IEEE CybConf 2026 Successfully Held at Nanjing University

From April 17 to 20, 2026, the 6th IEEE International Conference on Cybernetics (IEEE CybConf 2026) was successfully held at the International Conference Center of Nanjing University, Xianlin Campus. Centered on the theme "Cyb ernetics: Shaping the Future of AI," IEEE CybConf 2026 was sponsored by IEEE Systems, Man, and Cybernetics Society, supported by two past Presidents of this SMC Society including Honorary Chair of the conference Professor Sam Tak-Wu Kwong (IEEE Fellow, Fellow of the Canadian Academy of Engineering) and Honorary Chair of the conference Professor Imre Rudas (IEEE Fellow), and hosted by Nanjing University. Scholars and researchers from 15 countries and regions gathered in Nanjing to exchange ideas on the latest advances and future directions in cybernetics and related fields.

Opening Ceremony

On the morning of April 18, the opening ceremony took place in the Zijin Hall of the International Conference Center. Distinguished attendees included Professor Ian R. Petersen from the Australian National University, Fellow of the Australian Academy of Science and IEEE/IFAC Fellow; Professor Jian Chu, founder of SUPCON; Professor Giancarlo Fortino of the University of Calabria, IEEE Fellow and Vice President for Cybernetics of IEEE SMC Society; Professor Guanghui Wen of Southeast University, IET Fellow; Professor Bo Qi from Chinese Academy of Sciences; and Professor Tadahiko

Murata from Osaka University, IEEE Fellow, together with participants from around the world. The ceremony was chaired by General Chair Professor Chunlin Chen.

At the opening ceremony, Professor Kemin Zhou, Dean of the School of Robotics and Automation, delivered welcome remarks on behalf of Nanjing University and the School. He warmly welcomed participants from across the globe and introduced the University's distinguished history and the rapid development of the School of Robotics and Automation. He noted that the field is entering a pivotal stage in which control and optimization theories are increasingly empowering artificial intelligence, quantum technologies are accelerating toward practical deployment, and human-machine interaction is being redefined. He expressed the hope that the conference would inspire new collaborations and innovative ideas for the future of the discipline.

Professor Giancarlo Fortino then addressed the audience on behalf of the IEEE SMC Society, commending the strong organization and academic quality of the conference and thanking Nanjing University for hosting the event. Following this, Program Chair Associate Professor Zhi Wang presented the technical program report, outlining the submission and review statistics, plenary and parallel session arrangements, and best paper competition process.

Plenary and Keynote Program

The conference featured three plenary talks by internationally renowned scholars and four keynote talks by leading researchers. The program covered a wide range of frontiers, including control theory, quantum control and metrology, industrial intelligence, digital twins, and computer vision.

On the morning of April 18, Professor Ian R. Petersen from the Australian National University delivered a plenary talk titled "Control Theory Applied to Accelerated Gradient Optimization Algorithms," chaired by Professor Kemin Zhou. He presented recent advances in analyzing and improving gradient-based optimization methods, including the heavy-ball method and triple momentum method, using tools such as discrete-time circle criteria and optimal gain margins, and also discussed new algorithm designs that incorporate integral action to achieve zero steady-state error in online convex optimization.

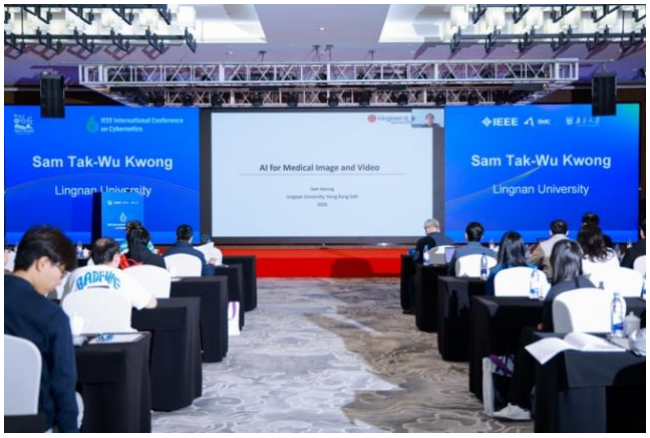
Professor Giancarlo Fortino then delivered a keynote talk titled "Generative Digital Twins," highlighting emerging paradigms at the intersection of generative AI and digital twins. Using vehicle trajectory prediction in smart-city scenarios as an example, he illustrated the strong application potential of generative digital twins.

Later that afternoon, Professor Guanghui Wen of Southeast University gave a keynote talk on “Distributed Consensus and Optimization of Multi-Agent Systems with Switching Communication Topologies.” He introduced systematic methods for constructing multiple Lyapunov functions based on nonsingular M-matrix theory and Lyapunov inequalities, together with their application to unmanned surface vehicle formation control.

Professor Bo Qi from Chinese Academy of Sciences, then delivered a keynote talk titled "Ultra-High-Precision Single-Parameter Estimation via Non-Hermitian Effects, Control, and Optimization." His presentation showcased recent progress in quantum metrology enabled by system control and the optimization of non-Hermitian physical effects.

On the morning of April 19, Professor Jian Chu, founder of SUPCON, gave a plenary talk titled "TPT-Driven Industrial Intelligence: AI for Safer, Higher-Quality and Cheaper Process Manufacturing." He shared innovative applications of pretrained time-series Transformer models in safety monitoring, cost optimization, and quality control for process industries.

Professor Sam Tak-Wu Kwong from Lingnan University delivered a plenary talk on "High Dynamic Range Video," presenting recent work on HDR image reconstruction, single-image HDR reconstruction networks, and HDR image quality assessment.



Professor Tadahiko Murata from Osaka University gave a keynote talk titled "Future of Digital Twin: How to Consider Human Factors in Cybernetics," proposing a next-generation social simulation paradigm that incorporates psychological traits into synthetic population data.

Parallel Sessions and Best Paper Competition

The conference program included eight oral sessions and two poster sessions, spanning topics from classical control to quantum engineering, data- and AI-driven complex systems and networks, deep learning and perception, autonomous systems and robot control, reinforcement learning and intelligent decision-making, intelligent monitoring and system optimization, robust AI perception and human-machine intelligent systems, as well as AI for healthcare and human-centered computing.

A dedicated best paper competition was also held during the conference. A total of nine best paper applications and eight best student paper applications were received. After careful review by the evaluation committee, four papers were shortlisted for the best paper award and three for the best student paper award. The shortlisted works covered topics such as model compression, quantum noise reconstruction, quantum feedback control, generative speech-driven systems, visual navigation, slip regulation for quadruped robots, and power load forecasting. All seven finalist papers were presented orally on the afternoon of April 18 in Zijin Hall.

In parallel with the main technical program, the conference also hosted three workshops and an IEEE SMCS Summer School running throughout the event for early-career researchers and graduate students, providing valuable opportunities for structured learning and engagement with emerging research topics.

Conference Overview

The IEEE International Conference on Cybernetics is one of the flagship conferences of the IEEE Systems, Man, and Cybernetics Society, providing a premier forum for researchers in cybernetics, computational intelligence, and human-machine systems worldwide. The 6th edition of the conference was chaired by Professor Chunlin Chen, IEEE Fellow and Vice Dean of the School of Robotics and Automation, Nanjing University, with Professor Daoyi Dong from the University of Technology Sydney, IEEE Fellow, serving as Co-Chair. Honorary Chairs included Professor Sam Tak-Wu Kwong from Lingnan University, Hong Kong SAR, China, and Professor Imre Rudas from Obuda University, Hungary. Associate Professor Zhi Wang of Nanjing University served as Program Chair, while Professor Hanxiong Li from the City University of Hong Kong, IEEE Fellow, Professor Tongliang Liu from the University of Sydney, and Professor Qingsong Wen from the Squirrel Ai Learning served as Program Co-Chairs. Professor Kemin Zhou, IEEE/IFAC/AAAS Fellow, and several leading distinguished scholars served on the International Advisory Committee. Dr Jingwen Wei from the School of Robotics and Automation, Nanjing University and other colleagues served as Local Organization Co-Chairs. Faculty members and students from the School also actively contributed through paper presentations and technical exchange, with multiple papers selected for oral and poster presentation. At the banquet, Professor Giancarlo Fortino announced that the next IEEE International Conference on Cybernetics will be held in Italy next year.