," *International Journal of Control*, 88(3):631-639, 2015.
- 9 Shun Chen*, Daniel W.C. Ho, and **Chi Huang**, "Fault reconstruction and state estimator design for distributed sensor networks in multi-targets tracking," *IEEE Transactions on Industrial Electronics: Regular paper*, 62(11):7091-7102, 2015.
- 10 Sufang Zhang, Wei Wang, and **Chi Huang***, "Stabilization of networked distributed systems with partial and event-based couplings," *Mathematical Problems in Engineering*, 342465, 2015.
- 11 Jianquan Lu*, Jie Zhong, **Chi Huang**, and Jinde Cao, "On pinning controllability of Boolean control networks," *IEEE Transactions on Automatic Control*, 61(6):1658-1663, 2016. (**ESI Highly Cited Paper**)
- 12 Jie Zhong, Jianquan Lu*, **Chi Huang**, Lulu Li, and Jinde Cao, "Finding graph minimum stable set and core via semi-tensor product approach," *Neurocomputing*, 174(22):588-596, 2016.
- 13 Xiaoran Lan, Hao Zhang, Ming Li, and **Chi Huang***, "Prediction of mobile users for updating terminal research based on data mining," *Mathematics in Practice and Theory*, 47(16):71-80, 2017. (in Chinese)
- 14 Wei Wang, **Chi Huang***, Jinde Cao, and Fuad E. Alsaadi, "Event-triggered control for sampled-data cluster formation of multi-agent systems," *Neurocomputing*, 267:25-35, 2017.
- 15 **Chi Huang***, Guisheng Zhai, and Gesheng Xu, "Necessary and sufficient conditions for consensus in third order multi-agent systems," *IEEE/CAA Journal of Automatica Sinica*, 5(6):1044-1053, 2018.

- 16 Liye Jia and **Chi Huang***, "Formation-containment control in multi-agent system with impulsive algorithms," *Journal of University of Jinan (Science and Technology)*, 32(4):335-343, 2018. (in Chinese)
- 17 Chengli Feng and **Chi Huang***, "Bipartite consensus of multi-agent systems with communication constraints," *Journal of University of Jinan (Science and Technology)*, 32(6):521-528, 2018. (in Chinese)
- 18 Gesheng Xu, **Chi Huang***, and Guisheng Zhai, "A necessary and sufficient condition for designing formation of discrete-time multi-agent systems with delay," *Neurocomputing*, 315:48-58, 2018.
- 19 Wenzhi Li, **Chi Huang***, and Guisheng Zhai, "Quadratic performance analysis of switched affine time-varying systems," *International Journal of Applied Mathematics and Computer Science*, 28(3):429-440, 2018.
- 20 **Chi Huang***, Wei Wang, Jinde Cao, and Jianquan Lu, "Synchronization-based passivity of partially coupled neural networks with event-triggered communication," *Neurocomputing*, 319:134-143, 2018.
- 21 Gesheng Xu, **Chi Huang***, and Guisheng Zhai, "Necessary and sufficient condition for designing formation in third-order multi-agent systems," *Journal of University of Jinan (Science and Technology)*, 33(1):81-87, 2019. (in Chinese)
- 22 Min Li and **Chi Huang***, "Short term traffic flow prediction based on ensemble learning method," *Journal of University of Jinan (Science and Technology)*, 33(5):389-395, 2019. (in Chinese)
- 23 Chuan Luo, **Chi Huang***, Wenshou Zeng, Shihao Liu, Ming Li, and Hao Zhang, "Discrimination of intelligent screw machine based on random forest," *Journal of University of Jinan (Science and Technology)*, 33(5):410-416, 2019. (in Chinese)
- 24 **Chi Huang***, Chengli Feng, and Jinde Cao, "Consensus of cyber-physical power systems based on multi-agent systems with communication constraints," *Journal of Modern Power Systems and Clean Energy*, 7(5):1081-1093, 2019.
- 25 Chuan Luo, **Chi Huang***, Jinde Cao, Jianquan Lu, Wei Huang, Jianhua Guo, and Yun Wei, "Short-term traffic flow prediction based on least square support vector machine with hybrid optimization algorithm," *Neural Processing Letters*, 50(3):2305-2322, 2019.
- 26 Xin Hu, **Chi Huang***, Jianquan Lu, and Jinde Cao, "Stabilization of Boolean control networks with stochastic impulse," *Journal of the Franklin Institute*, 356(13):7164-7182, 2019.
- 27 Peiyuan Li and **Chi Huang***, "Classification method for human protein images based on CSPNet and ensemble learning," *Computer Engineering*, 46(8):235-242, 2020. (in Chinese)
- 28 Xia Zhang and **Chi Huang***, "Synchronization analysis for fuzzy complex networks with reaction-diffusion terms," *Journal of North University of China (Natural Science Edition)*, 41(1):11-18, 2020. (in Chinese)
- 29 Xin Hu and **Chi Huang***, "Set stabilization of Boolean control networks with stochastic impulse," *Journal of Systems Science and Mathematical Sciences*, 40(4):587-598, 2020. (in Chinese)
- 30 **Chi Huang***, "The reform of information theory teaching based on online and offline integration," *Journal of Fujian Computer*, 36(10):86-87, 2020. (in Chinese)
- 31 **Chi Huang***, Jianquan Lu, Daniel W.C. Ho, Guisheng Zhai, and Jinde Cao, "Stabilization of probabilistic Boolean networks via pinning control strategy," *Information Sciences*, 510:205-217, 2020. (**ESI Highly Cited Paper**)

- 32 Nan Jiang, **Chi Huang***, Yao Chen, and Jürgen Kurths, "Bisimulation-based stabilization of probabilistic Boolean control networks with state feedback control," *Frontiers of Information Technology & Electronic Engineering*, 21(2):268-280, 2020.
- 33 Mingqing Xiao, Guisheng Zhai*, and **Chi Huang**, "Quadratic stabilization of switched affine systems," *Journal of Control and Decision*, 7(1):1-23, 2020.
- 34 Wei Wang, **Chi Huang***, Chuangxia Huang, Jinde Cao, Jianquan Lu, and Li Wang, "Bipartite formation problem of second-order nonlinear multi-agent systems with hybrid impulses," *Applied Mathematics and Computation*, 370:124926, 2020.
- 35 Zijian Luo, Wenjun Xiong*, Jinde Cao, and **Chi Huang**, "Event-triggered state tracking for two-dimensional neural networks with impulsive learning control schemes," *Journal of the Franklin Institute*, 357(17): 12364-12379, 2020.
- 36 Wei Wang, Li Wang*, and **Chi Huang**, "Guaranteed cost bipartite formation problem of multi-agent systems with impulse control," *Control and Decision*, 36(1): 180-186, 2021. (in Chinese)
- 37 **Chi Huang***, Xia Zhang, Hak-Keung Lam, and Shun-Hung Tsai, "Synchronization analysis for nonlinear complex networks with reaction-diffusion terms using fuzzy-model-based approach," *IEEE Transactions on Fuzzy Systems*, 29(6): 1350-1362, 2021. (**ESI Highly Cited Paper**)
- 38 **Chi Huang***, Jianquan Lu, Guisheng Zhai, Jinde Cao, Guoping Lu, and Matjaž Perc, "Stability and stabilization in probability of probabilistic Boolean networks," *IEEE Transactions on Neural Networks and Learning Systems*, 32(1): 241-251, 2021. (**ESI Highly Cited Paper**)
- 39 **Chi Huang***, Wei Wang, Jianquan Lu, and Jürgen Kurths, "Asymptotic analysis of Boolean networks with multiple missing data," *IEEE Transactions on Automatic Control*, 66(12): 6093-6099, 2021.
- 40 Anguo Zhang, Lulu Li*, **Chi Huang**, and Jianquan Lu, "Output tracking of delayed Boolean control networks via output feedback control," *Journal of Liaocheng University (Natural Science Edition)*, 35(1): 1-8, 2022. (in Chinese)
- 41 **Chi Huang***, Daniel W.C. Ho, Jianquan Lu, Wenjun Xiong, and Jinde Cao, "Synchronization of an array of coupled probabilistic Boolean networks," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, in press.
- 42 Wei Wang, Li Wang*, and **Chi Huang**, "Event-triggered control for guaranteed-cost bipartite formation of multi-agent systems," *IEEE Access*, in press.
- 43 Zijian Luo, Wenjun Xiong*, and **Chi Huang**, "Finite-iteration learning tracking of multi-agent systems via the distributed optimization method," *Neurocomputing*, in press.

Conference paper

- 1 **Chi Huang***, Daniel W.C. Ho, and Jianquan Lu, "Synchronization analysis of time varying polytopic complex network," *15th International Conference on Automation and Computing (ICAC 2009)*, September 19, 2009, University of Bedfordshire, London, UK.
- 2 **Chi Huang***, Daniel W.C. Ho, and Jianquan Lu, "Synchronization analysis of complex network with uncertainty," *1st IFAC Workshop on Estimation and Control of Networked Systems (NecSys 2009)*, September 24-26, 2009, Venice, Italy.
- 3 **Chi Huang***, Daniel W.C. Ho, Wenjun Xiong, and Jianquan Lu, "Two-targets tracking problem in sensor network with partial information transmission," *The 8th Asian Control Conference (ASCC 2011)*, May 15-18, 2011, Kaohsiung, Taiwan. (**The Best Paper Award**)
- 4 **Chi Huang***, Daniel W.C. Ho, and Jianquan Lu, "Pinning synchronization in complex network with sampled data," *20th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2012)*, July 9-13, 2012, University of Melbourne, Australia.

- 5 **Chi Huang***, Daniel W.C. Ho, Jianquan Lu, and Zidong Wang, "Distributed filtering in sensor networks with hybrid communication constraints," *12th International Conference on Control, Automation, Robotics and Vision (ICARCV 2012)*, Dec. 5-7, 2012, Guangzhou, China.
- 6 Lulu Li*, Daniel W.C. Ho, Yuanyuan Zou, **Chi Huang**, and Jianquan Lu, "Event-triggered control for discrete-time multi-agent networks," *The 9th Asian Control Conference (ASCC 2013)*, June 23-26, 2013, Istanbul, Turkey.
- 7 **Chi Huang***, Daniel W.C. Ho, Lulu Li, and Jianquan Lu, "Distributed state estimation in rotational shiftwork sensor networks with communication constraints," *32nd Chinese Control Conference (CCC 2013)*, July 26-28, 2013, Xi'an, China.
- 8 Guisheng Zhai* and **Chi Huang**, "Basic consensus problems in multi-agent systems with switching interconnection graphs," *2013 CACS International Automatic Control Conference (CACS 2013)*, December 2, 2013, Nantou, Taiwan.
- 9 **Chi Huang***, Lulu Li, and Jianquan Lu, "Pinning stabilization of connected neural networks with event-based couplings," *International Conference on Mechatronics and Control*, July 3-5, 2014, Jinzhou, China.
- 10 **Chi Huang***, Daniel W.C. Ho, Guisheng Zhai, and Lulu Li, "Input-to-state synchronization of complex dynamical network with time-varying delays," *33rd Chinese Control Conference (CCC 2014)*, July 28-30, 2014, Nanjing, China.
- 11 Lulu Li, Daniel W.C. Ho, **Chi Huang**, and Jianquan Lu, "Event-triggered discrete-time multi-agent consensus with delayed quantized information," *33rd Chinese Control Conference (CCC 2014)*, July 28-30, 2014, Nanjing, China.
- 12 Jie Zhong, Jianquan Lu, **Chi Huang**, Lulu Li, and Jinde Cao, "Synchronization of master-slave switched Boolean networks with delay," *The 10th Asian Control Conference (ASCC2015)*, May 31-Jun. 3, 2015, Kota Kinabalu, Malaysia.
- 13 **Chi Huang***, Daniel W.C. Ho, and Guisheng Zhai, "Distributed stabilization of fuzzy networked systems with event-based sampling scheme," *34th Chinese Control Conference (CCC 2015)*, July 28-30, 2015, Hangzhou, China.
- 14 Lulu Li*, Daniel W.C. Ho, Jianquan Lu, and **Chi Huang**, "Multi-agent consensus with delayed quantized information," *34th Chinese Control Conference (CCC2015)*, July 28-30, 2015, Hangzhou, China.
- 15 Guisheng Zhai*, Nobufumi Naito, and **Chi Huang**, "Robust H^∞ controller design for generalized mechanical systems: An approach utilizing physical characteristics," *54th Annual Conference of the Society of Instrument and Control Engineer of Japan (SICE2015)*, July 28-30, 2015, Hangzhou, China.
- 16 **Chi Huang***, Guisheng Zhai, and Wenzhi Li, "Quadratic Stabilization and \mathcal{L}_2 Gain analysis of switched affine systems," *The 29th Chinese Control and Decision Conference (CCDC 2017)*, May 28-30, 2017, Chongqing, China.
- 17 **Chi Huang*** and Wei Wang, "Projective cluster synchronization of dynamical networks via pinning impulsive control," *The 36th Chinese Control Conference (CCC 2017)*, July 26-28, 2017, Dalian, China.
- 18 **Chi Huang***, Guisheng Zhai, and Gesheng Xu, "An algebraic approach to designing consensus algorithm of networked high dimensional agents," *The 36th Chinese Control Conference (CCC 2017)*, July 26-28, 2017, Dalian, China.
- 19 Wei Wang and **Chi Huang***, "Cluster formation control for multi-agent systems with sampled-data method," *Chinese Automation Congress (CAC 2017)*, October 20-22, 2017, Jinan, China.

- 20 Guisheng Zhai*, Wenzhi Li, **Chi Huang**, and Minqing Xiao, "Quadratic stabilization of uncertain switched affine systems: An observer-based approach," *57th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE 2018)*, September 11-14, 2018, Nara, Japan.

(* for corresponding author)