IEEE Smart World Congress 2022

The 19th IEEE Conference on Ubiquitous Intelligence and Computing (UIC-2022)
The 2022 IEEE Autonomous and Trusted Vehicles Conference (ATC-2022)
The 22nd IEEE Conference on Scalable Computing and Communications (ScalCom-2022)
The 2022 IEEE Conference on Digital Twin (DigitalTwin-2022)
The 2022 IEEE International Conference on Privacy Computing (PriComp-2022)
The 2022 IEEE Conference on Metaverse (Metaverse-2022)

December 15-18, 2022, Haikou, Hainan, China

http://www.ieee-smart-world.org/
Conference Program and Information Booklet

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Registration Desk

The Registration Desk will be open to assist you at the following times:
• Thursday, December 15, 2022, 13:00 – 20:00
• Friday, December 16, 2022, 8:00 – 20:00
• Saturday, December 17, 2022, 8:00 – 20:00
• Sunday, December 18, 2022, 8:00 – 13:00

Name Badges and Meal Tickets

All delegates, sponsors and speakers of the IEEE UIC/ATC/ScalCom/DigitalTwin/PriComp/Metaverse-2022 will be provided with a name badge, to be collected upon registration. This badge must be worn at all times as it is your official pass to all technical sessions of the conferences and morning and afternoon coffee break.

There are different meal tickets for the welcome reception on December 16, the three lunches on December 16-18, and the banquet on December 17, respectively.

Presentation Guidelines

Conference Date
The conference is to be held from Dec 15-18, 2022. The time for conference program is based on CST, China Standard Time.

Language
The presentation language of the IEEE UIC/ATC/ScalCom/DigitalTwin/PriComp/Metaverse-2022 is English.

For Session Chairs
Session Chairs are requested to join the physical room or online zoom/room at least 10 minutes before their sessions.

For Authors
You are strongly encouraged to join the physical room or online zoom/room during your presentation and Q&A. Please kindly read the program carefully and find the session where your paper is located, and contact the session chair as soon as possible. The email of each session chair has been published. Please confirm your attendance with the session chair at least 10 minutes before the session.

Timing
Please check the program for the exact time of your session and where your paper falls within the session.

It is recommended that all IEEE UIC/ATC/ScalCom/DigitalTwin/PriComp/Metaverse-2022 presentations use **15 minutes presentation time plus 5 minutes question time**. However, the Session Chairs will determine the exact presentation time for each paper, based on the number of presentations in each session. The Session Chairs will ensure that you do not over-run the time allocated.

Proceedings
If you are interested in reading papers during the presentations, here are the proceedings:

https://conferences.computer.org/smartworldpub

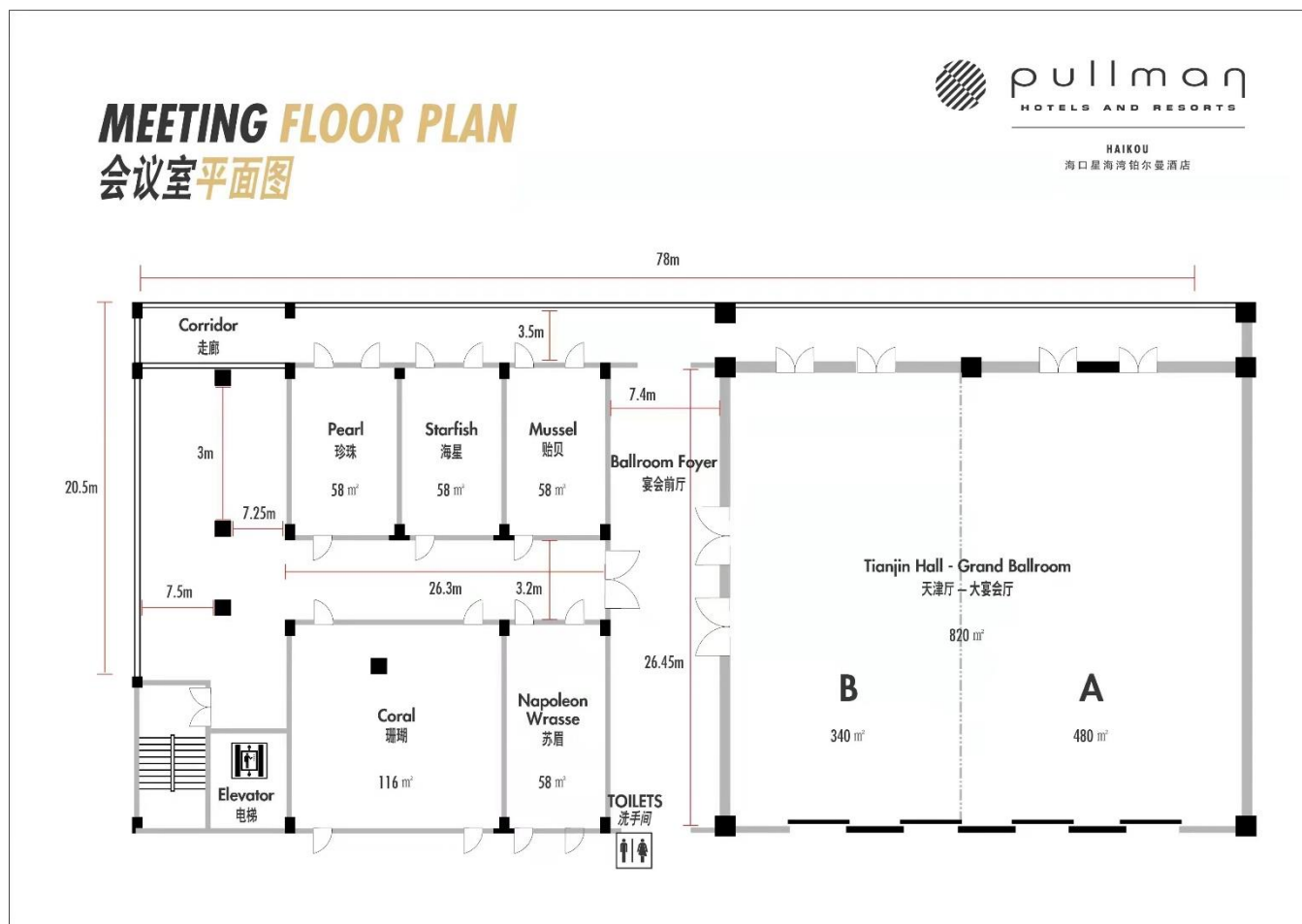Username: smartworldpub22
Password: conf22//

Conference Venue

Besides six physical rooms, the following zoom/room links are for conference presentation. You can enter any zoom/room that you are interested in via the links:

Keynote (Zoom URL): https://us06web.zoom.us/j/4597473422?pwd=M0h5L1Q5VWhnSXdVUVErdlBMWUxpdz09
ID: 459 747 3422; Password: 1216W
地点：**2022 年 12 月 16 日主会场在海口星海湾铂尔曼酒店天津厅**

<table>
<tr><td>

Room 1: Physical/Virtual Presentation (Tencent meeting room)
ID: 705 4483 8064; Password：0001
Room 2: Physical/Virtual Presentation (Tencent meeting room)
ID: 304 8484 7190; Password：0002
Room 3: Physical/Virtual Presentation (Tencent meeting room)
ID: 812 1330 4340; Password：0003
Room 4: Physical/Virtual Presentation (Tencent meeting room)
ID: 521 6364 9865; Password：0004
Room 5: Physical/Virtual Presentation (Tencent meeting room)
ID: 831 6268 8337; Password：0005
Room 6: Physical/Virtual Presentation (Tencent meeting room)
ID: 615 683 219; Password：0006
Room 7: Virtual Presentation (Zoom URL)
https://us06web.zoom.us/j/4597473422?pwd=M0h5L1Q5VWhnSXdVUVErdlBMWUxpdz09
ID: 459 747 3422; Password: 1216W

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12 月 15-18 日各分会的地点分布表	
Room 1	珊瑚厅
Room 2	珍珠厅
Room 3	贻贝厅
Room 4	海星厅
Room 5	苏眉厅
Room 6	主楼多功能厅
Room 7	主楼茶室（三楼）

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Welcome Message from the Congress Chair

Welcome to the IEEE Smart World Congress 2022 which includes the 19th IEEE Conference on Ubiquitous Intelligence and Computing (UIC-2022); the 2022 IEEE Autonomous and Trusted Vehicles Conference (ATC-2022); the 22nd IEEE Conference on Scalable Computing and Communications (ScalCom-2022); the 2022 IEEE Conference on Digital Twin (DigitalTwin-2022); the 2022 IEEE International Conference on Privacy Computing (PriComp-2022) and the 2022 IEEE Conference on Metaverse (Metaverse-2022).

The smart world is set to enhance everyday things with abilities of sensation, communication, computation, and intelligence so that many tasks and processes could be simplified, efficient, and enjoyable. It consists of numerous "smart things" that can be endowed with different levels/forms of intelligence and be connected together for a network level of intelligence. At the same time, the fairness and ethics in utilizing such intelligence are of extreme importance. Research on ubiquitous and trustworthy smart world is an emerging research field covering many interdisciplinary areas that benefits humanity and will have significant societal impacts.

Here we would like to sincerely thank all organizing committee members, program committee members, and reviewers for their hard work and valuable contribution. Without your help, these conferences would not have been possible. We greatly appreciate the sponsorship from IEEE, IEEE Computational Intelligence Society, IEEE Computer Society, IEEE Technical Committee on Scalable Computing (TCSC), IEEE CIS Cyber-Physical-Social Systems Task Force, IEEE SC Hyper-Intelligence Technical Committee (HI-TC), Alibaba Cloud, Jiuqi Software, Haier Group, China Unicom, Naling Technology Ltd., Hainan Province Computer Federation and Chinese Information Processing Society of China. We are very grateful to the keynote speakers for their authoritative speeches. We thank all authors and conference participants for using this forum to communicate their excellent work.

The conferences are planned to be held in Haikou, on December 15-18, 2022. Given the COVID-19 pandemic and associated travel restrictions, as the safety of people is of the highest priority, the conferences are held physically and virtually accordingly.

We hope you find the conferences a stimulating and exciting forum.

Laurence T. Yang
FCAE, FEIC, MAE, FIEEE, FIET
Chair, IEEE CS Technical Committee on Scalable Computing
Chair, IEEE SMC Technical Committee on Cybermatics
Chair, IEEE SC Hyper-Intelligence Technical Committee
Academic Vice-president and Dean, Hainan University, China
Congress Steering Chair

Congress Keynotes

Keynote 1: Yi Pan, Shenzhen Institute of Advanced Technologies, Chinese Academy of Sciences, China

Automatic and Semi-Automatic Translation for Cloud Programming Models

Keynote 2: Abdulmotaleb El Saddik, University of Ottawa, Canada

AI-Powered Metaverse

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Research Progress and Development Trend of Privacy Computing

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Digital Twins and Intelligent Computing Platform for Smart City and Industry Applications

Keynote 8: Haiqin Xie, Haier COSMOPlat IOT Ecological Technology, China

Exploration on Digital Twin of COSMOPlat

Keynote 9: Mihaela van der Schaar, University of Cambridge, UK

The Future of Healthcare in the Metaverse

Keynote 1: Automatic and Semi-Automatic Translation for Cloud Programming Models

Yi Pan, Shenzhen Institute of Advanced Technologies, Chinese Academy of Sciences, China

About the Keynote Speaker

Prof. Yi Pan is currently a Chair Professor and the Dean of Faculty of Computer Science and Control Engineering at Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, China and a Regents' Professor Emeritus at Georgia State University, USA. He served as Chair of Computer Science Department at Georgia State University from 2005 to 2020. He has also served as an Interim Associate Dean and Chair of Biology Department during 2013-2017. Dr. Pan joined Georgia State University in 2000, was promoted to full professor in 2004, named a Distinguished University Professor in 2013 and designated a Regents' Professor (the highest recognition given to a faculty member by the University System of Georgia) in 2015.

Summary: Cloud computing has gradually evolved into an infrastructural tool for many scientific and business applications with intensive data or computing requirements. One of the challenges in cloud computing now is how to run software efficiently on cloud platforms since lots of classic sequential codes are not ready to be executed in parallel in cloud environments, resulting in long execution time and low efficiency. It is also costly and labor intensive to redesign and convert current sequential codes into cloud codes running on cloud programming models such as MapReduce or Spark. Thus, automatic translation from sequential codes to cloud codes is one of the directions that could resolve the problem of slow code migration from traditional computing platforms to cloud infrastructures. In this talk, I will present several automatic translators (M2M, J2M and J2S) for cloud programming models MapReduce and Spark. I will provide details of the design of our translators and their performance results based on many experiments. Performance comparisons between hand-coded cloud programs and automatically translated codes will also be carried out. Semi-automatic translation with human tuning will also be introduced. Our experimental results indicate that the translators we have designed not only can precisely translate the sequential codes such as MATLAB codes or Java codes into cloud codes, but also can achieve almost a linear speedup in performance if the data sizes in the applications are huge enough. Since cloud computing is used for big data anyway, this demonstrates that automatic translation to reduce labor costs is a possible effective way to go for cloud programming. In addition, the limitations and shortcomings of our automatic translation and semi-automatic translation will be identified and future directions in this area will be provided.

Keynote 2: AI-Powered Metaverse

Abdulmotaleb El Saddik, University of Ottawa, Canada

About the Keynote Speaker

Before joining MBZUAI, Prof. El Saddik served as a Distinguished University Professor in the School of Electrical Engineering and Computer Science at the University of Ottawa. He is an internationally recognized scholar who has made strong contributions to the knowledge and understanding of intelligent multimedia computing, communications, and applications. He is Editor-in-Chief of the ACM Transactions on Multimedia Computing, Communications and Applications (ACM TOMM), Associate Editor & Guest Editor for several Transactions and Journals. He has co-authored 10 books and more than 600 publications and chaired more than 50 conferences and workshops and has supervised more than 150 researchers. He has received research grants and contracts totaling more than $22M. He is the author of the book Haptics Technologies: Bringing Touch to Multimedia.

Summary: The Metaverse is the universe of persistent & consistent digital Twins. A digital twin is a digital replication of a living or non-living physical entity. By bridging the physical and the virtual worlds, data is transmitted seamlessly allowing the virtual entity to exist simultaneously with the physical entity. There is a need to understand how people will be represented and how thy interact with each other and the objects in the Metaverse. In this talk we present a body of work on Digital Twins in collaborative Haptic-Virtual Environments. Furthermore, the speaker will present recent research outcomes from different communities and discuss the challenges and issues ahead

Keynote 3: Digitalised Smart Grid for Net-Zero Energy Future

Zhongdong Wang, University of Exeter, UK

About the Keynote Speaker

Prof. Zhongdong Wang is a Professor of Electrical Power Engineering, Head of Exeter Energy and Director of the Centre for Smart Grid at the University of Exeter. She received her BEng degree and MSc degree from Tsinghua University in 1991 and 1993, respectively and PhD degree in Electrical Engineering from UMIST in 1999. She joined The University of Manchester in 2000 and was promoted to a full professorship in 2009. She was the Associate Dean for the Faculty of Science and Engineering at the University of Manchester (2016-2020) and Pro-Vice-Chancellor and Executive Dean for the College of Engineering, Mathematics and Physical Sciences at the University of Exeter (2020-2022). Prof Wang is a Fellow of the IET and IEEE.

Summary: Electrical power systems are the essential infrastructure to a modern society, and have been developing since 1950s with higher voltage and larger capacity. Power transmission and distribution networks are currently going through digitalization, with net-zero target in 2050, a smarter grid is required to deal with the intermittent renewable generation in order to keep the light on. In this talk, I will present the smart grid concept, and explain why AI and ML can help energy and power systems to cope with uncertainty of generation and demand, and how AI and ML can help build digital twins for energy network, ensuring reliability and resilience of energy supply to the society.

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Keynote 4: 5G, XR and the Metaverse – A Silicon Valley View

Mischa Dohler, Ericsson in Silicon Valley, USA

About the Keynote Speaker

Mischa Dohler is now Chief Architect at Ericsson Inc. in Silicon Valley, working on cutting-edge topics of 6G, Metaverse, XR, Quantum and Blockchain. He serves on the Technical Advisory Committee of the FCC and on the Spectrum Advisory Board of Ofcom. He is a Fellow of the IEEE, the Royal Academy of Engineering, the Royal Society of Arts (RSA), the Institution of Engineering and Technology (IET); and a Distinguished Member of Harvard Square Leaders Excellence.

Summary: In this keynote, I will discuss what technology enablers need to be put in place to ensure the successful birth of the next generation internet which we hope will be much more immersive compared to today's internet. We will discuss XR device roadmaps, and how they are mapped to the 5G/6G timelines. We will discuss how these will enable fully immersive experiences for businesses and consumers alike.

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Keynote 5: Adaptive Control of Nonlinear Dynamic Systems under Various Constraints

Yongduan Song, Chongqing University, China

About the Keynote Speaker

Song Yongduan received his PhD degree in 1992 from Tennessee Technological University, USA. He held a tenure full professor position from North Carolina A&T State University during 2004-2008, he was also one of the six distinguished Langley Professors at Nation Institute of Aerospace (NIA) during 2005–2008. He is currently the Dean of the Institute of Artificial Intelligence at Chongqing University. He has led a number of national key R&D projects, published more than 250 papers, 12 monographs, and holds more than 80   patents from China, the United States, and Japan. His research interests include intelligent robot, control theory and application. He is a Fellow of IEEE and he is the Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems.

Summary: Most practical systems normally operate under various constraints, due to, for instance, physical limitation, system performance require- ment or security consideration. This talk presents an overview on the typical control design methods for systems with constraints, introduces some recent developments and highlights several potential future research directions.

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Keynote 6: Research Progress and Development Trend of Privacy Computing

Hui Li, Xidian University, China

About the Keynote Speaker

Dr. Hui Li is currently a chair professor and dean of cyber engineering at Xidian University. He has over 20 years of experience in applied cryptography, privacy computing, information theory and coding. He has published over 300 papers in academic journals and conferences. He served as chair of SIGSAC China from 2016-2020, board member of Chinese Association of Cryptologic Research, board member of Chinese Information Processing Society of China. His Google Scholar Citation is over 12000, and h-index is 54.

Summary: With the rapid development of information technology and the continuous evolution of service models, frequent cross-border, cross-system, and cross-ecosphere interactions of user data have become more and more common, but the existing privacy protection schemes cannot provide systematic protection, and there is an urgent need to propose a perfect theoretical system of privacy protection. This speech first introduces why privacy computing should be studied, the academic connotation of privacy computing, and the academic differences with other technologies, then introduces the theory and key technical system of privacy computing, mainly including: privacy computing framework, formal definition of privacy computing, important features of privacy computing, privacy protection effect evaluation, algorithm design guidelines, privacy computing language, forensic techniques in privacy computing framework, etc. Finally, it briefly introduces the future development trend.

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Keynote 7: Digital Twins and Intelligent Computing Platform for Smart City and Industry Applicaitons

Lei Zhang, Alibaba Cloud Intelligence, China

About the Keynote Speaker

Dr. Lei Zhang is the Vice President and Chief Scientist of Smart City at Alibaba Cloud Intelligence. He is in charge of core data and AI technology platform development related to government and industry applications. He also leads R&D, solutions, and business development teams in transportation, logistics, automated vehicle, and natural resources verticals. Dr. Zhang is an internationally renowned researcher with more than 20 years of experience in data science, AI, and systems analysis/simulation/modeling. He has published more than 350 refereed papers in top international journals and conferences and won numerous research awards. Dr. Zhang previously served as a chair professor and institute director at a leading university, Secretary General for the World Society for Transportation and Land Use Research, Academic Chair of the INFORMS Transportation and Logistics Society.

Summary: Data is the new resource in the economy, Alibaba Could help convert data into intelligence, decision support, and value through the digital transformation in cities and industries. Digital twin technology drives digital transformation in Smart City. For example, using digital twin, we can combine dynamic and static data from multiple sources to improve safety, efficiency and sustainability. Following success in City Brain applications in more than 50 cities internationally, Alibaba Could provide a City Digital Twins Platform as the new foundation for the digital transformation of city government and operations, which is based on a "4+1" technology architecture.

Keynote 8: Exploration on Digital Twin of COSMOPlat

Haiqin Xie, Haier COSMOPlat IOT Ecological Technology, China

About the Keynote Speaker

Ms. Haiqin Xie has over 20 years of experience in information technology and management of large-scale enterprises, focusing on process and information technology, and innovative applications of industrial internet. She has leaded a variety of significant scientific research projects for MOST (Ministry of Science and Technology of China), and played leading or crucial roles in a number of major national, provincial, municipal and group-level projects. She has won the Shandong Province/Qingdao Science and Technology Progress Award for many times and was awarded Top Technical Talent in Shandong Province ， IDG China TOP5 Outstanding CIO and Industrial Internet Pioneer of the Year. Ms. Haiqin Xie is also an advisor on industrial internet to MIIT (Ministry of Industry and Information Technology of China) and MOST (Ministry of Science and Technology of China).

Summary: Where there's the new technology, there's the productivity. As an important handle of the integration of virtual and reality, digital twin technology has increasingly been an important driving force of digital economy and industrial metaverse. Facing China's multi-category and multi-field industries, how to figure out a balance between common technologies and customized needs and meet the evolving requirements of different types of users has been a burning question. In this talk, we will answer these questions according to our explorations and practices as an industrial Internet platform. On the basis of reliable technological prowess, COSMOPlat will keep attention on key technologies of digital twin and data governance.

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Keynote 9: The future of healthcare in the metaverse

Mihaela van der Schaar, University of Cambridge. UK

About the Keynote Speaker

Mihaela van der Schaar is the John Humphrey Plummer Professor of Machine Learning, Artificial Intelligence and Medicine at the University of Cambridge and a Fellow at The Alan Turing Institute in London. In addition to leading the van der Schaar Lab, Mihaela is founder and director of the Cambridge Centre for AI in Medicine (CCAIM).

Summary: In this keynote, I will describe my vision of how the Metaverse will transform healthcare. By applying machine learning and AI on data from a variety of devices and sensors, we can better monitor and treat patients at home, in hospitals and in the clinic, and enable patients and clinicians to interact in completely new ways in the Metaverse on the basis of the derived analytics. The Metaverse will also allow AI-enabled avatars to join multidisciplinary clinical teams, creating more efficient and more advanced health delivery systems. Finally, I will outline a vision of how national and international healthcare systems can interact and be transformed and how clinical trials can be conducted and augmented in the Metaverse.

The IEEE Smart World Congress 2022 Schedule

IEEE UIC/ATC/ScalCom/DigitalTwin/PriComp/Metaverse-2022

Thursday December 15, 2022 (China Standard Time CST, UTC+8)							
13:00-20:00	**Registration**						
Room	**Room 1**	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**	**Room 7**
14:00-15:40	UIC-44: Intelligent/Smart Environment & Application (XII)	UIC-47: Intelligent/Smart Systems & Services (III)	UIC-50: Intelligent/Smart Systems & Services	UIC-53: Personalization and Social Aspects (II)	UIC-56: Personalization and Social Aspects (V)	UIC-57: Ubiquitous Intelligence with Blockchain Technology	
15:40-16:00	**Coffee Break**						
16:40-18:20	UIC-45: Intelligent/Smart Systems & Services (I)	UIC-48: Intelligent/Smart Systems & Services (IV)	UIC-51: Intelligent/Smart Systems & Services (VII)	UIC-54: Personalization and Social Aspects (III)	ScalCom-1: Cloud and Fog Computing	ATC-1: Autonomous and Trust Vehicles	
19:00-20:40	UIC-46: Intelligent/Smart Systems & Services (II)	UIC-49: Intelligent/Smart Systems & Services	UIC-52: Personalization and Social Aspects	UIC-55: Personalization and Social Aspects (IV)	ScalCom-2: Blockchain, Modelling and Simulations	ATC -2: Communications and Networking	Other-1: DigitalTwin-Metaverse-PriComp

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Friday December 16, 2022 (China Standard Time CST, UTC+8)	
08:30-9:50	**Opening Ceremony**
9:50-10:10	**Coffee Break**
10:10-10:45	**Keynote 1:** Automatic and Semi-Automatic Translation for Cloud Programming Models **Yi Pan**, Shenzhen Institute of Advanced Technologies, Chinese Academy of Sciences, China **Chaired by:** Xiaokang Wang, Hainan University, China
10:45-11:20	**Keynote 2:** AI-Powered Metaverse **Abdulmotaleb El Saddik,** University of Ottawa, Canada **Chaired by:** Xiaokang Wang, Hainan University, China
11:20-11:55	**Keynote 3:** Digitalised Smart Grid for Net-Zero Energy Future **Zhongdong Wang**, University of Exeter, UK **Chaired by:** Huazhong Liu, Hainan University, China
11:55-12:30	**Keynote 4:** 5G, XR and the Metaverse – A Silicon Valley View **Mischa Dohler**, Ericsson in Silicon Valley, USA **Chaired by:** Huazhong Liu, Hainan University, China
12:30-14:30	**Lunch**
14:30-15:05	**Keynote 5:** Adaptive Control of Nonlinear Dynamic Systems under Various Constraints **Yongduan Song**, Chongqing University, China **Chaired by:** Qingchen Zhang, Hainan University, China
15:05-15:40	**Keynote 6:** Research Progress and Development Trend of Privacy Computing **Hui Li**, Xidian University, China **Chaired by:** Qingchen Zhang, Hainan University, China
15:40-16:15	**Keynote 7:** Digital Twins and Intelligent Computing Platform for Smart City and Industry Applications **Lei Zhang**, Alibaba Cloud Intelligence, China **Chaired by:** Qingchen Zhang, Hainan University, China
16:15-16:35	**Coffee Break**
16:35-17:10	**Keynote 8:** Exploration on Digital Twin of COSMOPlat **Haiqin Xie**, Haier COSMOPlat IOT Ecological Technology, China **Chaired by:** Wei Wang, Huazhong University of Science and Technology, China
17:10-17:45	**Keynote 9:** The Future of Healthcare in the Metaverse **Mihaela van der Schaar**, University of Cambridge, UK **Chaired by:** Wei Wang, Huazhong University of Science and Technology, China
19:00-20:00	**Reception (Tianjin Hall)**

Room	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7
Saturday December 17, 2022 (China Standard Time CST, UTC+8)							
8:00-9:40	UIC-1: Intelligent/Smart Object & Interaction (I)	UIC-6: Intelligent/Smart Environment & Application (I)	UIC-11: Intelligent/Smart Environment & Application (VI)	UIC-16: Intelligent/Smart Environment & Application (XI)	PriComp-1: Privacy Computing (I)		
9:40-10:05	Coffee Break						
10:05-11:45	UIC-2: Intelligent/Smart Object & Interaction (II)	UIC-7: Intelligent/Smart Environment & Application (II)	UIC-12: Intelligent/Smart Environment & Application (VII)	UIC-17: Intelligent/Smart Environment & Application (XII)	PriComp-2: Privacy Computing (II)		
11:45-13:30	Lunch						
13:30-15:10	UIC-3: Intelligent/Smart Object & Interaction (III)	UIC-8: Intelligent/Smart Environment & Application (III)	UIC-13: Intelligent/Smart Environment & Application (VIII)	UIC-18: Intelligent/Smart Systems & Services (I)	UIC-21: Intelligent/Smart Systems & Services (IV)	Panel of Metaverse	
15:10-15:30	Coffee Break						
15:30-17:10	UIC-4: Intelligent/Smart Object & Interaction (IV)	UIC-9: Intelligent/Smart Environment & Application (IV)	UIC-14: Intelligent/Smart Environment & Application (IX)	UIC-19: Intelligent/Smart Systems & Services (II)	UIC-22: Intelligent/Smart Systems & Services (V)	Panel of Metaverse	
17:10-18:10	UIC-5: Intelligent/Smart Object & Interaction (V)	UIC-10: Intelligent/Smart Environment & Application (V)	UIC-15: Intelligent/Smart Environment & Application (X)	UIC-20: Intelligent/Smart Systems & Services (III)	UIC-23: Intelligent/Smart Systems & Services (VI)		
19:00-21:00	Banquet(Tianjin Hall)						

Sunday December 18, 2022 (China Standard Time CST, UTC+8)							
Room	**Room 1**	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**	**Room 7**
8:00-9:40	UIC-24: Personalization and Social Aspects (I)	UIC-29: Intelligent/Smart Object & Interaction (II)	UIC-34: Intelligent/Smart Environment & Application (II)	UIC-39: Intelligent/Smart Environment & Application (VII)	DigitalTwin-1: Modelling & Simulation	Metaverse-1: Metaverse Computing and Communications	
9:40-10:05	Coffee Break						
10:05-11:45	UIC-25: Personalization and Social Aspects (II)	UIC-30: Intelligent/Smart Object & Interaction (III)	UIC-35: Intelligent/Smart Environment & Application (III)	UIC-40: Intelligent/Smart Environment & Application (VIII)	DigitalTwin-2: Technologies & Applications (I)	Metaverse-2: Metaverse Interaction	Other-4: PriComp-UIC
11:45-13:30	Lunch						
13:30-15:10	UIC-26: Personalization and Social Aspects (III)	UIC-31: Intelligent/Smart Object & Interaction (IV)	UIC-36: Intelligent/Smart Environment & Application (IV)	UIC-41: Intelligent/Smart Environment & Application (IX)	DigitalTwin-3: Technologies & Applications (II)	Metaverse-3: Metaverse Security	
15:10-15:30	Coffee Break						
15:30-17:10	UIC-27: Ubiquitous Intelligence with Blockchain Technology	UIC-32: Intelligent/Smart Object & Interaction (V)	UIC-37: Intelligent/Smart Environment & Application (V)	UIC-42: Intelligent/Smart Environment & Application (X)	DigitalTwin-4: Evaluation & Optimization, Security & Privacy	Metaverse-4: Metaverse Applications	Other-3: UIC (Research Paper
17:10-18:50	UIC-28: Intelligent/Smart Object & Interaction (I)	UIC-33: Intelligent/Smart Environment & Application (I)	UIC-38: Intelligent/Smart Environment & Application (VI)	UIC-43: Intelligent/Smart Environment & Application (XI)			Other-2: PriComp-ScalCom-UIC

The UIC 2022 Presentation Program

UIC-1: Intelligent/Smart Object & Interaction (I)
Session Chair: Shuo Yu (yushuo@dlut.edu.cn), Dalian University of Technology, China

1. Detecting and Classifying Adversarial Examples Based on DCT Transform
Yating Ma; Ruiqi Zha; Zhichao Lian

2. T-PSI: Efficient Multi-Party Private Set Intersection with Threshold
Dan Meng; Zhihui Fu; Chao Kong; Guitao Cao

3. Nonintrusive Measurement on Temporal and Spatial Features of Microservice Inferences
Xiaoling Li; Tao Zeng; Biyong Liu; Haichuan Hu; Zichen Xu; Shuang Tan; Yusong Tan; Chenren Xu

4. CAIM: A Context-Aware Incentive Mechanism for Robust Federated Learning
Chunwei Chang; Yangguang Cui; Jianhua Shen; Tongquan Wei

UIC-2: Intelligent/Smart Object & Interaction (II)
Session Chair: Shuo Yu (yushuo@dlut.edu.cn), Dalian University of Technology, China

1. Continuously Monitoring Optimal Routes with Collective Spatial Keywords on Road Networks
Jiajia Li; Zongbo Wang; Yifei Zhang; Liang Zhao; Lei Li; Chuanyu Zong

2. Constructing Efficient Set of APs via Spatial Discrimination and Localization Difference
Yanhui Ji; Licai Zhu; Liang Zhao; Hao Yang

3. Edge-Aided Cellular Learning Automata for Energy-Efficient Sensor Self-Relocation in Mobile WSNs
Hengshun Chen; Minghua Wang

4. SSPS: An UEFI Based Secure System-In-Pocket-Storage Approach to Desktop-Go-with-Person
Ming Wu; Lei Zhou; Vincent Zimmer; Michael Rothman; Fujin Huang

5. Joint Computing Resource Scheduling and Task Priority Selection in UAV-Enabled MEC
Tieniu Xu; Zhiwen Yu; Yongbo Song; Jiaju Ren; Helei Cui; Bin Guo

UIC-3: Intelligent/Smart Object & Interaction (III)
Session Chair: Jian Zhang (jianzh@bjtu.edu.cn), Beijing Jiaotong University, China

1. Jamming-Resilient Over-The-Air Computation for Federated Learning in Edge Intelligence
Yifei Zou; Minghui Xu; Huiqun Li; Qin Hu; Xianjun Deng; Dongxiao Yu; Xiuzhen Cheng

2. CASIN: Cascading Interaction Network for Robust Depth Sensing with an Auxiliary Task
Nengzhen Chen; Yunji Liang; Zhiwen Yu; Luwen Huangfu

3. An Exact Potential Game-Based End-Edge-Cloud Collaborative Task Offloading Approach
Yue Shen; Wanchun Dou; Bowen Liu; Fei Dai

4. Efficient Federated Learning with Adaptive Channel Pruning for Edge Devices
Yongzhe Jia; Xuyun Zhang; Bowen Liu; Wanchun Dou

5. Data-Driven Vehicular Mobility Model Introducing with Kinetic Car-Following Models for Traffic Simulation
Jian Zhang; Xiaoping Che

UIC-4: Intelligent/Smart Object & Interaction (IV)
Session Chair: Jian Zhang (jianzh@bjtu.edu.cn), Beijing Jiaotong University, China

1. A Fault-Tolerant and Real-Time Framework for Efficient Resilience in Edge Inference System
Wenwen Liu

2. Few-Shot Node Classification on Attributed Networks Based on Prototypical Network
Yaliang Zhao; Guangming Zhang; Jinke Wang

3. Energy-Efficient Online Node Cooperation Strategy for Hierarchical Federated Learning
Sailan Zou; Zhuo Li; Xin Chen

4. RiLoc: Representative Guided Subarea to Exact Localization from Crowdsourced Samples
Assefa Tesfay Abraha; Bang Wang

5. GENII: A Graph Neural Network-Based Model for Citywide Litter Prediction Leveraging Crowdsensing Data
Zhiting Wang; Yongxiao Bao; Zengwei Zheng; Jianhua Ma; Binbin Zhou

UIC-5: Intelligent/Smart Object & Interaction (V)
Session Chair: Jian Zhang (jianzh@bjtu.edu.cn), Beijing Jiaotong University, China

1. Spatio-Temporal Feature Based Multi-Participant Recruitment in Heterogeneous Crowdsensing
Fengyuan Zhang; Zhiwen Yu; Yimeng Liu; Helei Cui; Bin Guo

2. Cost-Effective Task Scheduling in Mobile Cloud Computing Under a Deadline Constraint
Yalong Li; Linhui Wang; Jinyu Liu; Jin Sun

3. Significant Ties Graph Neural Networks for Continuous-Time Temporal Networks Modeling
Jiayun Wu; Tao Jia; Yansong Wang; Li Tao

4. Access Characteristic Guided Remote Swapping for User Experience Optimization on Mobile Devices
Wentong Li; Yina Lv; Changlong Li; Liang Shi

UIC-6: Intelligent/Smart Environment & Application (I)
Session Chair: Minxian Xu (mx.xu@siat.ac.cn), Chinese Academy of Sciences, China

1. Learning High Dimensional Associations for Nonalcoholic Fatty Liver Disease Diagnosis Prediction
Zhijin Wang; Bing Cai; Wen Yang; Peisong Zhang; Yaohui Huang; Jinmo Tang

2. DSMISR: Differential Siamese Multi-Scale Attention Network for Iris Image Super Resolution Based on SwinIR
Jin Hao; Shijie Lian; Suqi Li; Hua Li

3. LSANet: Lesion-Specific Attention Network for Monkeypox Categorization
Ruilong Dan; Qicen Wu; Xiaoyu Ji; Xiaodiao Chen; Gangyong Jia; Renshu Gu; Xin Ye; Yaqi Wang

4. LightOcean: Lightweight and Efficient Network for Real-Time UAV Tracking
Haiyang Chen; Weiqiang Wang; Xingzhou Zhang; Wei Zhou; Weisong Shi

5. Multi-Feature Fusion Strategy for Missing Values Filling in Traffic Prediction
Xiaoru Deng; Chunyang Ye; Hui Zhou

UIC-7: Intelligent/Smart Environment & Application (II)
Session Chair: Minxian Xu (mx.xu@siat.ac.cn), Chinese Academy of Sciences, China

1. Speech Acquisition Using a Lightweight Convolutional Neural Network
Ranran Sun; Hualin Zeng; Long Yang; Dali Zhu

2. V-TransTDN: Visual Transformer Network for Target-Driven Navigation Using Meta-Reinforcement Learning
Fei Li; Chi Guo; Kang Zhou; Huyin Zhang

3. Arbitrary-Shaped Text Detection with Watershed Segmentation Network
Zhikui Chen; Yipeng Lv; Suhua Zhang; Hao Ren; Feng Wang; Fangming Zhong

4. GPLDet: A Strong Anchor-Free Object Detector for Gastric Precancerous Lesions
Zhimin Tang; Yuhui Deng; Shun Long; Hong Li; Shujie Pang; Jie Li

1. *Mining Implicit Relations Among Image Channels for Few-Shot Semantic Segmentation*
Xu Yuan; Ying Yang; Huafei Huang; Shuo Yu; Lili Cong

2. *Vertex Adjustment Loss for Multidirectional License Plate Detection and Recognition*
Song-Lu Chen; Shu Tian; Qi Liu; Feng Chen; Xu-Cheng Yin

3. *Accuracy Indoor Localization Based on Fuzzy Transfer Learning Model*
Sheng Wu; Licai Zhu; Liang Zhao; Hao Yang

4. *Fine-Grained Reconstruction of Vehicle Trajectories Based on Electronic Registration Identification Data*
Xin Chen; Linjiang Zheng; Wengang Li; Longquan Liao; Qixing Wang

5. *Multi-Scale Feature Fusion Residual Shrinkage Network for COVID-19 Diagnosis*
Jiale Lin; Zhuangfei Wen; Zhao Qiu

UIC-9: Intelligent/Smart Environment & Application (IV)
Session Chair: Hua Li (lihua@hainanu.edu.cn), Hainan University, China

1. *A Research for Travel Mode Identification Based on Cellular Signaling Data*
Yang Zhang; Dongchao Ma; Fan Zhang; Yan Li; YuZhu Jin; Lihua Song; Laizhong Cui

2. *Lymphoma Ultrasound Image Classification with Causal Attention and Feature Fusion*
Dehua Chen; Yingkang Han; Xiaokang Zhou

3. *Geometric-Aware Calibration Mechanism for Self-Supervised Depth Estimation*
Yan Wang; Ge Li; Ruonan Zhang; Xingyu Chen; Li Thomas

4. *A Novel Hybrid Scheme for Time Series Prediction Using LMS Filter and ISSA-Based LSTM*
Pei Heng Li; Xiaotong Wu; Han Yao Huang; Dong Xia Chen; Hua Wei Jiang; Genlin Ji

5. *Dual-Alignment Based Generalized Zero-Shot Learning for Human Activity Recognition*
Zhaohua Yang; Yang Gu; Weining Weng; Shuai Guo

UIC-10: Intelligent/Smart Environment & Application (V)
Session Chair: Hua Li (lihua@hainanu.edu.cn), Hainan University, China

1. *DOPNet: Dynamic Optimized Pruning Net for Model Compression*
Xiaohai Li; Yiqiang Chen

2. *Weather-Oriented Domain Generalization of Semantic Segmentation for Autonomous Driving*
Cheng Fang; Guo Bin; Sicong Liu; Ma Ke; Zhiwen Yu

3. *Row-Segmented Sparse-Dense Matrix Matrix Multiplication on GPUs*
Guoqing Xiao; Ziming Long; Yuedan Chen; Qin Yunchuan; Fan Wu

4. *PRAD: Unsupervised KPI Anomaly Detection by Joint Prediction and Reconstruction of Multivariate Time Series*
Zhiying Xiong; Qilin Fan; Kai Wang; Xiuhua Li; Xu Zhang; Qingyu Xiong

UIC-11: Intelligent/Smart Environment & Application (VI)
Session Chair: Siyang Lu (sylu@bjtu.edu.cn), Beijing Jiaotong University, China

1. *Redesign Visual Transformer for Small Datasets*
Jingjie Wang; Xiang Wei; Siyang Lu; Mingquan Wang; Xiaoyu Liu

2. *What is Next? A Generative Approach for Service Composition Recommendations*
Guodong Fan; Shizhan Chen; Qiang He; Hongyue Wu

3. *APR-ES: Adaptive Penalty-Reward Based Evolution Strategy for Deep Reinforcement Learning*

Dongdong Wang; Siyang Lu; Xiang Wei; Mingquan Wang; Yandong Li; Liqiang Wang

4. FewFine: Few-Shot Malware Traffic Classification via Transfer Learning Based on Fine-Tuning Strategy
Xingtong Liu; Meng Shen; Laizhong Cui; Ke Ye; Jizhe Jia; Guangchun Yue

5. Research on Real-Time Sport Classification and Counting Algorithm Based on Video
Mengyun Ke; Zhuang Ma; Chongwen Wang

UIC-12: Intelligent/Smart Environment & Application (VII)
Session Chair: Siyang Lu (sylu@bjtu.edu.cn), Beijing Jiaotong University, China

1. Modeling Crowdedness of Emergency Departments Leveraging Crowdsensing Mobility Data
Tieqi Shou; Zhiyuan Wang; Shang Shi; Dingqi Yang; Binbin Zhou; Cheng Wang; Longbiao Chen

2. A Trajectory Privacy Protection Publishing Method Based on Trajectory Segment Graph Division
Wanqing Wu; Ruohe Lei; Xin Yang

3. An Efficient Spatial-Temporal Representation Method for EEG Emotion Recognition
Weining Weng; Yang Gu; Yiqiang Chen

4. HMES: A Scalable Human Mobility and Epidemic Simulation System with Fast Intervention Modeling
Haoyu Geng; Guanjie Zheng; Zhengqing Han; Hua Wei; Zhenhui Lin

5. A Multi-Head Attention Based Dual Target Graph Collaborative Filtering Network
Qinglong Peng; Junwei Du; Bin Tang; Yan Lu; Jinhuan Liu; Feng Jiang; Shuang Cui; Xu Yu

UIC-13: Intelligent/Smart Environment & Application (VIII)
Session Chair: Xiaofei Xing (xxfcsu@163.com), Guangzhou University, China

1. PickPic: A Real-Time and Low-Redundancy Image Selection Framework for Disaster Perception
Tingpei Huang; Wenyu Luan; Shibao Li; Jianhang Liu

2. Aspect-Level Semantic and Syntactic Reinforcement for Aspect-Based Sentiment Analysis
Shiqi Wang; Hongliang Dong; Zhiyi Fang; Chongkuan Chen

3. Modeling Human Mobility Based on Temporal Characteristics
Yujin Xie; Zhiwen Yu; Ying Zhang; Bin Guo

4. Multimodal Sarcasm Detection Based on Multimodal Sentiment Co-Training
Yi Liu; Zengwei Zheng; Binbin Zhou; Jianhua Ma; Lin Sun; Ruichen Xia

5. ProtoPLSTM: An Interpretable Deep Learning Approach for Wearable Fine-Grained Fall Detection
Chenlong Gao; Teng Zhang; Xinlong Jiang; Wuliang Huang; Yiqiang Chen

UIC-14: Intelligent/Smart Environment & Application (IX)
Session Chair: Xiaofei Xing (xxfcsu@163.com), Guangzhou University, China

1. SiamDSA: Dual-Branch Self-Attention Siamese Network for Visual Object Tracking
Yang Pei; Weiwei Xing; Xiang Wei; Weibin Liu; Mingquan Wang; Fuyong Sun

2. Remaining Useful Life Prediction of Bearing via a Double Attention-Based Deep Neural Network
Donghui Pan; Yongkang Liu; Haifeng Zhang; Kai Zhong

3. A Versatility-Performance Balanced Hardware Architecture for Scene Text Detection
Yao Xin; Guoming Tang; Rumin Zhang; Teng Liang; Ray C. C. Cheung; Donglong Chen

4. BRCNN: Chinese Medical Question Answer Selection Based on BERT
Qingchen Zhang

1. MDAFF-Net: A Multi-Scale Dual-Attention Feature Fusion Model for Long-Term Traffic Prediction
Yan Kang; Siyu Xie; Bin Pu

2. RASTE: A Relation-Guided Joint Method for Aspect Sentiment Triplet Extraction
Linyang Zhong; Jiaxing Shang; Linjiang Zheng; Fei Hao; Weiwei Cao; Hong Sun

3. A Batch Authentication Protocol Based on Small Exponent Test for Internet of Vehicles
Ruirui Zhang; Zisang Xu; Jianbo Xu

4. A Self-Supervised Representation Learning Method of Speech Recognition for Smart Grid
Fei Peng; Yunhou Zhang; Tianyu An; Duoqin Wang; Zhikui Chen; Shan Jin

1. Mercury: A High-Performance Streaming Graph Method for Broad and Deep Flow Inspection
Siyuan Ren; Yongquan Fu; Bo Pang; Yan Jia

2. Physics-Based Spatio-Temporal Modeling with Machine Learning for the Prediction of Oceanic Internal Waves
Song Wu; Wei Dong; Xiaoyong Li; Senzhang Wang; Xiaojiang Zhang

3. Noise-Aware Subband Attention Network for Underwater Acoustic Signal Denoising
Aolong Zhou; Xiaoyong Li; Wen Zhang

4. ICFD: An Incremental Learning Method Based on Data Feature Distribution
Yunzhe Zhu; Xiaoling Li; Yusong Tan; Qingbo Wu; Xueqin Ning

1. A Reusable Convolutional Accelerator for CNN on Resource-Limited FPGA
Aihui Jiang; Yufeng Li; Jiangtao Li; Chenhong Cao

2. Enhancing Intellectual Property Protection in Deep Neural Network with Confidential Computing
Wensheng Tian; Ruiyan Xia; Zhichao Yan; Panpan Tang; Yonggang Tu; Lei Zhang

3. AFMeta: Asynchronous Federated Meta-Learning with Temporally Weighted Aggregation
Sheng Liu; Haohao Qu; Qiyang Chen; Rui Liu; Linlin You

4. A Differential Privacy Based Prototypical Network for Medical Data Learning
Qingchen Zhang

1. A Metaheuristic Algorithm for Mobility-Aware Task Offloading for Edge Computing Using Device-To-Device Cooperation
Can Huang; Yuang Yan; Yi Zhang; Jin Sun

2. Energy-Constrained Partial Offloading in Data Processing Unit (DPU)-Enabled Mobile Edge Computing
Jinyu Liu; Tianhao Lin; Yi Zhang; Yalong Li

3. Motion-Robust Respiratory Signal Reconstruction Using Smart Glasses
Qingyu Wu; Jianfei Shen; Yang Gu; Feiyi Fan; Yiqiang Chen

4. Intrusion Detection Based on Statistical Analysis for RPL-Based Internet of Things
Kai Gao; Fei Tong; Yujian Zhang

5. Energy-Efficient and Reliable Federated Learning in Heterogeneous Mobile-Edge Computing

Yan Xu; Liying Li; Peijin Cong; Junlong Zhou

1. Energy-Efficient Resource Allocation for Slicing-Enabled Multi-Access Edge Computing
Yanan Xu; Zhenli He; Yin Zhang; Wei Zhou

2. Towards Robust Intelligence in Space
Xin Yuan; Ruolin Xing; Shangguang Wang; Mengwei Xu

3. A Graph-Based Information Fusion Approach for ADHD Subtype Classification
Wuliang Huang; Xinlong Jiang; Chenlong Gao; Teng Zhang; Yunbing Xing; Yiqiang Chen; Yi Zheng

4. Inferring Attack Paths in Networks with Periodic Topology Changes
FanFan Hao; Zhu Wang; Mengyao Shi; Tingting Peng; Liang Fang; Fenghua Li

5. Design of Autonomous Driving Verification Platform Based on Udacity Vehicle Simulator
Wufei Wu; Bo Fan; Yong Xie

1. Deep Learning-Based CSI Feedback for IoT-Oriented Massive MIMO Systems
Binglei Yue; Chi Jiang; Ranran Wang; Haojiang Ye; Yin Zhang

2. A Service-Enhanced Task Offloading Method in MEC-Enabled IoV Networks
Bohai Zhao; Kai Peng; Victor C.M. Leung

3. An Intelligent Resource Scheduling Method with Edge Channel Deployment for BPM
Bowen Liu; Wanchun Dou; Xiaokang Zhou; Xuyun Zhang; Lianyong Qi; Fei Dai; Chaochao Chen

4. LCP: A Lightweight Cache Partition Approach Based on Machine Learning
Ruiji Xu; Jiefan Qiu; Zehui Feng; Keji Mao; Liyao Xing; Kaikai Chi

1. Fast Provisioning of Virtual Machine Based on Intelligent Virtual Machine Image Prefetching
Haiqiang Fei; Yindan Zhang; Wei Wang; Yubo Li; Hui Xu; Hongsong Zhu; Zhiyu Hao; Dahui Li

2. OSCO: An Efficient Segment Routing Scheme for Backup Path
Shu Yang; Jiaming Li; Laizhong Cui

3. SKDLog: Self-Knowledge Distillation-Based CNN for Abnormal Log Detection
Ningning Han; Siyang Lu; Dongdong Wang; Mingquan Wang; Xiaoman Tan; Xiang Wei

4. Edge Resource Autoscaling for Hierarchical Federated Learning Over Public Edge Platforms
Mingliao Zhao; Kongyange Zhao; Zhi Zhou; Xu Chen

5. An Ant Colony Approach with Subjective-Objective Weight Optimization for Service Selection
Xiukun Yan; Ming Zhu; Yong Xie; Jing Li; Jiayi Du; Lianjun Zhao

1. An Improved LightGBM Job Running Status Prediction Algorithm Integrating Combinatorial Feature Selection and Bayesian Hyperparameter Optimization on Spark
Xiaoyong Tang; Cheng Shi; Zhihong Zhu; Wenzheng Liu

2. Unsupervised Domain Adaptation for Emotion Recognition in Conversation

Tao Zhang; Zhenhua Tan; Xiaoer Wu

3. Dense Vehicle Counting Method Based on Deep Spatio-Temporal Network
Qiyan Fu; Weidong Min; Chunbo Li; Haoyu Zhao; Meng Zhu

4. Position Error Correction for Satellite Precipitation Products Using Image Registration Based on Unsupervised Learning
Wenlong Tian; Xiaoqun Cao; Xiaoyong Li; Kecheng Peng

UIC-23: Intelligent/Smart Systems & Services (VI)
Session Chair: Xiang Wei (xiangwei@bjtu.edu.cn), Beijing Jiaotong University, China

1. MlpE: Knowledge Graph Embedding with Multilayer Perceptron Networks
Xu Qing, xq; Kaijun Ren

2. TEMPO-RI: A Multi-Task Spatio-Temporal Model for Tropical Cyclone Rapid Intensification Forecasting
Sihao Chen; Anze Gao

3. A Novel Hybrid Model Based on Dual Attention Networks for Significant Wave Height Forecast
Jiaming Tan

4. GAS: GPU Allocation Strategy for Deep Learning Training Tasks
Yingwen Chen; Jianchen Han; Huan Zhou; Chen Chen

UIC-24: Personalization and Social Aspects (I)
Session Chair: Shankai Yan (skyan@hainanu.edu.cn), Hainan University, China

1. On Accuracy Rate of Community Detection and Pairing in Mobile Social Network
Jinbin Tu; Qing Li; Yun Wang

2. Edge Caching Based on User Interest Propagation for Short Videos
Zecheng Li; Zhuo Li; Xin Chen

3. Attention-Based Knowledge-Aware Multi-Interest Intelligent Model for Sequential Recommendation
Yang Li; Qianmu Li; Shunmei Meng; Jun Hou

4. FedGPS: Personalized Cross-Silo Federated Learning for Internet of Things-Enabled Predictive Maintenance
Yuchen Jiang; Chang Ji

UIC-25: Personalization and Social Aspects (II)
Session Chair: Shankai Yan (skyan@hainanu.edu.cn), Hainan University, China

1. ML-Based Privacy Leakage Behavior Detection in Android Apps at Scale
ZhiLiang Bu; Chunlei Zhao; Liangyi Gong; Yan Wang; Yi Yang; Xi Wang

2. Denoising Sequence Embeddings via Contrastive Learning for Micro-Video Recommendation
Rui Zhao; Beihong Jin; Yisong Yu; Beibei Li

3. Modeling Behavior and Attribute Feedbacks Based Flight Recommendation for Dynamic Pricing
Chunjing Xiao; XinYang Shi; Wei Fan; Xiang Wu; Lishun Zeng

4. Graph Neural Network Session Recommendation Algorithm Based on Semantic Knowledge and Temporal Encoding
Huihui Chai

UIC-26: Personalization and Social Aspects (III)
Session Chair: Jianbo Xu (jianbo_xu@hainanu.edu.cn), Hainan University, China

1. Future-Aware and High-Order Representation Learning for Cold-Start Recommendation
Junruo Gao; Yuyang Liu; Jun Li; Liang Zhao

2. *Topology-Aware Quantization Strategy via Personalized PageRank for Graph Neural Networks*
Yuxuan Chen

3. *MGSF: Towards Multi-Graphs Semantic Fusion for Multi-Behavior Recommendation*
Yingzheng Zhu; Xiufang Liang; Huajuan Duan; Fuyong Xu; Pei-Yu Liu; Ran Lu

4. *Enhancing Heterogeneous Graph-Based Short Text Topic Learning*
Qingren Wang; Junwei Wu; Jie Cui

UIC-27: Ubiquitous Intelligence with Blockchain Technology
Session Chair: Jianbo Xu (jianbo_xu@hainanu.edu.cn), Hainan University, China

1. *BARM: Blockchain-Based Anonymous Reward Mechanism for Medical Recommendation in Smart Healthcare*
Hui Wang; Yong Xie; Xing Su; He Hua Yao

2. *MARACrowd: A Multi-Attribute Reverse Auction for Task Allocation in Blockchain-Based Mobile Crowdsensing*
Ruiyun Yu; Ann Move Oguti; Dennis Reagan Ochora; Shuchen Li; Pengfei Wang

3. *A Lightweight Homomorphic Encryption Federated Learning Based on Blockchain in IoV*
Weidong Zhang; Xuangou Wu; Linna Wei; Wei Zhao; Siyang Lu

4. *LogBlock: An Anomaly Detection Method on Permissioned Blockchain Based on Log-Block Sequence*
Qihui Zhou; Xianglin Dang; Dongdong Huo; Qianyun Ruan; Chuang Li; Yu Wang; Zhen Xu

UIC-28: Intelligent/Smart Object & Interaction (I)
Session Chair: Jianbo Xu (jianbo_xu@hainanu.edu.cn), Hainan University, China

1. *When Adversarial Example Attacks Meet Vertical Federated Learning*
Dan Meng; Zhihui Fu; Chao Kong; Guitao Cao

2. *A Constraint Graph Virtual Adversarial Training*
Xu Yang; Guoqing Yang; Xianliang Liu; Zhi Yang; Qiuling Zhang; Jianfang Wang

3. *An Autonomous Navigation Flight Algorithm Based on Monocular Camera for UAV in Stairs Scenario*
Jialiang Wang; Liuyang Nie; Hui Chen; Kai Dong; Qiang Han

4. *EPCA-ENet Facilitates Robotic Hand Recognition Accuracy with Flexible Pressure Sensor*
Zhangjin Ling; Jie Shang

5. *An Improved Butterfly Optimization Algorithm for UAV Path Planning in Complex Environment*
Jiahao Xu; Xuefeng Yan; Yanbiao Niu

UIC-29: Intelligent/Smart Object & Interaction (II)
Session Chair: Xiaodong Bai (xiaodongbai@hainanu.edu.cn), Hainan University, China

1. *CRCS: Learning Synergistic Cascade Correlation for Microscopic Cascade Prediction*
Huacheng Li; Chunhe Xia; Tianbo Wang; Haopeng Zhao

2. *An Intelligent Scoring Method for Sketch Portrait Based on Attention Convolution Neural Network*
Shaolong Zheng; Zewei Xu; Zhenni Li; Yihui Cai; Mingyu Han; Yi Ji

3. *Engagement Detection of Online Learners Based on Key Frames*
Danqing Pu

4. *Latent Dynamic Token Vision Transformer for Pedestrian Attribute Recognition*
Xia Feng; Jiaxian Guo; Caihua Liu

5. *Mutual Attention Feature Alignment in Cross-Domain Detection*
Jian Hu; Zhongshu Chen; Lin Zuo; Jiahang Li; Maolin Luo; Xianlong Tian

1. *Graph Representation Learning on Noise and Sparse Labels*
Xinchao Guo; Weiyu Zhang; Xu Sun

2. *Visual Representation and Layout Optimization for Comparison of Dynamic Graph*
Ming Jing; Yunjing Liu; Guangwei Zhang; Li Zhang; Anming Dong; Jiguo Yu

3. *Joint Model Checking of Software-Defined Networking for Multiple Applications*
Jiangyuan Yao; ShengJun Lin; Deshun Li

4. *Learning from Imperfect Demonstrations via Reweighting Confidence*
Tao Ning; Zhang Chunhong; Hu Zheng; Xiaosheng Tang; Benhui Zhuang

5. *Verify Deep Learning Models Ownership via Preset Embedding*
Wenxuan Yin; Haifeng Qian

1. *A Privacy-Preserving Framework for Mental Health Chatbots Based on Confidential Computing*
Wensheng Tian; Yifan Lu; Jinhao Yu; Jiafeng Fan; Panpan Tang; Lei Zhang

2. *Transformer Tracker by Attention Feature Fusion Module and Online Update Module*
Xiaohan Liu; Aimin Li

3. *Self-Distilled Named Entity Recognition Based on Boundary Detection and Biaffine Attention*
Yong Song; Zhiwei Yan; Yukun Qin; Xiaozhou Ye; Ye Ouyang

4. *A Novel Cross-FOV Gaze-Driven Human-Robot Interaction Framework for Service Robots*
Zheng Zhao; Pengfei Yi; Jing Dong; Rui Liu; Mingkai Cheng; Dongsheng Zhou; Xiaopeng Wei

5. *Iture: An Interference-Aware Task Allocation Framework Based on DRL Algorithm in Edge*
Wenwen Liu

1. *REUT: A Retinex-Inspired Low-Light Image Enhancer for UAV Tracking at Night*
Longjie He; Hongyuan Zheng; Xiangping Bryce Zhai

2. *Counting Mobile Devices with Physical Layer Measurements in the 2.4GHz ISM Band*
Zhaoyan Zhang; Baoqi Huang; Chaowei Zhang; Bing Jia; Wuyungerile Li; Gang Xu

3. *Optimization Scheme of Single-Objective Task Offloading with Multi-User Participation in Cloud-Edge-End Environment*
Xiao Wang; Xiaofei Xing; Peiqiang Li; Shaohong Zhang

4. *A Chatbot for Negotiation Dialogues with Efficient Detection and Optimal Response*
Siqi Chen; Qisong Sun; Ran Su

5. *Which User Guidance Works Better in VR? A User Guidance Learning Effect Study in Virtual Environment*
Shuqin Zhu; Xiaoping Che; Chenxin Qu; Haohang Li; Siyuan Wang

1. *High Fidelity Motion Adaptive Face Reenactment*
Changle Shao; Zhichao Lian; Zhihui Wei

2. *Robust Spatio-Temporal Trajectory Modeling Based on Auto-Gated Recurrent Unit*

Jia Jia; Xiaoyong Li; Ximing Li; Linghui Li; Jie Yuan; Hongmiao Wang; Yali Gao; Pengfei Qiu; Jialu Tang

3. Long Sequence Time-Series Forecasting via Gated Convolution and Temporal Attention Mechanism
Mengjun Lu; Xiaodong Li; Xiangping Bryce Zhai

4. MLRNet: Towards Real-Time Crowd Counting with Mobile-Based Lightweight Framework
Peirong Ji; Xiaofeng Xia; Zhiwei Wu; Fusen Wang; Xinyue Liu; Jun Sang

5. Joint Global and Local Feature Learning Based on Facial StO2 for Stress Recognition
Dong Chen; Xinyu Liu; Tong Chen; Dairong Peng; Jiaxiu Wang

UIC-34: Intelligent/Smart Environment & Application (II)
Session Chair: Shuo Yu (yushuo@dlut.edu.cn), Dalian University of Technology, China

1. Generate Frequency Limited Adversarial Examples to Attack Multi-Focus Image Fusion Models
Xin Jin; Qian Jiang; Peng Liu; Xin Jin; Xueshuai Gao; Puming Wang; Shin-Jye Lee

2. Difficulty-Aware Convolutional Knowledge Tracing for Student Performance Prediction
Yuan Zeng; Tiancheng Jin; Liang Dou

3. Shape Strengthed U-Shape Network for Objects Extraction of Remote Sensing Images
Ying Xia; Benchu Zhu

4. A Deep Learning-Based Multi-Model Ensemble Method for Hydrological Forecasting
Yufeng Yu; Rui Wei; Ke Li; Yubin Chen; Xiao Zhang; Dingsheng Wan

UIC-35: Intelligent/Smart Environment & Application (III)
Session Chair: Shuo Yu (yushuo@dlut.edu.cn), Dalian University of Technology, China

1. Marine Fish Object Detection Based on YOLOv5 and Attention Mechanism
Lulu Chen; Zhaoxiang Zang

2. Deep Q-Learning Enabled Energy-Efficient Resource Allocation and Task Deployment for MEC
Yang Li; Shunyu Wang; Gaochao Xu; Li Ma

3. A Simple and Effective Method for RGB-T Salient Object Detection
Zhengyi Liu; Bin Zhu; Yacheng Tan; Haitao Chu

4. Temporal Attention Splitting Network for Non-Invasive Blood Glucose, Cuff-Less Blood Pressure Estimation
Shichao Li; Ling Xiong; Heng Zhang

5. Stimulus Reconstruction Based Auditory Attention Detection Using EEG in Multi-Speaker Environments without Access to Clean Sources
Kai Yang; Xueying Luan; Gaoyan Zhang

UIC-36: Intelligent/Smart Environment & Application (IV)
Session Chair: Leyi Xiao (xiaolyttkx@hainanu.edu.cn), Hainan University, China

1. Term Similarity-Aware Extensive and Intensive Reading for Multiple Choice Question Answering
Xue Li; Junjie Zhang; Junlong Ma

2. U2-Net: A Stacked and Nested Network with Axial Attention for Detection of Building Surface Cracks
Yan Guo

3. INSIDER：A Framework for Assessing Confidence in Psychological Scales Based on Multi-Modal Physiological Signal Fusion
YouMian Wang; Bin Hu; Zhenxiang Chen; Xiaoqing Jiang; WenJuan Liu; Peicheng Wang

4. An Intrusion Detection System Based on Multiple Interpretation Methods
Dongwen Chai

5. STACE-GCN: A Spatio-Temporal-Aware Channel Excited Graph Convolutional Network for Skeleton-Based Action Recognition
Shuxi Wang; Chengju Zhou; Jiahui Pan; Pingzhi Liu; Daqin Feng; Zina Li

UIC-37: Intelligent/Smart Environment & Application (V)
Session Chair: Leyi Xiao (xiaolyttkx@hainanu.edu.cn), Hainan University, China

1. Query-Specific Temporal Knowledge Graph Representation Learning Model
Yayao Zuo; Zhengwei Liu; Yang Zhou; Minghao Zhan; Peilin Zhan

2. Micro-Expression Recognition Based on MAML Meta-Learning Algorithm
Bo Wan; Junjun Dang; Xuanxuan Liu; Qi Wang

3. Digital Twins-Based Multi-Agent Deep Reinforcement Learning for UAV-Assisted Vehicle Edge Computing
Chen Hu; Lei Zhang; Dezhi Chen; Zirui Zhuang; Qi Qi; Cong Liu; Jianxin Liao; Jingyu Wang

4. Hydrological Time Series Motif Association Rule Mining Based on Three-Step Pruning and Constraints
Yuelong Zhu; Zhixin Teng; Yirui Wu; Feng Jun

5. A Brain Disease Classification Framework with Temporal Attribute and Feature Fusion
Yunjing Liu; Li Zhang; Xiaoxiao Wang; Ming Jing; Guangwei Zhang; Anming Dong; Jiguo Yu

UIC-38: Intelligent/Smart Environment & Application (VI)
Session Chair: Leyi Xiao (xiaolyttkx@hainanu.edu.cn), Hainan University, China

1. Leveraging Perturbation Consistency to Improve Multi-Hop Knowledge Base Question Answering
Xin Wang; Hongbin Shi

2. TCFNet: Transformer and CNN Fusion Model for LiDAR Point Cloud Semantic Segmentation
Lu Ren; Jianwei Niu; Zhenchao Ouyang; Zhibin Zhang

3. Domain Adaption Object Detection with Global - Local Contrastive Learning and Co-Training Network
Ming Zhao; Xing Wei; Yang Lu; Ting Bai; Chong Zhao

4. Automatic Detection for Machine-Generated Texts is Easy
Mingyang Lyu; Chenlong Bao; Jintao Tang; Ting Wang; Peilei Liu

UIC-39: Intelligent/Smart Environment & Application (VII)
Session Chair: Xixun Yu (xixunyu@hainanu.edu.cn), Hainan University, China

1. Jointly Learning Time-Structure-History Graph Embedding for Temporal Knowledge Graph Reasoning
Hao Duan

2. FIG-LP: Feature-Inverse-Graph Based Link Prediction in Graph Stream
Xu Zhang; XiaoQiang Xiao; Guowei Li; WeiXun Ning; JianTong Song

3. SCDNet: Real-Time Semantic Segmentation Network with Split Connection and Flexible Dilated Convolution
Leo Yao; Shu Tian; Song-Lu Chen; Xu-Cheng Yin

4. Long- and Short-Term Sequential Recommendation with Temporal Interval
Kun He

5. Brisk-Yolo：A Lightweight Object Detection Algorithm for Edge Devices
Yang Liu; Le Jiang; Guoming Li; Yunxin Liu; Xiaozhou Ye; Ye Ouyang

UIC-40: Intelligent/Smart Environment & Application (VIII)
Session Chair: Xixun Yu (xixunyu@hainanu.edu.cn), Hainan University, China

1. DSWHAR: A Dynamic Sliding Window Based Human Activity Recognition Method
Li Sun; Yiqiang Chen; Xiaodong Yang; Chunyu Hu

2. A Novel Myo-Based Hybrid Neural Network for Tooth Brushing Monitoring
Zhenchao Ouyang; Zongkai Fu; Qing Ye

3. Relational Context Enhanced Dual Path Reasoning for Fact Prediction in Knowledge Graph
Yilin Wang; Zhen Huang; Minghao Hu; Dongsheng Li; Wei Luo; Dong Yang

4. Deep Learning and Data Randomness Based Blind Recognition of Channel Codes
Haifeng Peng; Chunjie Cao; Yang Sun; Haoran Li; Kangrui Ye

5. Through-Wall Human Trajectory Tracking Based on Multi-View Fusion Attention Mechanism
Fei Lei; Feiyi Fan; Jianfei Shen

UIC-41: Intelligent/Smart Environment & Application (IX)
Session Chair: Xingfeng Li (lixingfeng@hainanu.edu.cn), Hainan University, China

1. Dual Multimodal Contrastive Attention Networks for Sarcasm Detection
Xinkai Lu; Ying Qian; Yan Yang; Wenrao Pang

2. Feature-Based Data Augmentation Approach for Sequential Recommendation
Kaiyang Ma; Zhenyu Yang; Yu Wang; Laiping Cui

3. Multi-View Clustering Method Based on Graph Attention Autoencoder
Dianying Chen; Xiumei Wei; Xuesong Jiang

4. MSIP: Study on Multi-Source Infection Pattern Mining Algorithm in Four-Dimensional Spacetime
Deshun Li; Lingyu Li; Qiuling Yang; Jiangyuan Yao; Yuyin Tan

UIC-42: Intelligent/Smart Environment & Application (X)
Session Chair: Xingfeng Li (lixingfeng@hainanu.edu.cn), Hainan University, China

1. A Language-Agnostic Framework with Bidirectional Syntactic Graph Convolutional Networks for Cross-Lingual Aspect Term Extraction
Yaxin Cui; Baojie Tian; Junlin Wang; Yan Zhou; Songlin Hu

2. iTA: Inferring Traffic Accident Hotspots with Vehicle Trajectories and Road Environment Data
Jiannan Gao; Yigao Wang; Zhihan Jiang; Hang Zhu; Qiyue Zhong; Xiaoliang Fan; Longbiao Chen; Cheng Wang

3. Wildfire Detection and Burned Area Estimation Based on Multi-Source Crowdsensing Spatial Data
Lijuan Weng; Ruixiang Luo; Menghan Huang; Cheng Wang; Longbiao Chen

4. News-SBG: A Novel News Classification Model with Delivered Label Representation
Yao Tang

UIC-43: Intelligent/Smart Environment & Application (XI)
Session Chair: Xingfeng Li (lixingfeng@hainanu.edu.cn), Hainan University, China

1. Capsule Network Based on Multi-Granularity Attention Model for Text Classification
Hao Wang Wang

2. Multimodal Hateful Memes Detection via Image Caption Supervision
Huaicheng Fang; Fuqing Zhu; Jizhong Han; Songlin Hu

3. Recover the Structure of Monocular Depth Estimation Base ViT-CNNs
Xin Yang; Qingling Chang; Xinlin Liu

4. A Silkworm Counting Method with Density Map Based on Multiscale Feature Fusion
WeiJia Wang

1. Hand Movement Classification from Spatio-Temporal Sensory Data Based on Hybrid Random Forest Deep Learning
Kun Liang; Wei Zhao; Heng Qian; Yanan Liu; Zeng Zeng

2. Surface Defect Detection Based on ResNet Classification Network with GAN Optimized
Hanbo Fu

3. Deep Reinforcement Learning for Dependent Task Offloading in Mobile Edge Computing Systems
Gong Bencan

4. Research on Chinese Short Text Classification Based on Prefix-Vector Attention Template and Probabilistic Answer Set
Baoshan Sun; Jiaxi Yang

UIC-45: Intelligent/Smart Systems & Services (I)
Session Chair: Shankai Yan (skyan@hainanu.edu.cn), Hainan University, China

1. BBDL: A Wear-Leveling Algorithm of IoT Terminal PCRAM Application
Hongyu Wang; Hongfeng Yan; Tiejun Cao; Wei Zhong; Hui Jin; Yongjie Nie

2. Project Co-Art: Improving Children's Imagination Through AI-Based Human-Computer Co-Creation
Zuyu Shen; Yinzhu Piao; Cong Tan; Ruikai Lin; Xu Zhao; Xi Wan

3. Towards Safer Transporting in Resilient Cities: Risk Assessment and Path Planning
Kunchi Liu; Siheng Li; Zhenghui Liu; Fusang Zhang; Beihong Jin

4. TWAFR-GRU: An Integrated Model for Real-Time Charging Station Occupancy Prediction
Qiyang Chen; Sheng Liu; Haohao Qu; Rui Zhu; Linlin You

5. Hybrid Parallelism Based Communication Optimization for Edge Deep Learning
Guanxu Zhou; Zhuo Li

UIC-46: Intelligent/Smart Systems & Services (II)
Session Chair: Shankai Yan (skyan@hainanu.edu.cn), Hainan University, China

1. Station-Level Demand Prediction for Bike-Sharing Based on Multi-Spatio-Temporal Scale Features
Liming Jiang; Li Yang; Chen Shaomiao; Jiang Youfu; Tang Peng

2. ConFormer: Convolutional Transformer Exploiting Spatial and Temporal Information for 3D Human Pose Estimation
Hongde Luo; Nian Gu; Heng Zhang

3. DT-EEC: A Digital Twin-Assisted End-Edge-Cloud Collaboration Architecture for Industrial Internet Environment
Lujie Tang; Kejiang Ye

4. Keyphrase Extraction with Dynamic Graph Convolutional Networks and Diversified Inference
Qiangjuan Huang; Yuanxin Liu; Haoyu Zhang

5. Info-HGCN: Hyperbolic Graph Convolution Networks for Information Diffusion Prediction
Xiang Zeng; Xin Song; Yingdan Shang; Feng Xie; Bin Zhou

UIC-47: Intelligent/Smart Systems & Services (III)
Session Chair: Hua Li (lihua@hainanu.edu.cn), Hainan University, China

1. Technology for Embedded GPU Virtualization in the Edge Computing Environment
Yang Xinyu; Xin Wang; Lei Yan; Suzhi Cao

2. UMCIS: A Robust and High-Precision 6-DoF Estimation System for Indoor Headgear
Shuyu Lin

3. Discovering All-Chain Set with Direction and Graduality Characteristics Over Streaming Time Series
Shaopeng Wang; Chunkai Feng

4. Processing kNN Query with Pre-Computation in Time-Dependent Road Networks
Jiajia Li; Chunhui Liu; Ying Zhao; Xiaojing Liu; Liang Zhao; Xiufeng Xia

5. Discovering Fairness-Aware Structures from Social Networks Based on Concept-Cognitive Learning
Min Tao; Fei Hao; Yishui Zhu; Doo-Soon Park; Xinyi Xu

UIC-48: Intelligent/Smart Systems & Services (IV)
Session Chair: Hua Li (lihua@hainanu.edu.cn), Hainan University, China

1. Coflow Scheduling without Prior Knowledge Based on Traffic Characteristics
Deshun Li; Ganghua Cao; Jiangyuan Yao; Qiuling Yang; Yuyin Tan

2. Inductive Node Classification Based on Masked Graph Self-Encoders
Tianci Wang; Jianxia Chen; Shuxi Zhang; Xinyun Wu

3. SLEO: An Efficient Equilibrium Optimizer for Numerical Optimization
Qingxin Liu; Qi Qi; Ni Li

4. Lightweight Dynamic Storage Algorithm via Code Switching for Energy Internet
Yujia Zhai; Song Deng

5. MCRaft: Synergistic Collaboration of Multi Leaders for IoT Cluster Stability Optimization
Zhigang Xu; Yupeng Lei; Hongmu Han; Xinhua Dong; Xingxing Chen; Zhanyi Zhu

UIC-49: Intelligent/Smart Systems & Services (V)
Session Chair: Hua Li (lihua@hainanu.edu.cn), Hainan University, China

1. A Web Service Classification Method Based on Graph Neural Network Knowledge Distillation
Hao Huang; Buqing Cao; Shanpeng Liu; Dong Zhou; Mingdong Tang; Feng Xiao

2. Web Service QoS Prediction Based on Reputation and Location Aware Matrix Factorization
Fan Chen; Yugen Du; Wenhao Zhong; Hanting Wang

3. A Novel Backdoor Attack Adapted to Transfer Learning
Peihao Li; Jie Huang; Shuaishuai Zhang; Chunyang Qi; Chuang Liang; Yang Peng

4. Cache Dependent Rules with Size-Limited Flow Table in Software-Defined Networking
Wen Wang

UIC-50: Intelligent/Smart Systems & Services (VI)
Session Chair: Xingfeng Li (lixingfeng@hainanu.edu.cn), Hainan University, China

1. A Secure and Efficient Isometric Feature Mapping Outsourcing Framework
Peng Yang; Shaohong Zhang

2. Readability Analysis of Privacy Policies for Large-Scale Websites: A Perspective from Deep Learning and Linguistics
Han Ding; Shaohong Zhang

3. Two-Sided Online Stable Task Assignment with Incomplete Lists and Ties in Spatial Crowdsourcing
Weiyi Huang; Peng Li; Bo Li; Jing Liu; Lei Nie; Haizhou Bao

4. Ultrannel: Ultrasound Based Covert Communication Channel
Jianyi Zhang; Ruilong Wu

5. Accelerate Supercomputing Through Cross-Region Interconnection
Jing Han; Jingshan Pan; Huiling Shi; Yan Zhou; Chang Tang; Wei Zhang

UIC-51: Intelligent/Smart Systems & Services (VII)
Session Chair: Xingfeng Li (lixingfeng@hainanu.edu.cn), Hainan University, China

1. PATVD: Vulnerability Detection Based on Pre-Training Techniques and Adversarial Training
Weiye Yu; Guang Kou; Qihe Liu; Haoyu Zhang; Qiang Wang

2. EPCP: An Efficient Point Cloud Classification Network with Position Fusion
Yunming Liu; Jianming Wang; Haoran Ma; Yukuan Sun

3. Performance Evaluation of Hierarchical Federated Learning Networks Based on Stochastic Network Calculus
Yashi Dang; Zhuo Li; Xin Chen

4. Learning Cyber Threat Intelligence Knowledge Graph Embedding with Heterogeneous Relation Networks Based on Multi-Head Relational Graph Attention
Xuren Wang; Rong Chen; Bingha Song; Juangang An; Jun Jiang; Jian Wang; Peian Yang

5. Delay-Efficient Joint Offloading and Resource Allocation Strategy in Multi-MEC Server Edge Cloud Combination Systems
ZhiTian Sun; Xin Chen; Bo Yin; Yijie Wang

UIC-52: Personalization and Social Aspects (I)
Session Chair: Xingfeng Li (lixingfeng@hainanu.edu.cn), Hainan University, China

1. SET: A Squeeze-And-Excitation Transformer for Offline Signature Verification
Jianxin Ren; Jue Chen; Yujie Xiong

2. MixOT: Graph Representation Learning Based on Mix-Order Sampling and Transport Aggregator for Social Networks
Changqin He; Haoyu Zhang; Zhihui Hu; Guang Kou; Qiangjuan Huang

3. Multi-View Self-Attention Network for Next POI Recommendation
Hao Li; Peng Yue; Shangcheng Li; Chenxiao Zhang; Can Yang

4. Predicate-Augmented Personalized PageRank for Entity Typing in Knowledge Graphs
Mingxi Zhang; Jianghai Dai; Liang Qiao; Changmei Zhong; Jinhua Hua

5. Optimal Strategy Selection for Cyber Deception via Deep Reinforcement Learning
Yuantian Zhang; Feng Liu; Huashan Chen

UIC-53: Personalization and Social Aspects (II)
Session Chair: Leyi Xiao (xiaolyttkx@hainanu.edu.cn), Hainan University, China

1. Capturing High-Order Interactions for Interest-Aware News Recommendation
Jiadong Yuan; Yuanyuan Zhang; Chen Chen; Shanliang Pan; Jiang Yuan; Hongzhuo Wu

2. How Does Bot Affect Developer's Sentiment: An Empirical Study on GitHub Issues and PRs
Anze Gao; Yang Zhang; Sihao Chen

3. PAGE: Endowing Dialogue Agents with Personalized Characters via Persona Perception
Jiaxin Li; Fuyong Xu; Yuanying Wang; Pei-Yu Liu; Zhenfang Zhu; Jinlong Wang

4. Bi-TWD: A Unified Attack Detection Framework in Recommender Systems Based on BiLSTM and Three-Way Decision
Hongyun Cai; Shilin Yuan; Jie Meng; Jichao Ren

5. AutoRec++: Incorporating Debias Methods Into Autoencoder-Based Recommender System
Cheng Liang; Yi He; Teng Huang; Di Wu

1. Flow-Based User Click Identification in Encrypted Web Traffic
Zhenxuan Feng; Ruixin Liu; Mingpei Cao; Yuesheng Zhu

2. An Improved K-Shell Method Based on Information Entropy to Identify Key Users in Social Networks
Jun Chen; Xiumei Wei; Xuesong Jiang

3. TGNRec: Recommendation Based on Trust Networks and Graph Neural Networks
Ting Li; Chun-dong Wang; Huaibin Wang

4. A New Eye-Tracking Method with Image Feature Based Model for Mobile Devices
Shiwei Cheng; Qiufeng Ping; TiYong Liu

5. Emotional Feature Extraction for Depression Recognition Using SCAR-NET
Yuxiang Wang; Keji Mao; Ligang Ren; Jiefan Qiu; Guanglin Dai

1. OR-AutoRec: An Outlier-Resilient Autoencoder-Based Recommendation Model
Yuanpeng Hu; Xianmin Wang; Cheng Liang; Jing Li; Di Wu; Yi He

2. A General Feature Extraction Framework in Pre-Trained Language Models for Aspect-Category Sentiment Analysis
Ke Liu; Pei Li; Jianyong Yu

3. Community Discovery Method Based on Graph Attention Autoencoder
Dianying Chen; Xiumei Wei; Xuesong Jiang

4. Aspect-Level Sentiment Classification Based on Self-Attention Routing via Capsule Network
Chang Liu; Jianxia Chen; Tianci Wang; Xinyun Wu

5. Safety Boundary in Virtual Reality: An Approach Based on User Motion Analysis and Prediction
Zimo Cai; Xiaoping Che; Chenxin Qu; Haohang Li; Siyuan Wang

1. Reinforcement Learning-Based Explainable Recommendation Over Knowledge Graphs with Negative Sampling
Siyuan Zhang; Yuanxin Ouyang; Zhuang Liu; Wenge Rong; Zhang Xiong

2. Seizing the Long Tail: Neural Complementary Recommendation for Cloud API Delivery
Pengfei He; Wenchao Qi; Linlin Liu; Dianlong You; Limin Shen; Zhen Chen

3. Sentiment Analysis of Microblogs with Rich Emoticons
Shuo Zhang; Chunyang Ye; Hui Zhou

4. User Information Perception in Virtual Reality Environment
Enyao Chang; Xiaoping Che; Jingzhi Cui; Chenxin Qu

5. A Data Representation and Resource Allocation Approach for Intelligent Network Architecture
Wenchao Li; ZhiCheng Zeng; Anran Xu; Shan Yin; Liwei Kuang; Fei Zou

1. IPP-HF: An Identity Privacy Protection Scheme for Consortium Blockchain Hyperledger Fabric
Fengwei Liang; Xiaofei Xing; Guojun Wang

2. Incentive-Compatible Intelligence Collaboration Analysis Framework Based on Blockchain and Evolutionary Game
Zhigang Xu; Qi Li; Xinhua Dong; Hongmu Han; Yan Zhongzhen; Haitao Wang

3. BMTAC: A Decentralized, Auditable, Time-Limited, Multi-Authority Attribute Access Control Scheme in Blockchain Environment
Zhigang Xu; Qing Sun; Hongmu Han; Xinhua Dong; Yan Zhongzhen; Zhiqiang Zheng; Wenlong Tian

4. BDTwins: Blockchain-Based Digital Twins Lifecycle Management
XianXian Cao; Xiaoling Li; Yinhao Xiao; Yumin Yao; Shuang Tan; Ping Wang

. The ATC 2022 Presentation Program

1. Blockchain-Based Trust Evaluation Mechanism for Internet of Vehicles
Xiao Xiong; Leixiao Li; Haoyu Gao; Zheng Yue; Tieming Niu; Jinze Du

2. An Approach for Traffic Flow Prediction Combining 3D Convolution and Attention Mechanism
Lecheng Li; Fei Dai; Bi Huang; Guozhi Liu; Shuai Wang; Yuxuan Zuo

3. Intrusion Detection System for In-Vehicle Networks with Incremental Learning Based on Cloud-Edge Collaborative Architecture
Jiaying Lin; Yehua Wei; Haoran Jiang; Jing Long

4. SWAM: Driver Distraction Recognition Based on Attention Mechanism
Wanli Li; Jing Huang; Yizhi Huang; Yijie Chen; Renfa Li

5. Vehicle Check-In Data-Driven POI Recommendation Based on Improved SVD and Graph Convolutional Network
Yuwen Liu; Jie Zhang; Ruihan Dou; Xiaokang Zhou; Xiaolong Xu; Shoujin Wang; Lianyong Qi

1. Architecture and Applications of Wireless Autonomous Network
Lifang Zhang

2. A Hybrid Cat-Artificial Fish Swarm Algorithm for Optimal Sensor Placement of IoT-Based Bridge Structural Health Monitoring
Lingzhi Yi; Bin Luo; Chenlu Zhu; Xianjun Deng; Yunzhi Xia; Hengshan Wu

3. Minimum Delay Optimization for Message Scheduling Based on Pheromone Resetting Strategy in In-Vehicle Applications
Junqiang Jiang; Lunxin Xie; Duqun Zhou; Bo Fan

4. A Novel Message Packing Strategy for Time-Sensitive Networking
Wenyan Yan; Yan Liu; Bin Fu; Wenhong Ma; Zhangwei Yu; Renfa Li

. The ScalCom 2022 Presentation Program

1. Optimization of the Pedestrian and Vehicle Detection Model Based on Cloud-Edge Collaboration
Huabin Wang; Yuping Chen; Bo Liu; Ruichao Mo; Weiwei Lin

2. Failure-Tolerant Task Offloading for Vehicular Fog Computing
Chaogang Tang; Huaming Wu; Chunsheng Zhu; Shuo Xiao; Haifeng Jiang; Dong Zeng

3. Research on Integration Method of Civil Aviation Safety Information Based on Object-Oriented Thinking
Sun Diange; Ding Cui

4. Bayesian Contrastive Representation Learning for Dynamic Graph
Zian Wu; Huijun Tang; Huan Liu

1. Trusted Outsourced Computing Framework for Smart Contract of Permissioned Blockchain
Wensheng Tian; Zhichao Yan; Zedong Wang; Weitao Dai; Panpan Tang; Lei Zhang

2. A Blockchain-Based Practical Regulatory Framework for Charitable Funds
Wensheng Tian; Panpan Tang; Lei Zhang

3. Simulation Analysis of IEEE 802.15.4 MAC Layer Based on Matlab
Zhiyong Ji; Tao Wu; Weixi Liang; Yubin Zhao; Dunge Liu

4. Human Activity Recognition Based on Lightweight Programmable WiFi Chips
Weixi Liang; Rongshan Tang; Zhiyong Ji; Yubin Zhao; Dunge Liu

. The DigitalTwin 2022 Presentation Program

DigitalTwin-1: Modeling & Simulation
Session Chair: Xia Xie (shelicy@hainanu.edu.cn), Hainan University, China

1. Design and Implementation of Business Process Model in Stereoscopic Warehouse Digital Twin System
Yujie Zhou; Guohua Liu

2. Multi-robot task assignment based on discrete firefly algorithm
Xiao Zhong

3. DT-FLDS: DT-enabled Federated Learning Data Sharing Model
Yage Cheng; Wen Sun; Haibin Zhang; Zhang Rui; Xiangnan Zhou

DigitalTwin-2: Technologies & Applications (I)
Session Chair: Xia Xie (shelicy@hainanu.edu.cn), Hainan University, China

1. Efficient Non-preemptive on-demand Charging Scheduling Scheme for WRSN
Abdulbary Naji; Wang Xingfu; Ammar Hawbani; Saeed Alsamhi; Aiman Ghannami; Liang Zhao

2. Comparison and analysis of classical image denoising methods based on convolution neural network
Hongyu Liu; Hua Qu

3. On-road Features Based In-chamber C-V2X Application Test Scheme Design
Dongmei Chen; Yufei Yan; Lei Ye; Han Hu; Jianmei Lei; Lingqiu Zeng

4. Dual Priority Scheduling Algorithm for Wireless Rechargeable Sensor Networks
Chen Jiangyuan; Wang Xingfu; Ammar Hawbani; Liang Zhao; Saeed Alsamhi

DigitalTwin-3: Technologies & Applications (II)
Session Chair: Wen Sun (sunwen@nwpu.edu.cn) , Northwestern Polytechnical University, China

1. Research on Quality Prediction of Optical Modules in 5G Networks
Bei Li; Hongjia Liu; Guanghai Liu; Wen Sun; Lexi Xu; Tian Xiao; Yi Li; XiaoMeng Zhu; Yuting Zheng; Qiang Chen

2. Simulation of Vibration Model for On-Board Vehicle Equipment based on digital Twin Technology
Junguo Jia; Menglong Xu; Abdul Hadi Hanan; Bin Chen; Hao Bian; Jun Li

3. Digital Twin Enabled Dual-System Reinforcement Learning Method
Haiqin Xie; Sheng Tan; Fengqi Ling; Jialin Wu; Xin Zhang; Liang He

4. A Digital Twin System for Monitoring the Security of Theater Stages
Qian Li; Dongdong Huo; Lizhong Jiang

DigitalTwin-4: Evaluation & Optimization, Security & Privacy
Session Chair: Wen Sun (sunwen@nwpu.edu.cn) , Northwestern Polytechnical University, China

1. Joint Optimization of Beamforming and Transmission Power Based on Digital Twins Control System
Xunwen Xu; Lang Li; Baoyin Bian; Hongzhen Yang; Wenmeng Li; Hua Zhang; Jun-Bo Wang; Yujing Zhao

2. Privacy-Preserving Digital Twin for Vehicular Edge Computing Networks
Yi Yang; Wenqiang Ma; Wen Sun; Haibin Zhang; Zhiqiang Liu; Lexi Xu; Ye Zhu

3. A Cloud-Edge Collaborative Security Architecture for Industrial Digital Twin Systems
Kong Yusheng; Wang Yazhe; Lei Ren

4. A Double-Layer Optimal Operational Control of Traditional Chinese Medicine Pharmaceutical Process (Research paper)
Peiyuan Li; Panshuo Li

. The PriComp 2022 Presentation Program

PriComp-1: Privacy Computing (I)
Session Chair: Jun Feng (junfeng@hust.edu.cn), Huazhong University of Science and Technology, China

1. A Privacy Protection Method for Medical Health Data
Peipei Sui; Minxia Zhang; Zhaoteng Zhang

2. A Quantifying Approach for Evaluating Differential Privacy in Deep Learning
Lihua Yin; Yang Lv; Zhe Sun; Fuqiang Tao; Ran Li

3. A Lightweight Locally Repairable Code-Based Storage Architecture for Blockchains
Bao Wanning; Wang Liangmin

4. Secure and Scalable Data-Sharing Framework Based on Blockchain and IPFS for Al-Najaf Oil Refinery
Samir M. Umran; Songfeng Lu; Zaid Ameen Abduljabbar; Zhi Lu

PriComp-2: Privacy Computing (II)
Session Chair: Jun Feng (junfeng@hust.edu.cn), Huazhong University of Science and Technology, China

1. Recommendation System with Privacy Protection Based on Differential Privacy Aggregation
Jiuxin Cao; Bo Hong; Jin Yang; Jiawei Ge; Bo Liu

2. Certificate-Based Enterprise Privacy Analysis and Anomaly Discovery
Xingwen Zhao; Haoyang Yu

3. SmartCircles: A Benefit-Evaluation-Based Privacy Policy Recommender for Customized Photo Sharing
Haiyang Luo; Zhe Sun; Yunqing Sun; Ang Li; Binghui Wang; Jin Cao; Ben Niu

4. Risk Quantification of Privacy Management in Vehicular Ad Hoc Networks
Gang Liu; Ricky Yuen-Tan Hou

. The Metaverse 2022 Presentation Program

Metaverse-1: Metaverse Computing and Communications
Session Chair: Yunfan Zhang (doublezyf@gmail.com), Hainan University, China

1. Design and Implementation of a Distributed 3D Rendering System
Dan Liu; Lai Wei; Qiuhong Zheng; Peng Ding; Yun Shen

2. Panoramic Short Video Marketing: An Accessible Application of Metaverse at the Preliminary Stage
Bin Jia; Li Ma

3. Deep Reinforcement Learning Based Bitrate and Redundance Ratio Adaption for Panoramic Video Transmission
Qiang Long; Yaohua Sun

4. Emergency Message Broadcasting Scheme for Urban VANET
Zhang Yu; Yufeng Chen

Metaverse-2: Metaverse Interaction
Session Chair: Minxian Xu (mx.xu@siat.ac.cn), Chinese Academy of Sciences, China

1. The Multi-Directional Tabletop Three-Dimensional Light-Field Display with Super Multi-View to Solve Vergence-Accommodation Conflict
Peiren Wang; Jinqiang Bi; Jing Cai; Zhengyang Li; Wenjia Zhang; Kexin Bao

2. Research on Dialogue Management Model Based on A3C Algorithm
Dejun Wang; Beier Sun; Bowen Xiao; Zhihui Li

3. A Three-Dimensional Cyclic Multiplication - Convolution Neural Network for Hyperspectral Image Classification
Xiaorui Xiong; Zhongyin Sheng; Xuwen He; Zihan Huang; Zihan Xu; Qiaoling Lin

4. Multi-Entity Government Policy Networks: Modelling and Characteristic Mining
YiLin Kang; Renwei Ou

Metaverse-3: Metaverse Security
Session Chair: Hui Zhu (zhuhuifree@163.com), Hainan University, China

1. A Cross-Chain Framework for Industry Collaboration and Transaction
Zexun Jiang; Cong Zha; Xinyi Li; Xu Zhang; Hao Yin

2. Keycrux: A New Design of Distributed and Convenient Blockchain Digital Wallet
Yifan Yu; Yunkai Xu; Jiawei Yuan; Changhao Wu; Xiaoguang Liu; Ming Su

3. VSES-MB: Verifiable Searchable Encryption Scheme in Metaverse by Blockchain
Zi Jiao; Fu-cai Zhou; Qiang Wang; Jintong Sun; Jiahui Lu

4. Metaverse-AKA: A Lightweight and Privacy-Preserving Seamless Cross-Metaverse Authentication and Key Agreement Scheme
Yingying Yao; Xiaolin Chang; Lin Li; Jiqiang Liu; Jelena Mišić; Vojislav B. Mišić

Metaverse-4: Metaverse Applications
Session Chair: Hui Zhu (zhuhuifree@163.com), Hainan University, China

1. Overlap Makes Perfect: Designing a Meta-Tutor with Live Corrective Feedback for Ubiquitous Motion Learning
Tianjun Wu

2. Policy2Graph: A Structure-Aware Perspective on Constructing Policy Knowledge Graph for Smart Governance
Dejun Wang; Hebin Hu; YiLin Kang; Yi Zhang; Zhida Guo

3. SimCollege: A Digital Game for Promoting the Ethical Framework of Educational Metaverse
Ying Wu; Fei Hao; Ting Wu

4. Sequence Labelling Using Multi-Task Learning with Attention Gates
Renwei Ou

Other Presentation Program

1. Software Product Line for Metaverse: Preliminary Results
Filipe Arantes Fernandes; Cláudia Werner

2. Blockchainizing the Wordle Game in Advanced Metaverse Realms Using Smart Wearables
Sajjad Rostami Najafabadi; Abdeljalil Beniiche; Lisa Gouiran; Martin Maier

3. Self-Sovereign Identity for Trust and Interoperability in the Metaverse
Siem Ghirmai; Daniel Mebrahtom; Moayad Aloqaily; Mohsen Guizani; Mérouane Debbah

4. TESCO: Multiple Simulations Based AI-Augmented Fog Computing for QoS Optimization
Sundas Iftikhar; Uttkarsh Raj; Shreshth Tuli; Muhammed Golec; Deepraj Chowdhury; Sukhpal Singh Gill; Steve Uhlig

5. Enabling Network Digital Twin to improve QoS Performance in Communication Networks
M Saravanan; Satheesh Kumar Perepu; Adhesh Reghu Kumar

6. A Smart Card Based Approach for Privacy Preservation Authentication of Non-Fungible Token Using Non-Interactive Zero Knowledge Proof
Muhammad Bilal Akram Dastagir; Omer Tariq; Dongsoo Han

1. Utility-Aware Data Anonymization Model for Healthcare Information
Fadi Alhaddadin

2. PABAU: Privacy Analysis of Biometric API Usage
Feiyang Tang

3. An Overview and Ontology of Privacy to Preserve Privacy in Ultra-Wideband Networks
Katharina O. E. Müller; Jan von der Assen; Chao Feng; Burkhard Stiller

4. Developers' Privacy Education: A Game Framework to Stimulate Secure Coding Behaviour
Abdulrahman Hassan Alhazmi; Nalin Asanka Gamagedara A Arachchilage; Mumtaz Hameed

5. Holmes: An Efficient and Lightweight Semantic Based Anomalous Email Detector
Peilun Wu; Hui Guo

1. An Improved YOLO V5 Model for Pulmonary Nodule Detection With Synthetic Data Generated by GAN
Jieming Zhang; TaiMyoung Chung

2. Real-Time Semantic Segmentation in Traffic Scene Based on Cross Stage Partial Block
Lian Liu; Huilin Yin; Liguo Zhou; Ruining Wang; Alois Knoll

3. Egocentric Hand-Object Interaction Detection
Yao Lu; Yanan Liu

4. A Privacy Preserving Video Surveillance System for Trauma Rooms
Zhengyong Ren; Yuxin Yang; Kambiz Ghazinour; Sara Bayramzadeh; Qiang Guan

5. Attack-Model-Agnostic Defense Against Model Poisonings in Distributed Learning
Hairuo Xu; Tao Shu

1. Scenario Based Approach for Context Query Generation
Ravindi Iroshinee De Silva; Arkady Zaslavsky; Seng W Loke; Prem Prakash Jayaraman; Amin Abken; Alexey Medvedev

2. Heuristic Once Learning for Image & Text Duality Information Processing
Li Weigang; Luiz Antonio Borges Martins; Nikson Bernardes Fernandes Ferreira; Christian Moryah Contiero Miranda; Lucas Althoff; Walner De Oliveira Pessôa; Mylene Farias

3. Contrastive R-CNN for Incremental Learning in Object Detection
Peisheng Qian; Kai Zheng; Cen Chen; Zhongyao Cheng; Li Wang; Hui Li Tan

4. An Integrated Platform for Synchronous and Auto-Tagged Data Collection From Diverse Sensors
Walid Brahim; Jianhua Ma; Muxin Ma; Alex Qi; Yunlong Luo; Yihong Qi

5. Lightweight Collaborative Inferencing for Real-Time Intrusion Detection in IoT Networks
Gabriel A Morales; Jingye Xu; Dakai Zhu; Rocky Slavin

6. ELECTOR: Deterministic Leader Election Algorithm for Modular Robots
Edy Hourany; Bachir Habib; Abdallah Makhoul; Benoit Piranda; Julien Bourgeois