

BlockSys' 2020

2020 International Conference on Blockchain and Trustworthy Systems

CONFERENCE PROGRAM

Virtual Conference

August 6-7, 2020

<http://blocksys.info/2020/>

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AGENDA

Test Sessions

Aug. 5 Wednesday – Online Test for Authors				
10:00-10:20 Session 1 Test Paper: #1,4,12,14,34	10:20-10:40 Session 2 Test Paper: #26,69,76,81,100	10:40-11:00 Session 3 Test Paper: #41,10,19,49,64,85	11:00-11:20 Session 4 Test Paper: #70,95,18,27,40,88	11:20-11:40 Session 5 Test Paper: #39,65,2,53,60,61
14:00-14:20 Session 6 Test Paper: #58,59,48,99,50,87	14:20-14:40 Session 7 Test Paper: #51,17,57,82,96	14:40-15:00 Session 8 Test Paper: #72,11,13,20,21	15:00-15:20 Session 9 Test Paper: #33,54,71,5,6	15:20-15:40 Session 10 Test Paper: #29,38,97,62
*Important Note <ul style="list-style-type: none"> ➤ Please join the online test on time; every participant is required to join the online test. ➤ If you miss your session, please accept the host's invitation to go to breakout room for further test. 				

Formal Technical Sessions

Aug.6 Thursday	
Morning 09:00-09:10 Opening Remarks Chair: Zibin Zheng , Sun Yat-sen University <ul style="list-style-type: none"> • Jiannong Cao, The Hong Kong Polytechnic University • Hongning Dai, Macau University of Science and Technology Chair: Jiannong Cao , The Hong Kong Polytechnic University 9:10-09:50 Keynote Speech <ul style="list-style-type: none"> • "Blockchain in IoT: Challenges and Opportunities" Guihai Chen, Nanjing University 9:50-10:30 Keynote Speech <ul style="list-style-type: none"> • "Toward Secure Blockchain-Enabled Internet of Vehicles: Optimizing Consensus Management Using Reputation and Contract Theory" Dusit Niyato, Nanyang Technological University 	Afternoon Chair: Jiajing Wu , Sun Yat-sen University 13:30-14:00 Invited Speech <ul style="list-style-type: none"> • "Enabling Practices for Blockchain Data Management" Jiang Xiao, Huazhong University of Science and Technology 14:00-14:30 Invited Speech <ul style="list-style-type: none"> • "Social Brain and Blockchain System Convergence: a Big Data Perspective" Jianxin Li, Beihang University 14:30-15:00 Invited Speech <ul style="list-style-type: none"> • "Reinforcement Learning Based Blockchain Aided Secure Relay Scheme for VANETs" Liang Xiao, Xiamen University 15:00-15:30 Invited Speech <ul style="list-style-type: none"> • "Blockchain and Federated Learning for IoT" Yan Zhang, University of Oslo
10:30-10:40 Short Break	15:30-15:40 Short Break
Chair: Hongning Dai , Macau University of Science and Technology 10:40-11:20 Keynote Speech <ul style="list-style-type: none"> • "Onionchain: Towards Balancing Privacy and Traceability of Blockchain-Based Applications" Jian Weng, Jinan University 11:20-12:00 Keynote Speech <ul style="list-style-type: none"> • "Blockchain-based Ubiquitous Interoperability for Social-Cyber-Physical Convergence" Gang Huang, Peking University 	15:40-17:10 Oral Presentation Sessions Session 1 "Blockchain Security and Privacy" Chair: Yongkai Fan , Communication University of China Session 2 "Blockchain and Data Mining" Chair: Yuan Huang , Sun Yat-sen University

AGENDA

Formal Technical Sessions

Aug. 7 Friday	
Morning Chair: Shangguang Wang , Beijing University of Posts and Telecommunications 9:00-9:30 Invited Speech <ul style="list-style-type: none"> "XBlock: Explore Intelligence from Blockchain Data" Jiajing Wu, Sun Yat-sen University 9:30-10:00 Invited Speech <ul style="list-style-type: none"> "Innovative Applications of Edge Computing and Blockchain in Cooperative Vehicle Infrastructure System (CVIS)" Daxin Tian, Beihang University 10:00-10:30 Invited Speech <ul style="list-style-type: none"> "Blockchain and Differential Privacy for Trustworthy Edge Intelligence" Chi Liu, Beijing Institute of Technology 	Afternoon 13:30-15:00 Oral Presentation Sessions Session 5 "Blockchain Security and Privacy" "Theories and Algorithms for Blockchain" Chair: Jing Long , Hunan Normal University Session 6 "Blockchain and Internet of Things" "Blockchain and Mobile Edge Computing" Chair: Zigui Jiang , Sun Yat-sen University
10:30-10:40 Short Break	15:00-15:10 Short Break
10:40-12:10 Oral Presentation Sessions Session 3 "Blockchain Services and Applications" Chair: Yong Feng , Kunming University of Science and Technology Session 4 "Trustworthy system development" Chair: Qian He , Guilin University of Electronic Technology	15:10-16:25 Oral Presentation Sessions Session 7 "Blockchain and Smart Contracts" Chair: Mingdong Tang , Guangdong University of Foreign Studies Session 8 "Blockchain Security and Privacy" Chair: Li Liu , Kunming University of Science and Technology
	16:25-16:35 Short Break
	16:35-18:00 Oral Presentation Sessions Session 9 "Performance Optimization of Blockchain" "Blockchain and Mobile Edge Computing" Chair: Bing Tang , Hunan University of Science & Technology Session 10 "Blockchain and Cloud Computing" Chair: Ao Zhou , Beijing University of Posts and Telecommunications

Welcome

BlockSys'2020 is a research conference on the theory and practice of blockchain and trustworthy systems. The blockchain technology is transforming industries by enabling anonymous and trustful transactions in decentralized and trustless environments. As a result, blockchain technology and other technologies for developing trustworthy systems can be used to reduce system risks, mitigate financial fraud and cut down operational cost. BlockSys'2020 provides scientists and engineers from both industry and academia a platform to present their ongoing work, relate their research outcomes and experiences, and discuss the best and most efficient techniques for the development of blockchain and trustworthy systems.

Publications



All accepted and presented papers will be published by Springer in the Communications in Computer and Information Science (CCIS) series, and will be indexed by EI Compendex. Distinguished papers (more than 30 papers) presented at the conference, after further revision, will be published in special issues of selected journals.

- IEEE Transactions on Industrial Informatics (SCI, IF=7.377)
- IEEE Transactions on Vehicular Technology (SCI, IF=5.339)
- IEEE Internet of Things Journal (SCI, IF=9.515)
- SENSORS (SCI, IF= 3.031)
- China Communications (SCI, IF=1.882)
- IEEE Open Journal of the Computer Society
- International Journal of Computational Science and Engineering (ESCI, EI)
- International Journal of Embedded Systems (ESCI, EI)
- International Journal of Systems and Service-Oriented Engineering

Conference Organizing Committee

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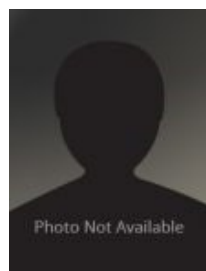
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- Kai Lei, Peking University
- Kenneth Fletcher, University of Massachusetts Boston
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- Mario Larangeira, IOHK/Tokyo Institute of Technology
- Pengcheng Zhang, Hohai University
- Qianhong Wu, Beihang University
- Qinghua Lu, CSIRO Organization
- Shangguang Wang, Beijing University of Posts and Telecommunications
- Shizhan Chen, Tianjin University
- Shuguang Deng, Zhejiang University
- Sude Qing, China Academy of Information and Communications Technology
- Tao Xiang, Chongqing University
- Ting Chen, University of Electronic Science and Technology of China (UESTC)
- Tsuyoshi Ide, IBM
- Wei Luo, Zhejiang University
- Wei Song, Nanjing University of Science and Technology
- Weifeng Pan, Zhejiang Gongshang University
- Xiaodong Fu, Kunming University of Science and Technology
- Xiaoliang Fan, Xiamen University
- Yucong Duan, Hainan University
- Yutao Ma, Wuhan University
- Zihui Lu, Fudan University
- Quanqing Xu, Alibaba
- Yiming Zhang, National University of Defense Technology

Keynote Speakers

“Blockchain in IoT: Challenges and Opportunities”

Guihai Chen, Nanjing University



Abstract: With the explosive growth of embedded devices and the advent of the 5G era, Internet of Things (IoT) are widely deployed everywhere in our lives, such as smart home, smart city, smart farming, etc. However, there are many vulnerabilities in IoT, which hinder the promotion of IoT applications. How to deal with these issues is still an open question both in academia and industry. Recently, with the development of blockchain technology, more and more researchers try to find the chance to fix those vulnerabilities

by combining blockchain and IoT. By leveraging the characteristics of decentralization, tamper-proof, transparency and traceability of blockchain, it is possible to explore a novel solution to build more secure IoT systems. However, it brings significant challenges while integrating blockchain into IoT, such as efficiency, scalability, computation-intension, etc. Thus, in this speech, we systematically introduce the opportunities and challenges when combining blockchain and IoT. Firstly, we modeled IoT systems as three layers, i.e., application layer, communication layer and perception layer, and analyzed vulnerabilities of IoT for each layer. Secondly, we reviewed the advantages and disadvantages of concurrent blockchain technologies. Thirdly, we listed several opportunities and challenges for blockchain and IoT combination. Finally, we presented three main deployed architectures for blockchain based IoT systems and several potential applications.

Bio: Guihai Chen is a distinguished professor of Nanjing University. He earned B.S. degree in computer software from Nanjing University in 1984, M.E. degree in computer applications from Southeast University in 1987, and Ph.D. degree in computer science from the University of Hong Kong in 1997. He had been invited as a visiting professor by Kyushu Institute of Technology in Japan, University of Queensland in Australia and Wayne State University in USA. He has a wide range of research interests with focus on parallel computing, wireless networks, data centers, peer-to-peer computing, high-performance computer architecture and data engineering. He has published more than 450 peer-reviewed papers, and most of them are in well-archived international journals such as IEEE TPDS, IEEE TC, IEEE TKDE, ACM/IEEE TON and ACM TOSN, and also in well-known conference proceedings such as HPCA, MOBIHOC, INFOCOM, ICNP, ICDCS, CoNext and AAAI. He has won 10 best paper awards including ICNP 2015 best paper award and DASFAA 2017 best paper award.

陈贵海，南京大学大学教授、博导，CCF 会士。主要研究方向为分布式网络与数据处理，包括未来网络系统与协议、无线网络结构与优化、物联网与传感网、新型计算机体系结构、数据中心核心技术、数据分析与处理等。已发表论文 450 余篇。Google Scholar 引用 12000 余次，单篇论文最高引用 1200 余次。多次获得国际会议论文奖，包括 2009 年 MOBICOM 最佳展示提名奖、2011 年 INFOCOM 学生最佳展示一等奖、2014 年 ICCS 最佳学生论文奖、2014 年 AAMAS 全球交易代理竞赛冠军、2015 年 ICNP 最佳论文奖、2016 年 ICPADS 最佳论文奖、2016 年 CloudComp 最佳论文奖、2017 年 DSAFA 最佳论文奖、2017 年 INFOCOM 最佳论文提名奖、2018 年 AAIM 最佳学生论文奖。现任中国计算机学会分布计算与系统专委会主任，担任国际学术会议的程序委员或主席 60 余次。曾获多种奖励，包括 2002 年教育部高校青年教师奖、2003 年国家自然科学基金委员会项目特优评价、2004 年中创软件人才奖、2005 年南京市人民政府颁发的留学回国人员特殊贡献奖、2006 年江苏省六大人才高峰称号、2008 年国家杰出青年科学基金、2011 年国务院政府特殊津贴、2015 年教育部自然科学一等奖等(第一完成人)、2018 年江苏省科学技术一等奖(第一完成人)。



“Toward Secure Blockchain-Enabled Internet of Vehicles: Optimizing Consensus Management Using Reputation and Contract Theory”

Dusit Niyato, Nanyang Technological University

Abstract: In the Internet of Vehicles (IoV), data sharing among vehicles is critical for improving driving safety and enhancing vehicular services. To ensure security and traceability of data sharing, existing studies utilize efficient delegated proof-of-stake consensus scheme as hard security solutions to establish blockchain-enabled IoV (BloV).

However, as the miners are selected from miner candidates by stake-based voting, defending against voting collusion between the candidates and compromised high-stake vehicles becomes challenging. To address the challenge, in this research, we propose a two-stage soft security enhancement solution: 1) miner selection and 2) block verification. In the first stage, we design a reputation-based voting scheme to ensure secure miner selection. This scheme evaluates candidates' reputation using both past interactions and recommended opinions from other vehicles. The candidates with high reputation are selected to be active miners and standby miners. In the second stage, to prevent internal collusion among active miners, a newly generated block is further verified and audited by standby miners. To incentivize the participation of the standby miners in block verification, we adopt the contract theory to model the interactions between active miners and standby miners, where block verification security and delay are taken into consideration.

Bio: Dusit Niyato is currently a professor in the School of Computer Science and Engineering and, by courtesy, School of Physical & Mathematical Sciences, at the Nanyang Technological University, Singapore. He received B.E. from King Mongkuk's Institute of Technology Ladkrabang (KMITL), Thailand in 1999 and Ph.D. in Electrical and Computer Engineering from the University of Manitoba, Canada in 2008. He has published more than 400 technical papers in the area of wireless and mobile networking, and is an inventor of four US and German patents. He won the Best Young Researcher Award of IEEE Communications Society (ComSoc) Asia Pacific (AP) and The 2011 IEEE Communications Society Fred W. Ellersick Prize Paper Award. Currently, he is serving as a senior editor of IEEE Wireless Communications Letter, an area editor of IEEE Transactions on Wireless Communications (Radio Management and Multiple Access), an area editor of IEEE Communications Surveys and Tutorials (Network and Service Management and Green Communication), an editor of IEEE Transactions on Communications, an associate editor of IEEE Transactions on Mobile Computing, IEEE Transactions on Vehicular Technology, and IEEE Transactions on Cognitive Communications and Networking. He was a guest editor of IEEE Journal on Selected Areas on Communications. He was a Distinguished Lecturer of the IEEE Communications Society for 2016-2017. He was named the 2017, 2018, and 2019 highly cited researcher in computer science. He is a Fellow of IEEE.



“Onionchain: Towards Balancing Privacy and Traceability of Blockchain-Based Applications”

Jian Weng, Jinan University

Abstract: With the popularity of Blockchain comes grave security-related concerns. Achieving privacy and traceability simultaneously remains an important problem. Efforts have been made to address the issues, while they may subject to specific scenarios. This paper studies how to provide a more general solution for this problem. Concretely, we propose Onionchain, featuring a suite of protocols, offering both traceability and privacy.

As the term implies, our Onionchain is inspired by Onion routing. We investigate the principles of Onion routing carefully and integrate its mechanism together with Blockchain technology. We advocate the Blockchain community to adopt Onionchain with the regards of privacy and traceability. To this end, a case-study of Onionchain, which runs in the context of Vehicular Ad Hoc Networks (VANETs), is proposed, providing the community a guideline to follow. Systematic security analysis and extensive experiments are also conducted to validate our secure and cost-effective Onionchain.

Bio: Jian Weng is the Vice President and Professor with Jinan University, Guangzhou. He received the Ph.D. degree from Shanghai Jiao Tong University. His research interests include cryptography and information security. He has published more than 100 papers in international conferences and journals, such as CRYPTO, EUROCRYPT, ASIACRYPT, TCC, ACM CCS, PKC, CT-RSA, IEEE TPAMI, IEEE TIT, etc. He served as general co-chairs or PC co-chairs for conferences SecureComm 2016, RFIDsec 2013 Asia, ISPEC 2011, and severed as a PC member for more than 40 international conferences. He won the 2014 Innovation Award from Chinese Association for Cryptographic Research, 2017 National Excellent Teacher in Cyber Security, the best paper award from 2011 Symposium on Cryptography and Information Security (SCIS 2011), and the best student paper award from 8th International Conference on Provable Security (ProvSec 2014).

翁健, 暨南大学副校长、教授, 国家杰出青年基金获得者。博士毕业于上海交通大学。在 CRYPTO、EUROCRYPT、ASIACRYPT、TCC、PKC、CT-RSA、IEEE TPAMI、IEEE TIT 等国际会议和国际期刊上发表了 80 多篇论文。担任 NSFC 信息学部评专家、教育部网络空间安全教学指导委员会委员、广东省第六届学位委员会工学 II 组学科评议组成员、暨南大学第十一届学位评定委员会委员兼工学分委会主席、信息安全国际会议 SecureComm 2016 大会主席、ISPEC 2011 程序委员会主席和 RFIDsec'13 Asia 程序委员会主席, 以及 40 多次国际会议程序委员会委员。曾获中国密码学会首届密码创新奖、2017 年度全国网络安全优秀教师、第 26 届密码学与信息安全会议 SCIS 2011 最佳论文奖、第 10 届可证明安全国际会议 ProvSec 2014 最佳学生论文奖等奖励。



“Blockchain-based Ubiquitous Interoperability for Social-Cyber-Physical Convergence”

Gang Huang, Peking University

Abstract: Social-cyber-physical convergence marks the transition of information technology and its applications from “informatization of the natural world” to “naturalization of the information world”. Its ubiquitous, social, situational and intelligent patterns and modes call for the pivotal technical characteristic of universal interoperability across heterogeneous information systems, where the key challenge is incontrollable data transmission and

processing among different principals. This talk presents our efforts on achieving ubiquitous interoperability inspired by blockchain technologies. Our fundamental idea is to abstract the interoperability code as smart contracts, and record the contract and its related runtime behaviors onto distributed ledgers where records are difficult to modify. In this way, code can be executed as promised, lowering the danger of incontrollable data. To release such idea, we design and implement BDWare, a cloud platform for ubiquitous interoperability. BDWare consists of a high-throughput linearly-scalable distributed ledger system which supports fast data booking and auditing, and a flexibly-configurable smart-contract engine which supports situational deployment of smart contracts. This talk will introduce the techniques behind BDWare, show several successful usage scenarios of BDWare, and outlook the future trends of system software driven by social-cyber-physical convergence.

Bio: Dr. Gang Huang is a tenured full professor from Peking University. He is vice president of Institute of Artificial Intelligence in Peking University, vice director of Institute of Software in Peking University, and winner of National Science Foundation for Distinguished Young Scholars. His research interests are operating system and middleware for internet computing including cloud computing, mobile computing, big data and blockchain. He has published more than 80 papers in ACM / IEEE Transactions, OOPSLA, ICSE, WWW, FSE, Ubicomp and other internationally renowned journals and conferences, and won the best paper award in international conferences for five times. His research outputs have been transferred to many open source and commercial software products and widely used in the past decade, such as PKUAS and YanCloud. He won the award of 1st Class National Award for Technology Invention in 2018, 2nd Class National Award for Natural Science in 2012, 2nd Class National Award for Technology Invention in 2008, 1st Class MOE Award for Science and Technology Progress in 2015, China Youth Science and Technology Award and CCF Distinguished Young Scientists in 2013, and National Outstanding PhD Dissertations in 2006.

黄罡，男，博士，北京大学教授、博导，软件研究所副所长，操作系统研究中心主任，国家杰出青年科学基金、中国青年科技奖、中国计算机学会青年科学家奖、全国优秀博士学位论文获得者。

长期从事系统软件领域的教学与科研工作，在国家重点研发计划、国家高技术研究发展计划（863）、国家自然科学基金、中美自然科学基金联合研究、欧盟第七框架等项目支持下，针对自适应软件的可变性、可达性和可用性问题的，从复杂自适应系统的视角，提出一套基础化、系统化、普适化的基于运行时体系结构的自适应软件模型与方法，在自适应软件计算反射原理、运行时模型驱动方法、自适应系统的软件定义方法等方面取得突破，研制的技术与系统在企业计算、云计算、大数据和区块链等领域得到广泛应用。先后获 2007 年国家技术发明二等奖（个人排名第三）、2012 年国家自然科学二等奖（排名第二）、2015 年高等学校科技进步一等奖（排名第一）、2018 年国家技术发明一等奖（排名第二）以及十余次国际会议和期刊最佳/优秀论文等荣誉。

现任中国电子学会青年科学家俱乐部副主席、中国电子学会云计算与大数据青年科学家专委会主任、中国计算机学会专委会工作委员会副主任、IEEE 商业信息化与系统技术委员会执行委员、中国新一代 IT 产业推进联盟技术委员会主任、北京市大数据工作领导小组专家咨询组专家。曾任 ACM/IFIP/USENIX Middleware、IEEE COMPSAC、IEEE SOSE、“一带一路”青年创新大会等国际会议程序委员会主席或大会主席、ISO/JTC 云计算国际标准以及 Java 国际标准专家组成员。

Invited Speakers



“Enabling Practices for Blockchain Data Management”

Jiang Xiao, Huazhong University of Science and Technology

Abstract: The realization of trustworthiness Web 3.0 era requires accessing the unprecedented benefits – auditability, transparency, automation, effectiveness – from the disruptive blockchain technology. However, as the amount of data is exploding at unprecedented scale, blockchain systems existing today are becoming inefficient in storing and processing the enormous data. In this talk, we will uncover many unexplored challenging issues of blockchain data management. We will also discuss about the initial successes leaving tremendous potential for further innovation.

Bio: Dr. 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, distributed computing, and wireless indoor localization. Awards include Hubei Downlight Program 2018, CCF-Intel Young Faculty Research Program 2017, and Best Paper Awards from IEEE ICPADS/GLOBECOM.

肖江，华中科技大学计算机学院副教授、博士生导师，CCF 女工委委员，2019 年 ACM-WUHAN&HBCS 新星奖获得者，2018 年湖北省青年科技晨光计划获得者，2017 年中国计算机学会 CCF-Intel 青年学者提升计划获得者。2014 年获香港科技大学计算机科学与工程博士学位。主要研究领域为分布式计算与系统、无线室内定位与智能感知。近年来在国际知名学术期刊与会议上发表论文 38 篇，含 CCF A 类论文 7 篇、B 类论文 10 篇，谷歌学术引用 1000 余次。获全球普适计算以及云计算国际会议 GPC2019 唯一最佳论文奖，获 IEEE 国际并行与分布式系统会议第 18 届年会 ICPADS 2012 唯一最佳论文奖（排名第一），获 IEEE 全球通信大会 Globecom 2012 最佳论文奖。现主持 1 项国家自然科学基金青年项目，1 项湖北省自然科学基金面上项目，并参与多项国家和省部级项目。



“Social Brain and Blockchain System Convergence: a Big Data Perspective”

Jianxin Li, Beihang University

Abstract: Big Data driven social brain system and blockchain have become two of the most trending and disruptive technologies. Anomaly detection is a pattern detection method for behaviors beyond expectations and has played a key role in social brain anomaly detection. Blockchain technology is expected to create a secure, immutable, decentralized system for the highly sensitive information that Big Data driven social brain systems must collect, store, and utilize. In this talk, we will first introduce the Ring project, a social brain platform developed in BDBD, which using a set of abnormal subgraph detection and analysis algorithms, together with some application systems. Then, we discuss the convergence trends of social brain and blockchain system matters and its key challenges. In such context, this talk will focus on some research on combining social brain and blockchain system with a Big Data perspective, including how to store and manage massive data, how to protect data holders' privacy, how to guarantee the resilience of the system to malicious users' attacks, how to learn collaboratively in decentralized systems. We will highlight some interesting and practical applications utilizing blockchain in various fields. We will also point out several open research directions for further study.

Bio: Jianxin Li is a professor in Beijing Advanced Innovation Center for Big Data and Brain Computing, School of Computer Science and Engineering, Beihang University, Beijing, China. He received the PhD degree from Beihang

University in 2008. He was a visiting scholar in the Machine Learning Department of CMU in 2015, and a visiting researcher of MSRA in 2011. His current research interests include bigdata, anomaly detection and trustworthy computing. He has published over 50 papers in TKDE, TBD, WWW, IJCAI, AAAI, SRDS, USENIX LISA etc.

李建欣, 北京航空航天大学计算机学院, 教授, 博导, 系副主任。2008 年 1 月于北京航空航天大学获计算机软件与理论专业工学博士学位, 2008 年赴英国卢瑟福·阿普尔顿国家实验室访问, 2011 年微软亚洲研究院访问研究员, 2015.3-2016.4, 美国卡内基梅隆 CMU 大学机器学习系访问学者。担任 Journal of Cloud Computing, Big Data Mining and Analytics 期刊编委, 计算机学会 (CCF) 高级会员, CCF 大数据专委会委员等, 主要研究方向为大数据分析处理、可信计算等, 在 TKDE, TBD, WWW, IJCAI, AAAI, SRDS 和 USENIX LISA 等发表学术论文 50 余篇, 曾获国家级二等奖 3 项, 省部级一等奖 4 项; 曾入选“微软学者”和微软亚洲研究院“铸星计划”, 北京市“科技新星”、教育部“新世纪优秀人才计划”和“青年长江学者”等。



“Reinforcement Learning Based Blockchain Aided Secure Relay Scheme for VANETs”
Liang Xiao, Xiamen University

Abstract: Selfish users can use onboard units (OBUs) in vehicular ad hoc networks (VANETs) to launch various attacks such as jamming, eavesdropping and spoofing and aim to obtain illegal advantages. In this talk, we present an indirect reciprocity security framework for VANETs and a reinforcement learning based blockchain aided relay scheme to suppress the attack motivation of selfish users. In this scheme, a scalar reputation is assigned to each OBU

to evaluate their dangerous level to the VANET. A blockchain that uses consensus mechanism and encryption algorithms is implemented to record the behaviors of the OBUs. This framework applies reinforcement learning to choose the relay OBU or determine whether to follow the request of a source OBU or not. Simulation results show that the proposed relay scheme can efficiently increase the packet delivery ratio, the reputation and the utility of the each OBU and improve the VANET security.

Bio: Liang Xiao is currently a Professor in the School of Informatics, serving as department head in the Department of Cybersecurity, Xiamen University, Fujian, China. Her research interests include wireless security, game theory, and blockchains. She has published five books or book chapters and won the best paper award for six conferences such as 2017 IEEE ICC. She has served in several editorial roles, including an associate editor of IEEE Transactions on Dependable and Secure Computing, IEEE Trans. Information Forensics & Security and IEEE Trans. Commun. She received the B.S. degree in communication engineering from Nanjing University of Posts and Telecommunications, China, in 2000, the M.S. degree in electrical engineering from Tsinghua University, China, in 2003, and the Ph.D. degree in electrical engineering from Rutgers University, NJ, in 2009. She was a visiting professor with Princeton University, Virginia Tech, and University of Maryland, College Park.

肖亮, 厦门大学信息学院教授、网络空间安全系主任, 从事无线通信安全等方向的研究。出版 5 部英文学术专著/章节, 获得 ICC 等 6 个国际会议最佳论文奖、中国通信学会青年科技奖。曾担任 IEEE Trans. Information Forensics & Security, IEEE Transactions on Dependable and Secure Computing 和 IEEE Transactions on Communications 等 7 个国际 SCI 期刊编委。美国 Rutgers 大学电子与计算机工程系博士, 清华大学电子系硕士, 南京邮电学院通信工程系学士。曾在普林斯顿大学, 弗吉尼亚理工和马里兰大学等高校作访问学者。



“Blockchain and Federated Learning for IoT”
Yan Zhang, University of Oslo

Abstract: In this talk, we will first present the key concepts and main principles related to Blockchain, Federated Learning and IoT. We also present the different perspectives as well as challenges when Blockchain is explored in IoT. Then, we mainly focus on our recent studies and results related to: (i) Blockchain and Federated Learning for secure data sharing

in industrial IoT; (ii) Blockchain and Asynchronous Federated Learning for Internet of Vehicles. We will also point out several open research questions for further study.

Bio: He is a Full Professor at the Department of Informatics, University of Oslo, Norway. He received a Ph.D. degree in School of Electrical & Electronics Engineering, Nanyang Technological University, Singapore. His current research interests include: next-generation wireless networks leading to 6G, green and secure cyber-physical systems (e.g., transport, smart grid, and healthcare). His works in these areas have received more than 15000+ citations and H-index 65. He is an editor of 10 IEEE Transactions/Magazines: IEEE Communications Magazine; IEEE Network Magazine; IEEE Communications Surveys & Tutorials; IEEE Transactions on Industrial Informatics; IEEE Transactions on Vehicular Technology; IEEE Transactions on Green Communications and Networking; IEEE Internet of Things; IEEE Systems Journal; IEEE Vehicular Technology Magazine and IEEE Blockchain Technical Briefs. He is IEEE VTS (Vehicular Technology Society) Distinguished Lecturer and CCF 2019 Distinguished Speaker. He serves as the Chair of IEEE ComSoc TCGCC (Technical Committee on Green Communications & Computing). He is an elected member of CCF Technical Committee on Blockchain. He received the award “Highly Cited Researcher” according to Clarivate Analytics in 2019 and 2018. He is IEEE Fellow, Fellow of NTVA, and IET Fellow.

张彦, IEEE Fellow, 欧洲科学院院士, 挪威工程院院士, 全球“高被引科学家”, 挪威奥斯陆大学教授; 张彦现任挪威奥斯陆大学 (U.S.NEWS 世界百强名校, 软科 ARWU 世界百强名校) 信息工程学院教授。2005 年毕业于新加坡南洋理工大学获电子电气工程博士学位, 分别于北京航空航天大学 and 南京邮电大学获硕士和学士学位。近期主要研究方向为未来无线网络和智能安全物联网。入选 2020 年全球 Top1000 计算机科学和电子学领域科学家 H 指数排名并在挪威排第一位。任 IEEE 通信学会绿色通信与计算技术委员会主席, IEEE 杰出讲师, IEEE 车载技术学会 Fellowship and Scholarship 评选委员会委员, 及 CCF 区块链专委会委员。获评 2019 年 CCF 杰出演讲者。目前担任 10 个 IEEE Transactions/Magazine 顶级期刊编委, 包括 IEEE Communications Magazine; IEEE Network Magazine; IEEE Communications Surveys & Tutorials; IEEE Transactions on Industrial Informatics; IEEE Transactions on Vehicular Technology; IEEE Transactions on Green Communications and Networking; IEEE Internet of Things; IEEE Systems Journal; IEEE Vehicular Technology Magazine; 以及 IEEE Blockchain Technical Briefs。并现任或曾任国内多个核心期刊编委, 包括中国通信, 通信与信息网络学报, 及物联网学报。



“XBlock: Explore Intelligence from Blockchain Data”

Jiajing Wu, Sun Yat-sen University

Abstract: Blockchain technology is a emerging technology that has the potential to revolutionize many traditional industries. While the popularity of blockchain technology bringing about a lot of technical innovation, it also leads to many new problems, such as user privacy disclosure and illegal financial activities. However, the public accessibility of blockchain data and recent advances in artificial intelligence provide an unprecedented opportunity for researchers to understand and resolve these problems through blockchain data analysis. This talk will introduce a blockchain dataset website, xblock.pro, which collects the current mainstream blockchain data and some of our recent work on data mining and fraud detection tasks based on these datasets.

Bio: Dr. Jiajing Wu is currently an Associate Professor at the School of Data and Computer Science, Sun Yat-Sen University, Guang Zhou, China. She received the Ph.D. degree from The Hong Kong Polytechnic University in 2014 and she was a recipient of the Hong Kong Ph.D. Fellowship Scheme during her Ph.D. study in Hong Kong. Her research area includes blockchain transaction network, network science, graph mining, and cyber-physical systems. She is serving as an Associate Editor for IEEE Transactions on Circuits and Systems II and a guest editor of Chaos and Sensors.

吴嘉婧, 中山大学数据科学与计算机学院副教授, IEEE 高级会员。2014 年 9 月于香港理工大学获博士学位, 主要研究方向为区块链交易网络, 网络科学, 图挖掘, 信息物理融合系统等。主持国家自然科学基金 2 项 (青年项目与面上项目各 1 项),

近年来在国际学术期刊与会议上发表论文 30 余篇，其中第一作者或通信作者身份发表 SCI 论文 20 篇（含 IEEE Transactions 论文 11 篇），ESI 高被引论文 1 篇。担任 IEEE Trans. On Circuits and Systems II 副编辑，Chaos 与 Sensors 期刊客座编辑，承担包括 ISCAS 和 Blocksys 在内的多个国内外学术会议的组织主席，特刊组织，分会主席等工作。



“Innovative Applications of Edge Computing and Blockchain in Cooperative Vehicle Infrastructure System (CVIS)”

Daxin Tian, Beihang University

Abstract: Cooperative Vehicle Infrastructure System (CVIS) significantly orients the development of future Intelligent Transportation System (ITS) to improve the traffic efficiency and vehicle safety, but it puts forward more requirements for the computing ability and security of the system. The emergence of edge computing and Blockchain makes it possible to implement a new generation of cooperative vehicle infrastructure technology. This talk presents general introductions of edge computing and Blockchain technologies and discloses their innovative application trends in CVIS. Moreover, we introduce the latest research and practice of our team on computation offloading and blockchain-based data sharing in vehicular edge networks. Further, we reveal that applications of edge computing and blockchain would be promising trends for CVIS and ITS.

Bio: Daxin Tian is a professor and the associate dean in the School of Transportation Science and Engineering, Beihang University, Beijing, China. He is awarded by Young Scholars of the Yangtze River and National Outstanding Youth Science Foundation. He has authored/co-authored about 116 journal/conference papers and book chapters. His current research interests include connected vehicles, vehicular ad hoc networks, swarm intelligence, and intelligent transportation systems. He is a senior member of IEEE, CCF and ITSC. He is serving on the editor in chief of International Journal of Vehicular Telematics and Infotainment Systems (IJVTIS), the associate editor of IEEE Internet of Things Journal, Journal of Intelligent and Connected Vehicles.

田大新，男，教授，博士生导师，青年长江学者，国家自然科学基金优青，北京航空航天大学交通学院副院长，在车联网领域主持国家自然科学基金、国家重点研发计划等纵向科研项目 11 项，发表学术论文 116 篇；出版专著 4 本、译著 1 本；授权发明专利 21 项；获国家科学技术进步奖二等奖 2 项，教育部技术发明奖一等奖 1 项，中国智能交通协会科学技术奖一等奖 1 项；担任国际学术期刊《International Journal of Vehicular Telematics and Infotainment Systems》主编，《IEEE Internet of Things Journal》和《Journal of Intelligent and Connected Vehicles》Associate Editor。



“Blockchain and Differential Privacy for Trustworthy Edge Intelligence”

Chi Liu, Beijing Institute of Technology

Abstract: In recent years, artificial intelligence (AI) technologies like deep learning has achieved significant results comparable to humans in games, control, computer vision and other tasks. However, how to protect user data privacy during the training process in a distributed edge computing environment become a research hotspot. In response to challenges such as limited computing capability of edge smart devices, data privacy protection requirements, and the insufficient support of deep learning of existing big data frameworks like Hadoop/Spark, in this talk, we will introduce a blockchain and differential privacy-based privacy protection and training optimization method for edge intelligence to support major deep learning model training on edge devices, by identifying key datasets and using the federal learning framework.

Bio: Prof. Chi (Harold Liu) receives the Ph.D. degree from Imperial College, UK in 2010, and the B.Eng. degree from Tsinghua University, China in 2006. He is currently a Full Professor and Vice Dean at the School of Computer

Science and Technology, Beijing Institute of Technology, China. He currently serves as the Editor for IEEE TRANSACTIONS ON NETWORK SCIENCE AND ENGINEERING, the Symposium Chair for IEEE ICC 2020 Next Generation Networking. He is a Fellow of IET, a Fellow of British Computer Society (BCS), a Fellow of Royal Society of Arts (RSA), and a Senior Member of IEEE.

刘驰，北京理工大学计算机学院副院长，教授，博士生导师，IET Fellow、BCS Fellow 和 RSA Fellow。分别于清华大学和英国帝国理工学院获得学士和博士学位，曾任美国 IBM T.J. Watson 研究中心和 IBM 中国研究院研究主管，并在德国电信研究总院（柏林）任博士后研究员。研究方向为大数据与物联网技术。主持了国家自然科学基金、国家重点研发计划课题、工信部、教育部等 20 余省部级研究项目，累计主持科研经费 1500 余万元。共发表 SCI/EI 论文百余篇，其中 ESI 高被引论文 2 篇、CCF-A 类论文 20 余篇，授权国内外发明专利 16 项，编写书籍 9 本，Google Scholar 索引 3700 余次，H index 为 29。现任国家自然科学基金会评专家、科技部重点研发计划会评专家、教育部科技奖评审专家、第四届全国信标委技术委员会委员、中国计算机学会大数据/普适计算专委会委员，中国电子学会物联网专委会委员/副秘书长、中国自动化学会大数据专委会委员、中国通信学会物联网专委会委员等；以及 IEEE Transactions on Network Science and Engineering 编委、IEEE ICC'20 Symposium Chair for Next Generation Networking。入选了国家人社部“高层次留学人才回国资助计划”，中国科协“青年人才托举工程”、陕西省第八批“百人计划（短期项目）”、中国电子学会优秀科技工作者、国家“十二五”轻工业科技创新先进个人、2017 年中国物联网年度人物等，IEEE Senior Member。并获得省部级一等奖 1 项、二等奖 1 项、三等奖 1 项。



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-Please set up your laptop time in advance

Equipment needed

- A computer with an internet connection (wired connection recommended)
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Oral Presentations

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- Each presentation is a maximum of 15 minutes in total, including Q&A. Please make sure your presentation is well timed.
- **Attention please:** Video recording is absolutely forbidden during the conference. Once confirmed, the conference is to resort to legal claims.

Voice control rules during the presentation

- The host will mute all participants while entering the meeting
- The host will unmute the speakers' microphone when it is turn for his or her presentation.
- Q&A goes after each speaker, the participant can raise hand for questions, the host will unmute the questioner.
- After Q&A, the host will mute all participants and welcome next speaker.

Thursday 8.6

Time	Activity	
Chaired by Zibin Zheng, Sun Yat-sen University		
09:00-09:10	Opening Ceremony	Jiannong Cao, The Hong Kong Polytechnic University Hongning Dai, Macau University of Science and Technology
Chaired by Jiannong Cao, The Hong Kong Polytechnic University		
09:10-09:50	Keynote Speech	“Blockchain in IoT: Challenges and Opportunities” Guihai Chen, Nanjing University
09:50-10:30	Keynote Speech	“Toward Secure Blockchain-Enabled Internet of Vehicles: Optimizing Consensus Management Using Reputation and Contract Theory” Dusit Niyato, Nanyang Technological University
10:30-10:40	Short Break	
Chaired by Hongning Dai, Macau University of Science and Technology		
10:40-11:20	Keynote Speech	“Onionchain: Towards Balancing Privacy and Traceability of Blockchain-Based Applications” Jian Weng, Jinan University
11:20-12:00	Keynote Speech	“Blockchain-based Ubiquitous Interoperability for Social-Cyber-Physical Convergence” Gang Huang, Peking University
12:00-13:30	Lunch Break	
Chaired by Jiajing Wu, Sun Yat-sen University		
13:30-14:00	Invited Speech	“Enabling Practices for Blockchain Data Management” Jiang Xiao, Huazhong University of Science and Technology
14:00-14:30	Invited Speech	“Social Brain and Blockchain System Convergence: a Big Data Perspective” Jianxin Li, Beihang University
14:30-15:00	Invited Speech	“Reinforcement Learning Based Blockchain Aided Secure Relay Scheme for VANETs” Liang Xiao, Xiamen University
15:00-15:30	Invited Speech	“Blockchain and Federated Learning for IoT” Yan Zhang, University of Oslo
15:30-15:40	Short Break	

Session 1: Blockchain Security and Privacy Chair: Yongkai Fan, Communication University of China

15:40-15:55	Paper ID 1: Identifying Illicit Addresses in Bitcoin Network Yang Li , Yue Cai, Hao Tian, Gengsheng Xue and Zibin Zheng
15:55-16:10	Paper ID 4: Blockchain-based Candidate Device-Selection for Federated Learning Keshan Zhang, Huawei Huang , Song Guo and Xiaocong Zhou
16:10-16:25	Paper ID 12: PSM ² : A Privacy-Preserving Self-Sovereign Match-Making Platform Chenyu Wu , Feng Yuan, Youshui Lu and Qi Saiyu
16:25-16:40	Paper ID 14: A Blockchain-based Distributed Authentication and Dynamic Group Key Agreement Protocol Zisang Xu , Feng Li, Minfu Tan and Jixin Zhang
16:40-16:55	Paper ID 34: Scalable and Communication-efficient Decentralized Federated Edge Learning with Multi-blockchain Framework Jiawen Kang , Zehui Xiong, Chunxiao Jiang, Yi Liu, Song Guo, Yang Zhang, Dusit Niyato, Cyril Leung and Chunyan Miao

Session 2: Blockchain and Data Mining
Chair: Yuan Huang, Sun Yat-sen University

15:40-15:55	Paper ID 26: Exploring EOSIO via Graph Characterization Yijing Zhao , Jieli Liu, Qing Han, Weilin Zheng and Jiajing Wu
15:55-16:10	Paper ID 69: De-Anonymization of the Bitcoin Network using Address Clustering Changhoon Kang , Chaehyeon Lee, Kyungchan Ko, Jongsoo Woo and James Won-Ki Hong
16:10-16:25	Paper ID 76: Cryptocurrencies Price Prediction Using Weighted Memory Multi-Channels Zhuorui Zhang , Junhao Zhou, Yanan Song and Hong-Ning Dai
16:25-16:40	Paper ID 81: Machine Learning based Bitcoin Address Classification Chaehyeon Lee , Sajjan Maharjan, Kyungchan Ko, Jongsoo Woo and James Won-Ki Hong
16:40-16:55	Paper ID 100: Deciphering Cryptocurrencies by Reverse Analyzing on Smart Contract Xiangping Chen, Queping Kong , Hao-Nan Zhu, Yixin Zhang, Nan Jia and Yuan Huang

Friday 8.7

Time	Activity	
Chaired by Shangguang Wang, Beijing University of Posts and Telecommunications		
09:00-09:30	Invited Speech	“XBlock: Explore Intelligence from Blockchain Data” <i>Jiajing Wu, Sun Yat-sen University</i>
09:30-10:00	Invited Speech	"Innovative Applications of Edge Computing and Blockchain in Cooperative Vehicle Infrastructure System (CVIS)” <i>Daxin Tian, Beihang University</i>
10:00-10:30	Invited Speech	'Blockchain and Differential Privacy for Trustworthy Edge Intelligence” <i>Chi Liu, Beijing Institute of Technology</i>
10:30-10:40	Short Break	
Session 3: Blockchain Services and Applications Chair: Yong Feng, Kunming University of Science and Technology		
10:40-10:55	Paper ID 41: Blockchain-based Distributed Machine Learning towards Statistical Challenges Mei Li, Qigang Wang and Wanlu Zhang	
10:55-11:10	Paper ID 10: Research on consensus algorithm of digital copyright blockchain Guo Jun, Yang Lan, Zhou HongBo, Guo Yang	
11:10-11:25	Paper ID 19: Blockchain-based Dynamic Spectrum Sharing for 5G and Beyond Wireless Communications Zuguang Li, Wei Wang and Qihui Wu	
11:25-11:40	Paper ID 49: Fabric-chain&chain: A blockchain-based electronic document system for supply chain finance Dun Li, Dezhi Han and Han Liu	
11:40-11:55	Paper ID 64: A Cross-Border VR Technology for Blockchain Environment Huiping Wang, Alan Hong and Xiaoyan Chen	
11:55-12:10	Paper ID 85: A Decentralized Data Processing Framework Based on PoUW Blockchain Guangcheng Li, Qinglin Zhao, and Xianfeng Li	
12:10-13:30	Lunch Break	

Session 4: Trustworthy system development Chair: Qian He, Guilin University of Electronic Technology	
10:40-10:55	Paper ID 70: Data Ownership Confirmation and Privacy-free Search for Blockchain-based Medical Data Sharing Cong Zha , Hao Yin and Bo Yin
10:55-11:10	Paper ID 95: A Survey on the Application of SGX in Blockchain Area Hong Lei, Qinghao Wang , Wenbo Shi and Zijian Bao
11:10-11:25	Paper ID 18: A Blockchain based Scheme for Authentic Telephone Identity Fuwen Liu , Bo Yang, Li Su, Ke Wang and Junzhi Yan
11:25-11:40	Paper ID 27: High-accuracy Reliability Prediction Approach for Blockchain Services under BaaS Jianlong Xu , Zicong Zhuang, Kun Wang and Wei Liang
11:40-11:55	Paper ID 40: BDSS: Blockchain-based data synchronization system Rengang Liang , Qian He, Bingcheng Jiang, Mingliu He, Kuangyu Qin
11:55-12:10	Paper ID 88: Analysis of the Randomness Generation for PoS-based Blockchains with Verifiable Delay Functions Liwei Liu and Maozhi Xu
12:10-13:30	Lunch Break
Session 5: Blockchain Security and Privacy; Theories and Algorithms for Blockchain Chair: Jing Long, Hunan Normal University	
13:30-13:45	Paper ID 39: PoW-based Sybil Attack Resistant Model for P2P Reputation Systems Biaoqi Li , Xiaodong Fu, Kun Yue, Li Liu, Lijun Liu and Yong Feng
13:45-14:00	Paper ID 65: Phishing detection on Ethereum via learning representation of transaction subgraphs Zihao Yuan , Qi Yuan and Jiajing Wu
14:00-14:15	Paper ID 2: The Framework of Consensus Equilibria for Mining-Pool Games and related Stability of Gap Games Behaviors in Blockchain Ecosystems Lan Di, Fan Wang, Lijian Wei, George Yuan , Tu Zeng, Qianyou Zhang
14:15-14:30	Paper ID 53: Modeling and Verification of the Nervos CKB Block Synchronization Protocol in UPPAAL Qi Zhang , Yuteng Lu and Meng Sun
14:30-14:45	Paper ID 60: A Blockchain Consensus Mechanism for Marine Data Management System Ziqi Fang , Zhiqiang Wei, Xiaodong Wang and Weiwei Xie
14:45-15:00	Paper ID 61: A Complete Anti-Collusion Mechanism in Blockchain Xiangbin Xian , Zhenguo Yang, Guipeng Zhang, Tucua Miro de Nelio S and Wenyin Liu
15:00-15:10	Short Break
Session 6: Blockchain and Internet of Things; Blockchain and Mobile Edge Computing Chair: Zigui Jiang, Sun Yat-sen University	
13:30-13:45	Paper ID 58: PCN-based Secure Energy Trading in Industrial Internet of Things Yong Feng, Yao Xiao , Dunfeng Li and Xiaodong Fu
13:45-14:00	Paper ID 59: A Data Trading Scheme Based on Payment Channel Network for Internet of Things Dunfeng Li, Yong Feng , Yao Xiao, Mingjing Tang and Xiaodong Fu
14:00-14:15	Paper ID 48: Blockchain Based Trust Management in Vehicular Networks Han Liu , Dezhi Han and Dun Li
14:15-14:30	Paper ID 99: CMBIoV: Consensus Mechanism for Blockchain on Internet of Vehicles Qiuyue Han , Yang Yang, Zhiyuan Ma, Jiangfeng Li, Yang Shi, Junjie Zhang and Sheng Yang

14:30-14:45	Paper ID 50: Adaptive Edge Resource Allocation for Maximizing the Number of Tasks Completed on Time: A Deep Q-Learning Approach Shanshan Wu , Qibo Sun, Ao Zhou, Shangguang Wang, and Tao Lei
14:45-15:00	Paper ID 87: Scheduling of Time Constrained Workflows in Mobile Edge Computing Xican Chen , Siyi Gao, Qibo Sun and Ao Zhou
15:00-15:10	Short Break
Session 7: Blockchain and Smart Contracts Chair: Mingdong Tang, Guangdong University of Foreign Studies	
15:10-15:25	Paper ID 51: How Similar Are Smart Contracts on the Ethereum? Nan Jia , Queping Kong, and Haiping Huang
15:25-15:40	Paper ID 17: Trustworthy Dynamic Target Detection and Automatic Monitor Scheme for Mortgage loan with Blockchain-based Smart Contract Qinnan Zhang , Jianming Zhu and Yuchen Wang
15:40-15:55	Paper ID 57: Dynamic Gas Estimation of Loops using Machine Learning Chunmiao Li , Shijie Nie, Yang Cao, Yijun Yu and Zhenjiang Hu
15:55-16:10	Paper ID 82: A Data Integrity Verification Scheme based on Blockchain and Blind Homomorphic Tags Shuai Huang , Jing Xiao, Hong-liang Mao, Mu-ran Su, Hai-bo Ying, and Shuang Tan
16:10-16:25	Paper ID 96: A Permissioned Blockchain-based Platform for Education Certificate Verification Jing Lu, Hanlei Cheng , Zhiyu Xiang, Bin Song
16:25-16:35	Short Break
Session 8: Blockchain Security and Privacy Chair: Li Liu, Kunming University of Science and Technology	
15:10-15:25	Paper ID 72: Detection of smart Ponzi scheme using opcode Jianxi Peng and Guijiao Xiao
15:25-15:40	Paper ID 11: Towards on blockchain data privacy protection with cryptography and software architecture approach Zexu Wang , Bin Wen, Ziqiang Luo
15:40-15:55	Paper ID 13: An attack detection and defense method for SDWN oriented blockchain network Lijun Xiao , Yulian Gao, Bin Liu and Tianke Fang
15:55-16:10	Paper ID 20: Research and implementation of Cross-chain Transaction Model Based on Improved Hash-locking Bingrong Dai, Shengming Jiang, Menglu Zhu , Ming Lu, Dunwei Li and Chao Li
16:10-16:25	Paper ID 21: A Security Problem in Small Scale Private Ethereum Network Zhen Gao , Dongbin Zhang, Jiuzhi Zhan
16:25-16:35	Short Break
Session 9: Performance Optimization of Blockchain; Blockchain and Mobile Edge Computing Chair: Bing Tang, Hunan University of Science & Technology	
16:35-16:50	Paper ID 33: DP-Hybrid: A Two-Layer Consensus Protocol for High Scalability in Permissioned Blockchain Fulin Wen , Lei Yang, Wei Cai and Pan Zhou
16:50-17:05	Paper ID 54: A Blockchain-based Crowdsourcing System with QoS Guarantee via a Proof-of-Strategy Consensus Protocol Xusheng Cai, Yue Wang, Feilong Lin, Changbing Tang and Zhongyu Chen

17:05-17:20	Paper ID 71: PBFT Consensus Performance Optimization Method for Fusing C4.5 Decision Tree in Blockchain Zhihong Liang, Yuxiang Huang , Zhichang Guo, Qi Liu and Tiancheng Liu
17:20-17:35	Paper ID 5: Clustering Algorithm Based on Task Dependence in Vehicle-Mounted Edge Networks Yixin Yu , Xinyue Shi, Yashu Yang, Xiang Ren and Haitao Zhao
17:35-17:50	Paper ID 6: An Efficient Offloading Scheme for Blockchain-empowered Mobile Edge Computing Jin Xie , Fan Wu, Ke Zhang, Xiaoyan Huang and Supeng Len

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16:35-16:50	Paper ID 29: Privacy-Preserving Multi-Keyword Search over Outsourced Data for Resource-Constrained Devices Lin-Gang Liu , Meng Zhao, Yong Ding, Yujue Wang, Hua Deng and Huiyong Wang
16:50-17:05	Paper ID 38: BPS-VSS:A Blockchain-based Publish/Subscribe Video Surveillance System with Fine Grained Access Control He Qian, Jiang Bingcheng , Cheng Dongsheng and Liang Rengang
17:05-17:20	Paper ID 97: SDABS: A Secure Cloud Data Auditing Scheme Based on Blockchain and SGX Hong Lei, Zijian Bao, Qinghao Wang, Yongxin Zhang and Wenbo Shi
17:20-17:35	Paper ID 62: Blockchain-based Secure Cloud Data Deduplication with Traceability Hui Huang , Qunshan Chen, Yuping Zhou and Zhenjie Huang