

IEEE ICUS 2022
Invited Session Summary

Title of Session

Artificial Intelligence and Resilience in Networking Information-centric System of Systems

Name, Salutation and Affiliation of Organizers

1. Prof. Yingchao Zhang,

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2. Prof. Cheng Zhu

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3. Assoc. Prof. Yun Zhou

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4. Dr. Qin Sun

Sun Yat-sen University, China

5. Dr. Hongxu Li

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Biosketches of Organizers



Yingchao Zhang is a Professor and Doctoral Supervisor in the School of System Science and Engineering at Sun Yat-sen University, China. He received his PhD in management science and engineering from the National University of Technology, China with a focus on the high-performance information integration in the virtual organization. His research interests include Information System of Systems Engineering, Intelligent Decision Support System, and Strategy. Prof Zhang has finished many research works founded by the NSF and other Government departments, focusing on the Intelligent Decision Support System. In recent years, he finished two books, which are “Command and Control System Engineering. Beijing: Defense Industry Press”, “Principle and Technology on System of Systems Engineering. Beijing: Defense Industry Press.” He is also a member of the CSEC.



Cheng Zhu is a Professor and Doctoral Supervisor in the School of System Engineering at National University of Defense Technology, China. His main research interests include Information System Engineering and Intelligent Decision Support Technology. Prof. Zhu has undertaken more than ten research projects funded by NSFC as well as other Chinese government departments, and has published 8 books and more than 70 papers.



Yun Zhou received the Ph.D. degree in Computer Science from the Queen Mary University of London, in 2015. He is currently an Associate Professor with the Science and Technology on Information Systems Engineering Laboratory, National University of Defense Technology, Changsha, China. His research interests are machine learning and Bayesian network theory. He applies these techniques to a wide range of real-world problems. His work is supported by the Outstanding Young Innovators of National University of Defense Technology (2019), the Training Program for Excellent Young Innovators of Changsha (2020), the Huxiang Youth Talent Support Program (2021). He has published several papers in reputed conferences in this area, including UAI, ICDM, INFOCOM, ACM SIGSPATIAL and PGM. He has authorized 8 invention patents, and his work has been cited for more than 600 times. Now, he is the reviewer of more than 10 reputed journals such as TKDE, TNNLS and IJAR.



Qin Sun, born in 1991, is a Ph.D. student majoring in information and communication engineering in the School of Systems Science and Engineering at Sun Yat-sen University, China. His current research interests include resilient system-of-systems modeling and resilience enhancement for unmanned systems.



Hongxu Li is a Ph.D. student in the School of System Science and Engineering at Sun Yat-sen University, China. His research interests include resilience assessment and optimization of UAV swarms. Now, he is the reviewer of journals such as Computers and Electrical Engineering.

Details of Session

In recent years, the resilient networking information-centric system of systems has become a novel and vital combat system in the development of military intelligence; however, there are many security vulnerabilities and risks in real-world usage. On the one hand, from the perspective of intelligence, the degree of intelligence of networking information-centric system of systems is rapidly increased, and its application gradually changes from the functional level to the decision-making level. Therefore, it is necessary to explore the explainability of intelligent networking information-centric system of systems. On the other hand, from the perspective of security, as the degree of intelligence increases, the networking

information-centric system of systems faces more and more vulnerabilities and risks (such as counterattacks). Therefore, it is necessary to study artificial intelligence and resilience in networking information-centric system of systems. This session will focus on artificial intelligence and resilience in networking information-centric system of systems, which covers the applications of artificial intelligence, network security, and resilience theory in networking information-centric system of systems, which is very important for the development of networking information-centric system of systems in the future.

This session is intended to invite the latest original paper containing (but not limited to) the innovative ideas, concepts, new discoveries, improvements, and new applications relevant to 'Artificial Intelligence and Resilience in Networking Information-centric System of Systems'.

- Theory in Artificial Intelligence and Resilience in Networking Information-centric System of Systems
- Mechanism in Artificial Intelligence and Resilience in Networking Information-centric System of Systems
- Modeling and Simulation in Artificial Intelligence and Resilience in Networking Information-centric System of Systems
- Theory, technology, and method in Intelligent Resilient Command and Control System of Systems
- Evaluation in Artificial Intelligence and Resilience in Networking Information-centric System of Systems
- Safety in Artificial Intelligence and Resilience in Networking Information-centric System of Systems
- Application in Artificial Intelligence and Resilience in Networking Information-centric System of Systems