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State Specially Appointed Expert
AAAS Fellow
ASME Fellow
IFAC Fellow
INCOSE Fellow
IEEE Fellow
Outstanding Scientist of ACM

EDUCATION

Rensselaer Polytechnic Institute <i>Ph.D. in Computer and Systems Engineering</i>	Troy, NY, USA <i>Aug. 1990</i>
Zhejiang University <i>Master in Mechanics</i>	Hangzhou, Zhejiang, China <i>Jan. 1984</i>
Shandong Institute of Chemical Engineering <i>Bachelor in Chemical Engineering</i>	Qingdao, Shandong, China <i>Jan. 1982</i>

PROFESSIONAL EXPERIENCES

Instructor <i>Department of Mechanics, Zhejiang University</i>	1984-1986 <i>Hangzhou, China</i>
Research Assistant <i>Robotics and Automation Laboratory (RAL), RPI</i>	1987-1988 <i>Troy, USA</i>
Research Engineer <i>NASA Center for Intelligent Robotic Systems for Space Exploration (CIRSSE)</i>	1988-1990 <i>USA</i>
Research Associate <i>New York State Center for Manufacturing and Productivity Transfer</i>	1988-1990 <i>New York, USA</i>
Professor and Director <i>University of Arizona</i>	1990 - 2011 <i>Tucson, USA</i>
<ul style="list-style-type: none">• Assistant Professor (1990)• Associate Professor (1995)• Full Professor (1999)• Director of the Robotics and Automation Laboratory (1990-2011)• Director of the Program in Advanced Research for Complex Systems (1999-2011)	
Research Scientist <i>NASA Space Engineering Research Center</i>	1990-2008 <i>USA</i>
Research Professor <i>Motor Control Group, Arizona Laboratory</i>	1992-1997 <i>Phoenix Tucson, USA</i>
Professor and Director <i>Institute of Automation, Chinese Academy of Sciences</i>	1997 - Present <i>Beijing, China</i>

- Founding Director of the Intelligent Control and Systems Engineering Center under the support of the Outstanding Chinese Talents Program from the State Planning Council (1999)
- Appointed as the Director of the Key Laboratory of Complex Systems and Intelligence Science, CAS (2002)
- Appointed as the Deputy Director of the Institute of Automation, CAS (2002-2006)
- Appointed as the State Specially Appointed Expert and the Founding Director of the State Key Laboratory for Management and Control of Complex Systems (2011)

Dean 2005 – 2019
School of Software Engineering, Xi'an Jiaotong University Xi'an, China

Director 2010 – 2015
The Research Center of Computational Experiments and Parallel Systems, NUDT Changsha, China

PROFESSIONAL SERVICES

President

- Supervision Council of Chinese Association of Automation 2018-Present
- IEEE Council on RFID 2019-2021
- Association of Global Intelligent Science and Technology (AGIST) 2015-2022
- American Zhu Kezhen Education Foundation 2007-2008
- IEEE ITS Society 2005-2007
- Chinese Association for Science and Technology, USA 2005-2006

Vice President

- IEEE Systems, Man, and Cybernetics Society 2019-2021
- ACM China Council 2010-2011
- Chinese Association of Automation 2008-2018

Founding Chair

- AAAI Beijing Chapter 2011-2016
- ACM Social and Economic Computing Chapter 2010-2015
- INFORMS Beijing Chapter 2008-2011
- ACM Beijing Chapter 2006-2008
- INCOSE Beijing Chapter 2005-2008

Editor-in-Chief

- IEEE Transactions on Intelligent Vehicles 2022-Present
- IEEE Transactions on Computational Social Systems 2017-2021
- ACTA Automatica Sinica 2011-2017
- IEEE Transactions on Intelligent Transportation Systems 2009-2016
- IEEE Intelligent Systems 2009-2012

Founding Editor-in-Chief

- Chinese Journal of Intelligent Science and Technology (in Chinese) 2019-2021

- China's Journal of Command and Control (in Chinese) 2015-2021
- IEEE/CAA Journal of Automatica Sinica 2014-2017
- IEEE ITS Magazine 2006-2007
- International Journal of Intelligent Control and Systems 1995-2000

Associate Editor-in-Chief

- Science and Technology Review 2008-2014
- IEEE Intelligent Systems 2004-2008

Editor-in-Charge

- Series in Intelligent Control and Intelligent Automation 1994-2005

Associate Editor

- IEEE Transactions on Systems, Man, and Cybernetics: Systems 2021-Present
- Systems Engineering, the INCOSE Journal 2012-Present
- ACM Transactions on Intelligent Systems and Technology 2010-2012
- ACM Transactions on Management Information Systems 2010-2014
- IEEE Transactions on Service Computing 2008-2010
- IEEE Transactions on Knowledge and Data Engineering 2006-2008
- IEEE Intelligent Systems 2004-2008
- IEEE Transactions on Robotics and Automation 2003-2005
- IEEE Transactions on Intelligent Transportation Systems 2002-2008
- IEEE Transactions on Systems, Man, and Cybernetics 1999-2005

Chair

- IFAC Technical Committee on Economic, Business, and Financial Systems 2016-Present
- IFAC Technical Committee on Social and Economic Systems 2008-2013

SERVICES IN CONFERENCES

General Chair

- 2021 IEEE International Conference on Digital Twins & Parallel Intelligence, Beijing, China, July 2021.
- The 3rd IFAC Workshop on Cyber-Physical & Human Systems, Beijing, China, Dec. 2020.
- The 12th Parallel Intelligence Conference, Qingdao, Shandong, Sept. 2020.
- The 11th Parallel Intelligence Conference, Beijing, China, Dec. 2019.
- The 29th IEEE Intelligent Vehicles Symposium, Changshu, Suzhou, June 2018.
- Chinese Congress on Intelligent Vehicles, Wuhan, China, Oct. 2015.
- The 9th IEEE International Conference on Networking, Sensing and Control, Beijing, China, July 2012.
- The 1st National Conference on Social Computing, Beijing, China, Dec. 2009.
- The 1st National Conference on Parallel Management, Beijing, China, Dec. 2009.

- IEEE International Conference on Intelligent Transportation Systems, Beijing, China, 2008.
- Oriental Science and Technology Forum on Web Sciences, Shanghai, China, 2007.
- 2007 ASME/IEEE International Conference on Mechatronic and Embedded Systems and Applications (MESA'07), Las Vegas, NV USA, Sept. 2007.
- 2007 IEEE/INFORMS International Conference on Service Operations and Logistics, and Informatics (SOLI 06), Philadelphia, PA USA, Aug. 2007.
- 2007 IEEE International Conference on Vehicular Electronics and Safety (VES 07), Beijing, China, Dec. 2007.
- 2005 ASME/IEEE International Conference on Mechatronic and Embedded Systems and Applications (MESA'05), Long Beach, CA, USA, Oct. 2005.
- 2005 IEEE International Symposium on Intelligent Vehicles, Las Vegas, NV, USA, June 2005.
- 2005 IEEE International Conference on Networking, Sensing, and Control, Tucson, AZ, USA, March 2005.
- 2003 IEEE International Conference on Intelligent Transportation Systems, Shanghai, China, Oct. 2003.

General Co-Chair

- The 1st IEEE International Conference on Human-Machine Systems, Rome, Italy, Sept. 2020.
- IEEE International Intelligent Transportation Systems Conference, Qingdao, China, Oct. 2014.
- The 1st US-China International Workshop on Digital Government Research and Practice (IntDG06), Beijing China, Oct. 2006.
- Workshop on Intelligence and Security Informatics (WISI 05), Singapore, April 2005.
- 2005 IEEE Intelligence and Security Informatics, Atlanta, GA, May 2005.

Program Chair

- 2009 IEEE International Symposium on Intelligent Vehicles, Xi'an, China June 2009.
- XiangShan Scientific Conference on Social Computing, Beijing, China, 2007.
- The 29th XiangShan Conference on System of Systems for Social Computing: Fundamentals and Applications, Beijing, China, April 2007.
- 2006 IEEE/INFORMS International Conference on Service Operations and Logistics, and Informatics (SOLI 06), Shanghai, China, June 2006.
- 2001 IEEE International Conference on Systems, Man, and Cybernetics, Tucson, AZ, USA, Oct. 2001.
- 1998 IEEE International Symposium on Intelligent Control, Gaithersburg, VA, USA, Sept. 1998.

Program Co-Chair

- The 2nd IEEE International Conference on Human-Machine Systems, Magdeburg, Germany, Sept. 2021.
- The 14th International IEEE Conference on Intelligent Transportation Systems, Anchorage, AK, USA, Sept. 2010.

- 2010 IEEE International Symposium on Intelligent Vehicles, San Diego, USA, June 2010.
- 2004 IEEE International Symposium on Intelligent Vehicles, Parma, Italy, June 2004.

Tutorials and Workshops Chair

- 2002 IEEE International Conference on Decision and Control, Las Vegas, NV, USA, Dec. 2002.

Local Chair

- The Internal Joint Conference on Artificial Intelligence, Beijing, China, August 2013.

Awards Committee Co-Chair

- The Internal Joint Conference on Artificial Intelligence, Beijing, China, August 2013.

HONOR

International Federation of Automatic Control (IFAC) Fellow In 2007

- For outstanding contributions to intelligent control systems and their applications.

American Society of Mechanical Engineers (ASME) Fellow In 2007

- For outstanding contributions in mechanics, robotics, mechatronics, and embedded systems.

American Association for the Advancement of Science (AAAS) Fellow In 2007

- For significant contributions to the field of complex systems and intelligence science, particularly for theory and methods in social computing, computational intelligence, and intelligent control.

International Council of Systems Engineering (INCOSE) Fellow In 2005

- For significant contributions to theory and applications of intelligent and complex systems.

Institute of Electrical and Electronics Engineers (IEEE) Fellow In 2003

- For contributions to intelligent control systems and applications to complex systems.

AWARD

IFAC Pavel J. Nowacki Distinguished Lecturer for 2020-2023 Triennium In 2021

IEEE ITSS Outstanding Application Award In 2021

First Prize in Natural Sciences, Chinese Association of Automation In 2020

IFAC Outstanding Service Award In 2020

IEEE SMC Andrew Sage Award Best Transactions Paper Award In 2019

Second Prize in Science and Technology, China Intelligent

Transportation Systems Association	In 2019
First Prize in Creative Founder Award, China Association of Inventions	In 2018
Special Prize in Science and Technology Progress, Chinese Association of Automation	In 2018
First Prize in Science and Technology, China Highway and Transportation Society	In 2017
First Prize in Science and Technology Progress, Chinese Association of Automation	In 2017
IEEE Transactions on Neural Networks and Learning Systems Outstanding Paper Awards	In 2017
Second Prize in Natural Sciences, Chinese Association of Automation	In 2016
First Class Award in Natural Sciences, Chinese Association of Automation	In 2015
IEEE ITSS Outstanding Application Award	In 2015
IEEE SMC Society Norbert Wiener Award	In 2014
ASME/IEEE Achievement Award in Mechatronic/Embedded Systems	In 2012
IEEE ITSS Outstanding Research Award	In 2011
IEEE ITSS Outstanding Application Award	In 2009
IEEE ITSS Outstanding Service and Leadership Award	In 2009
National Prize in Natural Sciences of China	In 2007
ASME Outstanding Service Award	In 2007
Excellent Advisor Award: Chinese Academy of Sciences	In 2006
Excellent Advisor Award: Chinese Academy of Sciences	In 2004
Beijing Science and Technology Progress Award	In 2004
Excellent Performance Award for Hundred Talents: Chinese Academy of Sciences	In 2002
Taylor Franklin Best Paper Award	In 2002
IEEE SMC Outstanding Service Award	In 2002
Innovation and Contribution Award: ABB Inc.	In 2002
Outstanding Young Scientist Award: Natural Science Foundation of China	In 2001
Outstanding Contribution Award: IBM	In 2000

Outstanding Technical Contribution Award: BHP Copper	In 1999
Oversea Outstanding Talent Award: Chinese Academy of Sciences	In 1999
Excellent Academic Award: Chinese Association of Science and Technology (USA)	In 1999
Technical Innovation Award: Caterpillar	In 1996
Outstanding Technical Contribution Award: AT&T Foundation	In 1994

RESEARCH PROJECTS

- Co-PI, Intelligent Management and Control Technology for Vehicle Road Collaboration of Internet Connected Vehicles, ¥86M, Department of Science and Technology of Guangdong Province, China, 2020-2022.
- PI, Research on Cooperation Framework and Interaction Mechanism of Human Machine Hybrid Multi-agent, ¥5.5M, Ministry of Science and Technology, China, 2019-2023.
- Co-PI, Parallel Verification and Analysis System of Urban Traffic Based on Big Data, ¥3.27M, National Natural Science Foundation of China, 2019-2022.
- PI, Intel Collaborative Research Institute for Intelligent and Automated Connected Vehicles, \$0.6M, Intel Corporation, 2018-2021
- Co-PI Research and Application Validation of Parallel Driving Technology Based on Intelligent Intelligence Fusion of Man-Machine Intention, ¥4 M, Beijing Municipal Science and Technology Commission, 2018-2019.
- PI, Application of Artificial Intelligence Adaptive Technology in K12 Education, ¥2M, Shanghai Yixue Education Technology Co., Ltd., 2018-2019.
- Co-PI, Funds Plan of Strategy Research and Platforms Construction for Steering Group of Experts, ¥1.5M, National Natural Science Foundation of China, 2017-2018.
- PI, Research and Verification of Knowledge Automation Systems for Production Planning in Process Industry Based on the CPSS, ¥3.4M, National Natural Science Foundation of China, 2016-2020.
- PI, Industries 5.0 Demonstration Project, ¥3B, QDMG and Huatong Inc., China, 2016-2020.
- PI, Intelligent Industries Development Fund, ¥200M, Venture Capital Investment, China, 2015-2020.
- PI, Intelligent Vehicles Proving Ground Project, ¥150M, CSMG, China, 2015-2018.
- PI, Intelligent Enterprise Systems, ¥180M, QDMG, China, 2014-2020.
- PI, ERP3.0: Research on the Theory and Key Technology of Parallel Management Systems for Enterprises, ¥2.47M, National Natural Science Foundation of China, 2013-2017.
- Co-PI, CC 5.0 and Intel 5.0: Computational Experiments, Knowledge Automation, Parallel Systems and Parallel Testing, ¥4.7B, DRF, China, 2012-2015.

- PI, Cloud Computing for Intelligent Systems and Applications, ¥20M, DGMG, China, 2012- 2014.
- PI, Management and Control of Complex Systems, ¥48M, Ministry of Science and Technology, China, 2011-2016.
- PI, Social Computing and Parallel Systems, ¥5M, Chinese Academy of Sciences, China, 2010-2013.
- PI, Method and Application of Intelligent Control and Computational Intelligence (Phase II), ¥5.5M, National Natural Science Foundation of China, 2010-2012.
- PI, Social Computing in E-Commerce, ¥2.85M, National Natural Science Foundation of China, 2009-2012.
- PI, Social Computing: Prototype Systems, ¥8M, Chinese Academy of Sciences, China, 2008-2011.
- PI, Basic Theory and Prototype System of Information and Security Informatics and Social Computing, ¥8M, Chinese Academy of Sciences, China, 2008-2009
- PI, Knowledge-based Multimedia Search Technologies and Service-Oriented Vertical Search Engines, Hi-tech Research and Development Program of China (863 Project), ¥5M, Ministry of Science and Technology, China, 2007-2010.
- PI, Method and Application of Intelligent Control and Computational Intelligence, ¥5M, National Natural Science Foundation of China, 2007-2009.
- PI, Outstanding Team Grant, ¥8.6M, the National Natural Science Foundation and Chinese Academy of Sciences, China, 2005-2012.
- PI, Information and Security Informatics Research Team, ¥6M, Chinese Academy of Sciences, China, 2005-2008
- PI, Knowledge-based Multimedia Search Technologies and Service-Oriented Vertical Search Engines, Hi-tech Research and Development Program of China (863 Project), ¥5M, Ministry of Science and Technology, China, 2005-2008.
- PI, Intelligence and Security Informatics, ¥6M, International Cooperation Program, Chinese Academy of Sciences, China, 2005-2008.
- PI, Social Computing: Theory and Applications, ¥5M, Chinese Academy of Sciences, China, 2005-2007.
- PI, Research of Computing with Word and Linguistic Dynamic Systems, ¥70K, National Natural Science Foundation of China, 2005.
- PI, Agent-based Control for Networked Systems, ¥2M, Key Project Program, the National Science Foundation and Chinese Academy of Sciences, China, 2004-2008.
- PI, Research on the Control Theory and Method under the Internet Environment, ¥1M, National Natural Science Foundation of China, 2004-2007.
- PI, Development of Embedded Vehicular Computing Platforms, ¥3M, the Provincial Key Technical Research Program, Department of Science and Technology, Shandong Province, China, 2004-2006.

- PI, OSEK/VDX & OSGi-based Embedded Vehicular Software Platform ¥1.5M, Hi-tech Research and Development Program (863 Project), Ministry of Science and Technology, China, 2004-2005.
- Co-PI, Reconfigurable Systems for Networked Manufacturing Systems, ¥55M, The National Key Fundamental Research Program (973 Project), Ministry of Science and Technology, China, 2003-2008.
- PI, Agent-based Technology for Real-time Networked Manufacturing Systems, ¥1.5M, Department of Science and Technology, Shandong Province, China, 2003-2006.
- PI, Laboratory Development Matching Grant, ¥3.75M, National Key Laboratory Program, Chinese Academy of Sciences, China, 2002-2007.
- PI, Laboratory Development Grant, ¥2M, National Key Laboratory Program, Ministry of Science and Technology, China, 2002-2007.
- PI, Intelligent Control Theory, ¥0.8M, National Natural Science Foundation of China, 2002- 2005.
- PI, Digital Highway and Vehicles, \$300K, DOT, USA, 2002-2005.
- PI, Sino-US Joint Center for Intelligent Control and Systems, \$750K, Kelon Group and Chinese Academy of Sciences, China, 2001-2003.
- PI, Intelligent Transportation Systems for Integrated Traffic Control and Management, ¥720K, Key Project in the Knowledge Innovation Program, Chinese Academy of Sciences, China, 2001-2002.
- PI, Outstanding Young Scientist Award, ¥1.6M, the National Natural Science Foundation and Chinese Academy of Sciences, China, 2001.
- PI, PARCS (Program for Advanced Research in Complex Systems) Grant, \$50K, ABB USA, 2001.
- PI, PARCS (Program for Advanced Research in Complex Systems) Scholarship Grant, \$41K, Tang Education Foundation, 2001.
- PI, Development in Telematics, Vehicular Navigation Systems, and Intelligent Home Systems, \$1.5M, Kelon Group, China, 2000-2003.
- PI, Integrated Design and Control of Flexible Manipulators, ¥150K, National Natural Science Foundation of China, 1999-2002.
- PI, Mechatronic Design and Control of IBM High-Performance Tape Track Following Systems, \$90K, IBM, San Jose, CA, 1999-2000.
- PI, Outstanding Oversea Talent Award, ¥2M, the State Planning and Development Council and Chinese Academy of Sciences, China, 1999.
- PI, Outstanding Oversea Talent Award, ¥2M, the State Planning and Development Council and Chinese Academy of Sciences, China, 1999.
- PI, Integrated Platform for Internet-based Laboratory Experiments, \$400K+\$650 In-Kind Support, the National Science Foundation, USA, 1998-2001.

- PI, Vehicles with Intelligent Systems for Transport Automation (VISTA Project), \$100K, the Arizona State Legislature, 1998-1999.
- Co-PI, Soft Distributed Control Systems for In Situ Copper Leaching, \$6.5M, BHP Copper Corporation, 1998-1999.
- PI, An Agent-Based Distributed Control System for Leaching Processes, \$150K, PWI Inc., 1998-1999.
- PI, A PLC Control System for BGA Assembly Stations, RVSI Corporation, \$70K, 1998.
- Co-PI, Robotic Excavation Techniques for Wheel Loaders, \$2.0M, Caterpillar Corporation, 1996-1999.
- PI, Development of a Computer-Based Scheduling Model for Planning and Operational Control of Leach Operations, \$55K, Copper Range Co., MI, 1995-1996.
- Co-PI, Training Program in Motor Control Neurobiology, \$1.2M, National Institute of Health, 1994-1997.
- PI, Automated Robotic Mining Excavation using Fuzzy Logic and Neural Networks, \$36K, National Science Foundation, USA, 1994-1995.
- PI, A Vision-Based Intelligent Real-Time Control System for Mining Tasks in Dynamic Environments, \$200K, Arizona Mining and Mineral Resource Research Institute, 1993-1994.
- PI, An Intelligent Vehicle for Lunar/Martian Applications, \$200K, Seed Grant from NASA, 1992-1993.
- PI, High-Autonomous Control System Development for Lunar/Martian Oxygen Production Plant, \$200K, NASA, 1991-1993.
- PI, Design and Evaluation of Communication Protocols for LAN-Connected Machines Environments, \$14K, AT&T Science and Engineering Foundation, 1991-1992.

INVENTIONS & PATENTS

- “Method and System of Keeping and Controlling Formation of Unmanned Vehicles” Chinese Patent Number ZL2017111072217.3 February 2020
- “Formation Method, Storage Device and Processing Unit of Unmanned Devices”, Chinese Patent Number ZL2017110650445.8 November 2020
- “Method, System and Apparatus for Traffic Path Recommending based on Parallel Integrated Learning” Chinese Patent Number ZL201910793353.4 December 2020
- “Method, System and Apparatus for Short-time Traffic Flow Prediction Method Based on Hybrid Depth Learning” Chinese Patent Number ZL201910842242.8 December 2020
- “Vehicle Detection Method Based on Hybrid Image Template” United States Patent Number US10157320B2 December 2018
- “Docker-based Experimental Method for Large-scale Computation of Artificial Traffic System” Chinese Patent Number ZL 201510518249.6, February 2018

- “Robustness Prospect Detection Method Based on Multi-view Learning” Chinese Patent Number ZL 201510174979.9 April 2018
- “A Method of Determining The Proportion of Partially Random Allocation of Traffic Evacuation Destinations” Chinese Patent Number ZL 201410785365.X May 2018
- “3D Printer Spray Nozzle Capable of Adjusting Cross Section Areas of Extruded Materials and Method for Controlling Printing Speed and Precision of the 3D Printer Spray Nozzle” United States Patent Number US10016929B2 July 2018
- “Method for Detecting Traffic Violation” United States Patent Number US9704060B2 July 2017
- “A Short Range Travel Time Prediction Method” Chinese Patent Number ZL201510345977.1 October 2017
- “A License Plate Recognition Method Based on Extreme Value Region and Extreme Learning Machine” Chinese Patent Number ZL201410374155.1 June 2017
- “A Traffic Data Compensation Method” Chinese Patent Number ZL201410336212.7 April 2017
- “A Detection System and Method for Illegally Operating Vehicles” Chinese Patent Number ZL201410361120.4 February 2017
- “3D Printing System” Chinese Patent Number ZL201480000261.1 November 2016
- “A Short-term Traffic Flow Forecasting Method” Chinese Patent Number ZL201410398861.X August 2016
- “A Detection and Prediction System and Method for Supply and Demand State of Public Transportation” Chinese Patent Number ZL201410293589.9 March 2016
- “A Traffic Accident Assistant Processing System and Method” Chinese Patent Number ZL201410064895.5 December 2015
- “Docker Based Large-scale Experimental Computation with Artificial Transportation System” Chinese Patent Number ZL201510518249.6 August 2015
- “A Short-term Traffic Flow Prediction Method” Chinese Patent Number ZL201410398861.X August 2014
- “A Social Interaction Network Generation Method and Device Based on Artificial Transportation Systems” Chinese Patent Number ZL201410065242.9 February 2014
- “A License Plate Recognition Method Based on Extreme Region and Extreme Learning Machine” Chinese Patent Number ZL201410374155.1 July 2014
- “An Intelligent Traffic Information Collection System and Method Based on Wireless Sensor Network” Chinese Patent Number ZL201410512888.7 September 2014
- “Traffic Signal Timing Recommendation System and Methods Based on ACP” Chinese Patent Number ZL201410373407.9 July 2014
- “An Optimization Method and System for Evacuation Control Scheme Based on Virtual Actural Interaction” Chinese Patent Number ZL201310037281.3 January 2013

- “A Vehicle Detection and Tracking Method Based on Vehicle Position Characteristics” Chinese Patent Number ZL201210340153.1 September 2012
- “An Auto-Inspection System for Vehicle Failures” Chinese Patent Number 200510098348.X September 2005
- “vASOS: An Embedded Vehicular Operating System” Chinese Patent Number 200510098349.4 September 2005
- “An Embedded Vehicle Auto-Navigation System and the Corresponding Methods” Chinese Patent Number 200510098351.1 September 2005
- “iHS: An Integrated Home Server” Chinese Patent Number 00131035.6 March 2002
- “aDCS: A Networked Distributed Control System”, Chinese Patent Number 00131033.X March 2002
- “hASOS: A Real Time Operating Platform for Home Automation” Chinese Patent Number 00131037.2 March 2002
- “A Neuro-Fuzzy Controller for Remote Operations of Networked Systems” Chinese Patent Number 00130888.2 March 2002
- “A WAP-Based Communication System for Smart Homes” Chinese Patent Number 00130887.4 March 2002

KEYNOTES AND PRESENTATIONS

- “Parallel Intelligence in CPSS for Industries 5.0: From Metaphysics to Metaverse”, International Winter School on AI in Cyber-Physical Systems For Industry 4.0, online, December 17, 2021
- “Social Prescription for Social Healthcare: From Merton’s Laws to Prescriptive Computing”, 3rd International Conference of Social Computing, Beijing China, December 11, 2021
- “Parallel Intelligence and Knowledge Automation: The Science and Technology for Metaverse and Beyonds”, IEEE ICFTIC 2021, online, November 13, 2021
- “Transportation 5.0 and Parallel Intelligence: MetaTransportation in MetaCity for Smart Mobility of MetaSociety”, ICITE2021, Beijing China, October 30, 2021
- “Parallel Intelligence for Unmanned Systems: From Virtual Twins to Parallel Operations”, 4th IEEE International Conference on Unmanned Systems(ICUS 2021), Beijing, China, October 16, 2021
- “Parallel Intelligence in The Third Axial Age: IoM Based Human Machine Systems”, 2021 Distributed and Hybrid Conference (DHC) on Internet of Minds (IoM), online, September 14, 2021
- “Industries 5.0 and Knowledge Automation: From CPS To CPSS via Parallel Intelligence”, ICAC’21, online, September 3, 2021
- “Neural Computing and Logical Computing: Explainable AI or TRUE DAO Intelligence?”, 2021 International Conference on Neural Computing for Advanced Applications, online, August 28, 2021

- “Parallel Intelligence for Parallel Education with Digital Learners in CPSS” IJCAI 2021 W14: AIMA4Edu: AI-based Multimodal Analytics for Understanding Human Learning in Real-World Educational Contexts, online, August 21, 2021
- “Parallel Education via iSTREAMS and iCDIOS: From Artificial Intelligence to Educational Intelligence” IEEE DTPI 2021, Beijing China, August 15, 2021
- “Federated Services in CPSS: From Parallel Services to Services Intelligence via Digital Twins and Smart Contracts” 2021 INFORMS Conference on Service Science(ICSS 2021), online, August 11, 2021
- “Artificial Intelligence and Intelligent Vehicles: Driving into the Third Axial Age with Smart Mobility in CPSS” Forum on core technologies of new generation vehicles, Beijing, China, January 12, 2020
- “Parallel Transportation and Transportation 5.0: From Intelligent Transportation to Transportation Intelligence” BAAI Conference, Beijing, China, June 23, 2020
- “The Origin and Goal of Cyber-Physical-Social Systems: From Systems Learning to Systems Intelligence” ICSSE 2020(online), September 01, 2020
- “Edge Emergence and Cloud Convergence in ITS: From Parallel Transportation to Transportation 5.0”, ICITE 2020(online), September 11, 2020
- “The Origin and Goal of Future in CPSS: Industries 4.0 and Industries 5.0“ IEEE SMC2019, Bari Italy, October 07, 2019
- “AI and Grand Challenges for ITS: Parallel Transportation Systems and Transportation 5.0” IEEE ITSC 2019, Auckland New Zealand, October 28, 2019
- “The Future of Artificial Intelligence: Driving into The Third Axial Age with Parallel Intelligence” 2019 China-Chile Workshop on Science and Technology Innovation Cooperation, Beijing, China, June 03, 2019
- “Intelligent Vehicles in China: Past Experiences and On-Going Innovations” 23rd World Semiconductor Council Meeting, Xiamen, Beijing, May 23, 2019
- “Parallel Driving and Parallel Mining” World Intelligent Driving Industry Forum, Tianjin, China, May 17, 2019
- “The Future of Artificial Intelligence: Driving into the Third Axial Age with Parallel Intelligence” 2019 Futures Congress, Santiago, Chile, January 14, 2019
- “Building Robots for Parallel Cognition: Cognitive Science in Reflection and Perspective” 2018 Third International Conference on Cognitive Systems and Information Processing, Beijing, China, November 30, 2018
- “Parallel Robotics: Building Bridges between Human Intelligence and Artificial Intelligence” The International Workshop on Robotics and AI, Beijing, China, November 16, 2018
- “Parallel Driving for Smart Mobility: Towards Intelligent Vehicles of the Third Axial Age” Pangyo Autonomous Motor Show 2018 International Forum, Pangyo, Korea, November 15, 2018

- “A Parallel Driving Framework for 300% Safety!” Solving the Autonomous Vehicle Safety Assurance Challenge (IEEE ITSC 2018) INTEL, Maui, Hawaii, USA, November 07, 2018
- “Transportation 5.0: From Parallel Driving to Parallel Traffic Control” 2018 IEEE International Conference on Intelligent Transportation Systems, Maui, Hawaii, November 04, 2018
- “Systems Engineering 5.0: Towards Systems of Parallel Systems in CPSS and IoM” 2018 INCOSE Beijing Summit, Beijing, China, September 26, 2018
- “AI for Automation of Intelligence: From Newton’s ‘Big Laws Small Data’ to Merton’s ”Big Data Small Laws” 14th IEEE International Conference on Automation Science and Engineering, Munich, Germany, August 21, 2018
- “Parallel Emergency and Safety Management for Nuclear Plant Operations: A New Approach based AI and Knowledge Automation” 26th ICONE – International Conference on Nuclear Engineering, London, UK, July 22, 2018
- “Interoperable Neural Networks: A Personal Journal and Perspective” IJCAI 2018 Tutorial: Toward Interpretable Deep Learning via Fuzzy Logic, Stockholm, Sweden, July 13, 2018.
- “Parallel Intelligent Manufacturing Systems: From Social Manufacturing to Smart Manufacturing” EU-China Intelligent Manufacturing Conference, Shanghai, China, May 07, 2018
- “Parallel Logistics in the Social IoT Era” IEEE World Forum on Internet of Things -Logistics Track, Singapore, February 6, 2018
- “Parallel Intelligent Education Systems in the New IT Era” Sino-Finnish EduCloud Forum 2017, Beijing, China, February 21, 2017.
- “Parallel Blockchain: Concept, Techniques and Applications” The first International Symposium on Blockchain and Knowledge Automation (ISBKA 2017) , Denver, USA, April 3, 2017.
- “Parallel Sensing and Parallel Blockchain for Transportation 5.0: From RFID to IoT for ITS in CPSS” The 11th Annual IEEE International Conference on RFID, Phoenix, USA, May 9-11, 2017.
- “Parallel Intelligence and Parallel Blockchain for X 5.0 in CPSS” IEEE SMC Workshop on Computational Psychophysiology, Beijing, China, May 22, 2017.
- “Drive Customer Value by Parallel Intelligence: ACP-Based AI and People Analytics” 2017 Manufacturing Performance Days, Tampere, Finland, May 31, 2017.
- “AI and Future Challenge for IV: A Chinese Perspective and Practice” 2017 IEEE Intelligent Vehicles Symposium (IV 2017) , Redondo Beach, California, USA, June 11-14, 2017.
- “From Industries 5.0 to Societies 5.0 via Grids 5.0 in CPSS: The Coming Age of New IT and Intelligent Industries” 2017 AIIB Annual Meeting of the Board of Governors, Seminar I: The Era of 4th Industrial Revolution and Infrastructure. Jeju, Korea, June 16, 2017.

- “Parallel Nuclear Power Systems: From Digitization To Smart Operation and Management” 2017 25th International Conference on Nuclear Engineering, Shanghai, China, July 2, 2017.
- “Artificial Intelligence and Coming New Axial Age: The Mission and Future of History” Consultation on UNDP Asia-Pacific Regional Programme (2018-2021), Bangkok, Thailand , August 23, 2017.
- “Parallel Networks: From SDN to CPSS-Oriented Smart Networks for IoT” Workshop on Mobile Networking, Analytics and Edge Computing, Munich, Germany, September 29, 2017.
- “Intelligence and Age: China’s Artificial Intelligence Dream of Straight Overtaking” SAP China Summit, Beijing, China, September 6, 2017.
- “Parallel Steel: From Digitalization to Intelligent Production for Steel Manufacturing” 2017 China Steel Industry Intelligent Manufacturing Collaborative Innovation Development Forum, Wuhan, China, October 13, 2017.
- “Parallel Ocean: From Ocean Big Data to Ocean Intelligent Utilization and Control” Qingdao, Chinese Society for Oceanography 2017 Academic Annual Meeting China, October 31, 2017.
- “Artificial Intelligence and Automotive Intelligence: China’s Projects and New Initiatives” Ford Research & Innovation Center, Palo Alto ,USA, November 20, 2017 .
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