The 2025 IEEE CyberSciTech/DASC/PICom/CBDCom Co-located Conferences

*The 10th IEEE Cyber Science and Technology Congress (**CyberSciTech 2025**)*
*The 23rd IEEE International Conference on Dependable, Autonomic and Secure Computing (**DASC 2025**)*
*The 23rd IEEE International Conference on Pervasive Intelligence and Computing (**PICom 2025**)*
*The 11th IEEE International Conference on Cloud and Big Data Computing (**CBDCom 2025**)*

October 21-24, 2025, Hakodate City, Hokkaido, Japan
https://cyber-science.org/2025/

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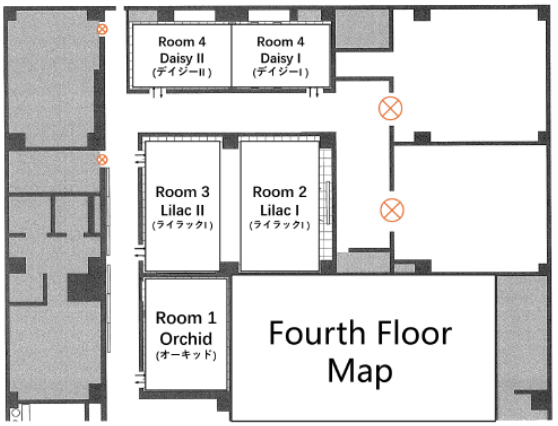
IEEE CyberSciTech/DASC/PICom/CBDCom 2025
Venue: Premier Hotel Cabin President, Hakodate City, Hokkaido, Japan
Program-at-a-Glance

Day1 (10/21)	08:00 – 10:20	**Zoom 1** CyberSciTech-1 Wksp/SS	**Zoom 2** CyberSciTech-2 Regular	**Zoom 3** CyberSciTech-3 Regular	**Zoom 4** DASC-1 Regular	**Zoom 5** CBDCom-1 Regular
	10:20 – 10:30					
	10:30 – 12:00	CyberSciTech-4 Wksp/SS	CyberSciTech-5 Regular	CyberSciTech-6 Regular	PICom-1 WiP/Wksp/SS	CBDCom-2 Regular/WiP
	12:00 – 13:00	Birds-of-a-Feather (BoF)				
	13:00 – 14:10	**Room 1 (Orchid)** CBDCom-3 WiP/Wksp/SS	**Room 2 (Lilac I)** PICom-2 WiP/Short	**Room 3 (Lilac II)** CyberSciTech-7 Wksp	CyberSciTech-8 Regular	CBDCom-4 Regular
	14:10 – 14:30	Coffee Break				
	14:30 – 17:00	DASC-2 Wksp/SS/WiP	PICom-3 Regular/SS	PICom-4 Wksp	PICom-5 Regular/Wksp	PICom-6 Wksp
	18:00 – 20:00	Welcome Reception				
Day2 (10/22)	09:00 – 09:30	**Room Camellia II / カメリアII (3rd Floor)** Opening Ceremony				
	09:30 – 10:10	Keynote Talk 1				
	10:10 – 10:30	Coffee Break				
	10:30 – 12:00	Panel Discussion				
	12:00 – 12:50	Lunch				
	12:50 – 14:50	**Room 1 (Orchid)** DASC-3 Regular	**Room 2 (Lilac I)** PICom-7 Regular	**Room 3 (Lilac II)** CBDCom-5 Regular	**Room 4 (Daisy I)** CyberSciTech-9 Regular	**Room 5 (Daisy II)** CyberSciTech-10 Regular
	15:00 – 18:00	Social Activities				
Day3 (10/23)	09:00 – 09:40	**Room Camellia II / カメリアII (3rd Floor)** Keynote Talk 2				
	09:40 – 10:20	Keynote Talk 3				
	10:20 – 10:40	Coffee Break				
	10:40 – 11:20	Keynote Talk 4				
	11:20 – 12:00	Poster Session (Brief Presentation, Q&A, Voting for Best Poster)				
	12:00 – 13:00	Lunch				
	13:00 – 15:20	**Room 1 (Orchid)** DASC-4 Regular	**Room 2 (Lilac I)** PICom-8 Regular	**Room 3 (Lilac II)** CBDCom-6 Regular	**Room 4 (Daisy I)** CyberSciTech-11 Regular	**Room 5 (Daisy II)** CyberSciTech-12 Regular
	15:20 – 15:40	Coffee Break				
	15:40 – 17:00	CyberSciTech-13 Regular	PICom-9 Regular	CyberSciTech-14 Regular	CyberSciTech-15 Wksp	CyberSciTech-16 Regular
	18:00 – 21:00	Conference Banquet (Room Camellia I & II / カメリアI & II)				
Day4 (10/24)	09:00 – 10:30	**Room 1 (Orchid))** CyberSciTech-17 Regular	**Room 2 (Lilac I)** CyberSciTech-18 Wksp	**Room 3 (Lilac II)** CyberSciTech-19 Wksp	**Room 4 (Daisy I)** CyberSciTech-20 Wksp	**Room 5 (Daisy II)** CyberSciTech-21 WiP
	10:30 – 11:00	Coffee Break				
	11:00 – 12:00	BoF and Closing (Room Lilac I & II / ライラックI & II)				
	12:00 – 13:00					
	13:00 – 17:00	Conference Organizational Meeting and IEEE HITC Meeting				

ROOM	English Name	Japanese Name
3rd Floor	Room Camellia I	カメリアI
	Room Camellia II	カメリアII
4th Floor	Room 1 Orchid	オーキッド
	Room 2 Lilac I	ライラックI
	Room 3 Lilac II	ライラックII
	Room 4 Daisy I	デイジーI
	Room 5 Daisy II	デイジーII

ZOOM ROOM	ID	Password
Zoom 1	849 8862 6085	524020
Zoom 2	834 9217 1984	280143
Zoom 3	886 1823 8180	125900
Zoom 4	818 1722 4597	176992
Zoom 5	830 6969 7707	905786



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General Information and Presentation Guidelines

Conference Time and Language

The time for the conference program is based on UTC+9, Japan Standard Time (JST). The presentation language is English.

Onsite Registration

Registration Site: Premier Hotel Cabin President Hakodate
Pre-Registration: Oct. 20, 13:30 – 16:30
Registration: Oct. 21 - 23: 09:00 – 16:00, Oct. 24, 9:00 – 11:00.

For Session Chairs

Session Chairs are requested to be in the room at least 10 minutes before their sessions. Please bring a note PC to your session. According to the number of papers and presenter's attendance in a session, its session chair can adjust the Q&A time but must ensure that the allocated time for the session is not exceeded.

For Authors

Authors of the Regular Papers, Work-in-Progress (WiP) Papers, Short Papers, Workshop (Wksp) Papers, and Special Session (SS) Papers

- Please confirm your attendance with the Session Chair before the session.
- Refer to this advance program to confirm the exact time of your session and the specific order of paper presentation in your session.
- You are encouraged to use your own PC for presentation in your session.
- For authors of Regular Papers, **15** minutes for the presentation and **5** minutes for Q&A.
- For authors of WiP/Short Papers, Workshop papers, and Special Session Papers, **10** minutes for the presentation and **5** minutes for Q&A.

Authors of Poster Papers

Preparation of Poster: The poster is portrait style, and A0-size (A zero) paper; that is, 841 mm x 1189 mm (or 84.1 cm x 118.9 cm), which is approximately 33.11 x 46.81 inches. Alternatively, you can prepare your poster using eight (8) sheets of A3-size paper (297 x 420mm, or 16.5 x 11.7 inch).
Setting up of Poster: Please ensure that your poster is set up prior to the start of the session (08:30-08:50 or 10:20-10:40) and remains on display throughout the session and until 13:00 (1:00 PM) on Oct. 23 (Day 3). Poster stands will be provided.
Presentation of Poster: All poster paper presenters in the session are required to first give a short oral introduction of the poster (up to **one minute** using no more than two PPT slides) to summarize and highlight their poster papers in the designated room (Camellia II Room) in 10:40 on Oct. 23. Email or copy your poster introduction PPT to conference organizers before 10:30 on Oct. 23. After all introductions have been completed, authors should stand at the side of their own posters during the poster session and until 12:45 to further explain their work and respond to questions from participants. The poster presenters can take their lunch after.

Voting for the Best Poster: All participants can vote until 13:00, Oct. 23 (Day 3).

Proceedings

If you are interested in reading papers during the presentations, here are the proceedings:
Provided before the conference
The username and password will be sent to all fully registered participants separately.

Message from CyberSciTech/DASC/PICom/CBDCom 2025 Steering Committee Chairs

Welcome to the four joint IEEE conferences of CyberSciTech, DASC, PICom and CBDCom! It is very delightful for us to gather together, physically and virtually, in Hakodate, a historic and beautiful city, Hokkaido, Japan, in the golden autumn season.

This year our joint conferences have received a large number of submissions from all the world. After rigorous review, the four conference program committees have selected a total of *242* papers including *135* regular ones, *27* work-in-progress or short papers, *67* workshop or special session papers, and *13* poster papers. In total, there are 40 parallel sessions consisting of *14* online sessions and *26* onsite sessions, and one poster session. In addition, there are *5* plenary sessions, four distinguished keynote speeches covering various hot topics and one panel for discussing future AI.

It is very challenging to organize such a scale of the joint conferences. There have been a lot of organizing tasks since the beginning of this year. Many people have spent tremendous time and done excellent work to make the joint event successful. First of all, we would like to thank Future University Hakodate and Prof. *Xiaohong Jiang* for hosting the conferences so that we all can meet here. Next, we would like to express our gratitude to the conferences' leading general and program chairs, especially, *Qun Jin, Qing Li, Xiaokang Zhou, Naohiro Hayashibara, Zonghua Zhang, Flavia Delicato, Antonio Guerrieri, Kenichi Kourai, Claudio Miceli, Ao Guo, Lidia Fotia, Xiaohong Jiang, Mohand Tahar Kechadi, Jie Li, Xun Shao, David Taniar, Sahraoui Dhelim,* and *Kazuhisa Matsuzono*. We also sincerely thank the advice, support and excellence of all other chairs. In particular, our special thanks go to Prof. *Bernady Apduhan* who has led and managed many technical and local matters, as well as to Dr. *Ao Guo* and Dr. *Bo Wu*, who both have done tremendous work in maintaining the conferences' websites, systems, programs, etc.

We highly appreciate the four distinguished keynote speakers, *Noriaki Kamiyama, Victor Chang, Shaoying Liu*, as well as the panelists, *Katsutoshi Yada, Jinhua She, Bin Hu, Qiangfu Zhao*, *Antonio Guerrieri,* and *Claudio Miceli*. We also appreciate the excellent service of the student volunteers, who have done a lot of detailed support but often invisible work, e.g., logistics preparation, registration administration, facility preparation and setting up, etc. We further thank the kind support from Hakodate City Hall and Premier Hotel Cabin President, especially Ms. *Midori Sugita*, for her wonderful assistance in making this successful event in this venue. Finally, we are grateful to all authors submitting high-quality research works to our conferences, and all participants attending the four conferences.

We hope you will fully enjoy both the joint conferences and Hakodate City.

Jianhua Ma

Steering Committee Chair

Laurence T. Yang

Steering Committee Chair

Message from CyberSciTech 2025
General Chairs, General Executive Chairs and Program Chairs

Over the past decade, cyber science and technology is developing at a tremendous rate. It is becoming an inseparable part of our daily lives. At the same time, challenges across cyber technologies, ethics, and other traditional disciplines are emerging. The future of this theme will be of transdisciplinary nature that requires careful exploration. The aim of the CyberSciTech Congress is to address the broad challenges in cyber science and technology and to offer a common platform for our fellow scientists, engineers, industrial practitioners, and researchers to present and exchange their latest ideas, discoveries, and implementations. Therefore, it is our great honor and pleasure to welcome all our participants to the 2025 Cyber Science and Technology Congress (CyberSciTech 2025) to be held in Hakodate City, Hokkaido, Japan on October 21–24, 2025. CyberSciTech 2025 is sponsored by the IEEE Computer Society, supported by IEEE Technical Committee on Cybermatics, IEEE Technical Committee on Smart World, IEEE Technical Committee on Scalable Computing, and IEEE Technical Committee on Hyper Intelligence, and hosted by Future University Hakodate (Japan). It is co-located with the 23rd IEEE International Conference on Dependable, Autonomic & Secure Computing (DASC 2025), the 23rd IEEE International Conference on Pervasive Intelligence and Computing (PICom 2025), and the 11th IEEE International Conference on Cloud and Big Data Computing (CBDCom 2025).

To address the comprehensive nature and emerging challenges of Cyberization, CyberSciTech 2025 offers six technical tracks on the topics of

- Track 1: Cyberspace Theory & Technology
- Track 2: Cyber Security, Privacy & Trust
- Track 3: Cyber Physical Computing & Systems
- Track 4: Cyber Social Computing & Networks
- Track 5: Cyber Intelligence & Cognitive Science
- Track 6: Cyber Life & Wellbeing

In addition, the following special sessions/workshops are jointly organized:

1. Special Session on Intelligent Computing in Cyber-Physical Social Systems (CyberIC 2025)
2. Special Session on Computing and Applications for Cyber Internet of Things (Cyber-IoT 2025)
3. Special Session on Cyber Social Computing and Cyber-Enabled Applications (CSC&CEA 2025)
4. The 1st International Workshop on AI-empowered Digital Health and Well-being Promotion (AI-DHWP 2025)
5. The 2nd International Workshop on Generative AI and Hyper Intelligence (GAI-HyperI 2025)
6. The 8th International Workshop on the Impact of Internet of Things on Daily Life (IoT-Life 2025)
7. The International Workshop on Physical-Aware Intelligence and Cognitive Modelling (PAICM 2025)
8. The International Workshop on Human-Centered AI and Digital Coaching (HAIDC 2025)
9. The 3rd International Workshop on Next Generation Intelligent Emergency Communications (NiWEC 2025)
10. The 7th IEEE International Workshop on Big Data Analytics for Cyber Security and Defence (BigCyberSecurity 2025)

Overall, CyberSciTech 2025 received 263 submissions covering a wide range of topics. All accepted papers were selected based on a rigorous peer review process. Finally, 84 high quality regular papers, 11 Work-in-Progress papers and 3 Poster papers are included in the 2025 Proceedings. Another 51 papers were accepted in the special sessions/workshops.

We would like to take this chance to thank the entire Steering Committee, especially Jianhua Ma (Chair), Laurence Yang, and Hui-Huang Hsu for their guidance.

It is our great pleasure to find and assemble a great organizing committee, which is the key to a successful event. We want to thank Future University Hakodate and all members of the Organizing Committee for their hard work. We would also like to express our gratitude to the Program Co-Chairs, Yutaka Watanobe, Yan Huang, Xiaoyan Wang, Weimin Li, S. Leili Mirtaheri, Xiaokun Zhang, Lai Tu, and Lingling Fang, for their valuable contributions.

We thank workshop and special session chairs Pan Wang and Yegang Du in inviting and organizing many great and topical workshops and special sessions to enrich the coverage of our Congress. A successful event always relies on a great publicity team and special thanks must go to Xiaohua Feng, Hongxin Yan, Hong Chen, Safa Otoum, Ruichen Cong, Kai Cheng, Zhuotao Lian, and Chen Yang.

Of course, we want to express our sincere gratitude to all authors, participants, PC members, and many others who greatly contributed to CyberSciTech 2025 in many ways.

The event will take place in Hakodate, Hokkaido, Japan. We are excited to welcome our global community and the exceptional papers and presentations prepared by our colleagues worldwide. We hope this conference will offer valuable insights and inspiration, fostering meaningful exchanges and collaborations. We look forward to your participation and wish you an enjoyable and productive experience at CyberSciTech 2025.

Bernady O. Apduhan, Qing Li, and Qun Jin

General Chairs of CyberSciTech 2025

Xiaohong Jiang, Xiaokang Zhou, Moayad Aloqaily, and Kanghyun Jo

General Executive Chairs of CyberSciTech 2025

Celimuge Wu, Gautam Srivastava, and Ao Guo

Program Chairs of CyberSciTech 2025

Message from DASC 2025
General Chairs, General Executive Chairs and Program Chairs

As computer and communication systems, along with other systems like Cyber-Physical Systems (CPS), the Internet of Things (IoT), and Autonomous Robotic Systems, continue to grow in size and complexity, their dependability and security become crucial for enabling next-generation scientific, engineering, and commercial applications. Designing, analyzing, evaluating, and enhancing the dependability and security of large-scale computing environments remains a significant challenge. Achieving trusted and autonomous computing systems demands collaborative research across various disciplines, from natural to social sciences. This requires advancements in numerous fields, alongside the development of new software, architectures, and communication technologies to integrate these diverse technologies effectively. The overall goal of the DASC 2025 conference is to address the broad challenges in various topics that are closely related to dependable, autonomic and secure computing. Therefore, it is our great honor and pleasure to welcome all our participants to the 23rd IEEE International Conference on Dependable, Autonomic and Secure Computing (DASC 2025), which will be held in the beautiful city Hakodate, Hokkaido, Japan during October 21-24, 2025. DASC 2025 is sponsored by the IEEE Computer Society, supported by IEEE Technical Committee on Cybermatics, IEEE Technical Committee on Smart World, IEEE Technical Committee on Scalable Computing, IEEE Technical Committee on Hyper Intelligence, IPSJ SIG-DPS, IEICE SIG-DC, and JSSST DSW, and hosted by Future University Haodate, Japan. It is co-located with the 10th IEEE Cyber Science and Technology Congress (CyberSciTech 2025), the 23rd IEEE International Conference on Pervasive Intelligence and Computing (PICom 2025), and the 11th IEEE International Conference on Cloud and Big Data Computing (CBDCom 2025).

To tackle the broad scope and emerging challenges of dependable, autonomic and secure computing, DASC 2025 offers five technical tracks on the topics of

- Track 1: Dependability, Reliability, and Fault Tolerance
- Track 2: Security, Privacy, and Trust in Systems and Networks
- Track 3: Autonomic Computing and Self-Adaptive Systems
- Track 4: AI, Machine Learning, and Advanced Computational Methods
- Track 5: Industrial Applications and Case Studies

In addition, the following two workshops on the topics of

1. The 8th International Workshop on Emerging Dependable Computing System Technologies and Applications (EDCSTA 2025)
2. The 22nd International Workshop on Assurance in Distributed Systems and Networks (ADSN 2025)

are jointly organized.

Overall, DASC 2025 attracted high-quality submissions from various regions worldwide, encompassing a broad spectrum of topics. Finally, 14 high-quality regular papers were accepted for presentation and publication in the conference proceedings. As the number of submitted papers to main tracks (1-to-5) and the Late Breaking Innovation track is 31, the acceptance rate is 45%. Besides the main tracks, 5 Work-in-Progress (WiP) papers and 4 Poster papers were accepted, together with 5 papers in the two co-located workshops.

We would like to take this chance to thank the entire Steering Committee, especially Jianhua Ma (Chair) and Laurence Yang for their guidance. Special thanks go to Ao Guo and Xiaokang Zhou for their very important contribution to the conference organization.

It is our great pleasure to find and assemble a great organizing committee, which is the key to a successful event. We would also like to express our gratitude to the Program Co-Chairs, Junjun Zheng, Luis Guillen, and Thomas TY Win for their valuable contributions.

We thank Workshop and Special Session Chairs Noriaki Kamiyama and Paramin Sangwongngam, and WiP/LBI/Poster Session Chairs Junichi Funasaka and Songpon Teerakanok in organizing great and topical workshops, WiP, LBI, poster and special sessions to enrich the coverage of our Congress. A successful event always relies on a great publicity team and special thanks must go to Mubashir Rehmani, Junjun Zheng, Qin Liu, Senthil Kumar, Dhomas Hatta Fudholi, and Yuhong Liu.

Of course, we want to express our sincere gratitude to all authors, participants, PC members, and many others who greatly contributed to DASC 2025 in many ways.

The event will be held on the beautiful city Hakodate in Hokkaido, Japan. We are thrilled to welcome our global community and showcase the outstanding papers and presentations from our colleagues around the world. We hope this conference provides valuable insights and inspiration, encouraging meaningful discussions and collaborations. We look forward to your participation and wish you an enjoyable and fruitful experience at DASC 2025.

Naohiro Hayashibara and Moayad Aloqaily

General Chairs of DASC 2025

Xiaohong Jiang and Bernady O. Apduhan

General Executive Chairs of DASC 2025

Takaki Nakamura and Zonghua Zhang

Program Chairs of DASC 2025

Message from PICom 2025
General Chairs and Program Chairs

On behalf of the Organizing Committee, we welcome you to the 23rd IEEE International Conference on Pervasive Intelligence and Computing (PICom 2025). Since its first edition in 2003, PICom has been established as a premier conference aiming to cover all dimensions of intelligent paradigms and their applications in several pervasive computing domains. By covering the different visions and components of computational intelligence, including well established techniques and disciplines as well as emerging paradigms, PICom has a broad scope. It aims to provide a forum to discuss and exchange novel and exciting ideas in the wide spectrum of theoretical and applied pervasive and intelligent computing. PICom's scope includes Ubiquitous Intelligence, Social Intelligence, Intelligent Networks, Machine Learning, Big Data, Internet of Things, Cloud Computing, Context-Aware Computing, and Pervasive Security, to name a few.

This year, we received high-quality submissions from several parts of the world covering a wide range of topics. A total of 21 Full Research papers and 11 work-in-progress/short papers were accepted for presentation and publication in the conference proceedings. Besides the main tracks, PICom also included three very interesting workshops and a special session, namely, the 4th International Workshop on Hybrid Internet of Everything Models for Industry 5.0 (HIEMI 2025), the 1st International Workshop on Quantum Computing for Distributed Systems (QuDiS 2025), the 1st International Workshop on Intelligent IoT Systems for Extreme Environments (IoT4X 2025), and the Special Session on Advanced Technology for Intelligent Rehabilitation Robotics.

The successful organization of an international conference of this scale requires the support and dedication of many people. First, we would like to thank the Steering Committee, Prof. Jianhua Ma, Prof. Laurence T. Yang, and Prof. Adnan Al-Anbuky, for nourishing the conference and wisely guiding its course over the years. A warm thanks to Prof. Bernady O. Apduhan, who (again) accepted the challenge of organizing the event and making everything run smoothly and efficiently. In addition to meeting all the numerous requests involved in the organization, Prof. Apduhan always does so with a smile on his face. We extend our thanks to the entire local committee members for their excellent and diligent work. We also want to thank Xiaokang Zhou and Ao Guo for their very important contribution to the conference organization. We are indebted to our Track Chairs - Federico Santoro, Marco Miozzo, Claudio Savaglio, Rebeca Motta, Andrea Vinci, Ao Guo, and Franco Cicirelli - for efficiently guiding the review process with the invaluable help of the members of the Technical Program Committee. Without their help, this program would not be possible. We are sincerely grateful to the Workshop & Special Session Chairs - Irfanullah Khan and Wenjing Zhao - and to our Publicity Chairs - Jingtao Sun, Wei Li, Gwanggil Jeon, Antonino Galletta, Celimuge Wu, Endang Djuana, and Zhuotao Lian - for helping in the dissemination of the Call for Papers. We would also like to thank the members of the Advisory Committee, in particular Professor Victor Chang, who volunteered to be one of the keynote speakers at our event. A heartfelt thanks to all the authors for their great contributions. We are also grateful to IEEE for publishing the proceedings. We sincerely hope the participants enjoy the conference program and benefit from all the learning opportunities and academic and professional interactions.

The 2025 edition of PICom is held in the beautiful Hakodate City, Hokkaido, Japan. We hope that participants truly enjoy the numerous local attractions, the hospitality of its people and the great quality of life.

Flavia C. Delicato
Antonio Guerrieri
Kenichi Kourai

General Chairs of PICom 2025

Claudio Miceli
Ao Guo
Lidia Fotia

Program Chairs of PICom 2025

Message from CBDCom 2025
General Chairs, General Executive Chairs and Program Chairs

On behalf of the Organizing Committee, it is our great honor and pleasure to welcome you to the 11th IEEE International Conference on Cloud and Big Data Computing (CBDCom 2025), held from October 21–24, 2025, in Hakodate City, Hokkaido, Japan, with hybrid participation options. Since its inception, CBDCom has established itself as a premier international forum for presenting the latest research innovations, systems, and applications in cloud computing and big data technologies. Over the past decade, the conference has consistently provided a unique venue for researchers, practitioners, and industry leaders to exchange ideas and foster collaborations that shape the future of computing.

The significance of cloud and big data computing continues to grow. The exponential rise of data generated by the Internet of Things, smart devices, social media, and large-scale scientific applications demands new paradigms for data storage, processing, and analysis. At the same time, the increasing adoption of AI and machine learning techniques requires scalable, secure, and energy-efficient infrastructures. Addressing these challenges calls for innovative approaches that combine advanced algorithms, novel architectures, distributed systems, and networked intelligence. CBDCom 2025 is designed to provide exactly this type of comprehensive platform. This year's conference features four technical tracks covering theories and algorithms, systems and security, IoT and smart technologies, and networking and communications. These tracks reflect the multi-disciplinary nature of the field and ensure that diverse perspectives are represented. In addition, a series of special sessions broaden the scope of discussion and allow emerging topics to receive focused attention. The conference also includes Work-in-Progress and Poster sessions that provide an excellent opportunity for presenting early-stage research and receiving valuable feedback from peers.

This year, the conference received a strong number of submissions from around the world. We received 74 submissions covering a wide range of topics. All accepted papers are selected based on a rigorous peer review process. Finally, 27 high quality regular papers, 4 Work-in-Progress papers, and 5 Poster papers are included in the 2025 Proceedings. Other 2 papers are accepted in the special session. We would like to thank the Program Chairs for their tireless efforts in coordinating the review process and shaping the program. We are equally grateful to the Workshop and Special Session Chairs, Publicity Chairs, and Publication Chairs, whose contributions were essential to the success of the conference. Our sincere thanks also go to the Steering and Advisory Committees for their invaluable guidance, as well as to IEEE for publishing the proceedings. We also acknowledge the contributions of our local hosts and volunteers in Hakodate, whose hard work made this event possible. Hakodate, located in northern Japan, is renowned for its scenic beauty, historical sites, and vibrant culture. We hope that in addition to the rich technical program, participants will enjoy exploring this unique city and engaging in cultural exchange.

Finally, we warmly welcome all participants to CBDCom 2025, whether you are joining us in person in Hakodate or virtually from around the world. We hope this conference will provide not only technical insights but also opportunities to establish long-lasting collaborations and friendships. We wish you an enjoyable, fruitful, and memorable experience at IEEE CBDCom 2025.

Xiaohong Jiang, Mohand Tahar Kechadi, and Jie Li

General Chairs of IEEE CBDCom 2025

Bernady Apduhan, Naohiro Hayashibara, and Xun Shao

General Executive Chairs of IEEE CBDCom 2025

David Taniar, Sahraoui Dhelim, Kazuhisa Matsuzono, and Yuanlong Cao

Program Chairs of IEEE CBDCom 2025

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Keynote 1: Cache Distribution from LEO Satellites

***Noriaki Kamiyama**, Ritsumeikan University, Japan*

About the Keynote Speaker

Noriaki Kamiyama received his M.E. and Ph.D. degrees in communications engineering from Osaka University in 1994 and 1996, respectively. From 1996 to 1997, he was a visiting researcher at the University of Southern California. He joined NTT Multimedia Network Laboratories in 1997, later working at NTT Network Technology Laboratories, where he received several Director's Awards for his contributions. From 2013 to 2014, he served as an invited associate professor at Osaka University, and as an invited professor in 2015. He became a professor at Fukuoka University in 2017 and has been a professor at Ritsumeikan University since 2021.

He was the Chair of the IEICE Technical Committee on Information-Centric Networking (ICN) (2023–2025), and he has been the Vice Chair of the IEICE Technical Committee on Complex Communication Sciences. He has been an Associate Editor for IEEE Transactions on Network and Service Management (TNSM) since March 2020. He serves as Vice Chair of the IEEE COM-19 Tokyo Joint Chapter (since November 2021), and as Vice Editor-in-Chief of the IEICE Communications Society Editorial Board (since June 2024).

He has received the Best Paper Awards at IFIP/IEEE IM 2013, WTC 2014, and ICOIN 2020. He also received multiple research and paper awards from IEICE, including the IEICE Communications Society Distinguished Contributions Award. His research interests include traffic measurement, traffic engineering, network security, LEO satellite networks, and quantum networks. He is a member of IEEE, ACM, and IEICE.

Abstract: Using LEO (Low Earth Orbit) satellites is an effective approach to provide network connectivity in areas where terrestrial infrastructure cannot be deployed. LEO satellites offer wide coverage, low power consumption, low latency, and high-capacity communication. However, LEO satellites have a drawback: low uplink throughput, which becomes a bottleneck when delivering large-size content from ground-based servers via LEO satellites. To address this problem, deploying caches on LEO satellites is an effective solution, allowing content delivery directly from the satellite caches. In this talk, I will explain issues on cache distribution from LEO satellite and approaches to solve these issues.

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Keynote 2: Federated Learning-Driven O-RAN Security for 6G Networks and Comprehensive Analysis

***Victor Chang**, Aston University, United Kingdom*

About the Keynote Speaker

Professor Victor Chang stands as an internationally recognized authority in applied AI, data science, cybersecurity, and cloud computing. His distinguished career spans groundbreaking research and extensive global collaboration. Currently positioned as Professor of Business Analytics at Aston University, he specializes in AI, Data Analytics and Cybersecurity while steering multiple strategic initiatives focused on creating secure, responsible, and sustainable digital transformation.

Victor's expertise seamlessly connects academic innovation with practical implementation. His influence extends across five continents through more than 60 invited keynote presentations at premier conferences, including IEEE Services, Cloud, Big Data, and other flagship events. Victor's technical innovation and leadership have produced several groundbreaking innovations, including the Cloud Computing Adoption Framework (CCAF), an advanced Deep-IFS security system, federated learning architectures for 6G networks, and sophisticated IoMT (Internet of Medical Things) platforms. His scholarly contributions include over 250 peer-reviewed publications, complemented by editorial responsibilities at leading journals. He's the Winner of the Inspirational Individual of the Year 2024, UK National IT Award. He has won the Data Leader of the Year 2025 (In-House), British Data Awards. He won the Information Technology 2025 Award, Business Awards UK, Cybersecurity Initiative of the Year 2025.

Abstract: The cybersecurity issues of 6G networks and Open Radio Access Networks (O-RAN) are challenging for traditional centralized defense techniques to handle. This keynote introduces a UK-Japan partnership that combines neuromorphic AI, federated learning, and O-RAN edge deployment for near-real-time, privacy-preserving malware detection. We address privacy issues, data heterogeneity, and communication delay in federated learning with our new FedAvgVChang algorithm. In running 20 rounds, the system achieves 96.8% detection accuracy, which is 38% faster than normal federated averaging. It is tested on the CIC IoT 2023 dataset and a synthetic IoT dataset that mimics CIC IoT 2023 with simulated attack scenarios (e.g., Mirai, DDoS). On normal hardware, it achieves a median inference delay of 0.15 seconds; on neuromorphic platforms (emulated Loihi), it can achieve inference times of less than 0.8 seconds. Strong detection across a variety of attack vectors is demonstrated by performance indicators such as a global F1-score of 0.968, AUC of 0.974, precision of 0.966, and recall of 0.970. This work validates the viability of scalable, privacy-conscious threat detection in synthetic edge and O-RAN sandbox scenarios. The presentation covers system design, performance metrics, collaborative roadmap, and future goals for federated neuromorphic security in forthcoming global 6G ecosystems.

The 2025 IEEE CyberSciTech/DASC/PICom/CBDCom Co-located Conferences

Keynote 3: Testing-Based Formal Verification for Software Dependability

***Shaoying Liu**, East China Normal University, China*

About the Keynote Speaker

Shaoying Liu is a Professor at Software Engineering Institute of East China Normal University, China, IEEE Fellow, BCS Fellow, and AAIA Fellow. He received his Ph.D. in Computer Science from the University of Manchester, U.K., in 1992, and has held research and teaching positions at ten universities in China, the United Kingdom, and Japan, respectively. His research interests include Formal Engineering Methods, Specification-based Program Inspection and Testing, Testing-Based Formal Verification (TBFV), Human Machine Pair Programming (HMPP), and Dependable Computing. Liu is a pioneer and leading researcher in Formal Engineering Methods for Software Development. He founded the ICFEM conference in 1997, SOFL+MVSL workshop in 2012, and SFPVV symposium in 2024, respectively. He designed the SOFL (Structured Object-Oriented Formal Language) specification language and method, authored two books titled “Formal Engineering for Industrial Software Development" and “Agile SOFL: Agile Formal Engineering Method”, respectively, both published by Springer, more than 15 edited books, and over 300 papers in refereed journals and international conferences. He has received many awards, including “Special Achievement Award” from IEEE DSA 2024, 2022 and 2020 “Distinguished Research Awards” from IPSJ/SIGSE respectively, the “20 Year ICFEM Impact Award” from ICFEM 2018, “IEEE Reliability Society Japan Joint Chapter 2016 Best Paper Award”, and “Outstanding Paper Award’’ from ICECCS’96. In recent years, he has served as the General/Conference Chair of several international conferences, including ICFEM 2024, WSSE 2025, and SFPVV 2025.

Abstract: Software dependability encompasses five critical properties: reliability, safety, integrity, availability, and maintainability. Ensuring these attributes throughout the software engineering process remains a significant and ongoing challenge. In this talk, I will begin by briefly outlining a general framework for developing dependable software. I will then focus on an advanced technique known as Testing-Based Formal Verification (TBFV), which integrates specification-based testing with formal methods to verify program correctness. TBFV is characterized by its ability to automatically verify the correctness of all program paths explored during testing, while also having the potential to uncover previously untested paths. This dual capability supports both validation and verification, enhancing the overall assurance of software quality. I will explain the core principles of TBFV, specific techniques it employs for fault prevention, validation, and verification, as well as the key challenges associated with its practical implementation. When fully realized, TBFV is expected to significantly reduce testing time and cost, and substantially improve software dependability.

The 2025 IEEE CyberSciTech/DASC/PICom/CBDCom Co-located Conferences

Keynote 4:

About the Keynote Speaker

The 2025 IEEE CyberSciTech/DASC/PICom/CBDCom Co-located Conferences

The Panel on XYZ Perspectives from xLM to yAI and zTech

To commemorate the centenary anniversary of Alan Turing's birthday, the Open Forum on Top 10 Questions on Intelligent Informatics/Computing (Top10Qi) was held in the World Intelligence Congress, Macau, 2012. Inspired by the profound question "Can machines think?" raised by Turing in 1950, the Top10Qi forum was conducted by first calling for questions from the crowd worldwide, then voting for top 10 questions from the 128 collected questions, and finally holding an interactive panel for the announcement and heated discussion on the top 10 voted questions.

Among the questions solicited in Top10Qi, some questions including "What are the most promising solutions and techniques to build real commercial intelligent systems?" have been partially answered thanks to swift and significant progress, especially LLM (Large Language Model) and GAI/GenAI as well as associative dialogue tools initiated from ChatGPT. In the unprecedented AI boom, LLM has been the core due to its learning ability by leveraging enormous data and supercomputing powers. Nowadays, other forms of LM (Large Model) have emerged, to name a few, VLM (Vision Language Model), LMM (Large Multimodal Model), and LRM (Large Reasoning Model). The term **xLM** collectively refers to various kinds of large models, both emerged and to emerge.

Some questions voted among the top 10, such as "Can machines be creative?" and "Will computers replace human thinking?", are imaginative and even deeply philosophical. These questions are, to some extent, also related to AGI (Artificial General Intelligence). Elon Musk has claimed that Grok 4 can discover new technologies and physics in the near future. Is it possible or not to make such imagination-like cAI (Creative AI), tAI (Thinking AI), even super or hyper AI? It is also one of fundamental themes under explorations by the IEEE SC Technical Committee on Hyper-Intelligence (HITC). The term **yAI** encompasses diverse AI forms, from widely discussed AGI to highly specialized HyperAI.

A few TopQi questions like "Can machines and the people think together?" have been positively responded thanks to LLM and GAI based technologies and application tools including ChatGPT, Gemini, Claude, Grok, DeepSeek, etc. Related intelligent technologies such as Agentic AI, RAG (Retrieval-Augmented Generation), Context Engineering, and Model Context Protocol (MCP) are rapidly emerging. Numerous applications are appearing, penetrating and pervading almost every aspect in the world, from daily life, education and entertainment to work, research and development. The term **zTech** refers broadly to innovative technologies and rich applications enabled by xLM and yAI.

This **XYZ panel**, coinciding with the 70th anniversary of the term 'Artificial Intelligence,' is designed as an insightful platform for distinguished experts to share their perspectives surrounding xLM, yAI, and zTech. Participants will exchange ideas, and collaboratively envision the future trajectory of artificial intelligence.

About the Panel Chair

Jianhua Ma, Professor

Hosei University, Japan

Jianhua Ma is a professor in the Faculty of Computer and Information Sciences and was a director in the Institute of Integrated Science and Technology (IIST), Hosei University, Japan. He is one of pioneers in research on Hyper World and Cyber World (CW) since 1996. He first proposed Ubiquitous Intelligence (UI) towards Smart World (SW), which he envisioned in 2004, and was featured in the European ID People Magazine in 2005. He has conducted several unique CW-related projects including the Cyber Individual (Cyber-I), which was highlighted on the IEEE Computing Now in 2011. He has founded IEEE Conferences on Ubiquitous Intelligence and Computing (UIC), Pervasive Intelligence and Computing (PICom), Cyber Physical and Social Computing (CPSCom), Internet of Things (iThings), and Internet of People (IoP). He is a chair of IEEE SC Technical Committee on Hyper-Intelligence, a co-chair of IEEE SMC Technical Committee on Cybermatics, and a founder of IEEE CIS Technical Committee on Smart World.

About the Panel Speaker

Antonio Guerrieri, Researcher

ICAR-CNR, Italy

Antonio Guerrieri is currently a researcher at ICAR-CNR (National Research Council of Italy, Institute for High-Performance Computing and Networking). He previously served as a researcher at the Telecom Italia WSN Lab in Berkeley, California, and at the Clarity Centre, UCD (University College Dublin), Ireland. Dr. Guerrieri has been involved in several research projects and co-founded SenSysCal S.r.l., a University of Calabria (UNICAL) spinoff focused on innovative IoT systems. His research interests include wireless sensor and actuator networks, building monitoring and control, smart objects, smart and cognitive environments, and the Internet of Things. He has co-authored over 100 papers in international journals, conferences, and books. He is an Associate Editor of IEEE Transactions on Human-Machine Systems (THMS) and serves on the editorial boards of journals such as IoT, Cybersecurity and Privacy, Engineering Proceedings, Sensors, and Wireless Communications and Mobile Computing. He is an adjunct professor at the DIMES department at UNICAL. More information can be found at https://staff.icar.cnr.it/guerrieri/wordpress/.

Bin Hu, Professor

Beijing Institute of Technology, China

Bin Hu is a (Full) Professor and the Dean of the School of Medical Technology at Beijing Institute of Technology, China. He is a National Distinguished Expert, Chief Scientist of 973 as well as National Advanced Worker in 2020. He is a Fellow of IEEE/IET/AAIA and IET Fellow Assessor & Fellowship Advisor. He serves as the Editor-in-Chief for the IEEE Transactions on Computational Social Systems and an Associate Editor for IEEE Transactions on Affective Computing. He is one of Clarivate Highly Cited Researchers, World's Top 2% Scientists and 0.05% Highly Ranked Scholar from ScholarGPS.

Claudio Miceli, Associate Professor

Federal University of Rio de Janeiro, Brazil

Claudio Miceli de Farias graduated in Computer Science (2008), and holds a master's degree (2010) and a PhD (2014) in Computer Science from the Federal University of Rio de Janeiro. He was chosen by MCTI to represent Brazil at the BRICS Young Scientists Forum in the area of Cyber-Physical Systems (2021). The professor was also awarded the Young Scientist of our state scholarship by FAPERJ. Currently, the aforementioned professor works in the Graduate Program in Systems Engineering and Computer Science (PESC-COPPE-UFRJ) and at the Tércio Pacitti Institute for Computer Research and Applications at UFRJ. In 2022, the aforementioned professor won the IEEE Hype-Intelligence Workgroup Middle Career Researcher Award for his contributions to the area. The professor's main topics of interest are smart cities, the Internet of Things, Data Fusion, and Security.

Jinhua She, Professor

Tokyo University of Technology, Japan

Dr. She received his B.S. degree in engineering from Central South University, Changsha, China, in 1983; and his M.S. and Ph.D. degrees in engineering from Tokyo Institute of Technology, Tokyo, Japan, in 1990 and 1993, respectively. In 1993, he joined the School of Engineering, Tokyo University of Technology, where he is currently a

professor. Dr. She's research interests include the applications of control theory, repetitive control, active disturbance rejection, and assistive robotics. He has published more than 400 journal papers and 6 monographs. He received the IFAC (International Federation of Automatic Control) Control Engineering Practice Paper Prize in 1999 (jointly with M. Wu and M. Nakano), and was included in the list of Thomson Reuters' Highly Cited Researchers from 2013 to 2015 and World's Top 2% Scientists since 2019. Dr. She is an IEEE Fellow, serves as an IEEE HI-TC Advisory Board member (2021-present) and an AdCom member of IEEE IES (2022-2024), was the Delegate of Cluster 4 of IEEE IES Technical Committees (2019-2021), and the chair of the Technical Committee on Human Factors (2017-2018). He is an Associated Editor of IEEE Transactions on Industrial Electronics, IEEE Journal of Emerging and Selected Topics in Industrial Electronics, and IEEJ Journal of Industry Applications, Journal of Advanced Computational Intelligence and Intelligent Informatics, and Intelligence & Robotics; and a Technical Editor of IEEE/ASME Transactions on Mechatronics.

Qiangfu Zhao, Professor

University of Aizu, Japan

Professor Qiangfu Zhao graduated from Tohoku University with a Doctor of Engineering degree in Electronic Engineering in 1988. From 1991 to 1993, he was an associate professor at Beijing Institute of Technology; from 1993 to 1995, he was an associate professor at Tohoku University (Japan); from 1995 to 1999, he was an associate professor at the University of Aizu (Japan); since 1999, he has been a tenured full professor at the University of Aizu. Professor Zhao published more than 200 academic papers related to optimal linear system design, signal / image processing / recognition, neural computing, evolutionary computing, perceptual computing, and machine learning in international journals and international conferences.

Katsutoshi Yada, Professor

Kansai University, Japan

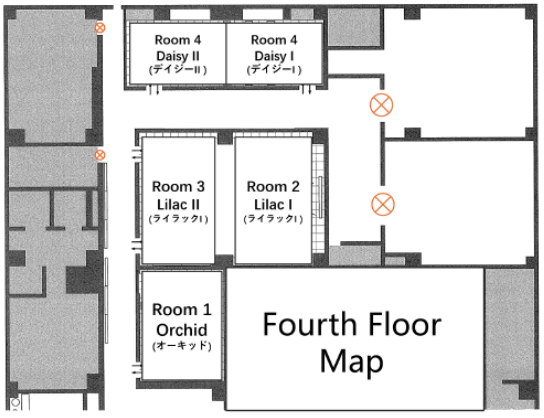
Katsutoshi Yada is Professor of Management Information Systems in the Faculty of Business Data Science , Kansai University and guest professor of Osaka University. He was a visiting scholar of School of Business at Columbia University from 2006 to 2007. His present research interests include data science and AI for business, and information strategy concerning data mining. His papers have appeared in several international journals, including Data Mining and Knowledge Discovery, Soft Computing, Decision Support Systems and others. He received Distinguished Professor Award from Kansai University and many international and domestic awards from academic societies.

Program at a Glance

Day1 (10/21)	08:00 – 10:20	**Zoom 1**	**Zoom 2**	**Zoom 3**	**Zoom 4**	**Zoom 5**
		CyberSciTech-1 Wksp/SS	CyberSciTech-2 Regular	CyberSciTech-3 Regular	DASC-1 Regular	CBDCom-1 Regular
	10:20 – 10:30					
	10:30 – 12:00	CyberSciTech-4 Wksp/SS	CyberSciTech-5 Regular	CyberSciTech-6 Regular	PICom-1 WiP/Wksp/SS	CBDCom-2 Regular/WiP
	12:00 – 13:00	Birds-of-a-Feather (BoF)				
	13:00 – 14:10	**Room 1 (Orchid)**	**Room 2 (Lilac I)**	**Room 3 (Lilac II)**	CyberSciTech-8 Regular	CBDCom-4 Regular
		CBDCom-3 WiP/Wksp/SS	PICom-2 WiP/Short	CyberSciTech-7 Wksp		
	14:10 – 14:30	Coffee Break				
	14:30 – 17:00	DASC-2 Wksp/SS/WiP	PICom-3 Regular/SS	PICom-4 Wksp	PICom-5 Regular/Wksp	PICom-6 Wksp
	18:00 – 20:00	Welcome Reception				
Day2 (10/22)	09:00 – 09:30	**Room Camellia II / カメリアII (3rd Floor)**				
		Opening Ceremony				
	09:30 – 10:10	Keynote Talk 1				
	10:10 – 10:30	Coffee Break				
	10:30 – 12:00	Panel Discussion				
	12:00 – 12:50	Lunch				
	12:50 – 14:50	**Room 1 (Orchid)**	**Room 2 (Lilac I)**	**Room 3 (Lilac II)**	**Room 4 (Daisy I)**	**Room 5 (Daisy II)**
		DASC-3 Regular	PICom-7 Regular	CBDCom-5 Regular	CyberSciTech-9 Regular	CyberSciTech-10 Regular
	15:00 – 18:00	Social Activities				
Day3 (10/23)	09:00 – 09:40	**Room Camellia II / カメリアII (3rd Floor)**				
		Keynote Talk 2				
	09:40 – 10:20	Keynote Talk 3				
	10:20 – 10:40	Coffee Break				
	10:40 – 11:20	Keynote Talk 4				
	11:20 – 12:00	Poster Session (Brief Presentation, Q&A, Voting for Best Poster)				
	12:00 – 13:00	Lunch				
	13:00 – 15:20	**Room 1 (Orchid)**	**Room 2 (Lilac I)**	**Room 3 (Lilac II)**	**Room 4 (Daisy I)**	**Room 5 (Daisy II)**
		DASC-4 Regular	PICom-8 Regular	CBDCom-6 Regular	CyberSciTech-11 Regular	CyberSciTech-12 Regular
	15:20 – 15:40	Coffee Break				
	15:40 – 17:00	CyberSciTech-13 Regular	PICom-9 Regular	CyberSciTech-14 Regular	CyberSciTech-15 Wksp	CyberSciTech-16 Regular
	18:00 – 21:00	Conference Banquet (Room Camellia I & II / カメリアI & II)				
Day4 (10/24)	09:00 – 10:30	**Room 1 (Orchid))**	**Room 2 (Lilac I)**	**Room 3 (Lilac II)**	**Room 4 (Daisy I)**	**Room 5 (Daisy II)**
		CyberSciTech-17 Regular	CyberSciTech-18 Wksp	CyberSciTech-19 Wksp	CyberSciTech-20 Wksp	CyberSciTech-21 WiP
	10:30 – 11:00	Coffee Break				
	11:00 – 12:00	BoF and Closing (Room Lilac I & II / ライラックI & II)				
	12:00 – 13:00					
	13:00 – 17:00	Conference Organizational Meeting and IEEE HITC Meeting				

ROOM	English Name	Japanese Name
3rd Floor	Room Camellia I	カメリアI
	Room Camellia II	カメリアII
4th Floor	Room 1 Orchid	オーキッド
	Room 2 Lilac I	ライラックI
	Room 3 Lilac II	ライラックII
	Room 4 Daisy I	デイジーI
	Room 5 Daisy II	デイジーII

ZOOM ROOM	ID	Password
Zoom 1	849 8862 6085	524020
Zoom 2	834 9217 1984	280143
Zoom 3	886 1823 8180	125900
Zoom 4	818 1722 4597	176992
Zoom 5	830 6969 7707	905786



The 2025 IEEE CyberSciTech Presentation Program

CyberSciTech-1
Wksp/SS (Cyber-IoT, CyberIC, AI-DHWP, NiWEC, GAI-HyperI, BigCyberSecurity)
Session Chair:

Beta Distribution-Based Adaptive Trust Management Scheme in UAV-Assisted IoTs
Deyu Zhang, Qichao Xu

Blockchain Based Hierarchical Federated Learning for EVs in Smart Grid Wireless Networks
Yiliang Liu, Rui Wang, Yuhui Jin, Xin Liu, Donglan Liu

Research on Open-Set Signal Recognition Based on Class Centroids and Comprehensive Decision Strategy
Li Zhao, Si Li, Zhiqi Jiang

VioScan: Deep Learning-driven Analysis of Compliance and Consistency in Android Applications
Fan Wu

DKD-ZKFL: Privacy Protection Cross Domain Recommendation Framework for Digital Health
LanBo, Sunyan Sun

Optimization of AI-Enabled Health Monitoring Equipment Configuration for Rescue Personnel
Rongxuan Zhao, Shuanghong Yang, Zhen Liu, Qian Zhang

Towards Health-I: Personalized Healthcare Intelligence Based on Generative AI with Cross-modal Learning and Long-term Adaptation
Lifei Wang, Ao Guo, Zhiying Huang, Jianhua Ma

Federated Learning with Large Language Models
Xiaotong Wu, Chuyating Zhang, Wenmin Lin

Joint Optimization of Resource Consumption and Latency in Split Learning for Internet of Vehicles
Guoli Yu, Zhou Su

CyberSciTech-2
Regular (Track 2A)
Session Chair:

XAI-based Customer Behavior Analysis for Network Intrusion Detection in Edge Intelligence
Xiaotong Wu, Chenxi Liu, Wenmin Lin

Active Detection of Parameter Modification-based Data Reconstruction Attack in Federated Learning
Xiaotong Wu, Zihao Chen, Wenmin Lin

Network Traffic Anomaly Detection Based on a Composite Diffusion Model and Expected Perturbation Score
Sirui Yao, Peng Gao, Qingyang Tong, Mingyu Li

Structural Reasoning from Incomplete Netlists: Towards Enhanced Hardware Trojan Detection
Decheng Qiu, Chen Dong, Bolun Li, Kaiwen Chen, Mingzhi Chen, Yang Yang, Yang Luo

CFExplainerTG: Counterfactual Explanation for Temporal Graph Neural Networks in Cybersecurity
Qingyang Tong, Peng Gao, Mingyu Li, Sirui Yao

Intelligent Multi-Agent Collaborative Phishing Detection Framework for Lightweight Edge Devices
Mingyu Li, Peng Gao, Sirui Yao, Qingyang Tong
DQN-Based Dynamic Private Knowledge Graph Construction for Secure Semantic Communication
Qiangqiang Zhu, Hui Lin, Zijie Huang, Zhongze Lin, Jia Hu

CyberSciTech-3
Regular (Track 5)
Session Chair:

Cross-Modal Evaluation of Transformer-Based Architectures for Medical Image Segmentation
Junce Wang, Xiaotong Wu, Wenmin Lin

Retrieval-Augmented Generation for Knowledge-Driven Question Answering in Traditional Chinese Medicinal Diets
Cailin Zeng, Xiaotong Wu, Wenmin Lin

Multi-port Connection Feature Extractor Sees Network Topology Clearly
Hanqing Zhao, Bo Yang

LEAF: Logic-Enhanced Adaptive Fusion for Large-Scale Ontology Alignment
Xiaomin Zhu, Bo Liu, Jinning Li, Xuebin Zhuang

Emotion Recognition based on Multimodal Physiological Signals using a CNN-Transformer Model
Maho Sato, Zhiying Huang, Ao Guo, Jianhua Ma

SQL Statement Similarity Detection Method Based on Multi-granularity Feature Analysis
Yongren Dai, Chengcheng Shao, Yong Cheng, Xiaoyong Li, Xiaoli Ren, Xiang Zhu, Maowen Li

GraphIC: Synthesizing Harder Samples for Imbalanced Node Classification
Shuang Mei, Yan Bai, Li-e Wang

CyberSciTech-4
Wksp/SS (HAIDC), WiP
Session Chair:

Graph Neural Network-Assisted Air-Ground Anti-Jamming Communications with Multiple UAVs
Xiao Tang, Jingyi Zhang, Kexin Zhao, Huirong Xiao, Qinghe Du

Understanding Human-AI Interaction in Aging Populations: Usability Differences between Robots and Avatars
Eva Theresa Jahn, Julia Renardias, Nora Hille, Ashita Ashok, Mea-Sophie Edelmann, Rainer Wieching, Dave Randall, Karsten Berns, Volker Wulf

Behavioral Effects of AI-generated Synthetic Vocalizations in Free-Moving Marmosets
Emma Woolgar, Yegang Du, Steven Errington, Ben Slater, Toshimi Ogawa, Yuki Kikuchi

Advances in personalised nutrition for older adults -the potential for AI in preventing and treating malnutrition
Marion Hetherington

The Prospects of Detecting and Flagging Online Hate Speech in Realtime
Sreenivas Sremath Tirumala, Shahid Minhas, Ushik Shrestha Khwakhali

Explainable AI for Pothole Detection: Comparing YOLOv9-tiny, YOLOv10-nano, and YOLOv11-nano through LayerCAM Visualization
Orven E. Llantos, Leonhel V. Fortin

Design and Implementation of An Intelligent Search Engine Based on Harmony OS
Haoyu Chen, Xiaotong Wu, Wenmin Lin

Privacy Is Not Just Security: Rethinking Education for a Trust-Centered Digital Future
Gurvirender Tejay

AI-Augmented Risk Mitigation Framework for Legacy Healthcare Applications Lacking SAST Compatibility
Harikrishnan Muthukrishnan, Arpna Rani Aggarwal, Rahul Bhatia
ECG-based People Identification Across Emotions, Experiments and Days
Yuang Meng, Zhiying Huang, Ao Guo, Jianhua Ma

CyberSciTech-5
Regular (Track 2, Track 3, Track 1)
Session Chair:

Graph Transformer-Based Influence Maximization
Shiyu Chen, Qianmu Li

Real-Time Network Traffic Anomaly Detection with a Multi-Task Learning-Based Hybrid LSTM-Transformer Model
Wei Chen, Jindian Lu, Hengwei Ouyang, Huafeng Jiang

Real-Time Ship Detection based on YOLOv8 Framework with Expanded Backbone
Enrique Jesús Morán Lemus, Zhichao Lian

A Federated Learning Optimization Algorithm for Non-i.i.d. Data in Edge Intelligent Controllers
Wenli Shang, Gangfu Li, Jingbo Ge, Zheng Zhou, Xiaobin Chen, Lei Ding, Zhong Cao

A Parallelized Agent-Based Optimization Framework for Jeepney Routes with Integrated Passenger Behavior Simulation
Orven E. Llantos, Gio Kiefer A. Sanchez

FMCW Radar Efficient IBI Estimation Using Guided VME: Design and Experimental Validation
Walid Brahim, Jianhua Ma, Muxin Ma, Alex Qi

A Novel Lightweight Network for Multi-contrast MRI Image SR Reconstruction
Haicheng Sun, Hao Yang, Xia Li

CyberSciTech-6
Regular (Track4, Track 6A, Track 6A)
Session Chair:

Design of KahibawHub: A Blockchain-Integrated Mobile Platform for Trusted Educational Content Sharing
Orven E. Llantos, Darllaine R. Lincopinis, Glyrhiz Marhiel A. Tabamo, Flordeliza N. Aguirre, Mindell Rey C. Aguirre, Lorie M Cagalitan, Jiu Alx R. Tabilla

Understanding Cyber Trust Propagation in Online Communities
Hanwen Liu, Xianjin Fang, Yanwei Xu

Generative Cyber-Social Recommenders: Challenges and Future Directions
Yanwei Xu, Hanwen Liu

Cauchy Kernel-based Maximum Correntropy Kalman Filter for Measurement Packet Dropping Systems
Wenyan Wang, Min Zhang, Xinmin Song

A Table-level Data Lineage Acquisition Method Based on Syntax Tree Parsing and SQL Similarity
Yan Li, Xiang Zhu, Yong Cheng, Xiaoli Ren, Chengcheng Shao, Xiaoyong Li, Maowen Li

Microaneurysm Detection Algorithm Based on Attention Mechanism
Wenbo Huang, Zhen Jie, Yang Yan, Ke Wang

Exploring Facial Micro-expressions Digital Biomarkers for Mild Cognitive Impairment: Insights from the Clock Drawing Test
Yilei Dong, Lingjie Fan, Binyu Yan

Cognitive Decline Trajectories in Dementia Patients Using Monte Carlo Simulation and Parallel Computing
Orven E. Llantos, Lavigne Kaye S. Sistona

CyberSciTech-7
Wksp (AI-DHWP)
Session Chair:

Care Robots for Dementia in Jilin Province: Challenges and Future Directions
Xiangyu Liu

Role-Playing LLM-Based Multi-Agent Support Framework for Detecting and Addressing Family Communication Bias
Rushia Harada, Yuken Kimura, Keito Inoshita

Human-Agent Interaction(HAI) for Health and Well-being: Differential Encouragement Framework in Sustained Interaction
Lingxuan Xiang, Qun Jin, Hideaki Kikuchi

Guidance, Efficiency, Foresight: A Tri-Pillar Architectural Blueprint for Large Language Models in Healthcare
Haiyang Yu, Ruichen Cong, Qun Jin, Yue Wu

Sentiment and Topic Analysis of HPV Vaccine Discourse on Bilibili Using BERTopic and ChatGPT
Yinghan Xu, Ruichen Cong, Masahiko Sakaguchi, Kayoko Katayama, Qun Jin, Shoji Nishimura, Atsushi Ogihara

CyberSciTech-8
Regular (Track1, Track 6)
Session Chair:

Enhanced Correlation Graph based Web APIs Composition Recommendation for Mashup Creation
Hualing Sun, Sheng Wang, Yuxuan Han, Qinghe Yan, Zheng Cong, Peihai Liu

A Multi-dimensional Data Lineage Construction Method Based on BERT Semantic Fusion and Structural Characterization
Mengqi Lu, Xiaoli Ren, Yong Cheng, Xiaolong Xu, Xiang Zhu, Chengcheng Shao, Xiaoyong Li

A Reinforcement Learning based Virtual Network Embedding Model with Graph Embedding
Yiwen Sun, Zhengmao Yao, Cong Wang, Changming Xu

Simulating the Spread of Antimicrobial Resistance in Agricultural Ecosystems Using an Agent-Based Approach with Parallelization
Orven E. Llantos, Kyla C. Reambonanza

CyberSciTech-9
Regular (Track 4, Track 6)
Session Chair:

Unveiling the Performance of Open-Source Value Co-Creation: the Moderating Role of Licenses
Yang Luo, Jifu Yan, Sanshan Sun

ILLMax: An Interpretable and Interest-Driven Influence Maximization Algorithm Based on Large Language Models
Qunpeng Hu, Liang Xu, Xinyi Zhang, Shiqin Jiang, Qian Mo, Junnan Gu, Jingchao Wang, Weimin Li

TCN-Former: Dual-Branch Modeling with Adaptive Fusion for Sequential Recommendation
Bofeng Zhang, Chaoqun Yang, Kaili Liao, Sen Niu, Jianhua Ma, Haiyan Li

Optimization of Big Data Governance Based on Large Models
Yu Wang, Huaizhen Kou

Graph Embedding with First-Order Connectivity for Enhanced Heterogeneous Arithmetic Resource Scheduling Model
Zisu Yuan, Qianmu Li

A Two-Stage Discovery-and-Validation Framework for Robust Causal Inference of Multivariate Health Data
Ruichen Cong, Ou Deng, Haiyang Yu, Shoji Nishimura, Atsushi Ogihara, Qun Jin

CyberSciTech-10
Regular (Track 2)
Session Chair:

A Lightweight ROI Encryption in HEVC using AES-CTR and XORShift32
Joshua Tito Amael, Yujun Kim, Young-Gab Kim

GuardCache: Memory-Augmented Adaptive Input Security for LLM Semantic Caching in FinTech
Shijing Hu, Xinyu Wang, Hengqi Guo, Zhihui Lu

A Reasonable Application of the Assurance Package CAP-B to Software Package Repositories
Hideaki Nishihara, Yoriyuki Yamagata, Yutaka Matsuno

Rule-based Function Call Graph Refinement for Enhanced IoT Malware Detection
I-Chun Cheng, Tao Ban, Shin-Ming Cheng, Takeshi Takahashi, Wei-Chung Teng

Secure Point of Sale: An Efficient Approach to Malware Detection and Mitigation for Point of Sale Devices
Damian S Dhesi, Bruce DeBruhl, Dongfeng Fang

Towards Green Generative AI for Exploit Prediction in Resource-Limited Systems
SeyedehLeili Mirtaheri, Mahdi Yousefikia, Amihossein Majd, Reza Shahbazian, Irina Trubitsyna, Andrea Pugliese

CyberSciTech-11
Regular (Track 6)
Session Chair:

Wi-Fhop: Enhancing Human Action Recognition via Multi-Channel WiFi Sensing
Kaikai Liu, Lingling Dang, Zifu Fan, Xiaoyu Wan

State-Level Oral Health Goal Achievement Prediction Using Machine Learning and Programmatic Factors
Sukanya Intarapak

Abnormal Behavior Detection in Subway Stations Based on Multimodal Large Language Models
Kaiyuan Song, Benxiong Huang, Lai Tu

Clustering and Optimization of Kindergarten's Playing Area using Time Series
Xi Qu, Wenlin Li, Junyan Du, Meng Qiu, Gaofei Sun, Xiaobing Xian, Fang Yu

MedViMamba: A Hybrid State Space and Convolutional Network for Multi-Modal MRI-Based IDH Mutation Status Classification in Gliomas
Yuehui Liao, Yu Chen, Panfei Li, Qun Jin, Xiaobo Lai

Causal Analysis of Health and Behaviors for Personalized Healthcare
Jing Zhang, Ruichen Cong, Shoji Nishimura, Atsushi Ogihara, Qun Jin

Template-Based Recognition of Compound Pulse Types in TCM Using High-Frequency PPG under Constant Pressure
Yu Zhang, Yihshyan Hwang, Chunyu Tu, Runhe Huang

CyberSciTech-12
Regular (Track 1)
Session Chair:

Web-based 3D Visual Analytics Framework for Large-scale Multivariate Oceanographic Data
Wenqiang Cui, Hao Wang, Ibrahim Hoteit

Critical Features are Achilles' Heels: Efficient Personalized Text-to-Image Model Attack through Delicate Feature Perturbation
Jingyao Xu, Dongdong Wang, Siyang Lu, Xiang Wei

FVM-UNet: FFT-enhanced VM-UNet for Medical Image Segmentation
Hanlin Wu, Qun Jin
RNL: RoCE Network Loadbalance with AI Traffic Characteristics and Link Congestion Awareness
Zhipeng Shen, Lei Li, Anning Cai, Lihong Zhang, Bing Liu

Safe and Transparent Monitoring of VMs with Injected eBPF Programs
Kyosuke Hori, Kenichi Kourai

TD-RAG: Time-aware Dynamic-window Retrieval-Augmented Generation for Risk Early Warning
Jianting Xu, Ou Deng, Qun Jin

Sensor-Initialized Gaussian Splatting: 3D Scene Reconstruction from Panoramic Depth
Hiroki Kobayashi, Katashi Nagao

CyberSciTech-13
Regular (Track 3)
Session Chair:

Parallelized Monte Carlo Simulation for Disaster-Adaptive Last-Mile Logistics Amidst Flood and Landslide Risks
Orven E. Llantos, Ian Gabriel D. Paulmino

Location History-based Improvement of Message Delivery in Delay-Tolerant Networks
Kazuma Matsubara, Naohiro Hayashibara

MEKITfromer: Time-Frequency Dual-Domain Collaborative Model for Cloud WorkLoad Forecasting
Xin Lin, Qiang Liu, Ying Jiang, Yongjun Fu

Enhancements in Real-Time Tracking Systems with Customized User Interface and GPS Data Broadcasting
Orven E. Llantos, Olga Joy Gerasta, Jefferson A. Hora, Eddie P Mondejar, Earl Ryan Aleluya, Jesrey Martin S Macasero, Dhondee D Mugot, Vincent M. Valdez, Terrence Jefferson B. Cimafranca, Helmar R. Israel, Edejed A. Paculba, Christian Cahig, Japheth Jay O. Vergara

Evaluating the Impact of Incremental Load Variations to Minimize Energy Losses for Distributed Power Flow System
Sadiq Muhammad, Saher Javaid, Yuto Lim, Yasuo Tan

CyberSciTech-14
Regular (Track 5)
Session Chair:

LLM-based Multi-Modal Variational Autoencoders for Entity Linking
Qian Li, Shangguang Wang

Intelligent Sci-Tech Project Review Assistance Framework Based on Natural Language Processing
Lin Jia, Qi Liu

PeriGuru: A Peripheral Robotic Mobile App Operation Assistant based on GUI Image Understanding and Prompting with LLM
Kelin Fu, Yang Tian, Kaigui Bian

An Efficient Decomposition-Driven Linear Framework for Long-Term Time-Series Forecasting
Zhihong Chen, Yu Zhao, Tao Zou, Junchen Ye, Runhe Huang, Bowen Du

CyberSciTech-15
Wksp (GAI-HyperI)
Session Chair:

Retrospective State Fusion with Query-Guided Weighting for Long-Range Epidemic Forecasting
Qi Yuan, Han Shu, Yizhi Pan, Jialiang Tang, Weiqi Jiang, Zidan Zhu, Pengpeng Zhang, Guanqun Sun, Kai Li

DRCNet: Dual-Resolution ConvNeXt Network for ARMD Diagnosis
Wenhao Ping, Ke Yang, Zumin Wang, Zhihui Bai

Blockchain-enabled AI collaboration
Jiashuo Zhang, Yuqi Zhang, Ting Zhang, Jianbo Gao, Zhong Chen

Why ControlNet Is Left: An Empirical Exploration of Attacking ControlNet
Jingyao Xu, Dongdong Wang, Siyang Lu

Agentic Hyper-Intelligence for Cyber Threat Detection: A Lightweight Framework for CVE Intelligence and Adaptive Anomaly Mitigation
Thirawat Sooksomstarn, Qian Wu, Atsushi Kanai

Attacks on Diffusion-based Models in Chinese Art Generation and Fusion of Evaluation Metrics
Ting Huang, Siyang Lu

CyberSciTech-16
Regular (Track 1, Track 5)
Session Chair:

An Intelligent TCM Diagnosis System with Localized LLMs and Modular Multimodal Reasoning Enhanced by RAG
Runhe Huang, Adili Abudukeranmu, Chunyu Tu, Zeyang Cui, Zhiyong Yu, Bowen Du

Weakly Supervised Rotated Object Detection Based on Multi-Scale Attention Mechanism
Sha Fan, Yihui Han, Wei Zhou, Jing Peng, Mingquan Jia, Ying Fu, Jiliu Zhou

Synergizing Knowledge Graphs with GenAI to Augment Students' Structural and Multi-level Cognitive Processes
Xiaokun Zhang

Semi-supervised Learning with Centerless Clustering
Hui Wang, Feiyang Du, Zengwei Zheng, Shenfei Pei

CyberSciTech-17
Regular (Track 5)
Session Chair:

LLMSR: Sequential Recommendation Based on Product Quantization Adapted to Large Language Models
Lingli Liu, Qianmu Li

GDiffLP: Diffusion-Driven Graph Contrastive Learning for Link Prediction
Liwei Zhang, Dongyu Wang, Huaizhen Kou

Transforming Evacuation Simulations into Human-Understandable Narratives via LLMs and Multimodal RAG
Yuto Hirahata, Fumihiro Sakahira

Learning Tendency Discovery with a Two-Stage Generalized Regression Model
Jian Chen, Taiki Iked

CyberSciTech-18
Wksp (CSC&CEA, NiWEC)
Session Chair:

Intelligent Approval Model Based on Heterogeneous Enhanced Integration and Deep Neural Network Fusion
Jinsong Li, Wenling Che, Xiaoyue Liu, Guotai Zhu, Jinlei Liu, Wei Zhou, Dong Sun, Yong Wan, Bo Gao

Construction of Course Knowledge Graph Based on Large Language Model
Ruiqiang Guo, Zixuan Yu, Yanjun Wang, Yuzhe Chen

An Intelligent Web-Based Interactive MMSE Assessment System for Alzheimer's Disease Using Large Language Models
Yikai Wang, Qiao Pan, Dehua Chen, Mei Wang

A Dynamic Segmentation Method for Identifying Logistics Cargo
Xian Wu, Zhenhai Wang, Qinghe Cao, Sen Zhang, Hongyu Tian

Adaptive Joint On-Board Processing and On-Demand Routing Scheme for Large-Scale LEO Satellite Networks
Yubao Li, Yichen Wang, Tao Wang, Dichen Jiu, Peixuan Li

Design and Implementation of Customizable Cloud-Edge-End Cooperated IoT System

Zhe Li, Qinghe Du, Shijiao Zhang, Yonghong Qi, Xueyong Wei, Zinan Yan, Yang Hu

CyberSciTech-19
Wksp (IoT-Life)
Session Chair:

AI to replace players who temporarily leave the table in online tabletop RPGs
Xin Tong, Kimiya Fujisawa

YOLOv8-SL: An Enhanced Student Behavior Detection Model with Swin Transformer and LDConv
Gan Huang, Yanmei Jiao, Bo Wu, Ryohei Sasaki

Walking Safety Framework Design for Visually Impaired Individuals via Smart Insoles and GPS
Yuan Bian, Xuan Huang, Bo Wu, Kaori Iwasaki

Difference Analysis of Experienced Amateur Tennis Players With and Without Formal Tennis Education
Hang Yi, Bo Wu, Siyu Xiong, Changlong Xu

A Study on the Impact of Ambient Light on Driver Fatigue Based on Eye-Tracking Data
Changlong Xu, Bo Wu, Hang Yi

CyberSciTech-20
Wksp (HAIDC)
Session Chair:

Design and Implementation of a Social Robot Reception Service in an Italian Geriatric Hospital
Giulio Amabili, Federico Barbarossa, Elvira Maranesi, Arianna Margaritini, Arianna Sgolastra, Giacomo *Cucchieri, Lidia Pascucci, Letizia Ferrara, Roberta Bevilacqua*

Designing a dietary management App aimed at preventing cognitive decline
Hikari Iki, Jessica Takabayash, Toshimi Ogawa, Yegang Du, Yasuyuki Taki

Mitigating Elderly Isolation Through Newspaper Engagement: A Qualitative Exploration
Jessica S Takabayashi, Yegang Du, Toshimi Ogawa

Variational Autoencoder-Based Synthesis of Marmoset Vocalizations Using Linear Spectrograms
Yegang Du, Emma Woolgar, Yuki Kikuchi, Toshimi Ogawa, Yasuyuki Taki

Perception and Comprehension of a Humanoid Robot by Older Adults with Dementia: Evidence from a Nursing Home Study in Japan
Toshimi Ogawa

CyberSciTech-21
WiP
Session Chair:

CyberShield: A Proposed Model for Building Cyber Resilience in Secondary Education
Mia Amor C Tinam-isan, Haron Hakeen D Lua, January Naga

Analysis from Conversations to Virtual Avatar with Generative AI in Talking Situations
Kaoru Mitsuhashi

Body Motion Cancellation in the non-contact vital sign monitoring system
Zhengguang Xu, Yangyu Xu

Development of a Customizable and Easy-to-use Driving VR Simulator Based on 3D City Model
Kiminobu Sato, Ruichen Cong, Qun Jin

The 2025 IEEE DASC Presentation Program

DASC-1
Regular (Track 2, Track 4), WiP
Session Chair:

A Decentralized Architecture for Industrial Data Interoperability Using Blockchain and IPFS
Jules Martial Yin-belta Mbara

Prior-Aware Ensemble Exponential Mechanisms: A Heuristic Approach to Differential Privacy
Yevhen Zolotavkin, Prajnamaya Dass, Stefan Köpsell

Reducing Failover Latency in Cisco ASA Site-to-Site VPNs Through IPsec Parameter Tuning
Hamed Rezaeianfardouei, Mark Townley

FedCIM: Handling Data Heterogeneity in Federated Learning to Improve Fairness and Robustness
Abdul Rehman, Darine Ameyed, Fehmi Jaafar

Analyzing the Behavior of LLM Under Concurrency and Token-Based DoS Attacks
MD Abdul Barek, Md Bajlur Rashid, A.B.M Kamrul Islam Riad, Guillermo Francia, Hossain Shahriar, Sheikh Iqbal Ahamed

Secure Messaging Framework: Boundless Encrypted Communication
Vanchhit Khare, Ankush Rastogi

BFTaaS: Byzantine Fault Tolerance as a Service through NIC-Level Aggregation
Rui Wang, Arne Vogel, Pierre-Louis Aublin

DASC-2
Wksp (ADSN, EDCSTA), WiP
Session Chair:

Modeling and Evaluating the Impact of Extreme Opinions on Opinion Polarization in Social Groups
Yishu Liu, Kazuki Nakajima, Masaki Aida

Cross-Regional Validation of an Early Detection Method for Excessive Online User Dynamics Using Frequency Analysis on Sina Weibo Data
Fangyuan Xiu, Kazuki Nakajima, Masaki Aida

A System for Visualizing Social Media Watch History to Mitigate Echo Chambers
Naoki Hirakura, Keiji Ota

Early Results Using Sequential C Programs to Describe and Verify Distributed Algorithms
Aoi Ono, Tatsuhiro Tsuchiya

Integrating Low-Code Data Flow programming and mruby for Efficient IoT Development
Kazuaki Tanaka, Krishnamoorthy R, Ko-ichiro Sugiyama

A Modular, Resource-Efficient IDS Framework for Automotive Cybersecurity
Israr Khaliq, Yuzo Taenaka, Youki Kadobayashi

Integrating CCNx into the APT Package Manager: Design and Preliminary Evaluation
Junichi Funasaka

GPU Accelerated Interpretable Generalization for Scalable Network Intrusion Detection and Forensics
Shu-Ting Huang, Wen-Cheng Chung, Hao-Ting Pai
Multi-Granular Discretization for Interpretable Generalization in Precise Cyberattack Identification
Wen-Cheng Chung, Shu-Ting Huang, Hao-Ting Pai

DASC-3
Regular (Track 4)
Session Chair:

Multivariate Analysis of Urban Public Transport Route Preference with Regression: A Hybrid Data-Driven Approach
Marielet A. Guillermo, Kate G Francisco, Jonna Baquillas, Arvin Fernando

FireNarrator: Multimodal LLM-Based Fire Incident Reporting with Decision Logic
Palash Yuvraj Ingle, Young-Gab Kim

DASC-4
Regular (Track 1, Track 2, Track 3)
Session Chair:

A Thinning-based Parametric Bootstrap Approach for Software Reliability Assessment
Jingchi Wu, Tadashi Dohi, Hiroyuki Okamura, Junjun Zheng

Enhancing Nonparametric Software Reliability Prediction via Multi-Kernel Local Linear Regression
Jiacheng Bai, Tadashi Dohi, Junjun Zheng, Hiroyuki Okamura

Efficient Digital Signature Security Enhancement for Remote Keyless Entry System
Jinyao Xu, Yintong Luo, Ian G. Harris

What You See Is Not What You Get: Introducing the Trusted Camera Framework to Combat Fake News
Pierre-Louis Aublin

Graph based threat detection system for a microsegmentation Zero Trust Architecture
Claudio Zanasi, Isabella Marasco, Michele Colajanni

PURPLE: Dynamic Control of CAKE
Duncan Ewan Cameron, Alvin C Valera, Winston K. G. Seah

A Metropolis-Hastings Sampling Approach to Improve Monte Carlo Localization in ROS-Based Robotics
Gustavo R Villela, Claudio Miceli de Farias

The 2025 IEEE PICom Presentation Program

PICom-1
Regular (Track 2B, Track 3, Track1A)
Session Chair:

SlideCraft: Context-aware Slides Generation Agent
Kunal Rao, Giuseppe Coviello, Murugan Sankaradas, Ciro De Vita, Gennaro Mellone, Srimat Chakradhar

TalentScout: Multimodal AI-Driven Expert Finding in Organizations
Murugan Sankaradas, Kunal Rao, Giuseppe Coviello, Srimat Chakradhar

Enhancing Sentiment Classification with Machine Learning and Combinatorial Fusion
Patten Sean, Pin-Yu Chen, Frank Hsu, Christina Schweikert

Enhancing SDG-Text Classification with Combinatorial Fusion Analysis and Generative AI
Jingyan Xu, Marcelo LaFleur, Christina Schweikert, Frank Hsu

Towards Personalized Programming Instruction Using Generative Language Models
Jennifer Joyce Montemayor, Julieto E Perez

A Context-Aware Intelligent Tutoring Framework for Grammar Modeling Using Large Language Models
Liezil C. Daberao

A Multilingual NLP Pipeline for Semantic Enrichment and Search of Local Government Ordinances: A Case Study from Davao Oriental
Malikey M Maulana, Jheanel Estrada

PICom-2
Regular (Track 2, Track 3, Track 5), Short
Session Chair:

Cloud-Integrated Multi-Agent Middleware for Dynamic Adaptive 3D Map Generation in Disaster-Response Robotic Systems
Izuru Akahori, Mingkang Chen, Jingtao Sun, Jun Yamaguchi

Semi-supervised Infant Crying Recognition Model Based on Attention Modules
Chuan-Yu Chang, Ting-Yu Shie

A Fog based Approach to Forest Fire Detection
Gabriel Santos Madruga Oliveira, Claudio Miceli de Farias

PICom-3
Regular (Track 1, Track3), SS
Session Chair:

Exploration-Enhanced Proximal Policy Optimization
Yinglong Dai, Zhi Yi, Qiangfu Zhao

A Multi-Agent Probabilistic Inference Framework Inspired by Kairanban-Style CoT System with IdoBata Conversation for Debiasing
Takato Ueno, Keito Inoshita

How are People's Explanations of the Behaviour of Robots Structured? An Exploratory Study and Discussion
Agnese Augello, Nicola Zagni, Maria Rausa, Edoardo Datteri, Antonio Lieto

A Deep Experimental Study of Ensemble-Based Phishing Detection in Centralised and Federated Settings
Esraa Daoud, Francisco Javier Garcia Blas, Sadi Alawadi, Jesus Carretero

An Improved Finite-Time Equivalent-Input-Disturbance Approach for Control Systems with Unknown Disturbances
Hantao Wang, Jinhua She, Jianqi An, Seiichi Kawata, Makoto Iwasaki

Pitch Attitude Control of Quadrotor UAV Combining PID and Equivalent-Input-Disturbance Approaches
Chengjie He, Jinhua She, Seiichi Kawata, Zewen Wang, Feng Wang

Explainable Human Activity Recognition Using IMU Data: A Shapley-Value-Based Method
Xinyu Yuan, Feng Wang, Seiichi Kawata, Juan Zhao, Jinhua She

Adaptive Equivalent Input Disturbance Approach to Current Control of PMSM Considering Unknown Periodic and Aperiodic Disturbances
Youwu Du

PICom-4
Wksp (IoT4X, HIEMI)
Session Chair:

The Design of Complete Coverage Path Planning for a Service Robot
Ching-Lung Chang, Yu-Ting Chien

Toward Resilient IoT-Based Communication Architectures for Disaster Response
Luciano Miuccio, Daniela Panno, Salvatore Riolo, Corrado Santoro, Federico Fausto Santoro

Model Quantization for Resource-Efficient DNN Implementation of MAC Protocols in Industrial IoT
Luciano Miuccio, Daniela Panno, Salvatore Riolo, Antonino Salemi, Anita Schilirò

Universal Wallet for Trustless Cross-Chain Interoperability via Merkle Proofs
Tariq Naeem, Massimiliano Pirani, Luca Spalazzi

BDI-Driven Indoor Positioning and Assistance via Hermes Mesh Networks and LLM Interfaces
Mario Bonanno, Miriana Russo, Corrado Santoro, Federico Fausto Santoro, Alessio Tudisco

Fuzzing OPC UA with AFLNet, ChatAFL and LibAFLstar: A Research Experience Paper
Marcello Maugeri, Cristian Daniele, Federico Fausto Santoro

PICom-5
Regular (Track1, Track4, Track5), Wksp (IoT4X)
Session Chair:

Multimodal Situation-aware Data Generation for Activity Recognition in Intelligent Wearable Systems
Zia Ur Rehman, Giuseppe D'Aniello, Lidia Fotia, Matteo Gaeta

YOLOv11 Based Algorithm for Abandoned Luggage Detection with Dynamic Radius Estimation
Ivan Vrsalovic, Marina Ivasic-Kos, Miran Pobar, Jonatan Lerga

Deep Learning and Physical Unclonable Functions for Secure Authentication in Smart Environments
Fulvio Bergantin, Alberto Falcone, Agostino Forestiero, Davide Macrì, Marzia Settino, Vincenzo Caligiuri, Antonio De Luca, Giorgia Mammoliti

iTempDT: AI-Powered Digital Twin for Forecasting Indoor Temperature in Smart Buildings
Md Babul Islam, Antonio Guerrieri, Raffaele Gravina, Luigi Pontieri, Luigi Rizzo, Francesco Scala, Andrea Vinci, Giancarlo Fortino
MIPS: Scalable Multi-Level Architecture for Real-Time MQTT Protocol Security in IoT
Davide Macrì, Agostino Forestiero, Antonio Francesco Gentile, Emilio Greco

Reliable MAC Protocols under Harsh Channel Conditions via Reinforcement Learning
Anita Schilirò, Luciano Miuccio, Salvatore Riolo, Daniela Panno

PICom-6
Wksp (QuDis)
Session Chair:

Efficient Block-Encoding of Dense Matrices via QRAM using Qrisp Framework
Kashinath Gokarn, Binod Kumar, Masahiro Fujita

Evaluating the Integration of Hardware-Based QKD and Emerging Software-Based Cryptographic Innovations for Banking Security: Case Studies from Wells Fargo
Tahereh Rezaei

Towards Quantum Logic Programming
Filippo Vella, Giovanni Pilato, Salvatore Gaglio, Tommaso Brugarino

PICom-7
Regular (Track 2, Track 3)
Session Chair:

AI-assisted Intent-Mapping and translation for Digital Twins Network applications
Pasquale Pace, Gianluca Aloi, Antonio Iera, Angelo Mendicelli, Paola Guarasci, Domenico Laurito

Generative AI for Optimizing Service Mapping in the Edge-Cloud Continuum
Loris Belcastro, Fabrizio Marozzo, Aleandro Presta

Using Optimized Tiling Schemes for Attaining k-Coverage in Wireless Sensor Networks
Habib M Ammari, Scott A Whitman

Towards Establishing Sensing k-Coverage: A Points Placement with Separation and Minimum Enclosing Circle-Based Approach
Habib M Ammari, Tianjian Li

SMAMCS: Simulated Multi-Agents for Mobile k-Coverage in Sparse Wireless Sensor Networks
Gavin L. Moore, Kellen K. O'Rourke, Habib M Ammari

Toward Interpretable Quality of Life Analysis from Wearable Data
Rossana Maria de Castro Andrade

PICom-8
Regular (Track 5), Wksp (QuDiS)
Session Chair:

A Low-Latency Control Fabric for Distributed Quantum Error Correction using RDMA: A Timed Event Structure Model
Vasileios Klimis

Study of Cancer Radiation Therapy with Quantum Computing
Chaemin Kim, Younggon Yoo, Kyungsun Moon

Application of Quantum Computers to Study the Dative Bond Between Pyridine Molecule and Lithium Ion
Fatemeh Ghasemi, Yukio Kawashima, Kyungsun Moon

Quantum Simulation of the Fermi-Hubbard Model on a Graphene Hexagon
Mohammad Mirzakhani, Kyungsun Moon

QTPi for Assurance of Quantum Key Distribution Protocols
Rajagopal Nagarajan, Aakash Warke

Priority-Aware Task Offloading Using RSSI and Packet Loss in Urban Vehicular Edge Networks
Nawaz Ali, Gianluca Aloi, Raffaele Gravina, Claudio Savaglio, Ali Hassan Sodhro, Giancarlo Fortino

PICom-9
Regular (Track 4)
Session Chair:

Enhancing LoRaWAN Simulator for Real-World Integration and Research Experimentation
Federico Fausto Santoro, Corrado Santoro, Alessio Tudisco, Miriana Russo

Adaptive Reclustering and Detour-Aware Scheduling for Multiple Mobile Chargers in WRSNs
Pei-Yu Su, Pi-Chung Wang

Evaluating Urban Partitioning Approaches to Improve Crime Forecasting Accuracy in Cities
Eugenio Cesario, Paolo Lindia, Andrea Vinci

The 2025 IEEE CBDCom Presentation Program

CBDCom-1
Regular (Track 1, Track 2, Track 3)
Session Chair: Ziji Ma, Hunan University, China

DS4ML: Visual Supporting Data Synthesis for Machine Learning Models Training
Yuanzhe Jin

Similarity-Based Microbial Identification Using MS Data: An Experimental Evaluation
Yuki Toyosaka, Kai Cheng, Kohei Asano

OpenEYEs: Leveraging LLM and Graph Neural Networks for Deep Ransomware Detection
Yufan Zhang, Yating Gao, Wei Hu, Gaolei Li, Jianhua Li

Enabling Autonomous AGV Navigation: Path Planning via Multi-Constrained MARL
Mengwei Li, Zongqi Ge, Weizhen Han, Qiang Xue, Enshu Wang, Bingyi Liu

Search Engine Augmented Chinese Named Entity Recognition for Big Data Content Security
Qinghua Mao, Jiatong Li, Kui Meng, Yuanyuan Sun, Pengjiao Wang, Jianhua Li, Xi Lin

Infrared Small Target Image Segmentation with Super-Resolution Tasks
Ziji Ma, Zhongwei Liu, Zhiru Gu

AtoNet: An Adaptive Distributed Algorithm for Dynamic Topology Management in Decentralized IoT Networks
Luigi Mastromauro, Muslum Ozgur Ozmen, Michel Kinsy

CBDCom-2
Regular (Track 4), WiP
Session Chair: Ziji Ma, Hunan University, China

Fair Resource Allocation in C-V2X Networks: A Reinforcement Learning Approach for Perception Message Dissemination
Xin Xu, Jingxiang Hao, Yifeng Xiao, Qiang Xue, Enshu Wang, Bingyi Liu

DGUM: A Dynamic Graph Update Mechanism for Video Summarization
Qi Wang, Ziji Ma, Zhiwen Jiang, Zhongwei Liu

Trajectory Optimization of UAV Communications based on MADDQN Particle Filter Assisted Localization and IMM Kalman Filter Prediction
Ying Ma, Long Chen, Wen Qiu, Wei Zhao, Zhi Liu

WordTree: Hierarchical Word Cloud via Treemap Layout
Yuanzhe Jin

Omnichannel Retail Analytics: A Scalable Big Data Architecture using Data Vault 2.0 and Apache Spark for Retail Intelligence
Durga Krishnamoorthy, Uttam Kumar, Ram Ghadiyaram

CBDCom-3
SS, WiP
Session Chair: Chaofeng Zhang, Advanced Institute of Industrial Technology, Japan

Covert Communication Based on Index Modulation for STBC-assisted STAR-RIS System
Xue Han, Pingping Shang, Caijuan Chen, Wenhao Yan, Chaofeng Zhang, Jia Hou

A RIS-Aided OTFS Communication System with Fractional Doppler Shift Suppression for V2X
Ke Mei, Caijuan Chen, Wenhao Yan, Chaofeng Zhang, Jia Hou

Multi-Scale Quantized Joint Source-Channel Coding for Energy-Efficient Federated Semantic Communication in Heterogeneous Edge Networks
Ke Wang, Lixin Li, Wensheng Lin, Lin Li, Kexin Zhang, Zhu Han

CBDCom-4
Regular (Track 1, Track 3)
Session Chair: Chaofeng Zhang, Advanced Institute of Industrial Technology, Japan

Quantum Software: From Engineering to Interaction
Mina Alipour

Cloud-Edge Computational Offloading Techniques and Verification Methods: A Survey
Mahyar Tourchi Moghaddam, Joakim Leed

Self-adaptive Multi-Access Edge Architectures: A Robotics Case
Mahyar Tourchi Moghaddam, Joakim Leed, Anders Qvist Frandsen

CBDCom-5
Regular (Track 1)
Session Chair: Xun Shao, Toyohashi University of Technology, Japan

Correlated Dropout-Aware Client Selection Framework for Efficient Decentralized Federated Learning Systems
Wenhao Yan, Qi Li, Tad Gonsalves

A Big Sports Data Analytics Solution for Redefining Basketball Player Roles
Carson K. Leung

A Big Sports Data Analytics Solution to Mine Frequent Patterns and Detect Anomalies from 311 City Service Requests
Carson K. Leung

Image Representation Based Malware Detection Using Transfer Learning
Iik Muhamad Malik Matin, Indra Hermawan, Susana Dwi Yulianti

A Scalable Constant Color Optimization Algorithm for Image Restoration
Yanting Li, Kai Cheng

Semantic Fusion Agent for Multimodal TCM Diagnosis and Cross-Domain RAG Integration
Adili Abudukeranmu, Chunyu Tu, Zeyang Cui, Shijian Li, Runhe Huang

CBDCom-6
Regular (Track 2, Track 3, Track 4)
Session Chair: Gaolei Li, Shanghai Jiaotong University, China

Proactive Concurrency Tuning for Inference Serving in Serverless Platform
Thanda Shwe, Bilkisu Larai Muhammad-Bello, Masayoshi Aritsugi

Adaptive Elite DPSO for Cold-Start-Constrained Edge Recommendation
Zexian Zhao, Shanxian Lin, Ancai Zhang, Tian Song, Yuichi Nagata, Haichuan Yang

Reward-Shaped PPO for Economic and Degradation-Aware Battery Control in Microgrids
Fatima Fatima, Ryuto Shimizu, Ryohei Banno, Wai Shiang Cheah, Xun Shao

Design and Implementation of an Internet of Things-Based Automatic Pesticide Spraying System for Hydroponic Lettuce Cultivation
Indra Hermawan

Joint Beam Selection and Power Allocation for Cell-Free Integrated Sensing and Communication Networks: An Optimal Transport Theory Approach
Yufeng Zheng, Lixin Li, Wensheng Lin, Wei Liang, Qinghe Du, Zhu Han

Efficient Multi-modal Semantic Communication for Transmitting Point Cloud and Image Information in V2X
Junyu Zhang, Rui Xu, Gaolei Li, Chengcheng Zhao, Jun Wu, Jianhua Li

Swin-SemantIC: A Transformer-Driven Enhancement Scheme for Semantic Interference Cancellation
Yizheng Huang, Wensheng Lin, Lixin Li, Zhu Han

The 2025 IEEE CyberSciTech/DASC/PICom/CBDCom Poster Program

Session Chairs:
Ao Guo, Nagoya University, Japan; Bo Wu, Tokyo University of Technology, Japan

Proposal of Crew Management Support Application for Regional Public Transportation Service in Japan
Chinasa Sueyoshi, Toshihiro Uchibayashi, Kotaro Ono, Yuya Tsumagari, Yuto Fukuyama, Hideyuki Satomura, Yoshihiro Yasutake, Kentaro Inenaga

Real-Time Passenger Detection and Counting Using Edge AI Camera
Kotaro Ono, Uchibayashi Toshihiro, Chinasa Sueyoshi, Kentaro Inenaga, Yoshihiro Yasutake

Towards GPU Passthrough in Intel TDX: Design Challenges and Early Baselines
Yoshiaki Sato, Hidetoshi Uranami, Akihiro Saiki, Keiji Kimura

Content-based Data Placement Mechanism for ORAM
Kazuaki Kawabata, Naohiro Hayashibara

Wasm Tracer: Improving Observability using e{BPF} for Wasm Applications
Naohiro Hayashibara, Anri Nakamura

Lightweight Monocular Depth Estimation and D3QN-based Obstacle Avoidance for UAV
Shao-Hung Cheng

Energy-Aware and Priority-Based Data Scheduling in Challenged Networks for Extreme Cold Regions using Deep Reinforcement Learning
Ari Hwang, Sun-Ho Yum, Soo-Hyun Park

A Standardization Framework for Multi-Modal Underwater Wireless Communication to Enable the Internet of Underwater Things
Sun-Ho Yum, Young-Kon Lim, Pradeep Reddy Gogulamudi, Soo-Hyun Park

AI-Driven Smoke Opacity Detection for Marine Vessel Exhaust Monitoring
Ho Wen Chen, Chien-Yuan Chen, Yen Hsun Chuang

Optimizing Input Resolution for Efficient AI-Powered Renal Stone Detection in Resource-Constrained Environments
Paniti Achararit, Pawaree Nonthasaen, Sutheera Kungwanchai, Suthee Treewatanawong

Sensor-Aware Feature Pruning for Cost-Effective Hand Gesture Recognition in Multi-IMU Wearable Systems
Paniti Achararit, Pawaree Nonthasaen

Truthful Double Auction Design with Approximate VCG, Folk-Theoretic Penalties, and Multi-Agent Reinforcement Learning
Ryuto Shimizu, Xun Shao