

The Hyper-Intelligence Congress 2022

The 24th IEEE International Conference on High Performance Computing and Communications (HPCC 2022)

The 20th IEEE International Conference on Smart City (SmartCity 2022)

The 18th IEEE International Conference on Embedded Software and Systems (ICSS 2022)

The 8th IEEE International Conference on Data Science and Systems (DSS 2022)

The 8th IEEE International Conference on Dependability in Sensor, Cloud and Big Data Systems and Applications (DependSys 2022)

The 2022 IEEE International Conference on Data, Information, Knowledge and Wisdom (DIKW 2022)

December 18-20, 2022, Chengdu, China

<http://www.ieee-hpcc.org/2022/>

Conference Program and Information Booklet



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Presentation Guidelines

Conference Date

The conference is to be held from Dec 18-20, 2022. The time for conference program is based on CST, China Standard Time.

Language

The presentation language of the IEEE HPCC/SmartCity/ICISS/DIKW/DSS/DependSys-2022 and associated workshops is English.

For Session Chairs

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

For Authors

You are strongly encouraged to join the physical room or online zoom during your presentation and Q&A. Please confirm your attendance with the Session Chair at least 10 minutes before the session.

Timing

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

It is recommended that all IEEE HPCC/SmartCity/ICISS/DIKW/DSS/DependSys-2022 presentations use **10-15 minutes presentation time plus 5 minutes question time**. However, the Session Chairs will determine the exact presentation time for each paper, based on the number of presentations in each session. The Session Chairs will ensure that you do not over-run the time allocated.

Proceedings

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

<https://conferences.computer.org/hpccpub>

The username and password will be sent to all fully registered participants separately.

Online Conference Venue

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

Keynote (Zoom meeting room): **ID 814-7326-3016, 密码: 100001**

地点: 2022 年 12 月 20 日主会场在**三楼祥瑞厅**

| | | | | | | | | | | | | | | | | | |
|---|--|---------|-------|--------|-------|--------|---------|--------|---------|--------|---------|--------|-------|--------|-------|--------------|-------|
| Room 1: Physical presentation (Zoom meeting room) ID: 840-7166-2710, Password: 000001 | <table border="1"><caption>12 月 18-20 日各分会的地点分布图</caption><tr><td>Room 1</td><td>三楼祥和厅</td></tr><tr><td>Room 2</td><td>三楼祥华厅</td></tr><tr><td>Room 3</td><td>16 楼会议室</td></tr><tr><td>Room 4</td><td>310 会议室</td></tr><tr><td>Room 5</td><td>311 会议室</td></tr><tr><td>Room 6</td><td>二楼祥庆厅</td></tr><tr><td>Room 7</td><td>二楼祥泰厅</td></tr><tr><td>Room Keynote</td><td>三楼祥瑞厅</td></tr></table> | Room 1 | 三楼祥和厅 | Room 2 | 三楼祥华厅 | Room 3 | 16 楼会议室 | Room 4 | 310 会议室 | Room 5 | 311 会议室 | Room 6 | 二楼祥庆厅 | Room 7 | 二楼祥泰厅 | Room Keynote | 三楼祥瑞厅 |
| Room 1 | | 三楼祥和厅 | | | | | | | | | | | | | | | |
| Room 2 | | 三楼祥华厅 | | | | | | | | | | | | | | | |
| Room 3 | | 16 楼会议室 | | | | | | | | | | | | | | | |
| Room 4 | | 310 会议室 | | | | | | | | | | | | | | | |
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| Room 7 | | 二楼祥泰厅 | | | | | | | | | | | | | | | |
| Room Keynote | 三楼祥瑞厅 | | | | | | | | | | | | | | | | |
| Room 2: Physical presentation (Zoom meeting room) ID: 837-6451-1129, Password: 000002 | | | | | | | | | | | | | | | | | |
| Room 3: Physical presentation (Zoom meeting room) ID: 852-2554-2769, Password: 000003 | | | | | | | | | | | | | | | | | |
| Room 4: Physical presentation (Zoom meeting room) ID: 848-0145-3185, Password: 000004 | | | | | | | | | | | | | | | | | |
| Room 5: Physical presentation (Zoom meeting room) ID: 816-1000-1972, Password: 000005 | | | | | | | | | | | | | | | | | |
| Room 6: Physical presentation (Zoom meeting room) ID: 867-8708-2167, Password: 000006 | | | | | | | | | | | | | | | | | |
| Room 7: Physical presentation (Zoom meeting room) ID: 816-0846-6647, Password: 000007 | | | | | | | | | | | | | | | | | |
| Keynote Room 8(Zoom meeting room): ID: 814-7326-3016, Password: 100001 | | | | | | | | | | | | | | | | | |

Welcome Message from the Congress Chair

Welcome to the Hyper-Intelligence Congress 2022 which includes the 24th IEEE International Conference on High Performance Computing and Communications (HPCC-2022); The 20th IEEE International Conference on Smart City (SmartCity-2022); The 18th IEEE International Conference on Embedded Software and Systems (ICSS-2022); The 8th IEEE International Conference on Data Science and Systems (DSS-2022); the 8th IEEE International Conference on Dependability in Sensor, Cloud and Big Data Systems and Applications (DependSys-2022); The 2022 IEEE International Conference on Data, Information, Knowledge and Wisdom (DIKW-2022).

Hyper-Intelligence refers to higher, super-intelligent abilities to accomplish complex tasks. For instance, hyper-intelligent humans are individuals gifted with extraordinary intellectual aptitudes and are capable of solving the world's most challenging problems. Hyper-Intelligence is an inter-disciplinary field that studies hyper-connections, hyper-compositions, and hyper-collaborations of intelligent entities in various forms and functions that can be physical or digital, local or remote. The Hyper-Intelligence Congress 2022 covers a multitude of application domains such as high performance computing and communications, smart city, data science and systems, dependability in sensors, cloud and big data systems and applications, green computing, data wisdom, etc. The Congress will usher in a new age of cyber-physical-social-human interactions, revolutionizing and reshaping the world as we know it.

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

The conferences were planned to be held in Chengdu, December 18-20, 2022. Given the COVID-19 pandemic and associated travel restrictions, as the safety of people is of the highest priority, the conferences were held physically and virtually on December 18-20, 2022 accordingly.

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



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

Congress Keynotes

Keynote 1: Qian Depei, Beihang University, China

Building China's Next Generation Computing Infrastructure

Keynote 2: M. Jamal Deen, McMaster University, Canada

Wearable Sensors for Ubiquitous-Healthcare – AI is a Key Enabler

Keynote 3: Zhiwei Xu, Chinese Academy of Sciences, China

Information Superbahn Planet-Scale Low-Entropy High-Goodput Computing Utility

Keynote 4: Yunhao Liu, Tsinghua University, China

Data Driven Research for AIOT

Keynote 5: Xiangyang Li, University of Science and Technology of China, China

AIOT: Smart Sensing & Edge Computing

Keynote 6: Kenli Li, Hunan University, China

Parallel Intelligent Processing of Ultrasonic Image and its Application

Keynote 7: Schahram Dustdar, TU Wien, Austria

Infrastructure for VR and AR: Computing and Store

Keynote 8: Minyi Guo, Shanghai Jiao Tong University, China

On the Three Layers of Sustainable Computing: Challenges and Opportunities

The Hyper-Intelligence Congress 2022

Keynote 1: Building China's Next Generation Computing Infrastructure

Qian Depei, Beihang University, China

About the Keynote Speaker



Qian Depei, professor of Beihang University, fellow of CCF, academican of Chinese Academy of Sciences. He has served as a member of the expert group of the National High-tech R&D Program (the 863 program) and the National Key R&D Program in information technology since 1996 and led several key national projects on high performance computing.

He has been working on computer architecture and computer networks for many years. His current research interests include high performance computer architecture and implementation technologies, distributed systems, network computing, and multicore/manycore programing. He has published more than 400 papers in journals and conferences.

Summary: This talk begins with a brief review of HPC development in China in the past decades and a discussion on the role of computing in enabling problem-solving. The new demands and challenges raised by big data (BD) and artificial intelligence (AI) applications to computing are presented. Some critical issues in establishing the computing the next computing infrastructure under the circumstance of “East-west Computing transfer” strategic project are discussed. Finally, the task of building CNGrid-NG, the next generation supercomputing infrastructure of China is proposed.

The Hyper-Intelligence Congress 2022

Keynote 2: Wearable Sensors for Ubiquitous-Healthcare – AI is a Key Enabler

M. Jamal Deen, McMaster University, Canada

About the Keynote Speaker



Dr. M. Jamal Deen is Distinguished University Professor and Director of the Micro- and Nano-Systems Laboratory, McMaster University. He served as the elected President of the Academy of Science, The Royal Society of Canada in 2015-2017. His current research interests are nanoelectronics, optoelectronics, nanotechnology, data analytics and their emerging applications to health and environmental sciences. Dr. Deen's research record includes more than 660 peer-reviewed articles (about 20% are invited), two textbooks on "Silicon Photonics- Fundamentals and Devices" and "Fiber Optic Communications: Fundamentals and Applications", 12 awarded patents of which 6 were extensively used in industry, and twenty-one best paper/poster/presentation awards. Over his career, he has won more than seventy-five awards and honors. As an educator, he won the Ham Education Medal (highest award for educators) from IEEE Canada, the McMaster University President's Award for Excellence in Graduate Supervision, and McMaster Student Union Macademics' Lifetime Achievement Award for his exceptional dedication to teaching and significant contribution to student life, the community at large, and academia.

As an undergraduate student at the University of Guyana, Dr. Deen was the top ranked mathematics and physics student and the second ranked student at the university, winning the Chancellor's gold medal and the Irving Adler prize, respectively. As a graduate student, he was a Fulbright-Laspau Scholar and an American Vacuum Society Scholar. He is a Distinguished Lecturer of the IEEE Electron Device Society for two decades. His awards and honors include the Callinan Award as well as the Electronics and Photonics Award from the Electrochemical Society; a Humboldt Research Award from the Alexander von Humboldt Foundation; the Eadie Medal from the Royal Society of Canada; McNaughton Gold Medal (highest award for engineers), the Fessenden Medal, and the Gotlieb Computer Award, all from IEEE Canada. In addition, he was awarded the four honorary doctorate degrees in recognition of his exceptional research and scholarly accomplishments, exemplary professionalism and valued services. Dr. Deen has been elected by his peers as Fellow/Academician of twelve national academies and professional societies including The Royal Society of Canada (FRSC) - The Academies of Arts, Humanities and Sciences of Canada (the highest honor for academics, scholars and artists in Canada); Academician (Foreign Member) of The Chinese Academy of Sciences (A-CAS, China's highest national honor in the area of science and technology and highest academic title); The World Academy of Sciences (FTWAS), National Academy of Sciences India (FNASI-Foreign); The Institute of Electrical and Electronic Engineers (FIEEE); The American Physical Society (FAPS); and The Electrochemical Society (FECS). Most recently (Nov 2022), he was elected the inaugural Vice President (North) of The World Academy of Sciences, representing the developed countries. In 2018, he was elected to the Order of Canada, the highest civilian honor awarded by the Government of Canada.

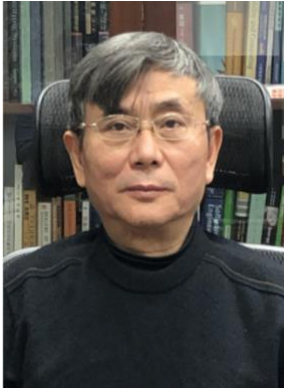
Summary: Several of the grand challenges in engineering for current and future healthcare and societal needs require wearable sensors and data analytics. In the health areas, we will discuss some major healthcare issues related to active aging and several examples of smart wearable systems. We will discuss the use of wearable sensor systems to measure your walking signals and sleep quality, and their customization to an individual's needs. Smart sensors are also used for a living diary and in a smart home server that functions as the "brain" of a smart medical home. In all these applications, intelligent software techniques is a key enabler for their user-friendly, accurate and cost-effective use. Further, the use of data analytics and intelligent software is important to provide customizable information to the users based on data collected from a variety of sensors. In addition, we will discuss some of the trends and opportunities in wearable sensors for healthcare. Finally, we will discuss some applications of smart sensors and data analytics, and what are some important research issues in sensors, home networks, autonomic systems and healthcare in the context of a futuristic smart medical home.

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Keynote 3: Information Superbahn Planet-Scale Low-Entropy High-Goodput Computing Utility

Zhiwei Xu, Chinese Academy of Sciences, China

About the Keynote Speaker



Zhiwei Xu is a professor at the Institute of Computing Technology, Chinese Academy of Sciences. His research areas include computer architecture and distributed systems. He has led over a dozen priority research projects in supercomputers, distributed systems, and energy-efficient AI processors. Professor Xu holds a PhD degree from University of Southern California.

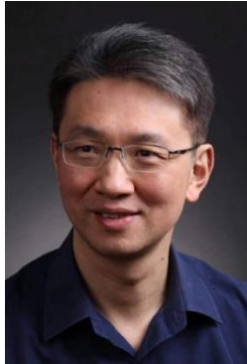
Summary: The idea of utility computing was proposed 60 years ago by John McCarthy, but now is poised to become a mainstream reality. This talk presents Information Superbahn, a perspective on computing utility, built on experiences of grid computing, services computing, and cloud computing. According to the Information Superbahn perspective, future computing utility should provide worldwide subscribers with four distinct features: (1) pay-per-use services, (2) planet-scale culture, (3) low-entropy systems, and (4) high-goodput utility. Preliminary evidence is provided to reveal the potential of Information Superbahn.

The Hyper-Intelligence Congress 2022

Keynote 4: Data Driven Research for AIOT

Yunhao Liu, Tsinghua University, China

About the Keynote Speaker



Yunhao Liu is a Chair Professor and the dean of the Institute of Global Innovation Exchange (GIX) at Tsinghua University. He also served as the Dean of School of Software in Tsinghua, and the MSU Foundation Professor and the Chairperson of Department of Computer Science and Engineering in Michigan State University. Yunhao received his B.S. degree in the Department of Automation at Tsinghua University, China, and an M.S. and a Ph.D. degree in Computer Science and Engineering at Michigan State University, USA. He is now the Editor-in-Chief of ACM Transactions on Sensor Network and the Honorary Chair of ACM China. He receives many best paper awards in international conferences including ACM SIGCOMM, MobiCom, SenSys, and etc. He was named Fellow of the Association for Computing Machinery (ACM) in 2015 for contributions to IOT and sensor networks and Fellow of the Institute of Electrical and Electronics Engineers (IEEE) in 2015 for contributions to wireless sensor networks and systems.

Summary: Over the last few years, the applications of artificial intelligence technology are becoming more and more approved by the society, as the number of people slowly warming up to the idea of including AI in our everyday lives increases. On the other hand, with the popularity of IoT (Internet of Things), the amount of data people need to analyze grows. The analysis of these data relies more on AI technology. As a bridge between the physical world and the digital world, IoT also provides new opportunities to apply to AI technology.

As a result, the birth of AIoT (artificial intelligence of things), the combination of AI and IoT, is inevitable. AIoT has unwittingly penetrated every aspect of human life, from small mobile applications and smart homes to large massive group analysis, city management, and policymaking. However, AIoT, like any other technological inventions, brings not only crucial and new opportunities but also challenging obstacles to human beings at the same time. Is AIoT our new Pandora's box?

The Hyper-Intelligence Congress 2022

Keynote 5: AIOT: Smart Sensing & Edge Computing

Xiangyang Li, University of Science and Technology of China, China

About the Keynote Speaker



Xiang Yang Li, Professor, Executive Dean of School of Computer Science and Technology, University of Science and Technology of China, ACM Fellow, IEEE Fellow, ACM Distinguished Scientist, former Co-Chair of ACM China, Executive Director of ACM Council, New Venture Chair Professor, Distinguished Young Fund recipient of Foundation Committee, Chief Scientist of National Key R&D Program for IoT Security Project, He has served as Assistant Professor, Associate Professor and Professor at Illinois Institute of Technology, EMC Chair Professor at Tsinghua University, and Visiting Professor at Microsoft Research Asia. He received his master's degree and PhD in computer science from the University of Illinois, and a double degree in computer science and business administration from Tsinghua University. Prof. Xiangyang Li has been engaged in research on Smart IoT, IoT and data security privacy, data sharing and trade.

Summary: Industrial Internet is a new generation of intelligent network formed by the deep integration of industrial production system and Internet, and its core is the deep integration application of information and physical system with the integration of perception, communication, analysis, decision-making and control. As a next-generation industrial infrastructure, the Industrial Internet will reshape the entire industrial production and manufacturing system, and form a new intelligent manufacturing system with equipment online, enterprises in the cloud and remote control, which contribute to the digitalization, networking and intellectualization of industrial production. As one of the core supports of Industrial Internet, intelligent IoT has been profoundly changing every aspect of industrial production. The core tasks of IoT are ubiquitous low-power depth perception, wireless-based interconnection of all things, and intelligent data sharing and computing. In this presentation, I will share some challenges of the Industrial Internet, especially the challenges of architecture, intelligent sensing, edge computing, and security. Meanwhile I will share our team's research work in intelligent IoT, including low-power and passive based intelligent sensing, large-scale passive low-power networks, intelligent edge computing, and secure privacy protection for intelligent IoT.

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Keynote 6: Parallel Intelligent Processing of Ultrasonic Image and its Application

Kenli Li, Hunan University, China

About the Keynote Speaker



Kenli Li, Vice President of Hunan University, CCF member. Head of the Innovation and Intelligence introduction Base of the Ministry of Education for High performance Computing, Director of the Engineering Research Center of the Ministry of Education for High performance Computing Application Software. Vice Chairman of the National Super Computing Innovation Alliance, member of the expert Committee of the New Generation artificial Intelligence Industry Technology Innovation Alliance, member of the overall expert Group of the National key Research and Development Program for High performance Computing, Chairman of CCF Changsha, Vice Chairman of Hunan computer Society, Deputy Editor of IEEE-TC/TSUSC/TII, editorial Board of computer Research and Development. He has presided over more than 30 national, provincial and ministerial projects, such as national key R & D programs and key projects of the Foundation Committee. Won the National Science and Technology Progress Award, Innovation team

Award (ranking 13th) and other awards. The main research fields are parallel and distributed processing, supercomputing and cloud computing, high-performance computing for big data and artificial intelligence and so on.

Summary: At present, prenatal diagnosis and birth defect screening are mainly examined by ultrasonic section, which are highly dependent on the operator's level of experience, low efficiency and standardization, and backward section evaluation techniques, which lead to high misdiagnosis rate and missed diagnosis rate of fetal malformation screening. Aiming at the accuracy and real-time challenge of ultrasonic image AI automatic capture and quality control system, different depth learning models are proposed to improve the accuracy of standard section interpretation, and different parallel computing models such as pipelining and data parallelism and their communication optimization methods are adopted to improve the real-time performance of section capture. And the new mode of ultrasonic image interpretation and auxiliary diagnosis based on end, edge and cloud architecture, which is expected to improve the work efficiency of ultrasound doctors and alleviate the work intensity of doctors.

The Hyper-Intelligence Congress 2022

Keynote 7: Infrastructure for VR and AR: Computing and Store

Schahram Dustdar, TU Wien, Austria

About the Keynote Speaker



Dr. Schahram Dustdar is Full Professor of Computer Science heading the Research Division of Distributed Systems at TU Wien, Austria. He holds several honorary positions: Francqui Chair Professor at University of Namur, Belgium (2021-2022), University of California (USC) Los Angeles; Monash University in Melbourne, Shanghai University, Macquarie University in Sydney, University Pompeu Fabra, Barcelona, Spain. From Dec 2016 until Jan 2017 he was a Visiting Professor at the University of Sevilla, Spain and from January until June 2017 he was a Visiting Professor at UC Berkeley, USA.

He is an elected member of the Academia Europaea: The Academy of Europe, where he is chairman of the Informatics Section, as well as an IEEE Fellow (2016), an Asia-Pacific Artificial Intelligence Association (AAIA) President (2021) and Fellow (2021). He is an EAI Fellow (2021) and an I2CICC Fellow (2021). He is a Member of the 2022 IEEE Computer Society Fellow Evaluating Committee (2022).

Summary: Several of the grand challenges in engineering for current and future healthcare and societal needs require wearable sensors and data analytics. In the health areas, we will discuss some major healthcare issues related to active aging and several examples of smart wearable systems. We will discuss the use of wearable sensor systems to measure your walking signals and sleep quality, and their customization to an individual's needs. Smart sensors are also used for a living diary and in a smart home server that functions as the "brain" of a smart medical home. In all these applications, intelligent software techniques is a key enabler for their user-friendly, accurate and cost-effective use. Further, the use of data analytics and intelligent software is important to provide customizable information to the users based on data collected from a variety of sensors. In addition, we will discuss some of the trends and opportunities in wearable sensors for healthcare. Finally, we will discuss some applications of smart sensors and data analytics, and what are some important research issues in sensors, home networks, autonomic systems and healthcare in the context of a futuristic smart medical home.

The Hyper-Intelligence Congress 2022

Keynote 8: On the Three Layers of Sustainable Computing: Challenges and Opportunities

Minyi Guo, Shanghai Jiao Tong University, China

About the Keynote Speaker



Prof. Minyi Guo is currently a Zhiyuan Chair Professor at the Department of Computer Science and Engineering of Shanghai Jiao Tong University (SJTU), China, and was the department head from 2009 to 2019. His research spans parallel/distributed computing, computer architecture, compiler optimization, cloud computing, and big data. He received the National Science Fund for Distinguished Young Scholars from NSFC in 2007, and he was appointed as the Chief Scientist of the prestigious 973 Program in 2014. He is the Editor-in-Chief of IEEE Transactions on Sustainable Computing (TSUSC), and he has served as General/Program Chair of many well-established IEEE conferences. Prof. Guo has published 8 books and 500+ publications in premier journals/conferences and a dozen of best paper awards. Prof. Guo has received numerous prestigious government/industry awards, including the Chinese National

Award for Technological Invention, and the IEEE TCSC Technical Achievement Award for Excellence in Scalable Computing, etc. He is a foreign member of the Academia Europaea, a Fellow of IEEE and CCF, and an ACM Distinguished Scientist.

Summary: Climate change and energy crisis are two of the biggest global issues of our time. It is critical to develop computing techniques that do not compromise the wellbeing of future generations. To reduce IT carbon footprint, and to support emerging data-analytic workloads that tend to scale well with large number of compute nodes, there is a heightening demand for green high-performance computing and communication systems. In this talk we would like to share our views on the design methodologies for sustainable computing. We divide sustainable computing system design into three layers and present the opportunities that each layer faces. We also discuss the deep challenges that must be addressed in the sustainable computing era. First, a new resource management abstraction for gaining visibility into the underlying infrastructure is needed. In addition, a framework that synergistically combines various software/hardware tuning knobs at each layer is necessary. Finally, it is time to develop appropriate autonomic control schemes to handle the dynamicity and complexity of the cloud. The above methodology constitutes the initial idea of a “Energy-Architecture-Workload” co-designed approach, which will lead to a more environmentally friendly digital infrastructure, as required by the ongoing shift in computing paradigm.

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IEEE HPCC/SmartCity/IECESS/DIKW/DSS/DependSys -2022

Presentation Program

Sunday December 18, 2022 (China Standard Time CST, UTC+8)

| Room | Room 1 | Room 2 | Room 3 | Room 4 | Room 5 | Room 6 | Room 7 |
|--------------------|--|---|--|---|--|--|---|
| 8:00-9:40 | HPCC-1: High Performance Computing and Applications (I) | HPCC-2: High Performance Computing and Applications (II) | HPCC-3: High Performance Computing and Applications (III) | HPCC-4: High Performance Computing and Applications (IV) | DIKW-1: Data Analytics and Smart applications | ICES-1: Models & Algorithms for Embedded Systems(I) | HPCC-5: High Performance Computing and Applications (V) |
| 9:40-10:05 | Coffee Break | | | | | | |
| 10:05-11:45 | HPCC-6: High Performance Computing and Applications (VI) | HPCC-7: Parallel and Distributed Computing and Systems (I) | HPCC-8: Parallel and Distributed Computing and Systems (II) | HPCC-9: Parallel and Distributed Computing and Systems (III) | DIKW-2: Model Design and Computing Optimization (I) | ICES-2: Models & Algorithms for Embedded Systems (II) | HPCC-10: Parallel and Distributed Computing and Systems (IV) |
| 11:45-13:00 | Lunch Break | | | | | | |
| 13:00-14:40 | HPCC-11: Parallel and Distributed Computing and Systems (V) | HPCC-12: Parallel and Distributed Computing and Systems (VI) | HPCC-13: Communications and Networking (I) | HPCC-14: Communications and Networking (II) | SmartCity-1: Smart City Systems | SmartCity-2: Data Processing Technology (I) | SmartCity-3: Data Processing Technology (II) |
| 14:40-16:20 | HPCC-15: Communications and Networking (III) | HPCC-16: Communications and Networking (IV) | HPCC-17: Communications and Networking(V) | HPCC-18: Communications and Networking (VI) | SmartCity-4: Data Processing Technology (III) | SmartCity-5: Data Processing Technology (IV) | HPCC-19: Communications and Networking(VII) |
| 16:20-16:40 | Coffee Break | | | | | | |
| 16:40-18:20 | HPCC-20: Communications and Networking (VIII) | HPCC-21: Communications and Networking (IX) | HPCC-22: Communications and Networking (X) | HPCC-23: Communications and Networking (XI) | SmartCity-6: Data Processing Technology(V) | HPCC-24: Communications and Networking (XII) | HPCC-25: Communications and Networking (XIII) |
| 18:20-19:50 | Banquet | | | | | | |

Monday December 19, 2022 (China Standard Time CST, UTC+8)

| | |
|-------------|---|
| 09:00-09:20 | Opening Ceremony |
| 09:20-10:00 | Keynote 1: Building China's Next Generation Computing Infrastructure Qian Depei, Beihang University, China |
| 10:00-10:40 | Keynote 2: Wearable Sensors for Ubiquitous-Healthcare – AI is a Key Enabler M. Jamal Deen, McMaster University, Canada |
| 10:40-11:00 | Coffee Break |
| 11:00-11:40 | Keynote 3: Information Superbahn Planet-Scale Low-Entropy High-Goodput Computing Utility Zhiwei Xu, Chinese Academy of Sciences, China |
| 11:40-12:20 | Keynote 4: Data Driven Research for AIOT Yunhao Liu, Tsinghua University, China |
| 12:20-14:00 | Lunch Break |
| 14:00-14:40 | Keynote 5: AIOT: Smart Sensing & Edge Computing Xiangyang Li, University of Science and Technology of China, China |
| 14:40-15:20 | Keynote 6: Parallel Intelligent Processing of Ultrasonic Image and its Application Kenli Li, Hunan University, China |
| 15:20-15:40 | Coffee Break |
| 15:40-16:20 | Keynote 7: Infrastructure for VR and AR: Computing and Store Schahram Dustdar, TU Wien, Austria |
| 16:20-17:00 | Keynote 8: On the Three Layers of Sustainable Computing: Challenges and Opportunities Minyi Guo, Shanghai Jiao Tong University, China |
| 18:00-18:30 | Award Ceremony |

Tuesday December 20, 2022 (China Standard Time CST, UTC+8)

| Room | Room 1 | Room 2 | Room 3 | Room 4 | Room 5 | Room 6 | Room 7 |
|--------------------|---|--|---|--|--|---|---|
| 8:00-9:40 | HPCC-26: Communications and Networking(XIV) | HPCC-27: High Performance Computing and Applications (Research papers) (I) | HPCC-28: High Performance Computing and Applications (Research papers) (II) | HPCC-29: High Performance Computing and Applications (Research papers) (III) | DSS-1: Data Science | DSS-2: Data Processing Technology | HPCC-30: High Performance Computing and Applications (Research papers) (IV) |
| 9:40-10:05 | Coffee Break | | | | | | |
| 10:05-11:45 | HPCC-31: High Performance Computing and Applications (Research papers) (V) | HPCC-32: High Performance Computing and Applications (Research papers) (VI) | HPCC-33: High Performance Computing and Applications (Research papers) (VII) | HPCC-34: High Performance Computing and Applications (Research papers) (VIII) | DSS-3: Data Systems | DSS-4: Data Applications | HPCC-35: Parallel and Distributed Computing and Systems (Research papers) (I) |
| 11:45-13:00 | Lunch Break | | | | | | |
| 13:00-14:40 | HPCC-36: Parallel and Distributed Computing and Systems (Research papers) (II) | HPCC-37: Parallel and Distributed Computing and Systems (Research papers) (III) | HPCC-38: Parallel and Distributed Computing and Systems (Research papers) (IV) | HPCC-39: Parallel and Distributed Computing and Systems (Research papers) (V) | DIKW-3: Model Design and Computing Optimization (II) | ICES-3: Models & Algorithms for Embedded Systems (III) | HPCC-40: Parallel and Distributed Computing and Systems (Research papers) (VI) |
| 14:40-16:20 | HPCC-41: Communications and Networking (Research papers) (I) | HPCC-42: Communications and Networking (Research papers) (II) | HPCC-43: Communications and Networking (Research papers) (III) | HPCC-44: Communications and Networking (Research papers) (IV) | DIKW-4: Model Design and Computing Optimization (III) | ICES-4: Models & Algorithms for Embedded Systems (IV) | HPCC-45: Communications and Networking (Research papers) (V) |
| 16:20-16:40 | Coffee Break | | | | | | |
| 16:40-18:20 | HPCC-46: Communications and Networking (Research papers) (VI) | HPCC-47: Communications and Networking (Research papers) (VII) | HPCC-48: Communications and Networking (Research papers) (VIII) | HPCC-49: Communications and Networking (Research papers) (IX) | DenpSys-1: Dependability and Security Fundamentals and Technologies (I) | DenpSys-2: Dependability and Security Fundamentals and Technologies (II) | HPCC-50: Communications and Networking (Research papers) (X) |
| 18:20-19:50 | Banquet | | | | | | |

Tuesday December 20, 2022 (China Standard Time CST, UTC+8)

Room

Room 8

9:00-11:30

Young Scientist Forum

The HPC 2022 Presentation Program

HPCC-1: High Performance Computing and Applications (I)

Session Chair: Shuai Wei, Sichuan University, China

1. Efficiently Executing Sparse Matrix-Matrix Multiplication on General Purpose Digital Single Processor
Haibo Xu; Jie Liu; Xiaoxiong Zhu
2. Deep Back-Filling: A Split Window Technique for Deep Online Cluster Job Scheduling
Lingfei Wang; Aaron Harwood; Maria Rodriguez Read
3. SWin: A Set-Window Division Mechanism to Alleviate I/O Jitters of NVMe SSD Drives
Yuting Liu; Liang Wang; Jinbin Zhu; Runnan Shen; Shixuan Jiang; Limin Xiao
4. High-Performance Matrix Multiplication on the New Generation Shenwei Processor
Le Xu; Hong An; Junshi Chen; Peng-Fei Zhang
5. Machine Learning-Enabled Performance Model for DNN Applications and AI Accelerator
Ruohan Wu

HPCC-2: High Performance Computing and Applications (II)

Session Chair: Hanzhou Wu, Shanghai University, China

1. DTSpMV: An Adaptive SpMV Framework for Graph Analysis on GPUs
Guoqing Xiao; Tao Zhou; Yuedan Chen; Yikun Hu; Kenli Li
2. Contrastive Self-Supervised Learning for Predicting Disease-RNA Associations
Xiaoyu Wu; Jinli Zhang; Zongli Jiang; Jianqiang Li
3. MISA-MD: A New Design of Molecular Dynamics Software for GPU Architecture
Genshen Chu; Tianyi Chen; Dandan Chen; He Bai; Shuai Ren; Yang Li
4. Robust and Lossless Fingerprinting of Deep Neural Networks via Pooled Membership Inference
Hanzhou Wu
5. GPU Parallelization and Optimization of a Combustion Simulation Application
Zhixiang Liao; Yongzhou Liu; Yonggang Che

HPCC-3: High Performance Computing and Applications (III)

Session Chair: Cunyang Wei, University of Chinese Academy of Sciences, China

1. Energy Efficient Dynamic Load Balancing Using Self-Organized Criticality in Grid Computing
Vivek Kumar; Chinmaya Kumar Swain; Aryabartta Sahu
2. Optimized Computation for Determinant of Multivariate Polynomial Matrices on GPGPU
Liangyu Chen; Jianjun Wei; Zhenbing Zeng; Min Zhang
3. PaddlePaddle: A Production-Oriented Deep Learning Platform Facilitating the Competency of Enterprises
Ran Bi; Tongtong Xu; Mingxue Xu
4. LBBGEMM: A Load-Balanced Batch GEMM Framework on ARM CPUs
Cunyang Wei; Haipeng Jia; Yunquan Zhang; Kun Li; Luhan Wang
5. ME-BERT: Multi-Exit BERT by Use of Adapter
Pan Ma

HPCC-4: High Performance Computing and Applications (IV)

Session Chair: Run Yan, National University of Defense Technology, China

1. Medical Dialogue Generation via Extracting Heterogenous Information

Bocheng Zhao; Zongli Jiang; Jinli Zhang; Fenglong Ma; Jianqiang Li

2. RTA: An Efficient SIMD Architecture for Ray Tracing

Run Yan; Huang Libo; Hui Guo; Yashuai Lü; Ling Yang; Nong Xiao; Li Shen; Yongwen Wang

3. MZ Core: An Enhanced Matrix Acceleration Engine for HPC/AI Applications

Yasong Cao; Mei Wen; Junzhong Shen; Sheng Liu; Zhi Wang; Minjin Tang; Yahao Fang; Jianchao Yang; Renyu Yang; Yuhan Kang; Jiawei Fei

4. Evaluating BERT on Cloud-Edge Time Series Forecasting and Sentiment Analysis via Prompt Learning

Qizhi Li; Xianyong Li; Yujia Song; Maolin Zhang; LongQi Chen; Gang Wang; Yajun Du

5. Design and Evaluation of a Rack-Scale Disaggregated Memory Architecture for Data Centers

Amit Puri; John Jose; Venkatesh Tamarapalli

HPCC-5: High Performance Computing and Applications (V)

Session Chair: Peini Liu, Universitat Politècnica de Catalunya, Spain

1. Voxelization of Moving Geometries on GPU

Rishabh Shukla; Nipun Arora; Dip Sankar Sankar Banerjee

2. Dual Memory Network for Medical Dialogue Generation

Zongli Jiang; Jia Xu; Jinli Zhang; Fenglong Ma; Jianqiang Li

3. Fine-Grained Scheduling for Containerized HPC Workloads in Kubernetes Clusters

Peini Liu; Jordi Guitart

4. Delay and Loss Rate Analysis of the Log Commitment Process in Raft

Yuqiang Wen; K. L. Eddie Law

5. Interactive and Reliable Graph Processing via the Edge-Cloud Collaboration Framework

Jun Zhou; Masaaki Kondo

HPCC-6: High Performance Computing and Applications (VI)

Session Chair: Mingjie Zhao, Sichuan University, China

1. A Practical Adversarial Attack on Graph Neural Networks by Attacking Single Node Structure

Chen Yang; Ye Zhonglin; Zhao Haixing; Meng Lei; Wang Zhao Yang; Yang Yan Lin

2. Contextual Modeling and Pseudo-Label Supervision for Weakly Supervised Video Anomaly Detection in Traffic Scene

Cheng Xu; Hongjun Wu; Kai Chen; Chenyang Yan; Hongzhe Liu

3. Three-Channel Graph Convolutional Neural Network

Lei Meng; Zhonglin Ye; Haixing Zhao; Yanlin Yang; Chen Yang; Wang Zhao Yang

4. ReSLB: Load Balanced Workflow for Distributed Deep Learning Mass Spectrometry Database

Mocheng Li; Yang Liu; Yang Ou; Zhiguang Chen; Nong Xiao; Tao Chen

5. Efficient Electronic Transaction Query Model for Light Nodes Based on Optimized Blockchain Structure

Mingjie Zhao; Cheng Dai; Yuting Zhao; Bing Guo

HPCC-7: Parallel and Distributed Computing and Systems (I)

Session Chair: Yuchuan Hu, Sichuan University, China

1. IIoT Mobile Business Data Placement Strategy Based on Bayesian Optimization Algorithm

Zhijie Shen; Bowen Liu; Xiaolong Xu; Lianyong Qi; Fei Dai; Wanchun Dou

2. A Loop Optimization Method for Dataflow Architecture

Zhijie Fan; Wenming Li; Tianyu Liu; Shengzhong Tang; Zhen Wang; Xuejun An; Xiaochun Ye; Dongrui Fan

3. A Method for Mobile-Aware Multi-Vehicular Offloading in Hybrid Cloud-Edge Environment
Yu Wang; Yunni Xia

4. Hybrid Decision Based Multi-Agent Deep Reinforcement Learning for Task Offloading in Collaborative Edge-Cloud Computing

Juan Chen; Zongling Wu; Lei Wu; Yunni Xia; Yang Wang; Ling Xiong; Canghong Shi

HPCC-8: Parallel and Distributed Computing and Systems (II)

Session Chair: Chaoxia Qin, Sichuan University, China

1. PRKP: A Parallel Randomized Iterative Algorithm for Solving Linear Systems
Junjie Wang; Min Tian; Yinglong Wang; Guoping He; Tao Liu

2. Hybrid Parameter Update: Alleviating Imbalance Impacts for Distributed Deep Learning
Hongliang Li; Dong Xu; Zhewen Xu; Xiang Li

3. A Secure and Reliable Construction Scheme for Enterprise Value Chain Networks
Chaoxia Qin; Bing Guo; Yuting Zhao; Yan Shen

4. Batched LU Factorization With Fast Row Interchanges for Small Matrices on GPUs
Rongfeng Huang

5. ESBench: Understanding Deep Learning Inference Overheads for Edge Serverless
Yanying Lin; Junhong Chen; Yang Wang

HPCC-9: Parallel and Distributed Computing and Systems (III)

Session Chair: Fanxing Liu, Sichuan University, China

1. A Cache-Aware Virtual Machine Placement With Network Constraints in Large-Scale Network Emulation
Haiqiang Fei; Wei Wang; Yu Chen; Zhenquan Ding; Hongsong Zhu; Yongji Liu; Zhiyu Hao; Chengli Yu

2. SCIF-ARF: Container Anomaly Prediction for Container Cloud Platforms
Jing Li; Chang Liu; Xiaofei Wang; Chunlei Liu

3. FedTADBench: Federated Time-Series Anomaly Detection Benchmark
Fanxing Liu; Cheng Zeng; Le Zhang; Yingjie Zhou; Qing Mu; Yanru Zhang; Ling Zhang; Ce Zhu

4. TBFL: A Trusted Blockchain-Based Federated Learning System
Yufang Wu; Guorong Chen; Yuhao Liu; Chao Li; Mingqing Hu; Wei Wang

5. A Cache Sharing Mechanism Based on RDMA
Xiao Zhang; Jinbo Yv; Yun Liu; Song Xiao; Xiaonan Zhao

HPCC-10: Parallel and Distributed Computing and Systems (IV)

Session Chair: Fei Chen, Sichuan University, China

1. ONLAD-IDS: ONLAD-Based Intrusion Detection System Using SmartNIC
Man Wu; Hiroki Matsutani; Masaaki Kondo

2. An Effective Approach for Multi-Label Classification With Missing Labels
Xin Zhang; Rabab Abdelfattah; Yuqi Song; Xiaofeng Wang

3. Image Enhancement Algorithm Based on Local Contrast for Convolutional Neural Network-Based Infrared Target Recognition
BingKun Nian; LiYuan Ma; Yan Zhang

4. A Multi-User Effective Computation Offloading Mechanism for MEC System: Batched Multi-Armed Bandits Approach
Hangfan Li; Lin Shi; Xiaoxiong Zhong; Yun Ji; Xinghan Wang; Zhang Sheng

5. Feature Quantization Convolutional Neural Networks for CSI Feedback in Massive MIMO Systems

HPCC-11: Parallel and Distributed Computing and Systems (V)

Session Chair: Xinlei Wei, Chongqing University, China

1. FNotify: A Low-Latency and Scalable Publish/Subscribe System Using RDMA
Yusen Xu; Sijie Shen; Mingcong Han; Rong Chen
2. Efficient, Scalable and Robust Data Shuffle Service for Distributed MapReduce Computing on Cloud Cluster
Rong Gu; Xu Huang; Haipeng Dai; Xiaoyu Geng; Xiaofei Chen; Yihua Huang; Fu Xiao; Guihai Chen
3. A Robust and Accurate Multivariate Time Series Anomaly Detection in Fluctuating Cloud-Edge Computing Systems
Yujia Song; Ruyue Xin; Rui Zhang; Juan Chen; Zhiming Zhao
4. Multi-Scenario Bimetric-Balanced IoT Resource Allocation: An Evolutionary Approach
Jiashu Wu; Hao Dai; Yang Wang; Zhiying Tu
5. Weak Network Oriented Mobile Distributed Storage: A Hybrid Fault-Tolerance Scheme Based on Potential Replicas
Xinlei Wei; Yujuan Tan; Duo Liu; Daitai Wu; Yu Wu; Xianzhang Chen

HPCC-12: Parallel and Distributed Computing and Systems (VI)

Session Chair: Kui Ye, Sichuan University, China

1. GSpTC: High-Performance Sparse Tensor Contraction on CPU-GPU Heterogeneous Systems
Guoqing Xiao; Chuanghui Yin; Yuedan Chen; Mingxing Duan; Kenli Li
2. Dual Chain Authentication and Key Agreement Protocol Based on Blockchain Technology in Edge Computing
Wei Jian; X U JiaoBo; Liang Wei; Kuan-Ching Li
3. Aprus: An Airborne Altitude-Adaptive Purpose-Related UAV System for Object Detection
Weiqliang Wang; Haiyang Chen; Xingzhou Zhang; Wei Zhou; Weisong Shi
4. DA2F: Research on Robustness of Deep Learning Models Using Approximate Activation Function
Yuqi Bian; Jing Wang; Weigong Zhang; Lan Gao
5. Multi-Agent Deep Reinforcement Learning for Task Offloading in Mobile Edge Computing Network
Lili Jiang; Lifeng Sun; Wenwu Zhu

HPCC-13: Communications and Networking (I)

Session Chair: Zhongwei Li, Sichuan University, China

1. In-Band Management Framework and Performance Evaluation for Interconnect Network in the TianHe Exascale Prototype System
Jijun Cao
2. A Low BER Cooperative-Adaptive-Equalizer for Serial Receiver in HPC Networks
Lai Mingche; Lv Fangxu; Pang Zhengbin; Zhang Geng; Xu Chaolong
3. GDMD: A Transmission Control Scheme With Block Information-Aware for Delay Sensitive Multimedia
Wei Yang; Yubing Li; Ping Jiang; Zhou Zhou; Qingyun Liu
4. Enhancing Predictive Expert Method for Invalidated Link Prediction in Heterogeneous Information Social Networks
Xiang Li
5. Fairness-Aware Algorithms for Seed Allocation in Social Advertising
Pengzi Wang; Yiming Zhu; Kai Han; Zhizhuo Yin; Qing Xiu; Pan Hui

HPCC-14: Communications and Networking (II)

Session Chair: Guojing Li, Soochow University, China

1. MTBD: HTTPS Tunnel Detection Based on Multi-Dimension Traffic Behaviors Decision
Bingxu Wang; Chang Liu; Gaopeng Gou; Peipei Fu; Yangyang Guan; Zhen Li; Qingya Yang
2. Spreading Factor Allocation and Rate Adaption for Minimizing Age of Information in LoRaWAN
Zhuoyao Wang; Xiaokang Xu; Jin Zhao
3. BYEE: Batch Fully Private Scheme for Coded Distributed Matrix Multiplication
Guojing Li; Jin Wang; Xiaotian Zou; Lingzhi Li; Fei Gu
4. SequenceShield: A Robust and Accurate DDoS Detection Method via Serializing the Traffic With Direction Information
Zeyi Deng; Wei Yang; Minchao Xu; Meijie Du; Yuzhen Li; Zhou Zhou; Qingyun Liu
5. Nuwa-RL: A Reinforcement Learning Based Receiver-Side Congestion Control Algorithm to Meet Applications Demands Over Dynamic Wireless Networks
Guanghui Gong; Xianliang Jiang; Jin Guang; Yi Xie; Haiming Chen

HPCC-15: Communications and Networking (III)

Session Chair: Chaoxia Qin, Sichuan University, China

1. A Lightweight Authentication Protocol for NFC-Enabled Drug Anti-Counterfeiting System
Xiangwei Meng; Liang Wei; Zisang Xu; Kuan-Ching Li
2. Ordinal Data Stream Collection With Condensed Local Differential Privacy
Yuanyuan He; Fayao Wang; Xianjun Deng; Jianbing Ni; Jun Feng; Shenghao Liu
3. Coding-Aware Routing for Maximum Throughput and Coding Opportunities by Deep Reinforcement Learning in FANET
Xiulin Qiu; Bo Song; Yaqi Ke; Lei Xu; Yuwang Yang
4. Less is More: Mitigating Tor Traffic Correlation With Distance-Aware Path Selection
Guoqiang Zhang; Jiahao Cao; Mingwei Xu; Qi Li
5. Learning Local Representation by Gradient-Isolated Memorizing of Spiking Neural Network
Man Wu; Zheng Chen; Yunpeng Yao

HPCC-16: Communications and Networking (IV)

Session Chair: Yihan Li, Xihua University, China

1. A Shapely-Based Lightweight Global Explainer for Network Intrusion Detection System
Hangsheng Zhang; Yu Chen; Weiyu Liu; ShangYuan Zhuang; Liang Dai; Jiyan Sun; Yinlong Liu; Liru Geng
2. Forward and Backward Private Searchable Symmetric Encryption With Efficient Updates
Zhiming Yin; Xiong Li; Kim-Kwang Raymond Choo; Yuzhen Liu; Liang Wei
3. Lightweight Many-To-Many Anonymous Authenticated Key Agreement Scheme for Intelligent Vehicular Ad-Hoc Networks
Xiaojun Zhang; Wenchen Wang; Hao Wang; Liming Mu; Haoyu Tang
4. An Efficient and Privacy-Concerned Multi-User Access Mechanism for EMRs
Yihan Li; Shengke Zeng; Yawen Feng; Zhiliang Zhao
5. QUIC-CNN: Website Fingerprinting for QUIC Traffic in Tor Network
Mingjie Nie; Futai Zou; Yi Qin; Tianming Zheng; Yue Wu

HPCC-17: Communications and Networking (V)

Session Chair: Yuanyuan He, Huazhong University of Science and Technology, China

1. STEAM: SVDD-Based Anomaly Detection on Attributed Networks via Multi-Autoencoders

Junjie Zhang; Xinye Wang; Zhenyang Yu; Menglin Huang; Lei Duan; Jie Zuo

2. Compressed Sensing by Using Measurement Completion for Robust Image Coding

Bo Zhang; Di Xiao; Sen Bai; Min Li

3. Subspace Clustering Based on Latent Low Rank Representation With Weighted Nuclear Norm Minimization

Cuiying Huang; Zhi Wang; Wu Chen

4. Manipulated Client Initial Attack and Defense of QUIC

Bo Cui; Zixuan Li

5. Dynamic Behavior Pattern: Mining the Fraudsters in Telecom Network

Dengshi Li; Lu Zeng; Ruimin Hu; Zijun Huang; Xiaocong Liang; Yilong Zang

HPCC-18: Communications and Networking (VI)

Session Chair: Yanfei Hu, Chinese Academy of Sciences, China

1. Hybrid Service Function Chains Dynamic Deployment in Multi-Domain Edge Cloud Networks

Shiyan Zhang; Beijia Wang; Qingxiao Huang; Yinhai Wu; Xinyu4 Zhang

2. A Glimpse of the Whole: Detecting Few-Shot Android Malware Encrypted Network Traffic

Wenhao Li; Xiao-Yu Zhang; Huaifeng Bao; Qiang Wang; Haichao Shi; Zhaoxuan Li

3. DeepPath: Solving Multi-Path Scheduling Problem for 5G Core Network

Long Zhang; Bo He; Jingyu Wang; Qi Qi; Haifeng Sun; Cong Liu; Jianxin Liao

4. Black-Box Adversarial Windows Malware Generation via United Puppet-Based Dropper and Genetic Algorithm

Shaohua Wang; Yong Fang; Yijia Xu; Yaxian Wang

5. CARE: Enabling Hardware Performance Counter Based Malware Detection Resilient to System Resource Competition

Yanfei Hu; Shuangshuang Liang; Min Li; Tao Xue; Boyang Zhang; Yu Wen

HPCC-19: Communications and Networking (VII)

Session Chair: Zhongwei Li, Sichuan University, China

1. Stable Causal Feature Selection Based on Direct Causal Effect Estimation

Xiaojing Du; Qingfeng Chen; Debo Cheng; Qian Huang; Junyue Cao; Zhenyun Deng; Shichao Zhang

2. Novel-Domain Object Segmentation via Reliability-Aware Teacher Ensemble

Jing Miao; Wei Luo; Nayyar Zaidi; Jinlong Wang

3. Dynamic Semantic Modeling of Structural Data Sources

Hailong Chu; Wu Weiming; Wolfgang Mayer; Debo Cheng; Hongyu Zhang; Zaiwen Feng

4. Matching Using Sufficient Dimension Reduction for Heterogeneity Causal Effect Estimation

Zhao Haoran; Zhang Yinghao; Debo Cheng; Chen Li; Zaiwen Feng

5. Image Anomaly Detection With Semantic-Enhanced Augmentation and Distributional Kernel

Mingxi Wang; Ye Zhu; Gang Li; Gang Liu; Bo Yang

HPCC-20: Communications and Networking (VIII)

Session Chair: Long Qu, Ningbo University, China

1. A Data-Free Black-Box Attack for Generating Transferable Adversarial Examples

Chenxu Wang; Ming Zhang; Jinjing Zhao; Xiaohui Kuang; Han Zhang; Xuhong Zhang

2. An Illicit Bitcoin Address Analysis Scheme Based on Subgraph Evolution

Qingqing Yang; Yuexin Xiang; Wei Ren

3. AIC-Bench: Workload Selection Methodology for Benchmarking AI Chips
Zhenyu Quan; Xiaoming Chen; Yinhe Han

4. Age of Aggregated Information-Minimizing Scheduling in Wireless Relay Network
Jieqiong Kang; Long Qu

5. Joint Optimization of Service Placing and Task Scheduling Based on Full Cooperation of Edge Nodes
Jinfeng Dou; Xuejia Meng; Fangzheng Yuan; Tao Yang; Xiaoxiao Sun; Xuanning Wei

HPCC-21: Communications and Networking (IX)

Session Chair: Mingjie Zhao, Sichuan University, China

1. An Approach of Bayesian Network Learning Based on Optimizing Fringe Search
Xiaolei Yu; Kuan Xie; Jianxiao Liu

2. FuzzGAN: A Generation-Based Fuzzing Framework for Testing Deep Neural Networks
Ge Han; Zheng Li; Peng Tang; Chengyu Hu; Shanqing Guo

3. Time-Frequency Analysis and Convolutional Neural Network Based Radio Frequency Fingerprint Identification
Songlin Chen

4. Multi-View Attention Networks With Contrastive Predictive Coding for Sequential Recommendation
Hongjun An; Jinghua Zhu; Heran Xi; Shiyang Zhou

5. Towards Optimized Streaming Tensor Completion on Multiple GPUs
Jiwei Hao; Hailong Yang; Qingxiao Sun; Huaitao Zhang; Zhongzhi Luan; Depei Qian

HPCC-22: Communications and Networking (X)

Session Chair: Yuchuan Hu, Sichuan University, China

1. Exploring the Feasibility of Transformer Based Models on Question Relatedness
Honglin Shu; Pei Gao; Ziwei Yang; Chen Li; Man Wu

2. A Clustering Resampling Stacked Ensemble Method for Imbalance Classification Problem
Jian Li; Jinlian Du; Xiao Zhang

3. Automatic Individual Tooth Segmentation in Cone-Beam Computed Tomography Based on Multi-Task CNN and Watershed Transform
Lipeng Xie; Baoxiang Liu; Yangjie Cao; Cong Yang

4. A Fine-Grained Multi-Label Privacy Detection Model for Unstructured Data Based on BERT Pre-Training
Yuchuan Hu; Qin Zheng; Zhongwei Li; Bing Guo; Fangpeng Weng; Cheng Dai

HPCC-23: Communications and Networking (XI)

Session Chair: Fangcao Zhao, Shandong Normal University, China

1. An Efficient Transformer Encoder-Based Classification of Malware Using API Calls
Chen Li; Zheng Chen; Junjun Zheng

2. A Disease Progression Prediction Model Based on EHR Data
Fangcao Zhao

3. LogTrans: Providing Efficient Local-Global Fusion With Transformer and CNN Parallel Network for Biomedical Image Segmentation
Xingqing Nie; Xiaogen Zhou; Zhiqiang Li; Luoyan Wang; Xingtao Lin; Tong Tong

4. Self-Paced Pseudo Label Refinement for Multi-View Subspace Clustering
Song Xin; Zhikui Chen; Jing Gao; Jianing Zhang; Peng Li

HPCC-24: Communications and Networking (XII)

Session Chair: Fei Chen, Sichuan University, China

1. Predicting Cloud Performance Using Real-Time VM-Level Metrics
Jihua Tian; Abdessalam Elhabbash; Yehia Elkhatib
2. Smart Health Records Sharing Scheme Based on Partially Policy-Hidden CP-ABE With Leakage Resilience
Edward Mensah Acheampong
3. Firewall Management: Rapid Anomaly Detection
Claas Lorenz; Bettina Schnor
4. Towards a Privacy Preserving Data Flow Control via Packet Header Marking
Somnath Mazumdar; Thomas Dreibholz

HPCC-25: Communications and Networking (XIII)
Session Chair: Zhongwei Li, Sichuan University, China

1. Key Factor Selection Transformer for Multivariate Time Series Forecasting
Jun Hu; Zehao Liu
2. LightSCA: Lightweight Side-Channel Attack via Discrete Cosine Transform and Residual Networks
Nengfu Cai; Du Wang; Md Zakirul Alam Bhuiyan; Lihua Han; Gang Li
3. Efficient PCA-Based Image Compression via Secure Outsourcing Edge Cloud
Yuling Luo; Shiqi Zhang; Shunsheng Zhang; Junxiu Liu; Ce Liang; Su Yang
4. MateGraph: Toward Mobile Malware Detection Through Traffic Behavior Graph
Ruihai Ge; Yongzheng Zhang; Chengxiang Si; Guoqiao Zhou; Wenchang Zhou
5. TB-Transformer: Integrating Mouse Trace With Object Bounding-Box for Image Caption
Nan Lin; Shuo Guo; Lipeng Xie

HPCC-26: Communications and Networking (XIV)
Session Chair: Shuai Wei, Sichuan University, China

1. An Adaptive Service Placement Strategy Based on Feature Analysis and Trajectory Prediction
Juan Fang; Lu Peng Fan; Shuaibing Lu
2. FaGAN: Frequency-Aware Generative Adversarial Network for Infrared and Visible Image Fusion
Yi Li; Hui Li; Xiaoyu Lei; Yang Li; Jiabao Wang; Zhuang Miao
3. Optimal Strategy Selection for Attack Graph Games Using Deep Reinforcement Learning
Yuantian Zhang
4. Online 8-Form Tai Chi Chuan Training and Evaluation System Based on Pose Estimation
Chunchen Wei; Jingxin Wen; Ran Bi; Huabin Yang; Yanqing Tao; Yuhang Fan; Yulong He; Didi Cheng; Yanru Zhang
5. Fine-Grained Spatiotemporal Features-Based for Anomaly Detection in Microservice Systems
Xikang Yang; Juan Wang; Biyu Zhou; Wang Wang; Wantao Liu; Yangchen Dong

HPCC-27: High Performance Computing and Applications (Research papers)(I)
Session Chair: Yuting Zhao, Sichuan University, China

1. AreaHash: Balanced and Fully Scalable Consistency Hashing Algorithm
JinBo J Zhang; Yan Zeng; Jian Wan; Ji-Lin Zhang; Meiting Xue; Li Zhou
2. A Validation Approach for the Lipschitz Constant for Neural Networks
Zhiwei Zuo; Qianqian Cai; Zhuo Tang; Jungang Ji
3. Design and Implementation of Compensated Gram-Schmidt Algorithm
Jiexi Jin; Hehu Xie; Peibing Du; Zhe Quan; Hao Jiang

4. ConeSSD: A Novel Policy to Optimize the Performance of HDFS Heterogeneous Storage
Xiao Zhang; Liang Wang; Zhijie Huang; Huiru Xie; Yuchen Zhang; Michael Ngulube
5. Accelerating Small Matrix Multiplications by Adaptive Batching Strategy on GPU
Yaqing Zhang; Yaobin Wang

HPCC-28: High Performance Computing and Applications (Research papers) (II)

Session Chair: Qin Zheng, Sichuan University, China

1. All-To-All Routing Algorithm for Galaxyfly Networks
Qinying Lin; Hongbin Zhuang; Xiao-Yan Li; Lichao Su
2. Cooperative Computation Offloading and Resource Management for Vehicle Platoon: A Deep Reinforcement Learning Approach
Lingyun Lu; Xiang Li; Jingxin Su; Zhihe Yang
3. ASMAMC: A Specific Microprocessor Architecture for Monte Carlo Method
Jianmin Zhang; Ziming Chen; Li Zhang
4. DCD: A New Framework for Distillation Learning With Dynamic Curriculum
Jiachen Li; Yuchao Zhang; Yiping Li; Gong Xiangyang; Wendong Wang
5. A Secure and Trusted Data Sharing Scheme Based on Blockchain for Government Data
Qin Zheng; Bing Guo; Yuchuan Hu; Zhongwei Li; Yuting Zhao

HPCC-29: High Performance Computing and Applications (Research papers) (III)

Session Chair: Luhan Wang, Chinese Academy of Sciences & Institute of Computing Technology, China

1. Entity Alignment Based on Latent Structural Information Mining Graph Convolutional Networks
Jiayi Du; Yulu Liu; Ai Wei; Hongen Shao; Tao Meng
2. EgpulP: An Embedded GPU Accelerated Library for Image Processing
Luhan Wang; Haipeng Jia; Yunquan Zhang; Kun Li; Cunyang Wei
3. VICTOR: An Adaptive Framing-Based Speech Content Authentication and Recovery Algorithm
Qing Qian; Shuyun Zhou; Meixin Song; Yunhe Cui; Huan Wang
4. Depth Monocular Estimation With Attention-Based Encoder-Decoder Network From Single Image
Xin Zhang; Rabab Abdelfattah; Yuqi Song; Samuel A. Dauchert; Xiaofeng Wang
5. Localization of Mobile Nodes in Graphs Using the True-Range Multilateration With Node Sorting (TriSort) Approach in an Indoor Environment
Michal Gorawski; Konrad Połys

HPCC-30: High Performance Computing and Applications (Research papers) (IV)

Session Chair: Juan Fang, Beijing University of Technology, China

1. A Task-Based Routing Algorithm for Network-On-Chip in Heterogeneous CPU-GPU Architectures
Juan Fang; Zhichao Wei; Yaqi Liu; Yumin Hou
2. Quantifying Throughput of Basic Blocks on Kunpeng 920 Processor Using Static Code Analyzers
Qingcai Jiang; Junshi Chen; Hong An; Shaojie Tan; Zhenwei Cao; Xiaoyu Hao
3. Burger-Tree: A Three-Layer Cache-Conscious Tree Index for Persistent Memory
Penghao Fan; Peiquan Jin; Yongping Luo; Xiaoliang Wang
4. Temporal Staggering of Applications Based on Job Classification and I/O Burst Prediction
Wenxiang Yang; Jie Yu
5. Research on Elastic Extension of Multi Type Resources for OpenMP Program
Junfeng Zhao; Xuesong Gao; Yuancong Li

HPCC-31: High Performance Computing and Applications (Research papers) (V)
Session Chair: Jingyu Zhang, Changsha University of Science & Technology, China

1. Mining Alarm Association Rules in Optical Transmission Networks Using a Statistical Approach
Miao Deng; Peng Li; Yu Liu; Rongjing Zhu; Yujie Zhang
2. Performance Optimization and Analysis of the Unstructured Discontinuous Galerkin Solver on Multi-Core and Many-Core Architectures
Ze Dai
3. SMVAR: A Novel RNN Accelerator Based on Non-Blocking Data Distribution Structure
Jinwei Xu; Jingfei Jiang; Shiyao Xu; Lei Gao
4. BTDFS: B+ Tree-Based Distributed File Storing Mechanism for Improving Small File Storage
Jiachen Tian; Jingyu Zhang
5. EDCNet: A Lightweight Object Detection Method Based on Encoding Feature Sharing for Drug Driving Detection
Junfei Wei; Yuan Li; Bo Zhang

HPCC-32: High Performance Computing and Applications (Research papers) (VI)
Session Chair: Haihui Liu, Shandong Normal University, China

1. Graph Convolutional Based Deep Spatio-Temporal Residual Networks for Traffic Prediction
Ke Sun; Qianqian Ren
2. A High-Performance SpMV Accelerator on HBM-Equipped FPGAs
Tao Li; Li Shen
3. PC-BNA: Parallel Convolution Binary Neural Network Accelerator
Liu Haihui
4. Optimizing Fast Trigonometric Functions on Modern CPUs
Jie Shen; Biao Long; Chun Huang
5. Time Series Data Association Mining With High-Frequency Data Interference
Rongjing Zhu; Peng Li; Yu Liu; Miao Deng

HPCC-33: High Performance Computing and Applications (Research papers) (VII)
Session Chair: Fangpeng Weng, Sichuan University, China

1. Using BERT and Word Definitions for Implicit Sentiment Analysis
Xianyong Li; Qizhi Li
2. Rapid Defect Detection in Cigarette Capsules Based on 1D Residual Network With Multi-Feature Fusion
Xudong Yang
3. CORF: Bridging the Gap of Complex Operator Fusion for Faster DNN Inference
Jianan Wang; Shi Yang; Zhaoyun Chen; Mei Wen
4. Castingformer: A Deep Neural Network for Precipitation Nowcasting
Ge Yang; Lijia Lin; Dian Huang
5. Semi-Supervised Graph Convolutional Neural Network Based Classification for Auto Parts Inventory Management
Fangpeng Weng; Bing Guo; Xinhua Suo; Xin Wu; Yuchuan Hu; Qin Zheng

HPCC-34: High Performance Computing and Applications (Research papers) (VIII)
Session Chair: Jie Ren, the Shaanxi Normal University, China

1. Adaptive Model Selection for Video Super Resolution

Chenge Jia; Jie Ren; Ling Gao; Zhiqiang Li; Jie Zheng; Zheng Wang

2. Topology-Aware Node Allocation on Supercomputers With Hierarchical Network
Wenxiang Yang; Jie Yu

3. Energy-Efficient Thermal-Aware Data Placement Strategy for Storage Clusters
Jie Li; Yuhui Deng; Zhifeng Fan; Zijie Zhong

4. Automated Inconsistency Analysis of Real-Time Requirements: A Domain-Expert-Friendly Approach
Shaobin Liu; Xiaohong Chen; Zhi Jin

5. Parallel-Friendly and Work-Efficient Single Source Shortest Path Algorithm on Single-Node System
Jie Zhang; Yuan Zhang; Yiming Sun; Huawei Cao; Xuejun An; Xiaochun Ye

HPCC-35: Parallel and Distributed Computing and Systems (Research papers) (I)
Session Chair: Yuting Zhao, Sichuan University, China

1. G-Update: A Group-Based Update Scheme for Heterogenous Erasure-Coded Storage Systems
Xuyu Zhao; Bing Zhu; Zhiwei Zeng; Weiping Wang; Kenneth Shum

2. Efficient Erasure-Coded Data Update and Recovery Based on Machine Learning and I/O Mitigation
Xiaosong Su; Jigang Wu; Bing Wei; Yalan Wu

3. A Multi-Layer PBFT Consensus Algorithm With Inter-Group Supervision
Yuting Zhao; Bing Guo; Chaoxia Qin; Mingjie Zhao

4. TianheQueries: Ultra-Fast and Scalable Graph Queries on Tianhe Supercomputer
Xinbiao Gan; Guang Wu; Peilin Guo; Jiaqi Si; Xuguang Chen; Chunye Gong; Tiejun Li

5. VM Performance Optimization Virtual Machine Migration Method Based on Ant Colony Optimization in Cloud
Hui Zhao; Shangshu Li; Jing Wang

HPCC-36: Parallel and Distributed Computing and Systems (Research papers) (II)
Session Chair: Fangpeng Weng, Sichuan University, China

1. A Deep Reinforcement Learning Based VM Scheduling Strategy Decreasing Datacenter Communication Cost
Zhijiao Xiao; Xiao Liu; Zhong Ming

2. Joint Latency and Energy Optimization of Online Task Offloading Algorithms for Vehicular Edge Computing
Pingping Dong; Cheng Nie; Yajing Li; Yuning Zuo; Xiaojuan Lu; Lianming Zhang

3. A Privacy-Enhanced Federated Learning Scheme With Identity Protection
Xueqin Zhao; Lingling Wang; Lin Wang; Zhongkai Lu

4. Optimized Client-Side Detection of Model Poisoning Attacks in Federated Learning
Guoxi Zhang; Jiangang Shu; Xiaohua Jia

5. An Optimized Transaction Processing Scheme for Highly Contented E-Commerce Workloads
Chunxi Zhang

HPCC-37: Parallel and Distributed Computing and Systems (Research papers) (III)
Session Chair: Shuai Wei, Sichuan University, China

1. FedACL: Federated Multi-Distillation With Auxiliary Classification Layers in IoT
Zhipeng Gao; Futeng Feng; Zijia Mo; Zijian Xiong; Yang Yang

2. Privacy-Preserving Multi-Party Neural Network Learning Over Incomplete Data
Fengxiao Liu; Gang Shen; Mingwu Zhang

3. FedCo: Self-Supervised Learning in Federated Learning With Momentum Contrast

Shuai Wei; Guitao Cao; Cheng Dai; Bing Guo; Shengxin Dai

4. Fabric Image Layering Based on Parallel K-Means

Lei Wang; Wei Zhao; Tong Sang; Zeng Zeng; Yangfan Li

5. The Influence-Maximizing Node Selection Algorithm Based on Local Isolated Centrality in Large-Scale Networks Implemented by Distributed Graph Computing

Piaoyang Chen; Mingsen Deng

HPCC-38: Parallel and Distributed Computing and Systems (Research papers) (IV)

Session Chair: Guodong Peng, Southwest University, China

1. HCER: A High Cost-Effectiveness Multi-Bit Fault-Tolerant NoC Router

Gao Wencai; Xiaowen Chen; Chen Li; Lu Jianzhuang; Hanyan Liu

2. Delaying Large Write Requests to Trade off I/O Performance and Long-Tail Latency in SSDs

Guodong Peng; Jun Li; Mingwang Zhao; Minjun Li; Zhibing Sha; Min Huang; Zhigang Cai

3. WRLQueue: A Lock-Free Queue for Embedded Real-Time System

Qidi Yang; Lei Tang; Yanrong Guo; Nailiang Kuang; Sheng Zhong; Hangzai Luo

4. Holistic Scheduling Algorithm for Tasks and Messages of Automotive Embedded System

Hongxing Xing; Yehua Wei; Can Cheng; Lianming Zhang

5. An Energy-Efficient Task Scheduling Method for CPU-GPU Heterogeneous Cloud

Hui Zhao; Jianhua Li; Guobin Zhang; Shangshu Li; Jing Wang

HPCC-39: Parallel and Distributed Computing and Systems (Research papers) (V)

Session Chair: Tianyu Xu, Chongqing University, China

1. Secure and Efficient BMC-Based Centralized Management Method for Large-Scale Data Centers

Hongwei Liu; Haojun Xia; Bibo Tu

2. A Precision Mechanism for Simulations of Multicore Energy-Aware Scheduling

Zhan Jiangyue; Bing Guo

3. 3DS: An Efficient DPDK-Based Data Distribution Service for Distributed Real-Time Applications

Tianyu Xu; Xianzhang Chen; Changze Wu; Jiapin Wang; Rongwei Zheng; Duo Liu; Yujuan Tan; Ao Ren

4. RBCP: A Reputation-Based Blockchain Consensus Protocol for Internet of Things

Jiaze Shang; Tianbo Lu; Yingjie Cai; Shuang Luo; Zhaoxin Jin

5. Aware: Adaptive Distributed Training With Computation, Communication and Position Awareness for Deep Learning Model

Yan Zeng; Guangzheng Yi; Yuyu Yin; Jiyang Wu; Meiting Xue; Ji-Lin Zhang; Jian Wan; Yunquan Zhang

HPCC-40: Parallel and Distributed Computing and Systems (Research papers) (VI)

Session Chair: Min Tang, National University of Defense Technology, China

1. Unsupervised Anomaly Detection Based on CNN-VAE With Spectral Residual for KPIs

Gongliang Li; Zepeng Wen; Xin Xie

2. A Dynamic Computational Memory Address Architecture for Systolic Array CNN Accelerators

Min Tang; Sheng Liu

3. Optimizing GNN on ARM Multi-Core Processors

Chaorun Liu; Huayou Su; Dou Yong; Kangkang Chen; Jie Yan Sun

4. An Unsupervised Convolutional Adversarial Anomaly Detection Model for IoT Data Infrastructure

Peian Wen; Zhenyu Yang; Lei Wu; Sibao Qi; Juan Chen

5. A Layer-Based Sparsification Method for Distributed DNN Training
Yanqing Hu; Qing Ye; Zhongyu Zhang; Jiancheng Lv

HPCC-41: Communications and Networking (Research papers) (I)

Session Chair: Long Qu, Ningbo University, China

1. An Efficient Parallel CNN Inference Framework for Multi-Zone Processor
Jie Chen; Zhong Liu
2. HCRO-LKSM: A Lightweight Key Sharing and Management Protocol Based on HCRO-PUF for IoT Devices
Zhenyu Wang; Ding Deng; Yang Guo; Shaoqing Li
3. Interference Elimination in IRS-Enabled Indoor MmW-D2D Communication
Bingjie Han; Xin Chen; Libo Jiao; Dongchao Guo
4. AoI Aware VNF Scheduling With Parallel Transmission for Delay-Sensitive Applications
Lingjie Yu; Long Qu
5. NBMon: NB-IoT-Based UAV Network Routing Monitoring System
Ji'ao Tang; Xiaojun Zhu; Chao Dong; Lei Zhang

HPCC-42: Communications and Networking (Research papers) (II)

Session Chair: Zhenjiang Guo, Chinese Academy of Sciences, China

1. Multi-Modal Feature Collaborative Fusion for Court Verdicts Recommendation
Xu Yuan; Yungang Wang Shan Jin; Ying Yang; Zhikui Chen
2. TCRing: A Novel Single-Channel Deadlock-Free Concentrated On-Chip Network
Zhenjiang Guo; Huandong Wang; Zhang Longbin; Junhua Xiao
3. Optimal Trajectory Planning and Task Assignment for UAV-Assisted Fog Computing
Shuaijun Liu; Jiaying Yin; Zishu Zeng; Jingjin Wu
4. CC-Guard: An IPv6 Covert Channel Detection Method Based on Field Matching
Jichang Wang; Liancheng Zhang; Zehua Li; Yi Guo; Lanxin Cheng; Wenwen Du
5. Secure SVM Services With Multiple Service Providers and Subscribers in the Cloud
RuiHeng Lu; Xiaofeng Wang; Mengyu Ge; Jiasheng Li; Haomiao Yang

HPCC-43: Communications and Networking (Research papers) (III)

Session Chair: Wei Cai, Institute of Information Engineering, Chinese Academy of Sciences, China

1. A Mobility Adaptive Service Placement Scheme in Satellite Edge Computing Network
Peng Deng; Gong Xiangyang; Xirong Que
2. FACA: An Effective Method for Detecting the Survivability of Large-Scale IPv6 Addresses
Yi Guo; Mengfan Liu
3. Cascading Failure Analysis of Uniform Double-Layer Hyper-Networks Based on the Couple Map Lattice Model
Shujie Gao; Xiujuan Ma; Fuxiang Ma; Bin Zhou
4. Graph Clustering Under Weight-Differential Privacy
Lang Chen; Kai Han; Qing Xiu; Dazheng Gao
5. METC-MVAE: Mobile Encrypted Traffic Classification With Masked Variational Autoencoders
Wei Cai; Zhen Li; Peipei Fu; Chengshang Hou; Gang Xiong; Gaopeng Gou

HPCC-44: Communications and Networking (Research papers) (VI)

Session Chair: Linsheng Yu, Xihua University, China

1. A Detecting Method Against Cross-Container Spectre Attacks
Xinfeng He; Yuanpu Li

2. A One-Class Anomaly Detection Method for Drives Based on Adversarial Auto-Encoder
Yufei Wang; Xiaoshe Dong; Longxiang Wang; Weiduo Chen; Bowen Li
3. Detecting Phishing Scams on Ethereum Using Graph Convolutional Networks With Conditional Random Field
Wenhan Hou
4. PME: Processing-In-Memory Masking and Encoding for Secure NVM
Zhiwen Xie; Yinhe Han; Xiaoming Chen
5. A Blockchain-Based Decentralized Privacy-Preserving Mobile Payment Scheme Using Anonymous Credentials
Linsheng Yu; Mingxing He; Ling Xiong; Qian Luo; Xianhua Niu

HPCC-45: Communications and Networking (Research papers) (V)
Session Chair: Mengyu Ge, University of Electronic Science and Technology of China, China

1. A Predictive Model of COVID-19 mRNA Vaccine Reactivity Based on Dual Attention for Federated Learning Scenarios
Mengyu Ge; Haomiao Yang; Ming Xian; Kunlan Xiang
2. Communication-Efficient Federated Learning Based on Chained Secure Multiparty Computing and Compressed Sensing
Di Xiao; Pengcen Jiang; Min Li
3. DcDID: Highly Privacy-Secure Decentralized Identity System Based on Dynamic Committee
Wu Xiaohua; Feng XueQi; Wu Fengheng; Jing Wang
4. THperf: Enabling Accurate Network Latency Measurement for Tianhe-2 System
Yunyang Xu; Dezun Dong; Cunlu Li; Liqian Xiao
5. Intelligent System for Distributed Deep Learning Training Traffic Optimization
Weipeng Lu; Shuang Wu; Junhui Ou; Bing Niu; Jin He; Kevin Song; Xinwei Zheng

HPCC-46: Communications and Networking (Research papers) (VI)
Session Chair: Xiaodong Dong, Nankai University, China

1. Balancing Revenue and Cache Partition Fairness for CDN Providers
Xiaodong Dong; Binlei Cai
2. Construct A Unique Agent Network for Cooperative Multi-Agent Reinforcement Learning
Long Liang; Haolin Wu; Hui Li
3. BBR-FIT: An Intelligent BBR Based on the Reinforcement Learning to Boost the Network Efficiency Over Time-Varying Networks
Yi Xie; Xianliang Jiang; Jin Guang; Haiming Chen
4. BPCN: A Simple and Efficient Model for Visual Question Answering
Feng Yan; Wushouer Silamu; Yanbing Li; Yachuang Chai
5. CENT: A Cache Efficient MPI All-Reduce With Non-Temporal Hint on X86 Architecture
Jie Liu; Jintao Peng; Chunye Gong; Min Xie; Dai Yi

HPCC-47: Communications and Networking (Research papers) (VII)
Session Chair: Qin Zheng, Sichuan University, China

1. BS2Vec: A Spatial Representation Learning Model for Large Scale Base Stations
Li Li; Junjun Si
2. BERT-Based Chinese NER With Lexicon and Position Enhanced Information Adapter
Zhongwei Li; Bing Guo; Qin Zheng; Yuchuan Hu; Xinhua Suo

3. Generating Natural Language Adversarial Examples Based on the Approximating Top-K Combination Token Substitution

Panfeng Qiu; Xi Wu; Yongxin Zhao

4. A Block Gray Adversarial Attack Method for Image Classification Neural Network

CaiLong Li; Chunlong Fan; Jici Zhang; Chenyang Li; Yiping Teng

HPCC-48: Communications and Networking (Research papers) (VIII)

Session Chair: Haoyu Zheng, Xihua University, China

1. Authentication Scheme Based on Non-Interactive Zero-Knowledge Proof for Mobile Health

Edward Mensah Acheampong

2. RTD: The Road to Encrypted Video Traffic Identification in the Heterogeneous Network Environments

Minchao Xu; Meijie Du; Zhao Li; Zeyi Deng; Wei Yang; Qingyun Liu

3. A Few-Shot Image Classification Method Based on Information Entropy for First-Order Gradient Meta-Learning

Chengzhi Xie; Fengjing An; Mingsen Deng

4. Deep Residual Neural Networks With Attention Mechanism for Spatial Image Steganalysis

Yue Shu; Renchao Qin; Yaying He; Ya Li; RuiLin Jiang; Zhiyuan Wu

5. Secure Single-Server Fuzzy Deduplication Without Extra Proof-Of-Ownership in Cloud

Shuai Cheng; Yawen Feng; Haoyu Zheng

HPCC-49: Communications and Networking (Research papers) (IX)

Session Chair: Chaoxia Qin, Sichuan University, China

1. A Reinforcement Learning Framework Based on Regret Minimization for Approximating Best Response in Fictitious Self-Play

Yanran Xu; Kangxin He; Shu Hu; Hui Li

2. Supervised Contrastive Meta-Learning for Few-Shot Classification

Chuanyao Zhang; Jianzong Wang; Zhangcheng Huang; Lingwei Kong; Xiaoyang Qu; Ning Cheng; Jing Xiao

3. Efficiently Conditional Community Search in Dynamic Graphs

Chuanyu Zong; Dong Ma; Tao Qiu; Jijia Li; Yunzhe An; Xiufeng Xia

4. SG-Net: A Super-Resolution Guided Network for Improving Thyroid Nodule Segmentation

Xingtao Lin; Xiaogen Zhou; Tong Tong; Xingqing Nie; Zhiqiang Li

5. Influence Maximization With Graph Neural Network in Multi-Feature Social Network

Yuhao Wang; Peng Li; Weiyi Huang

HPCC-50: Communications and Networking (Research papers) (X)

Session Chair: Licheng Zhang, University of Electronic Science and Technology of China, China

1. HybridRTS: A Hybrid Congestion Control Framework With Rule and Reinforcement Learning for Low-Latency WebRTC Live Video Streaming

Kaizhe Zhang; Zhiwen Wang; Hansen Ma; Haipeng Du; Weizhan Zhang

2. Cosine Similarity-Based Mixup Data Preprocessing Under Point Augmentation for Point Cloud Classification

Guangping Li; Yicheng Huang; Dingkai Liang; Ping an Hu

3. Aspect-Level Sentiment Analysis Based on Graph Attention Fusion Networks

Wenting Yu; Xiaoye Wang; Peng Yang; Yingyuan Xiao; Wang Jinsong

4. Staggered Repetition Frequency Pulse Solution and Evaluation for Ultra-Wideband Range Ambiguity in Long-Distance Multipath

Licheng Zhang; Ziyang Yang; Xiaozhang Zhu; Zhiqin Zhao

5. An Adaptive RPC Mechanism for Performance and Node Fault Tolerance Optimization in HDFS
Sz Z W; Jingyu Zhang

The SmartCity 2022 Presentation Program

SmartCity-1: Smart City Systems

Session Chair: Yanbing Yang, Sichuan University, China

1. Service Recommendations Under the Smart City
Wenzhuang Fan; Fei Dai; Xiangqian Li; Shaoqi Ding
2. Ellipsoid Pricing Based Budget-Constraint Incentives for Noisy Crowdsensing
Jiajun Sun
3. A Simulation Study of Community Renewal in the Perspective of Evolutionary Game and Urban Governance
Youmei Zhou; Hao Lei; Jingjing Chen
4. Capacity Bounds and Achievable Rates of Visible Light Communications for Future Smart City
Xin Hu; Xiong Deng; Wenxiang Fan; Ziqiang Gao; Yixian Dong; Yanbing Yang
5. Transfer Route Recommendation for Metro Systems Based on Multi-Source Data Fusion
Tailan Yuan; Wen Xiong
6. Towards Automatic Spatial Activation Concept-Based Explanations
Lu Liu; Zhichao Lian; Nan Liu; Youwei Li

SmartCity-2: Data Processing Technology (I)

Session Chair: Yanru Chen, Sichuan University, China

1. Binary Gaussian Mask Weighted Joint Dynamic and Static Guided Discriminative Correlation Filter for Visual Tracking
Zhiwen Xiao; Xiaodan Hu; Hu Zhu
2. A Novel Deep Forgery Video Detection Method Based on rPPG Signal of Green Channel
Panpan Wang; Shujuan Wang; Guoqing Sun; Zhichao Lian
3. RDA-Unet: A Retrieval Model for Radar Composite Reflectivity Factor From Himawari-8 Observations
Zhengyong Jin; Huichao Lin; Xiaolong Xu
4. Modeling and Analysis of Directional Clustered Backscatter Communications in IoT Systems
Qiu Wang; Yong Zhou
5. Dynamic Key-Value Memory Network by Considering Forgetting Mechanism and Multiple Features for Knowledge Tracing
Meiyuan Qu; Yuxia Lei; Chen Lei; Xiaowen Zhang; Shi Wang

SmartCity-3: Data Processing Technology (II)

Session Chair: Zhenghua Chen, Institute for Infocomm Research, A*STAR, Singapore

1. Solar Irradiance Forecasting Utilizing Distributed and Federated Learning
Hao Zhang; Ke Yan
2. JADD-GAN: A Joint Attention Generative Adversarial Data Fusion Network for Object Detection and Tracking
Guoxia Xu; Hao Wang; Chunming He; Meng Zhao; Hu Zhu
3. Cost-Effective Elderly Fall Detection With Symmetry Transformer Networks
Li Bing; Wei Cui; Yanru Chen; Joey Tianyi Zhou; Zhenghua Chen; Yuli Li; Min Wu
4. Design of Smart Home Monitoring System for Elderly Care Based on Raspberry Pi
Haoran Huang; Jiaying Li; Jiabin Yu; Binggang Xiao; Hongmei Mi; Xinke Shen
5. Optimization of Public Bus Scheduling Using Real-Time Online Information
Teng Hei Ho; Ke Wang; Man Xu; Chan-Tong Lam; Benjamin Ng

6. Design of an Intelligent Voice-Controlled Home System Based on Raspberry Pi
Kaiyi Wu; Jiaying Li; Jiabin Yu; Yuhao Hua; Binggang Xiao; Wu Wang

SmartCity-4: Data Processing Technology (III)

Session Chair: Chen Chen, Chongqing University, China

1. Weak-Supervised Anomaly Merchant Detection for Online-To-Offline Logistics Business
Shijie Xu; Weijian Zuo; Baoshen Guo

2. Analysis of Chinese Traditional Opera Based on the Western Music Genre Classification Methods
Yue Li; Zhengwei Peng; Ying Liufu; Guanghao Li; Huanyan Zhu

3. Efficient Checkpoint Under Unstable Power Supplies on NVM Based Devices
Jialin Liu; Edwin Sha; Qingfeng Zhuge; Rui Xu; Yuhong Song

4. Research on Intelligent Platform of Full Data and Scenario Simulation for the Smart Community Under the Concept of Social Health
Youmei Zhou

5. Study on Temperature and Humidity Coupling Control of Plant Plant Based on ANFIS
Liu Jiayao J Liu, Jiayao; Liu Yong Liu Yong; Guo Xiaokun Guo Xiaokun; Hu Wenwen Hu Wenwen; Shipu Xu; Wang Yunsheng Wang Yunsheng

6. WiNum: Keyboard Number Key Recognition Using WiFi Signal
HaoTian Duan; HaiXia Wang; HuiBin Liang; Zhe Cui; JianZheng Shen

SmartCity-5: Data Processing Technology (IV)

Session Chair: Li Lin, Southeast University, China

1. An Empirical Evaluation of Deep Neural Networks in Federated Learning
Xiaotong Wu; Lingling Shen

2. Blockchain Privacy Disclosure Risk Assessment Scheme Based on Improved Paillier Algorithm
Lingqin Ran; Changgen Peng; Xu DeQuan; Tan Weijie; Lin Zhongming

3. ST-ConvLSGRU: A Radar Echo Extrapolation Method Based on LSTM and GRU
Hailang Cheng; Mengmeng Cui; Xu Xiaolong

4. Towards Planning Package Delivery Paths by Exploiting the Crowd of Private Cars
Hejing Nie; Yiping Wen; Tiancai Li; Sipeng OuYang; Muyang Tian

5. Traffic Speed Prediction Based on Multi Spatial-Temporal Graph Fusion Convolution Network
Zhao ling Gu; Anqin Zhang

SmartCity-6: Data Processing Technology (V)

Session Chair: Yuqing Yin, China University of Mining and Technology, China

1. Task Oriented Adaptive HUD Human Reliability Analysis
Jian Ma

2. Collaborative Attribute-Based Multi-User Searchable Encryption
Fan Zhao; Changgen Peng; Xu DeQuan; Tan Weijie

3. Indoor and Outdoor Seamless Positioning Algorithm Based on UWB/GNSS
Xiaojun Zhao; Wei Li; Hao Wang

4. Accurate and Secure Localization Framework for Train Network
Che Congcong

5. Attention Based Convolutional Network for Traffic Speed Prediction
Yong Sun; Anqin Zhang

The ICES 2022 Presentation Program

ICES-1: Models & Algorithms for Embedded Systems (I)

Session Chair: Harini Ramaprasad, University of North Carolina at Charlotte, USA

1. User Satisfaction Oriented Elastic Charging Strategy for Electric Vehicles
Lei Sun; Yanru Liu; Kangwei Lin; Changqing Xia; Qingxu Deng
2. A Lightweight Trusted Architecture and Service Mechanisms Based on SylixOS
Qidi Zhao; Hongjun You; Tianyang Wang; Changyi Du; Bohao Pei; Kailong Zhang
3. Real-Time Schedulability Analysis for Overloaded Primary-To-Secondary Processor Systems
Mitchell Duncan; Fatima Raadia; Tanjila Atik; Marco Brocanelli; Nathan Fisher
4. Performance Evaluation of Intelligent Computing Platform for Air-Combat Decision Algorithm
Kangfa Xu; Linting Bai; Pengcheng Wen; Wensheng Niu
5. A Guard Bands Reduction Scheduling in IEEE 802.1Qbv Time-Sensitive Networks
Zexian Pan; Qingxu Deng; Zhiwei Feng; Yuhan Lin; Changqing Xia

ICES-2: Models & Algorithms for Embedded Systems (II)

Session Chair: Qiao Li, Xiamen University, China

1. VoiceBit: GPU-Accelerated Real-Time Human Voice Separation for Mobile Phones
Gang Chen; Zhaoheng Zhou; Shengyu He; Yi Zheng; Wang Yi
2. Difference-Adaptive Knowledge Distillation for Resource-Constrained Embedded Devices
Yi Xiong; Wenjie Zhai; Zongwei Zhu
3. End-Edge Coordinated Multiview Deep Learning for Time-Efficient Atrial Fibrillation Detection
Tianren Zhou; Hanwen Li; Zhaoyan Shen; Zhiping Jia
4. Pseudo Log: Restore Global Data Facing Power Failures With Minimum NVM Write
Edwin Sha; Yeteng Liao; Qingfeng Zhuge; Rui Xu; Yuhong Song; Jialin Liu
5. Scheduling Performance Evaluation Framework for ROS 2 Applications
Bo Peng; Atsushi Hasegawa; Takuya Azumi

ICES-3: Models & Algorithms for Embedded Systems (III)

Session Chair: Maregu Assefa, UESTC, China

1. A Thermal-Aware Approach for DVFS-Enabled Multi-Core Architectures
Javier Pérez Rodríguez; Patrick Meumeu Yomsis; Pavel Zaykov
2. Enabling Massive Scalability in Low-Power Wide-Area Networks
Mahbubur Rahman; Pushpen Bikash Goala
3. PPG-Based Heart Rate Estimation With Efficient Sensor Sampling and Learning Models
Yuntong Zhang; Jingye Xu; Mimi Xie; Wei Wang; Keying Ye; Jing Wang; Dakai Zhu
4. A Vision-Based Low-Cost Power Wheelchair Assistive Driving System for Smartphones
Zhiwei Wang; Kevin Liu; Jeffrey Wang; Jingye Xu; Jingjing Chen; Yufang Jin; Rocky Slavin

ICES-4: Models & Algorithms for Embedded Systems (IV)

Session Chair: Xupeng Wang, UESTC, China

1. Exploring TensorRT to Improve Real-Time Inference for Deep Learning
Yuxiao Zhou; Kecheng Yang
2. An Optimization Approach of Container Startup Times for Time-Sensitive Embedded Systems
Lukas Stahlbock; Jan Weber; Frank Köster

3. The Design of a Novel Modbus TCP/RTU Gateway for High Reliable Communication
Honglin Zhou; Junlin Song; Xiaomin Pu

4. Design and Realization of Intelligent Airborne Information Processing Concept Simulation System
Jianchun Xie; Linting Bai; Qing Luo

The DIKW 2022 Presentation Program

DIKW-1: Data Analytics and Smart applications

Session Chair: Jie Li, Hainan University

1. Collaborative Recommendation for User Spatial Activities in Mobile Environments
Ying Zhang; Wei He
2. Research on Gale Forecast Method of Yangpu Port Based on Random Forest Model
Wanting Wang; Liang Chen; Yucong Duan
3. Multi-Dimensional Intention Recognition for User-Generated Short Texts
Ying Zhang
4. Personalized Review Recommendation Without User Interactive Data
Shufan He; Zhiying Tu; Hua Zhang; Dianhui Chu
5. Joint Extraction of Entity Relations Based on Dependency Syntax and BERT in Medical Domain
Boyang Zhang; Xu Wenbo; Haitao Jia; Li JiaHao; Jingzhe Sun

DIKW-2: Model Design and Computing Optimization (I)

Session Chair: Shuai Wei, Sichuan University, China

1. Enhancing Cross-Lingual Medical Concept Alignment by Leveraging Synonyms and Translations of Unified Medical Language System
Luming Chen; Yifan Qi; Aiping Wu; Lizong Deng; Taijiao Jiang
2. Analysis of Semantic-Based Knowledge Graph Embedding Models in Uncertainty Knowledge Graphs
Jianjing Li; Guanfeng Li
3. OASIS: An Ontology-Driven Autonomic Management System for Intelligent Substations
Qianru Zhou
4. Compressive Sensing Solution Optimization Method in Sensing-Transmission-Calculation Integrated System
Zelin Zhang; Li Ma

DIKW-3: Model Design and Computing Optimization (II)

Session Chair: Yingtian Mei, Hainan University, China

1. Multivariate Time Series Imputation Based on Masked Autoencoding With Transformer
Yongsheng Wang; Hao Xu; Zhiwei Xu; Jing Gao; Yuhao Wu; Zhe Zhang
2. Purpose Driven Disputation Modeling, Analysis and Resolution Based on DIKWP Graphs
Yingtian Mei; Yucong Duan; Lei Yu; Liang Chen
3. Purpose Driven DIKW Modeling Integration and Analysis of Meteorology and Depression
Zhendong Guo; Yucong Duan
4. Purpose Driven Modelling and Analysis for Smart Table Fill and Design Based on DIKW
Yue Huang; Yucong Duan; Lei Yu; Yingtian Mei; Zhendong Guo; Ting Hu

DIKW-4: Model Design and Computing Optimization (III)

Session Chair: Yingtian Mei, Hainan University, China

1. Data Model Study for Advancement of PSI Management in Japan That Introduce S&OP Concepts
Xiaomei Qin
2. Automatic Semantic Modeling by Cross-Modal Retrieval
Ruiqing Xu; Wolfgang Mayer; Zaiwen Feng; Yulong Wang; Hongyu Zhang; Da Ning; Yucong Duan; Keqing He
3. Factors Influencing Out of Pocket Ratio to CPS Among NPC Patients in Guangxi: 2014-2020
Lifang Zhou

4. A Fault Diagnosis Method Based on Capsule Convolutional Network

Tian Huachen

5. A Real-Time Deformation Measurement System Platform of Historic Building Based on 3DGIS, BIM and IoT

Chunxia Shi; Feng Pan; Qiang He; Yue Wu; Xinkui Li

The DSS 2022 Presentation Program

DSS-1: Data Science

Session Chair: Chao Li, Chengdu Chengdu University of Technology, China

1. CTMSN-EHI: A Context-Aware Time-Decay Multi-Head Self-Attention Network With Enhanced History Information for Multi-Turn Spoken Language Understanding
Xiang Jin; Chuan Li; Dong Tao
2. A Hybrid BiLSTM-ATT Model for Improving the Accuracy of Sentiment Analysis
Lanxue Dang; Chunyu Wang; Hongyu Han; Yan-e Hou
3. Research on the Intelligent Countermeasure Based on the Multi-Aircraft Cooperative Combat Behavior Tree
Chengping Tian; Hao Zhang; Yan Li; Xiao Sun; Bin Cheng
4. CFCT: The Cell Function Classification Method for Complex Tables
Sainan Tong; Derong Shen
5. Interpretable Sentencing Element-Based Prison Term Prediction
Yifang Zhang; Duanyu Feng; Wei Tian; Hao Wang

DSS-2: Data Processing Technology

Session Chair: Kong Yue, Northeastern University, China

1. Construction of Social Community Knowledge Graph From Wikipedia
Shimei Li; Yueqi Liu; Tongge Xu; Liqun Yang
2. F3FAD: Fast 3D Facial Avatar Digitization With XR Cloud Service
Qing Yang; Hua Zhang
3. Evaluation of Data Poisoning Attacks on Federated Learning-Based Network Intrusion Detection System
Yuemeng Zhang; Yong Zhang; Zhao Zhang; Haonan Bai; Tianyi Zhong; Mei Song
4. Multi-Value Chain Auto Parts Demand Prediction Based on Dynamic Heterogeneous Graph Convolution
Xin Wu; Ashraful Islam
5. Dual-Guided Collective Entity Alignment for Knowledge Graphs
Bai Gang; Kou Yue; Shen De-rong; Nie Tie-zheng; Li Dong

DSS-3: Data Systems

Session Chair: Guangle Yao, Chengdu Chengdu University of Technology, China

1. An Outlier Detection Algorithm Supporting Differential Privacy Protection
Xia Huang-Zhi HZ Xia; Li-Min Chen; Fu Qi; Xue-Di Mao; Lin-Qi Sun; Feng-Yu Xue
2. Acoustic Howling Suppression With Neural Networks Using Real-World Data
Liang Wan; Baosheng Lv; Hongqing Liu; Lu Gan; Yi Zhou
3. Time-Frequency Complex Mask Network for Echo Cancellation and Noise Suppression
Ning Sun; Hongqing Liu; Lu Gan; Yu Zhao; Zhen Luo; Yi Zhou
4. Alzheimer's Disease Detection Using Acoustic and Linguistic Features
Hongshun Deng; Hongqing Liu; Yi Zhou; Lu Gan
5. Research on Intrusion Detection Method for Industrial Control Systems Based on Improved APSO-MKBoost-C Algorithm
Xiao Li; Kewen Li

DSS-4: Data Applications

Session Chair: Jianhan Yin, School of Medicine, First Medical Center of Chinese PLA General Hospital, China

1. CH-Go: Online Go System Based on Chunk Data Storage

Hui Lu; Yiming Yang; Cheng Li; Ashrafal Islam

2. An Enhanced BERTopic Framework and Algorithm for Improving Topic Coherence and Diversity
Sahil Sawant; Jinhong Yu; Kirtikumar Pandya; Chun-Kit Ngan; Rolf Bardeli

3. MBTI BERT: A Transformer-Based Machine Learning Approach Using MBTI Model for Textual Inputs
Raad Bin Tareaf

4. Predicting User Engagements Using Graph Neural Networks on Online Social Networks
Seyed Ali Alhosseini; Christoph Meinel

5. A Systematic Integrated Literature Review of Clinical Data Management Platforms of HL7 FHIR
Viktor Walter-Tscharf

The DependSys 2022 Presentation Program

DependSys -1: Dependability and Security Fundamentals and Technologies (I)

Session Chair: Junke Li, Qiannan normal University for nationalities, China

1. *Index System Construction and Weight Distribution Method Based on Improved Credibility*
Liang Chen; Sule Wang; Lulu Zhao
2. *Unsupervised Anomaly Detection for IoT Data Based on Robust Adversarial Learning*
Yan Qiao; Benchu Zhang; Zeyu Zhang
3. *Analyzing the Spatial-Temporal Characteristics and Influencing Factors of Public Attention to 5G Based on Baidu Index*
Pan Liu
4. *Target Recognition of HRRP Based on CNN With Multi-Axis Attention and Residual Connections*
Yuxuan Zhang; Kong Yingying
5. *Inference-Based Deep Reinforcement Learning for Physics-Based Character Control*
Yuxi Chen; Chenghao Huang; Weimin Yuan; Yutong Wu; Ziyi Zhang; Hao Tang; Yanru Zhang

DependSys -2: Dependability and Security Fundamentals and Technologies (II)

Session Chair: Degaung Li, Luoyang normal University, China

1. *Learning Based Opportunistic Data Transmission for Cognitive Industrial IoT*
Li Li; Xiaoxiong Zhong
2. *A Hybrid Model Based on Deep Convolutional Neural Network for Medical Named Entity Recognition*
Degaung Li; Shoubo Peng; Yongxin Zhang; Hao Lu; Bo Yu; Youzhong Ma
3. *Research Status, Hot Spots and Frontier Trend of Information Technology Education From the Perspective of Knowledge Graph*
Yulin Zhao
4. *A Deep Learning Network for Detecting COVID-19 From Chest X-Ray Images*
Bo Wang; Jiyong Zhang; Binbin Zhang; Yongxin Zhang; Shihui Ji
5. *timeTree: How to Represent Time Sequence in a Threat Tree*
Zhitao Wu; Jingjing Hu; Xiaowei Zhang; Wei Ren

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