

CONFERENCE PROGRAM



May 13-15, 2022

Virtual Conference

CCF 15th International Conference on **SERVICE SCIENCE**

THEME

Regulation and Governance of Digital Services

Host



Organizers



- PANEL 1 -



MAY 14, 2022

China Standard Time (CST) UTC/GMT+08:00

Blockchain and Digital Economy

Session Chairs | Jiajing Wu, Sun Yat-sen University
 Huawei Huang, Sun Yat-sen University



Zoom ID: 870 2542 0666 (Room 1)
<https://us02web.zoom.us/j/87025420666>

Time	#ID	Info.
13:30-13:45	Chair	Brief Introduction of the Panel
13:45-14:15	Panelist 1	Blockchain-Assisted Secure Data Sharing for Digital Economy Meng Shen, Beijing Institute of Technology
14:15-14:45	Panelist 2	Trade or Trick? Detecting and Characterizing Scam Tokens on Decentralized Exchanges Haoyu Wang, Huazhong University of Science and Technology
14:45-15:15	Panelist 3	Enabling Practices for Scalable Blockchain Storage Jiang Xiao, Huazhong University of Science and Technology
15:15-15:25		Break
15:25-15:55	Panelist 4	Towards New Generation Network Architecture via Blockchain Empowered Distributed Trust Su Yao, Tsinghua University
15:55-16:25	Panelist 5	Blockchain Technology and System Xiulong Liu, Tianjin University
16:25-16:55	Panelist 6	A Multiple-Blockchains based Service Monitoring Framework in Decentralized Edge Computing Puwei Wang, Renmin University of China
16:55-17:00		Panel Discussion

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Panel Introduction: In this panel entitled “ blockchain and digital economy”, we invite six promising and pioneering researchers in this area to present their cutting-edge research outputs in this inspiring direction. The topics of this panel include blockchain scalability, blockchain-assisted secure data sharing for digital economy, blockchain empowered distributed trust, high-performance blockchain system, etc.



Dr. Jiajing Wu is currently an Associate Professor with the School of Computer Science and Engineering, Sun Yat-sen University, China. She earned her Ph.D. degree from the Hong Kong Polytechnic University, Hong Kong in June, 2014. Her research focus includes blockchain, graph mining, and network science. She has published over 60 research papers on international journals and conferences, including 3 ESI high cited papers. Dr. Wu was a recipient of the Hong Kong Ph.D. Fellowship Scheme during her Ph.D. study in Hong Kong. She is a PI or co-PI of several blockchain-related research projects funded by NFSC, National Key R&D program, and Guangdong Basic and Applied Basic Research Foundation. She serves as an Associate Editor for the IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS—PART II: EXPRESS BRIEFS, and a guest editor of a series of international journals.



Dr. Huawei HUANG is currently an Associate Professor with the School of Software Engineering, Sun Yat-sen University, China. He earned his Ph.D. degree in Computer Science and Engineering from the University of Aizu (Japan) in Sep., 2016. His current research interests mainly focus on blockchain. He has served a research fellow of Japan Society for the Promotion of Science (JSPS), a visiting scholar at Hong Kong Polytechnic University, a Program-Specific Assistant Professor at Kyoto University, Japan. He has published over 80 research papers on IEEE/ACM conferences and journals, including INFOCOM, ICDCS, IWQoS, IEEE JSAC, TPDS, TMC, TC, TCC, TGCN, IEEE Communications Magazine, IEEE Wireless Communications, IEEE Network, and etc. He is a PI or co-PI of several blockchain-related research projects funded by NFSC, CCF and Guangdong Basic and Applied Basic Research Foundation. He has served as a leading guest editor for blockchain special issues at IEEE JSAC and IEEE OJ-CS, the operation-committee chair for IEEE Symposium on Blockchain at IEEE SERVICES 2021, and the TPC chair for blockchain workshops organized at GLOBECOM'2021, GLOBECOM'2022, ICC'2022, and iThings'2022.

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SPEECH TOPIC

Blockchain-Assisted Secure Data Sharing for Digital Economy

Meng Shen, Beijing Institute of Technology

Abstract: The sharing of data is the foundation of a vibrant Digital Economy, and has the potential to deliver tremendous benefits to all participants including both enterprises and individuals. However, the expansion of data sharing means there is an urgent need to address the issues of trust and privacy protection—an area where the emerging blockchain technology offers considerable advantages. This talk will describe in detail the requirements and challenges in secure data sharing in digital economy scenarios, introduce a blockchain-based architecture for secure data sharing, and discuss the integration of blockchain and cryptography techniques for privacy-preserving and collaborative data computing.

PANELIST BIO



Meng Shen is a full Professor in the School of Cyberspace Science and Technology, Beijing Institute of Technology, Beijing, China. He received the B.Eng degree from Shandong University, Jinan, China in 2009, and the Ph.D. degree from Tsinghua University, Beijing, China in 2014, both in computer science. His research interests include data privacy and security, blockchain applications, and encrypted traffic classification. He has authored over 60 papers in top-level journals and conferences, such as ACM SIGCOMM, IEEE JSAC, and IEEE TIFS. He has guest edited special issues on emerging technologies for data security and privacy in IEEE Network and IEEE Internet-of-Things Journal. He received the Best Paper Award at IEEE/ACM IWQoS 2021. Dr. Shen was selected by the Beijing Nova Program 2020 and was the winner of the ACM SIGCOMM China Rising Star Award 2019.

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SPEECH TOPIC

Trade or Trick? Detecting and Characterizing Scam Tokens on Decentralized Exchanges

Haoyu Wang, Huazhong University of Science and Technology

Abstract: The prosperity of the cryptocurrency ecosystem drives the need for digital asset trading platforms. Beyond centralized exchanges (CEXs), decentralized exchanges (DEXs) are introduced to allow users to trade cryptocurrency without transferring the custody of their digital assets to the middlemen, thus eliminating the security and privacy issues of traditional CEX. Uniswap, as the most prominent cryptocurrency DEX, is continuing to attract scammers, with fraudulent cryptocurrencies flooding in the ecosystem. In this talk, I will present our work on detecting and characterizing scam tokens on Uniswap. We have identified over 10K scam tokens listed on Uniswap, which suggests that roughly 50% of the tokens listed on Uniswap are scam tokens. All the scam tokens and liquidity pools are created specialized for the "rug pull" scams, and some scam tokens have embedded tricks and backdoors in the smart contracts. We further observe that thousands of collusion addresses help carry out the scams in league with the scam token/pool creators. The scammers have gained a profit of at least \$16 million from 39,762 potential victims. Our observations suggest the urgency to identify and stop scams in the decentralized finance ecosystem, and our approach can act as a whistleblower that identifies scam tokens at their early stages.

PANELIST BIO



Haoyu Wang is a Full Professor in the School of Cyber Science and Engineering at Huazhong University of Science and Technology (HUST). He is leading the SECURITY PRIDE Research Group (Security, Privacy, and Dependability in Emerging Software Systems). His research covers a wide range of topics in Software Analysis, Privacy and Security, eCrime, Internet/System Measurement, and AI Security. He has published over 90 peer-reviewed papers, including 48 full papers published in top-tier venues (41 CCF-A Papers, and 39 CSRankings Papers). He has been awarded three best/distinguished paper awards, including WWW 2020 Best Student Paper Award (the first award from China), and ACM OOPSLA 2020 Distinguished Paper Award. His research has been covered by over 20 media outlets all around the world, including CoinDesk, Yahoo Finance, Coin Geek, Publish0x, nasdaq.com, Cryptonews CoinGenius, etc.

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SPEECH TOPIC

Enabling Practices for Scalable Blockchain Storage

Jiang Xiao, Huazhong University of Science and Technology

Abstract: Blockchain holds out the promise of being the trust machine the 'Web 3.0'. It is foreseeable that there will be a significant number of blockchain systems launched to disrupt all sectors of our life. In this light, 'scalable blockchain storage' is perceived as the prominent characteristic of facilitating the mainstream blockchain systems to empower the future ecosystem. This presentation will first present the fundamental primitives and long faced challenges of designing a scalable, efficient, and secure blockchain storage framework. Second, the primary design principles and new approaches will be laid out. Finally, I will give a glimpse of the emerging trends.

PANELIST BIO



Jiang Xiao is currently an associate professor in School of Computer Science and Technology at Huazhong University of Science and Technology (HUST), Wuhan, China. She received the BSc degree from HUST in 2009 and the PhD degree from Hong Kong University of Science and Technology (HKUST) in 2014. She has been engaged in research on blockchain and distributed computing. Jiang has directed and participated in many research and development projects and grants from funding agencies such as National Key R&D Program Youth Scientist Project, National Natural Science Foundation of China (NSFC), Hong Kong Research Grant Council (RGC), Hong Kong Innovation and Technology Commission (ITC), and industries like Huawei, Tencent and Intel, and been invited by NSFC in reviewing research projects. Her awards include CCF-Intel Young Faculty Research Program 2017, Hubei Downlight Program 2018, ACM Wuhan Rising Star Award 2019, and Best Paper Awards from IEEE ICPADS/GLOBECOM/GPC.

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SPEECH TOPIC

Towards New Generation Network Architecture via Blockchain Empowered Distributed Trust

Su Yao, Tsinghua University

Abstract: When the Internet was born, the number of users was in the millions, and there was a foundation of trust between users and the network. However, with the continuous development of the Internet, the number of users has reached billions and continues to grow. Data centers, cloud computing, edge computing and other technologies are widely used in the Internet, and the interaction between users and the network is more complex. The performance-oriented design of the traditional Internet architecture has led to its lack of trust foundation and facing serious security threats. These problems also exist in other networks. So far, various security solutions cannot fundamentally solve the various threats faced by networks. To solve this problem, we will discuss how to build the new generation of Network architecture supported by distributed trust based on blockchain technology. Then, we will discuss the research status on decentralized network infrastructure, and our design for decentralized network security architecture, including research objective, research content and research difficulties. Finally, we will showcase a blockchain-assisted secure and lightweight authentication solution as an example.

PANELIST BIO



Su Yao received his Ph.D. degree from the National Engineering Laboratory for Next Generation Internet Interconnection Devices, Beijing Jiaotong University. Currently, he serves in the National Research Center for Information Science and Technology, Tsinghua University, as an assistant research fellow. His research interests include future network architecture, blockchain system, and artificial intelligence for network system. He co-lectured with Professor Xu Ke on Cyber Intelligent Economy and Blockchain at Tsinghua University. He is an executive member in CCF Technical Committee on Blockchain.

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SPEECH TOPIC

Blockchain Technology and System

Xiulong Liu, Tianjin University

Abstract: This talk starts with the brief introduction of blockchain and the milestones in development process. Through the analysis of cutting-edge blockchain technologies, this talk summarizes the critical challenges in the blockchain research area. Furthermore, this talk presents a blockchain system named Haihe-Smart-Chain developed by the research group, and key techniques involved in it. Finally, this talk discusses the future directions of blockchain.

PANELIST BIO



Xiulong Liu is a full-time professor in College of Intelligence and Computing, Tianjin University, China. Before that, he received the B.E. and Ph.D. degrees from Dalian University of Technology (China) in 2010 and 2016, respectively. He also worked as a visiting researcher in Aizu University, Japan; a postdoctoral fellow in The Hong Kong Polytechnic University, Hong Kong; and a postdoctoral fellow in the School of Computing Science, Simon Fraser University, Canada. His research interests include wireless human activity recognition, indoor localization and IoT security&privacy, etc. His research papers were published in many prestigious journals and conferences including MobiCom, INFOCOM, TON, TMC, TC, TPDS, IMWUT, TCOM, etc. He received Best Paper Awards from ICA3PP 2014 and IEEE System Journal 2017. He is also the recipient of CCF Outstanding Doctoral Dissertation award 2017.

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SPEECH TOPIC

A Multiple-Blockchains based Service Monitoring Framework in Decentralized Edge Computing

Puwei Wang, Renmin University of China

Abstract: In edge computing, applications are usually delivered as services, each of which runs independently and can cooperate to construct complicated applications. However, it is difficult to monitor services in a decentralized environment since there does not exist central authorization to guarantee trustiness of the service quality data collected. To address the issue, we introduce the blockchain techniques to service monitoring. Considering the services are usually distributed on the edge nodes, if we deploy only a blockchain on the edge nodes near to the services, it may have to support both the service registration and monitoring because of the loose-coupling principle. That would influence the performance, even crash the edge nodes. In this talk, we introduce a multiple-blockchains based framework, including a registration blockchain that focuses on the service registration and discovery, and a set of monitoring blockchains that focus on the service invocation and monitoring. The registration blockchain is deployed on the cloud nodes, and the monitoring blockchains are deployed on the edge nodes near to the services for collecting efficiently and precisely the service quality data. Based on the cross-chain technology, we design a cross-chain service discovery between the monitoring blockchain and the registration blockchain for finding the services the requesters need. We have implemented the proposed framework on the blockchain platform Hyperledger Fabric and the edge computing platform KubeEdge.

PANELIST BIO



Puwei Wang received the PhD degree in computer science from the Institute of Computing Technology, Chinese Academy of Sciences. He is now an associate professor in School Information, Renmin University of China. He has presided over several scientific research projects, including General Programs of the National Natural Science Foundation of China, and has participated in several national major projects such as the National Key Research and Development Program and the 973 Program of China. He has published more than 10 papers as the first author or corresponding author in top international journals and conferences, such as TPDS, TKDE, TSC, AAI, ICWS and ICSOC, etc. His major research interests include service computing and blockchain.