IEEE SMC 2022
PRAGUE • CZECH REPUBLIC

IEEE SMC 2022
International Conference on Systems, Man, and Cybernetics
Clarion Congress Hotel Prague, Czech Republic
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Special Session

Code: w6ja9

Title

Quantum Cybernetics and Machine Learning

Proposer / Main Organizer

Chunlin Chen, Nanjing University, Nanjing 210093, China, 0086-13605161215, clchen@nju.edu.cn

Biography

Chunlin Chen (S'05-M'06-SM'21) is currently a full professor and the chair of the Department of Control and Systems Engineering, School of Management and Engineering, Nanjing University, Nanjing, China. He received the B.E. degree and Ph.D. degree in engineering from the University of Science and Technology of China, Hefei, China, in 2001 and 2006, respectively. He was with the Department of Chemistry, Princeton University from September 2012 to September 2013. He had visiting positions at the University of New South Wales and City University of Hong Kong. His current research interests include machine learning, intelligent control and quantum control. He has published more than fifty journal papers (most in top-class journals) and fifty conference papers. He serves as the chair of IEEE SMC TC on Quantum Cybernetics.

The other organizers are

Daoyi Dong, University of New South Wales, Australia, daoyidong@gmail.com

Apurva Narayan, The University of British Columbia, Canada, apurva.narayan@uwaterloo.ca

Giovanni Acampora, University of Naples Federico II, Italy, giovanni.acampora@unina.it

Qing Gao, Beihang University, China, 10468@buaa.edu.cn

IEEE Member or SMC Society Member

All organizers are IEEE Members, SMC Society Members and Members of IEEE SMC TC on Quantum Cybernetics

Category

Cybernetics

Number of Expected Paper Submissions:

6

Keywords

Quantum control, quantum computation, quantum communication, quantum information processing, machine learning

Brief Description and Justification (200-250 words):

This special session deals with the problem of quantum systems control and machine learning. Emerging quantum technology, especially quantum information technology, is recognized as one of the most promising future technologies. By exploiting the unique features of quantum effects, quantum computation, quantum communication, quantum metrology and quantum simulation are rapidly developing around the world. Quantum cybernetics provides the framework for a fundamental and interdisciplinary investigation on the role of quantum effects on regulating quantum and classical systems, and developing new quantum technology. At the same time, quantum machine learning provides promising possibility to speed up the solution of learning problems by taking advantage of quantum characteristics.

The goal is to promote the development of the relevant emerging areas. Topics include but not limited to quantum control, quantum computation, quantum communication, quantum sensing, machine learning and quantum estimation.

Similar special sessions have been organized in IEEE SMC2021, IEEE SMC2020, IEEE SMC2019, IEEE SMC2018 and IEEE SMC2017 since the TC on Quantum Cybernetics was established in 2017.