



HKCT INSTITUTE OF
HIGHER EDUCATION
港專學院

2026 IIDS CONFERENCE

Application and Challenges of Blockchain Technology in Cross-Border Data Security: Practices and Prospects

IIDS ACBC 2026



Pre-conference Webinars: 14 & 18 August 2026

Main Conference: 21-23 August 2026

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Acknowledgements

Funding Body

Research Grants Council (RGC), University Grants Committee (UGC), Hong Kong

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Technical Supporting Organisations



中國計算機學聯
CHINA COMPUTER FEDERATION

**IEEE
ComSoc**
IEEE Communications Society



Hong Kong Section
英國電腦學會
(香港分會)



香港優才及專才協會
Hong Kong Quality And Talent Migrants Association

Conference Programme

Webinar Session 1

14 August 2026 15:00-17:00 | Online

Dr. WANG Qin and Dr. ZHANG Mingjin

Webinar Session 2

18 August 2026 15:00-17:00 | Online

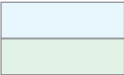
Prof. LIANG Jinwen and Dr. CONG Ruichen

Day 1 (21 August 2026, Friday)

HYBRID

Time	Sessions
09:00 – 09:30	Registration
09:30 – 10:00	Opening Ceremony
10:00 – 11:00	Keynote 1 - Prof. CAO Jiannong Blockchain for Trustworthy Web3 AI Infrastructure
11:00 – 11:15	Refreshment Break
11:15 – 12:15	Panel Discussion 1 - Emerging Technology for Education 4.0: AI and Blockchain Panellists: Prof. CAO Jiannong, Prof. WANG Minjuan, and Prof. LAM Sum Host: Ir. Dr. KWOK Lam For
12:15 – 13:00	Poster Presentation Session 1
13:00 – 14:30	Lunch Break
14:30 – 15:30	Keynote 2 - Prof. ZHU Liehuang Blockchain-Enabled Trustworthy and Secure Agent Networks
15:30 – 15:45	Refreshment Break
15:45 – 16:45	Keynote 3 - Prof. ZHANG Yan Integrating Blockchain and Federated Learning: State-of-the-Art and Future Development
16:45 – 17:30	Poster Presentation Session 2

Venue Guide



Auditorium

Learning Commons

Day 2 (22 August 2026, Saturday)

HYBRID

Time	Sessions
09:20 – 09:50	Registration
09:50 – 10:00	Welcome Speech
10:00 – 11:00	Keynote 4 - Prof. JIN Qun Facilitating the Secure Cross-Border Use of Health Data for the Benefit of Humanity
11:00 – 11:15	Refreshment Break
11:15 – 12:15	Keynote 5 - Prof. Giancarlo FORTINO Trust in Edge-based Internet of Things Architectures: State of the Art and Research Challenges
12:15 – 13:00	Poster Presentation Session 3
13:00 – 14:30	Lunch Break
14:30 – 15:30	Keynote 6 - Dr. Maria KYROPOULOU Strategic Behaviour in Blockchain Systems: Implications for Cross-Border Data Security
15:30 – 15:45	Refreshment Break
15:45 – 16:45	Panel Discussion 2 - Blockchain and Web 3.0 Research-Industry Development Trend Panellists: Mr. DU Yu, Ms. TU Wenhui, Prof. WU Weigang, and Dr. WANG Qin Host: Dr. CAO Yinfeng Kevin
16:45 – 17:30	Poster Presentation Session 4
17:30 – 18:00	Closing Ceremony

Day 3 (23 August 2026, Sunday)

PHYSICAL

Post-conference Collaboration - by Invitation Only

All times are in GMT+8. Conference is conducted in English, supplemented by Putonghua. Please refer to the event website for the latest operational notices.

Participant Information

Location

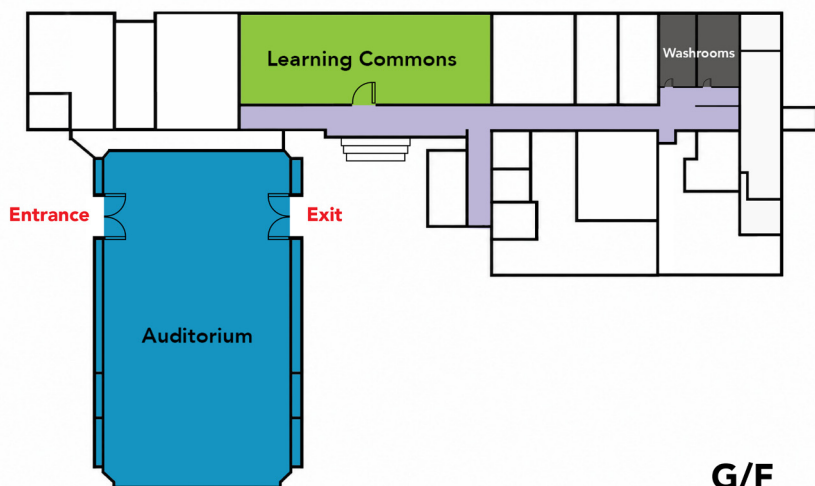
HKCT Jockey Club Undergraduate Campus

Address: 2 On Shing Street, Ma On Shan, Sha Tin, New Territories, Hong Kong

Getting There

The campus is approximately a five-minute walk from **Ma On Shan MTR Station (Exit B)**.

Venue Map



G/F

Venue Guide

Auditorium - Keynote and Panel Discussion Sessions

Learning Commons - Poster Presentations and Refreshments

Meeting Room

1/F Room 107 - Dedicated meeting area for participants

Guest Wi-Fi

SSID: ctGuest-Auth

Voucher Codes: 356457 / 642235

Conference Contact

Email: iids@ctihe.edu.hk

Telephone: (+852) 2265 6959

Welcome Message from the President

It is my great pleasure to welcome all distinguished speakers, researchers, industry representatives, institutional partners and participants to the IIDS Conference on “Application and Challenges of Blockchain Technology in Cross-Border Data Security: Practices and Prospects” (IIDS ACBC 2026). On behalf of HKCT and HKCT Institute of Higher Education (CTIHE), I extend my sincere appreciation to all of you for joining this important academic exchange.

Founded in 1947, HKCT has developed steadily from workers’ education and technical training into vocational and professional education and, more recently, post-secondary education. Building on this foundation, CTIHE launched its first bachelor’s degree programmes in 2014 and introduced master’s degree programmes in 2025, marking important milestones in our degree-awarding development. Throughout this journey, we have remained committed to widening educational opportunities, nurturing virtuous and professional talents, and connecting education with practical service to Hong Kong and our country.

Our long-term strategic aspiration is to develop CTIHE into a recognised University of Applied Sciences in Hong Kong. Achieving this goal requires the sustained enhancement of teaching quality, applied research, industry collaboration and international academic engagement. It also requires us to turn knowledge into practical solutions, connect emerging disciplines with social and economic needs, and create measurable value for industry and the wider community.

Against this background, IIDS ACBC 2026 represents an important landmark in our institutional development. As the first international academic conference hosted by CTIHE in this field, it marks a new stage in our efforts to strengthen research exchange and contribute more actively to the academic and professional communities. The conference addresses blockchain technology and cross-border data security—fields that demand rigorous research and close dialogue across computer science, governance, standards, regulation and industrial practice. By bringing together experts from Hong Kong, the Chinese Mainland and overseas, the conference provides a valuable platform for translating research into trusted and practical applications.

I sincerely thank the Research Grants Council of Hong Kong for its support under the Inter-Institutional Development Scheme, together with our technical supporting organisations, the organising and programme committees, keynote speakers, panellists, poster presenters, colleagues, students and all participants. I am confident that the discussions at IIDS ACBC 2026 will generate practical insights, foster new research partnerships and build lasting institutional connections.

I wish the conference every success, and all participants a productive and rewarding experience.



Prof. CHAN Cheuk Hay

President

HKCT Institute of Higher Education

Message from the General Chairs

On behalf of the Organising Committee, we are pleased to welcome you to the 2026 IIDS Conference on Application and Challenges of Blockchain Technology in Cross-Border Data Security: Practices and Prospects (IIDS ACBC 2026). Hosted by HKCT Institute of Higher Education, this conference brings together scholars, practitioners, and industry experts to discuss the opportunities and challenges arising from blockchain-enabled cross-border data exchange in an increasingly connected world.

As digital collaboration continues to expand across regions and sectors, questions of trust, privacy protection, regulatory compliance, interoperability, and secure data circulation have become more important than ever. In this context, IIDS ACBC 2026 aims to provide a timely academic and professional platform for rigorous discussion on how blockchain, Web3, and related emerging technologies can support trustworthy and practical solutions for cross-border data security.

The conference programme reflects this objective through two pre-conference webinars, six keynote speeches, two panel discussions, four poster presentation sessions, and post-conference collaboration activities. By combining academic perspectives with professional and industry experience, we hope to encourage exchanges that are both intellectually meaningful and practically relevant.

We express our sincere gratitude to all keynote speakers, webinar speakers, panellists, poster presenters, supporting organisations, and committee members for their valuable contributions and dedicated support. We also thank every participant for joining us, whether in person or online, and for helping to make this conference a forum for constructive dialogue and future collaboration.

We warmly welcome you to IIDS ACBC 2026 and sincerely hope that the conference will provide valuable insights, fruitful discussions, and lasting professional connections.



Prof. DING Yong



Prof. QU Bo

General Chairs of IIDS ACBC 2026

Message from the Programme Chair

It is our great pleasure, as Programme Chair, to welcome you to IIDS ACBC 2026. This conference is devoted to the study of blockchain technology and cross-border data security from technical, governance, and application-oriented perspectives. It aims to promote deeper understanding of trusted data exchange, privacy-preserving mechanisms, regulatory compliance, decentralised systems, and other important issues that now shape international digital cooperation.

The programme has been designed to support both breadth and depth of discussion. It includes two pre-conference webinars on 14 and 18 August 2026, followed by the main conference on 21-23 August 2026. Across six keynote speeches, two panel discussions, four poster presentation sessions, and collaboration activities, participants will engage with current research, emerging practices, and real-world challenges related to blockchain, Web3, secure data circulation, and associated interdisciplinary applications.

We wish to record our sincere appreciation to our distinguished keynote speakers, Prof. CAO Jiannong, Prof. ZHU Liehuang, Prof. ZHANG Yan, Prof. JIN Qun, Prof. Giancarlo FORTINO, and Dr. Maria KYROPOULOU, for accepting our invitation and generously sharing their scholarly and professional expertise. We are also deeply grateful to our pre-conference webinar speakers, Dr. WANG Qin, Dr. ZHANG Mingjin, Prof. LIANG Jinwen, and Dr. CONG Ruichen, for enriching the programme with their timely and thoughtful presentations.

Our special thanks are extended to the panellists, Prof. CAO Jiannong, Prof. WANG Minjuan, Prof. LAM Sum, Mr. DU Yu, Ms. TU Wenhui, Prof. WU Weigang, and Dr. WANG Qin, for contributing their informed perspectives and constructive discussion. We further thank the panel host, Ir. Dr. KWOK Lam For, for guiding the discussions with professionalism and care. Their generous participation has given the programme both academic depth and practical relevance. We also acknowledge with sincere gratitude all poster presenters, the Organising Committee, supporting organisations, and colleagues whose dedicated efforts have made this programme possible.

We hope that the programme will encourage rigorous academic exchange, thoughtful professional dialogue, and new collaborations across institutions, disciplines, and sectors. It is our sincere wish that your participation in IIDS ACBC 2026 will be both enjoyable and productive.



Dr. CAO Yinfeng Kevin

Programme Chair of IIDS ACBC 2026

Organising Committee

International Organising Committee

Honorary Chairs:

- Dr. WONG Chun Kau, Jolly – Macao University of Science and Technology / HKCT Institute of Higher Education
- Prof. CHEUNG Siu Keung – HKCT Institute of Higher Education

General Chairs:

- Prof. DING Yong – HKCT Institute of Higher Education
- Prof. QU Bo – HKCT Institute of Higher Education

Programme Chairs:

- Dr. CAO Yinfeng, Kevin – HKCT Institute of Higher Education / The Hong Kong Polytechnic University
- Dr. SUN Shifeng - Shanghai Jiao Tong University
- Prof. WEN Sheng – Swinburne University of Technology, Australia

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- Ms. NG Yan Cheuk, Rouvee – HKCT Institute of Higher Education

Publicity Chairs:

- Dr. CONG Ruichen – Waseda University, Japan
- Dr. ZHANG Mingjin – The Hong Kong Polytechnic University
- Dr. ZHAO Qingyang – The Hong Kong Polytechnic University

International Advisory Committee

Advisory Committee Chair:

- Ir. Dr. KWOK Lam For – HKCT Institute of Higher Education

Committee Members:

- Dr. WANG Qin – CSIRO, Australia
- Dr. WANG Zhipeng – University of Manchester, United Kingdom

Keynote Speakers



Prof. CAO Jiannong

- Vice President (Education) & Chair Professor
- Member of Academia Europaea
- Fellow of the Hong Kong Academy of Engineering
- IEEE Fellow, CCF Fellow

The Hong Kong Polytechnic University

Topic: Blockchain for Trustworthy Web3 AI Infrastructure

Abstract

We envision that AI is rapidly evolving from centralised platforms towards distributed ecosystems in which computing resources, data, models, and intelligent agents are deployed and shared across organisations. This shift towards decentralised resource sharing and collaborative intelligence is giving rise to Web3 AI infrastructure, while also surfacing fundamental challenges in security, privacy, and authentication. In this keynote, I will introduce how blockchain can serve as a trusted foundation for coordinating distributed AI resources and services, and discuss the key requirements for building secure, privacy-preserving, and verifiable AI infrastructure across organisational boundaries. I will present PolyLink, our blockchain-enabled Web3 AI infrastructure network, as a concrete realisation of this vision. By integrating heterogeneous computing resources, AI models, and intelligent agents, PolyLink enables cross-institutional resource sharing, distributed model training and inference, and coordinated multi-agent execution.

Biography

Professor Cao is the Otto Poon Charitable Foundation Professor in Data Science and Chair Professor of Distributed and Mobile Computing in the Department of Computing at The Hong Kong Polytechnic University (PolyU). He is also Vice President (Education) and Director of the Institute for Higher Education Research and Development (IHERD) at PolyU. He previously served as Head of the Department of Computing, Dean of the Graduate School, and Head of the College of Undergraduate Researchers and Innovators (CURI). He was also the founding director of the Research Institute for Artificial Intelligence of Things (RIAIoT) and the University Research Facility in Big Data Analytics (UBDA). Professor Cao is a member of Academia Europaea, a Fellow of the Hong Kong Academy of Engineering, IEEE and the China Computer Federation, and a Distinguished Member of the ACM. He chaired the Technical Committee on Distributed Computing of the IEEE Computer Society from 2012 to 2014. In 2017, he received the CCF Award for Overseas Outstanding Contributions.

Keynote Speakers



Prof. ZHU Liehuang

- Distinguished Professor
Beijing Institute of Technology

Topic: Blockchain-Enabled Trustworthy and Secure Agent Networks

Abstract

As large language model (LLM) agents evolve from isolated single-task execution to multi-agent collaboration, agent networks are rapidly becoming critical infrastructure for complex task automation, cross-domain resource orchestration, and value-driven cooperation. However, in open, dynamic, and heterogeneous collaborative environments, these networks face systemic challenges: fragile identity authentication, unverifiable capability claims, vulnerability of collaborative decision-making, misaligned incentive allocation, delayed payment settlement, and intractable behaviour auditing.

Centred on the theme of “blockchain-enabled trustworthy and secure agent networks,” this talk systematically reviews the development trajectory, collaborative architectures, and application trends of agent networks, with a focus on core challenges in open multi-agent ecosystems—including identity trust, collaborative security, incentive alignment, and auditability. It then examines how blockchain technology functions as a trust infrastructure, enabling verifiable identity construction, safeguards for collaborative decision-making, support for native value exchange, and end-to-end traceability. Finally, the talk outlines future directions for the convergence of blockchain and agent networks, providing theoretical foundations and technical insights for building the next generation of secure, trustworthy, and scalable agent ecosystems.

Biography

Professor Zhu Liehuang is Secretary of the CPC Committee and Distinguished Professor at the School of Cyberspace Security, Beijing Institute of Technology. He has been selected for a national programme for high-level leading talent in scientific and technological innovation, is a globally highly cited scholar, and is one of the world's top 2% scientists. He is a member of the expert group for the Blockchain Key Special Project under the National Key R&D Programme of China and a member of the general expert group for the Key Special Project on Basic Research Conditions and Major Scientific Instruments and Equipment R&D. He is Deputy Chair of the Ministry of Education Teaching Steering Committee for the Cryptography Science and Technology Major, Chair of the CCF Technical Committee on Blockchain (CCF TCBC), and Chair of the CAAI Technical Committee on Intelligent Information Network. He serves on the editorial boards of major international journals and has chaired programme committees of international conferences. His research focuses on cybersecurity and information security. He has led more than 30 national research projects, including National Key R&D Programme projects and NSFC Key Projects, and has published over 200 papers in the USENIX Security Symposium, IEEE Symposium on Security and Privacy, IEEE Transactions on Information Forensics and Security (TIFS), IEEE Transactions on Dependable and Secure Computing (TDSC), and other leading venues. He has received multiple best-paper awards and eight provincial- or ministerial-level science and technology awards. Doctoral students under his supervision have received three outstanding doctoral dissertation awards from national-level academic societies and Beijing Municipality.

Keynote Speakers



Prof. ZHANG Yan

- Professor
- Member of Academia Europaea
- IEEE/IET Fellow

University of Electronic Science and Technology of China

Topic: Integrating Blockchain and Federated Learning: State-of-the-Art and Future Development

Abstract

Integrating blockchain and federated learning emerges as a promising paradigm to tackle trust, incentive and single-point failure issues in traditional data sharing and distributed machine learning. This talk will present our recent studies on Blockchain and federated learning integration, including reviewing the state-of-the-art research, architectures, privacy preservation and resource sharing. Related to each topic, we will point out the follow-up studies in the literature and also open issues to be studied.

Biography

Professor Zhang Yan is a Full Professor at the University of Electronic Science and Technology of China. He previously served as a Full Professor at the University of Oslo and as Chief Scientist at Simula Research Laboratory in Norway. His research addresses next-generation wireless networks towards 6G and green and secure cyber-physical systems, including smart grids and transportation systems. Professor Zhang is Co-Editor-in-Chief of IEEE Transactions on Industrial Informatics, Area Editor of IEEE Transactions on Green Communications and Networking, and an editor for several other IEEE Transactions and magazines. His work has received more than 58,000 citations, with an h-index of 122. Since 2018, Clarivate has recognised him as a Highly Cited Researcher in both Engineering and Computer Science. He is a Fellow of IEEE and the Institution of Engineering and Technology. He is also an elected member of Academia Europaea, the Royal Norwegian Society of Sciences and Letters, and the Norwegian Academy of Technological Sciences.

Keynote Speakers



Prof. JIN Qun

- Professor
- Foreign Fellow of the Engineering Academy of Japan
Waseda University, Japan

Topic: Facilitating the Secure Cross-Border Use of Health Data for the Benefit of Humanity

Abstract

Today, human society faces pressing challenges, including the protection of public health and the promotion of human well-being. The integration of big data with emerging artificial intelligence (AI) technologies offers significant potential for addressing these challenges. In particular, the accountable cross-border sharing and utilisation of data have emerged as a highly promising approach. Moreover, recent rapid advances in AI are transforming scientific paradigms towards AI-enhanced science and AI for Science. In this talk, we first introduce the concept of Data Free Flow with Trust (DFFT) and Japan's Open Data Spaces initiative. We then demonstrate the value and importance of cross-border health data use through several research projects focused on protecting human health, supporting the daily lives of older adults, and promoting well-being. Finally, we present our vision and prospects for the secure cross-border use of data enhanced by AI and blockchain technologies, for the benefit of humanity.

Biography

Professor Jin Qun is a Professor in the Department of Human Informatics and Cognitive Sciences, Faculty of Human Sciences, at Waseda University, Japan. His work spans computer science, information systems and human informatics, with an emphasis on convergent research for understanding and supporting people. His recent interests include behaviour and cognitive informatics, big data, artificial intelligence and machine learning, large language models and generative AI, AI agents, blockchain, the metaverse, and cyber-physical-social systems. He also studies applications of these technologies in healthcare and learning support. Across these areas, his broader objective is to advance human-centred research through interdisciplinary convergence. Professor Jin has authored or co-authored several monographs and more than 450 refereed papers in academic journals and international conference proceedings. He is a Foreign Fellow of the Engineering Academy of Japan and a Fellow of the Asia-Pacific Artificial Intelligence Association.

Keynote Speakers



Prof. Giancarlo FORTINO

- Professor
 - IEEE Fellow
- University of Calabria, Italy*

Topic: Trust in Edge-based Internet of Things Architectures: State of the Art and Research Challenges

Abstract

The Internet of Things (IoT) aims to enable a scenario where smart objects, inserted into information networks, supply smart services for human beings. The introduction of edge computing in IoT can reduce the decision-making latency, save bandwidth resources, and expand the cloud services to be allocated at the network's edge. However, edge-based IoT systems currently face challenges in their decentralised trust management. Trust management is essential to obtain reliable mining and data fusion, improved user privacy and data security, and provisioning of services with context-awareness. In this survey, we first examine the edge-based IoT architectures currently reported in the literature. Then a complete review of trust requirements in edge-based IoT systems is produced. Also, we discuss about blockchain as a solution to solve several trust problems in IoT and analyse in detail the correlation between blockchain and edge computing. Finally, we provide a detailed analysis of performance aspects of trusted edge-based IoT systems and recommend promising research directions.

Biography

Professor Giancarlo Fortino is a Full Professor of Computer Engineering in the Department of Informatics, Modelling, Electronics and Systems at the University of Calabria, Italy. He received his PhD in Computer Engineering from the same university in 2000 and was elected an IEEE Fellow in 2022. He also holds Distinguished Professor appointments at Wuhan University of Technology and Huazhong Agricultural University in China. In addition, he serves as a High-end Expert at Huazhong University of Science and Technology, a Senior Research Fellow at Italy's ICAR-CNR Institute, a Chinese Academy of Sciences PIFI visiting scientist at SIAT in Shenzhen, and a High-end Expert of Henan Province. From 2021 to 2023, he served as a Distinguished Lecturer for the IEEE Sensors Council.



Dr. Maria KYROPOULOU

- Senior Lecturer
 - Faculty Director of Partnerships
- University of Essex, United Kingdom*

Topic: Strategic Behaviour in Blockchain Systems: Implications for Cross-Border Data Security

Abstract

Blockchain technology, which was originally developed to support cryptocurrencies, has evolved into a promising platform for secure and auditable cross-border data sharing. However, the security of such systems depends not only on cryptographic protocols, but also on the strategic behaviour of multiple stakeholders, including data custodians, infrastructure providers, and regulators.

This keynote explores algorithmic game theory as a mathematical framework for analysing and designing blockchain-based systems in the presence of rational, self-interested participants. After providing a brief introduction to blockchain technology, cross-border data security, and algorithmic game theory, the talk will present examples illustrating how game-theoretic models can provide rigorous guarantees about protocol security and strategic behaviour.

Building on this perspective, the keynote will discuss how emerging challenges in cross-border data security can be viewed through the same game-theoretic lens. Questions concerning incentive-compatible data sharing, strategic compliance, consortium governance, and collusion naturally give rise to mathematical models of strategic interaction. The talk concludes by outlining several open research directions, highlighting the potential of algorithmic game theory to provide a rigorous foundation for the design and analysis of secure and trustworthy blockchain-enabled cross-border data ecosystems.

Biography

Dr Maria Kyropoulou is a Senior Lecturer in the School of Computer Science and Electronic Engineering and Faculty Director of Partnerships at the University of Essex. Before joining Essex, she was a postdoctoral researcher at the University of Oxford and a stipendiary lecturer in Computer Science at Hertford College, University of Oxford. She received her PhD in Computer Science from the University of Patras. Her research covers theoretical computer science, economics and computation, and artificial intelligence, with particular emphasis on applying algorithmic game theory to settings including blockchain systems. Her work has appeared in respected international journals and conferences, including the Journal of Economic Theory and the ACM Conference on Economics and Computation. Her research is supported by UKRI, and she holds an EPSRC New Investigator Award for the project Blockchain Incentives: Consensus and Fairness. She also works closely with industry through Knowledge Transfer Partnership projects. Dr Kyropoulou co-organised and co-chaired the programme committee of the 15th International Symposium on Algorithmic Game Theory (SAGT 2022) and is a programme co-chair of the 8th International Conference on Advances in Financial Technologies (AFT 2026).

Panel Discussions

Topic: Emerging Technology for Education 4.0: AI and Blockchain

Panellists



Prof. CAO Jiannong

- Vice President (Education)
 - Chair Professor
- The Hong Kong Polytechnic University*



Prof. WANG Minjuan

- Assistant Vice President (Interdisciplinary Studies and Partnership)
 - Chair Professor of Emerging Technologies and Future Education
 - Co-Director, Global Institute for Emerging Technologies
- The Education University of Hong Kong*



Prof. LAM Sum

- Associate Vice President
- HKCT Institute of Higher Education*

Host



Ir. Dr. KWOK Lam For

- Governor
- HKCT Institute of Higher Education*

Panel Discussions

Topic: Blockchain and Web 3.0 Research-Industry Development Trend

Panellists



Mr. DU Yu

- Executive Director
Wanxiang Blockchain



Ms. TU Wenhui

- Researcher
China Mobile HK IRI



Prof. WU Weigang

- Professor
- Vice Dean, School of Computer Science and Engineering
Sun Yat-sen University



Dr. WANG Qin

- Senior Research Scientist
CSIRO, Australia

Host



Dr. CAO Yinfeng Kevin

- Lecturer
*HKCT Institute of Higher Education /
The Hong Kong Polytechnic University*

Webinar Speakers



Prof. LIANG Jinwen

• Professor
Beijing Institute of Technology

Topic: Security Foundations for Blockchain-Based Data Services

Abstract

Blockchain integrity alone does not determine how participants obtain verifiable identities, acquire cryptographic data capabilities, pay for those capabilities, and settle across heterogeneous blockchains. This talk presents a prototype research architecture organised around the lifecycle of data capabilities, represented by decryption keys and chameleon-hash trapdoors. FutureDID provides decentralised identity through multi-party credential issuance and accountable revocation. NANO governs private and revocable readability and editability capabilities, while Bi-trolChain explores bilateral control between data owners and users. Epass provides privacy-preserving asynchronous payment mechanisms that support the prototype's paid capability acquisition component. ParaSwap enables parallel atomic token exchange across multiple participants and blockchains. Together, the works form a systematic study of identity, capability governance, paid acquisition, and cross-chain settlement.

Biography

Prof. Liang Jinwen is Professor in the School of Cyberspace Science and Technology at Beijing Institute of Technology. He received his BSc and PhD degrees from Hunan University, China, in 2015 and 2021, respectively. From 2018 to 2020, he was a visiting PhD student at the BCCR Lab, University of Waterloo, Canada, and from 2022 to 2026, he served as a Postdoctoral Fellow in the Department of Computing at The Hong Kong Polytechnic University. His research interests include applied cryptography, AI security, blockchain and database security. He served as Technical Programme Committee Chair for the IEEE International Workshop on Future Mobile Computing and Networking for Internet of Things (FMobile) in 2022 and 2023, Publicity Chair for the 6th International Workshop on Cyberspace Security (IWCSS 2022), and a Technical Programme Committee member for IEEE VTC 2019-Fall.



Dr. WANG Qin

• Senior Research Scientist
CSIRO, Australia

Topic: Security Analysis of PoA Consensus Protocols

Abstract

Consensus mechanisms form the security foundation of blockchain systems, determining how nodes agree on transaction ordering, block validity, and ledger state. Proof-of-Authority (PoA) is an important class of consensus mechanisms. It is widely used in permissioned blockchains, consortium chains, and some high-performance public blockchains, and it also underpins several mainstream public-chain systems, including but not limited to Ethereum and Binance Chain. However, PoA security has not been well studied.

This talk focuses on finality security in PoA consensus. It will begin with two mainstream PoA implementations, Clique and Aura, and introduce their basic operating logic. It will then examine two real-world systems, Binance Smart Chain and VeChainThor, to analyse the potential security risks exposed by fast-finality mechanisms in practical deployments. The attacks show that timing assumptions, differences in message propagation, and weaknesses in synchronisation mechanisms can lead to delayed finality and even block reorganisations. The talk will also discuss the common causes behind these issues, possible directions for improvement, and the broader implications for current blockchain systems.

Biography

Dr. Wang Qin is a Senior Research Scientist at CSIRO Data61, Australia, and an Adjunct Senior Lecturer at UNSW Sydney. His expertise covers blockchain and Web3 technologies, including NFTs, DAOs and DeFi, as well as consensus protocols, scalability, security and privacy. He has led academic research, industry engagement and international standardisation, and has led community standards including EIP-5521, EIP-7634 and EIP-8034. He contributes actively to blockchain communities including ETHGlobal and has received community and research grants from Cardano and DFCRC. He has also participated in Project Acacia, the Reserve Bank of Australia's CBDC initiative. Dr. Wang has served on the technical programme committees of CCS, NDSS, WWW, FC, AsiaCCS and ICBC, and has undertaken editorial and reviewer roles for Blockchain: Research and Applications, IET Blockchain and Frontiers in Blockchain.

Webinar Speakers



Dr. ZHANG Mingjin

• Research Assistant Professor
The Hong Kong Polytechnic University

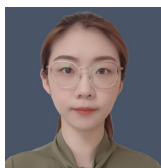
Topic: Efficient Geo-distributed LLM Inference in Collaborative Edge Computing

Abstract

LLMs are nearly 100% deployed in cloud data centres, which leads to high latency, high cost, and privacy risks. This report proposes PolyLink, a collaborative edge computing platform for efficient geo-distributed LLM inference. By connecting and pooling geographically distributed idle GPU server resources, the platform constructs a cross-regional distributed inference network. This not only enables low-cost, high-efficiency LLM services but also avoids the accuracy loss caused by model compression. This report highlights its adaptive model partitioning framework and efficient KV cache migration mechanism, as well as the application of PolyLink in the domain of educational agents.

Biography

Dr. Zhang Mingjin is a Research Assistant Professor in the Department of Computing at The Hong Kong Polytechnic University, where he previously served as a Postdoctoral Fellow. He obtained his BEng in Communication Engineering from Wuhan University of Technology, China, in 2019, and his PhD in Computer Science from The Hong Kong Polytechnic University, Hong Kong, in 2024. In 2023, he was a Visiting PhD Student in the Department of Computer Science and Technology at the University of Cambridge, United Kingdom. His research interests include edge computing, collaborative edge artificial intelligence, the Internet of Things and distributed machine learning.



Dr. CONG Ruichen

• Assistant Professor
Waseda University, Japan

Topic: Toward Trustworthy Decentralised Health Data Integration and Sharing

Abstract

Personal health data increasingly moves across devices, institutions, and boundaries, creating new challenges for privacy, ownership, access control, and accountability. Using health data sharing as a case study, we present our research on trustworthy data integration based on blockchain, IPFS, attribute-based encryption, smart contracts, and decentralised federated learning. The proposed approach enables individuals to retain control over their own data, supports fine-grained authorisation, records data access for audit, and separates health data records, authentication information, and access logs through a multi-ledger architecture. It also allows collaborative analysis without directly centralising raw data. We will discuss prototype implementation and experimental validation, then examine how these mechanisms may support cross-border data exchange among healthcare institutions. Finally, we will highlight limitations and future directions.

Biography

Dr. Cong Ruichen is an Assistant Professor in the Department of Human Informatics and Cognitive Sciences at the Advanced Research Center for Human Sciences, Faculty of Human Sciences, Waseda University, Japan. She received her bachelor's, master's and PhD degrees from Waseda University in 2020, 2022 and 2025, respectively. Her doctoral studies were supported for three years by the Japan Science and Technology Agency's Support for Pioneering Research Initiated by the Next Generation (SPRING) programme. Her research applies human-computer interaction, artificial intelligence and virtual reality techniques to model human behaviour, with particular emphasis on health analytics and educational applications that enhance human well-being.

Poster Presentations

TxN-PANDA: Auditing Transaction-Targeting Phishing Attacks on Web3 LLM Agents

Authors: Dongbin, BAI

Institution: Department of Computing, The Hong Kong Polytechnic University

A Blockchain-Based Secure Sharing Scheme for Electrical Impedance Tomography Data

Authors: Ruwen Zhao; Yong Ding; Shuo Wang; Zhibin Zhu

Institutions: Guilin University of Electronic Technology; HKCT Institute of Higher Education

Multi-scale Variational Autoencoder with Short-Long Term Structure for Multivariate Time Series Anomaly Detection

Authors: Yong Ding; Yuda Tan; Shuo Wang; Zhenyu Li; Zhen Liu

Institution: Guilin University of Electronic Technology

PolyLink: A Blockchain-Based Decentralized Edge AI Platform for LLM Inference

Authors: Hongbo Liu; Jiannong Cao; et al.

Institution: Department of Computing, The Hong Kong Polytechnic University

A Federated Multi-Task Learning Model Based on Task Priority in Ubiquitous Computing

Authors: Haoran Zhang; Jie Yang

Institution: Harbin Engineering University

FedHO: Memory-Efficient Federated Fine-Tuning for Large Models via Hybrid Gradient Computation

Authors: Yinan Zhang; Jiannong Cao; Mingjin Zhang; Ruosong Yang

Institutions: The Hong Kong Polytechnic University; China Mobile (Hong Kong) Innovation and Research Institute

When Compression Becomes an Attack Surface: Black-Box Attacks on Prompt-Compressed LLM Agents

Authors: Zesen Liu; Zhixiang Zhang; Yuchong Xie; Dongdong She

Institution: The Hong Kong University of Science and Technology

BF-IoV: Blockchain-Empowered Federated Learning for Trustworthy Internet of Vehicles

Authors: Qiuxian Chen; Yizheng Tao

Institution: China Academy of Engineering Physics

Accelerating Blockchain Service Deployment at the Edge via Adaptive Container Image Prefetching

Authors: Zhiyuan Hu; Jiannong Cao; Yinfeng Cao

Institution: The Hong Kong Polytechnic University

ccAI: A Compatible and Confidential System for AI Computing

Authors: Chenxu Wang; Danqing Tang; Changxu Ci; Junjie Huang; Yankai Xu; Fengwei Zhang; Jiannong Cao; Jie Song; Shoumeng Yan; Tao Wei; Zhengyu He

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HiddenEcho: Mitigating Noise Amplification in Differentially Private LLMs with Hidden-State Correction

Authors: Wenhao Li; Kunhao Li; Lei Yang

Institution: South China University of Technology

From Findings to Reports: Multi-Agent Smart Contract Repair-as-a-Service with Tool Fusion, Deduplication, and Second-Pass Validation

Authors: Liam Xu; Jiale Wu; Xinghao Xu; Nanzhu Yin; Chengzu Dong; Shiping Chen

Institutions: HKCT Institute of Higher Education; Lingnan University; CSIRO Data61

Poster Presentations

Privacy-preserving personalized federated learning for load forecasting

Authors: Haiquan Liang

Institution: Guilin University of Electronic Technology

Decentralized Physical Infrastructure Networks: Backgrounds, Architectures, Open Issues, and Case Studies

Authors: Jinwen Liang; Jiannong Cao; Bo Yang; Dongbin Bai; Hongbo Liu; Yinfeng Cao

Institutions: Beijing Institute of Technology; The Hong Kong Polytechnic University; China Mobile (Hong Kong) Innovation and Research Institute

Persistent Location-Collection Attacks and Location Sandbox Defense

Authors: Song Wu; Bo Wang; Yinfeng Cao; Qin Wang

Institutions: The Hong Kong Polytechnic University; HKCT Institute of Higher Education; CSIRO Data61

From Similarity to Vulnerability: Key Collision Attack on LLM Semantic Caching

Authors: Zhixiang Zhang; Zesen Liu; Yuchong Xie; Quanfeng Huang; Dongdong She

Institutions: The Hong Kong University of Science and Technology; Fudan University

Epass: Efficient and Privacy-Preserving Asynchronous Payment on Blockchain

Authors: Weijie Wang; Jinwen Liang; Chuan Zhang; Ximeng Liu; Liehuang Zhu; Song Guo

Institutions: Beijing Institute of Technology; Fuzhou University; The Hong Kong Polytechnic University

Privacy-Preserving Cross-Border Multi-Agent Collaboration

Authors: Zecheng Ren; Jing Zhang; Ruichen Cong; Qun Jin

Institution: Waseda University, Japan

Cross-Platform Learning Analytics for AI-Enhanced Individualized Learning

Authors: Jiaqi Wang; Ruichen Cong; Qun Jin

Institutions: Graduate School of Human Sciences, Waseda University, Japan; Faculty of Human Sciences, Waseda University, Japan

IoTAuth: A Decentralized Cross-Chain Identity Authentication Scheme for 6G Non-Terrestrial IoT Networks

Authors: Haotian Deng; Chuan Zhang; Weiting Zhang; Jinwen Liang; Licheng Wang; Liehuang Zhu

Institutions: Beijing Institute of Technology; Beijing Jiaotong University

FutureDID: A Fully Decentralized Identity System With Multi-Party Verification

Authors: Haotian Deng; Jinwen Liang; Chuan Zhang; Ximeng Liu; Liehuang Zhu; Song Guo

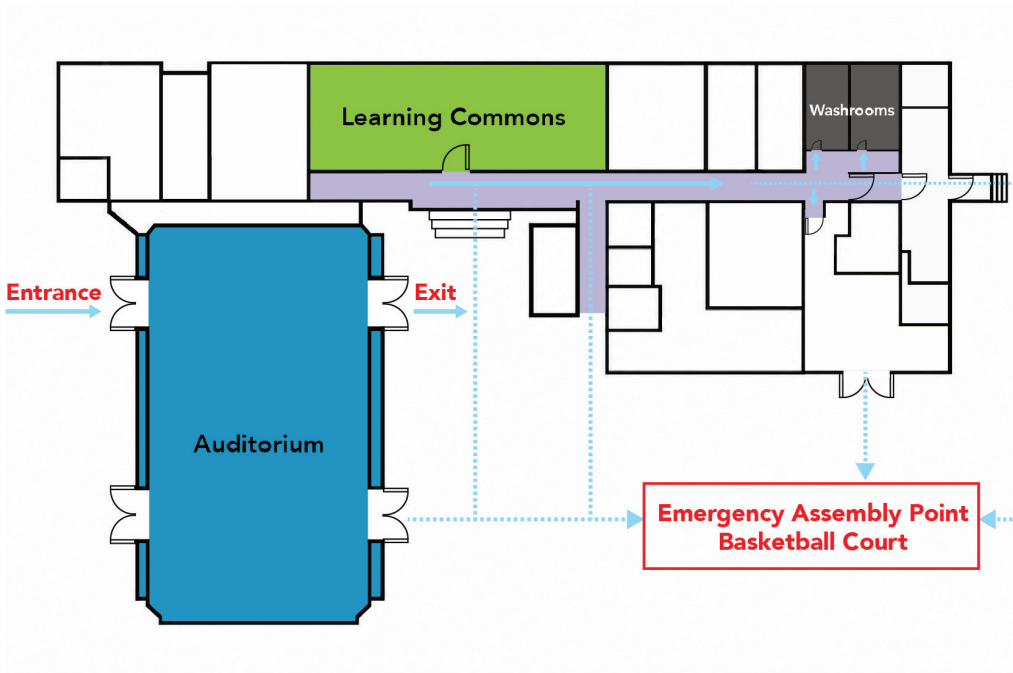
Institutions: Beijing Institute of Technology; Fuzhou University; The Hong Kong University of Science and Technology

EdenDID: Edge Computing and Blockchain-Based Decentralized Identity for Web3 Applications and DePIN

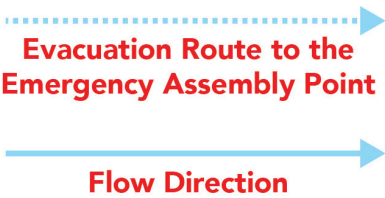
Authors: Hongbo Liu; Jiannong Cao; Yinfeng Cao; Dongbin Bai; Jinwen Liang; Ruidong Li

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Emergency Escape Route



G/F



Notes

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