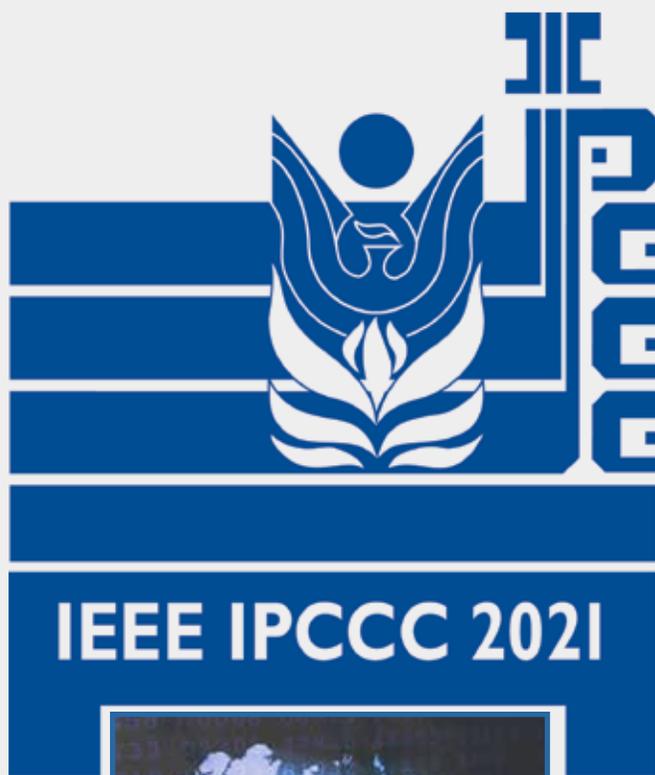


40TH IEEE INTERNATIONAL PERFORMANCE COMPUTING AND COMMUNICATIONS CONFERENCE



VIRTUAL CONFERENCE 2021
OCTOBER 28TH - 30TH



Message from the IPCCC 2021 General Co-Chairs

It is our great pleasure to warmly welcome you to the 40th IEEE International Performance, Computing, and Communications Conference (IPCCC 2021). The IPCCC 40th Anniversary Conference brings together researchers from academia, government, and industry all around the world to exchange their latest research achievements in computer and communication systems, as well as to inspire each other through discussions and presentations. We are very proud to present a high-quality program in this virtual conference, including a keynote talk, 40 full papers, 17 short papers, 2 posters, and 15 workshop papers.

Firstly, we would like to thank all the authors of the submitted and accepted papers. Their contributions keep the research in the field active and make this conference a lively place for research discussions. Secondly, we would like to express our appreciation to Program Co-Chairs Feng Wang and Donghyun Kim, all the members of the Technical Program Committee, as well as the external reviewers for their tremendous effort and hard work in paper selection during the global pandemic. Their timely feedback is very valuable to both the conference and the authors. Thirdly, we would like to sincerely thank our organizing committee members, including but not limited to General Vice-Chairs Nils Aschenbruck and Ningfang Mi, Workshop Co-Chairs Ruozhou Yu and Guoliang Jin, Poster Chair Zaobo He, Publication Chair Kathlene Hurt, Publicity Co-Chairs Zhuojun Duan, Gürkan Solmaz, and Yingjie Wang, Web Chair Neil Nelson, Financial Chair Nasr Ullah, and Registration Chair Jack Chen, for their enormous support and contribution in time. Their collective efforts during this challenging time makes the IPCCC virtual conference possible. It has been a privilege for us to work with such a marvelous group of dedicated professionals. Last but not least, we would like to thank the IEEE Computer Society for their continuing sponsorship and support of this conference.

On behalf of the conference executive committee, we welcome you to the virtual IEEE IPCCC 2021 conference, and join us in celebrating the 40th anniversary of the conference. We hope that you will enjoy the strong technical programs and have a wonderful time.

■ **Yingshu Li and Kuai Xu, General Co-Chairs, IPCCC 2021**

Message from the IPCCC 2021 Technical Program Co-Chairs

Welcome to the 40th edition of the IEEE International Performance Computing and Communications Conference (IPCCC 2021)! This is the second year this premier conference has been held in a virtual environment; we have learned from last year's success and strive to provide the same high-quality research presentation and engagement as in a face-to-face conference.

IPCCC 2021 received 141 legitimate paper submissions. Each paper was thoroughly reviewed by 3 reviewers. Out of the 141 submissions, 41 papers were accepted as a full paper, resulting in an acceptance ratio of 29%. In addition, 17 papers were accepted as a short paper and 2 were accepted for poster presentation. Full papers, short papers, and poster papers are all included in the IPCCC conference proceedings.

We would like to express our sincere gratitude to many people who have contributed to this year's IPCCC program. First, we thank the paper authors for choosing IPCCC as the channel to present their quality research and for their quick adaptation to the virtual format. Second, we are grateful to the 92 members of the Technical Program Committee for providing fair, timely, and constructive reviews. We appreciate their extra work to guarantee the quality of the conference since the number of submissions to IPCCC 2021 increased significantly over IPCCC 2020. Third, we would like to thank the IPCCC 2021 Organizing Committee and the Steering Committee for their help and support. Finally, we would like to welcome the attendees to the conference and we greatly appreciate your participation.

We hope you find the IEEE IPCCC 2021 program interesting and stimulating and have a great virtual experience!

■ **Feng Wang & Donghyun (David) Kim, Technical Program Co-Chairs, IPCCC 2021**

THE INTERNATIONAL PERFORMANCE, COMPUTING AND COMMUNICATIONS CONFERENCE IS THE PREMIER IEEE CONFERENCE PRESENTING RESEARCH IN THE PERFORMANCE OF COMPUTER AND COMMUNICATIONS SYSTEMS. FOR FOUR DECADES IPCCC HAS BEEN A RESEARCH FORUM FOR ACADEMIC, INDUSTRIAL AND GOVERNMENT RESEARCHERS.

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ANNOUNCING IPCCC 2022

November 11-13, 2022
PAPER ABSTRACT DUE: June 15th, 2022
FULL PAPER DUE: June 30th, 2022
ACCEPTANCE NOTIFICATION: August 15th, 2022
CAMERA READY DUE: August 30th, 2022

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IPCCC 2021 Day One – Thursday, October 28

IPCCC 2021 Virtual Conference Program [US Central Daylight Time]

Session I: Best Paper Candidates

07:00 - 08:15 Chair: Feng Wang

EdgePier: P2P-based Container Image Distribution in Edge Computing Environments

Zhipeng Cai (Georgia State University, USA), Xu Zheng (University of Electronic Science and Technology of China, China), Jinbao Wang (Harbin Institute of Technology, China)

Efficient Data Trading for Stable and Privacy Preserving Histograms in Internet of Things

Soeren Becker, Florian Schmidt and Odej Kao (Berlin Institute of Technology, Germany)

Session 2a: Deep Learning

08:15 - 09:45 Chair: William Headley

3DRIMR: 3D Reconstruction and Imaging via mmWave Radar based on Deep Learning

Yue Sun, Zhuoming Huang, Honggang Zhang, Zhi Cao and Deqiang Xu (University of Massachusetts, USA)

Accelerate Graph Neural Network Training by Reusing Batch Data on GPUs

Zhejiang Ran (National University of Defense Technology, China)

MAGINS: Neural Network Inertial Navigation System Corrected by Magnetic Information

Chao Qiu and Xiaoguang Niu (Wuhan University, China)

*Deep Learning-based Face Mask Usage Detection on Low Compute Resource Devices

Abdullah Hussein Al-Ghushami (Community College of Qatar, Qatar), Dabeeruddin Syed and Ameema Zainab (Texas A&M University, USA), Moaaz Ahmed (Hamad Bin Khalifa University, Qatar), Jadran Sessa (University of Milan, Italy)

*ELSV: An Effective Anomaly Detection System from Web Access Logs

Wei Wan (Chinese Academy of Sciences, China), Xin Shi (University of Chinese Academy of Sciences, China), Jinxia Wei and Jing Zhao (Chinese Academy of Sciences, China)

Session 2b: Network Security and Privacy

08:15 - 09:45 Chair: Lixin Wang

PMatch: Semantic-based Patch Detection for Binary Programs

Zhe Lang, Shouguo Yang, Yiran Cheng, Xiaoling Zhang, Zhiqiang Shi, Limin Sun (China Academy of Sciences, China)

PUFF: A Passive and Universal Learning-based Framework for Intra-domain Failure Detection

Lianjin Ye (Tsinghua University, China), Qing Li (Peng Cheng Laboratory, China), Xudong Zuo and Jingyu Xiao (Tsinghua University, China), Yong Jiang (Tsinghua University, China), Zhuyun Qi (Peng Cheng Laboratory, China), Chunsheng Zhu (Southern University of Science and Technology, China)

Universal Perturbation for Flow Correlation Attack on Tor

Jing Tian, Gaopeng Gou, Yangyang Guan, Wei Xia, Gang Xiong and Chang Liu (Chinese Academy of Sciences, China)

*RecGraph: Graph Recovery Attack Using Variational Graph Autoencoders

Jing Tian, Chang Liu, Gaopeng Gou, Zhen Li, Gang Xiong and Yangyang Guan (Chinese Academy of Sciences, China)

*NLP-based Entity Behavior Analytics for Malware Detection

Pejman Najafi and Daniel P Koehler (Hasso Plattner Institute, Germany), Feng Cheng (University of Potsdam, Germany), Christoph Meinel (Hasso Plattner Institute, Germany)

Break: 09:45-10:15

Session 3a: System Optimization

10:15 - 11:45 Chair: Peixiang Liu

LAFS: Learning-Based Application-Agnostic Flow Scheduling for Datacenters

Feixue Han (Tsinghua University, China), Qing Li (Peng Cheng Laboratory, China), KeKe Zhu (Tsinghua University, China), Jianer Zhou (Southern University of Science and Technology, China), Yong Jiang (Tsinghua University, China), Zhuyun Qi (Peng Cheng Laboratory, China), Fuliang Li (Northeastern University, China)

MR-tree: A Parametric Family of Multi-Rail Fat-tree

Yuyang Wang, Dezun Dong and Fei Lei (National University of Defense Technology, China)

Optimal Data Sink Location for Real-time NOMA-based Industrial IoTs

Xie Yaqi and Chaonong Xu (China University of Petroleum, China), Li Chao (Chinese Academy of Sciences, China)

*Elastic Scheduling of Virtual Machines in Cloudlet Networks

Kangkang Li and Liangmin Wang (Jiangsu University, China)

*Fast Monotonicity Preserving Text Sorting On GPU

Haoke Xu and Xiaoming Li (University of Delaware, USA)

IPCCC 2021 Day One [continued] – Thursday, October 28

IPCCC 2021 Virtual Conference Program [US Central Daylight Time]

Session 3b: Machine Learning I

10:15 - 11:45 Chair: Ting Li

Circuit-based PSI for Covid-19 Risk Scoring

Leonie Reichert, Marcel Pazelt, Björn Scheuermann (Humboldt University of Berlin, Germany)

FedVF: Personalized Federated Learning Based on Layer-wise Parameter Updates with Variable Frequency

Yuan Mei, Binbin Guo, Danyang Xiao and Weigang Wu (Sun Yat-sen University, China)

Private Distributed K-Means Clustering on Interval Data

Dingquan Huang, Xin Yao, Senquan An and Shengbing Ren (Central South University, China)

***Accelerating DNN Inference by Edge-cloud Collaboration**

Jianan Chen, Qi Qi, Jingyu Wang, Haifeng Sun and Jianxin Liao (Beijing University of Posts and Telecommunications, China)

***Q-learning-based Opportunistic Communication for Real-time Mobile Air Quality Monitoring Systems**

Trung Thanh Nguyen (Hanoi University of Science and Technology, Vietnam), Truong Thao Nguyen (National Institute of Advanced Industrial Science and Technology, Japan), Tuan Anh Nguyen Dinh, Thanh-Hung Nguyen and Phi Le Nguyen (Hanoi University of Science and Technology, Vietnam)

Lunch: 11:45-13:00

Session 4a: Machine Learning II

13:00-15:00 Chair: Zhicheng Yang

Defending Against Adversarial Attacks in Speaker Verification Systems

Li-Chi Chang, Zesheng Chen, Chao Chen, Guoping Wang and Bi Zhuming (Purdue University, USA)

DENNI: Distributed Neural Network Inference on Severely Resource Constrained Edge Devices

Rohit Sahu and Ryan J Toepfer (Iowa State University, USA), Matt Sinclair (University of Wisconsin-Madison, USA), Henry Duwe (Iowa State University, USA)

Federated Variational Learning for Anomaly Detection in Multivariate Time Series

Kai Zhang and Yushan Jiang (Embry-Riddle Aeronautical University, USA), Lee Seversky (Air Force Research Laboratory, USA), Chengtao M Xu, Dahai Liu and Houbing H Song (Embry-Riddle Aeronautical University, USA)

Key-based Input Transformation Defense Against Adversarial Examples

Yi Qin and Chuan Yue (Colorado School of Mines, USA)

***A Hybrid System for Learning Classical Data in Quantum States**

Samuel Stein (Pacific Northwest National Laboratory, USA), Ryan L'Abbate, Wenrui Mu and Yue Liu (Fordham University, USA), Betis Baheri (Kent State University, USA), Ying Mao (Fordham University, USA), Qiang Guan (Kent State University, USA), Ang Li and Bo Fang (Pacific Northwest National Laboratory, USA)

***SMOTE for Wi-Fi Fingerprint Construction in Indoor Positioning Systems**

Yun Fen Yong, Chee Keong Tan and Ian K T Tan (Monash University Malaysia)

Session 4b: Network Optimization

13:00-15:00 Chair: Ying Mao

A Self-adaptive Batch Request Aggregation Pattern for Improving Resource Management, Response Time and Costs in Microservice and Serverless Environments

George Kousiouris (Harokopio University of Athens, Greece)

BigBFT: A Multileader Byzantine Fault Tolerance Protocol for High Throughput

Salem Alqahtani (University at Buffalo, USA), Murat Demirbas (University at Buffalo, USA)

Data Placement Strategies for Data-intensive Computing over Edge Clouds

Xinliang Wei (Temple University, USA), A B M Mohaimenur Rahman (University of North Carolina at Charlotte, USA), Yu Wang (Temple University, USA)

Diagnosing the Interference on CPU-GPU Synchronization Caused by CPU Sharing in Multi-tenant GPU Clouds

Youssef Elmougy (Hofstra University, USA), Weiwei Jia and Xiaoning Ding (New Jersey Institute of Technology, USA), Jianchen Shan (Hofstra University, USA)

Unravel: An Anomalistic Crowd Investigation Framework Using Social Airborne Sensing

Md Tahmid Rashid (University of Notre Dame, USA), Dong Wang (University of Illinois at Urbana-Champaign, USA)

IPCCC 2021 Day Two – Friday, October 29

IPCCC 2021 Virtual Conference Program [US Central Daylight Time]

Session 5: Poster Session 08:30-9:00 Chair: Zaobo He

***An Air Quality Prediction Model Based on Deep Learning and Wavelet Analysis Considering the COVID-19 Pandemic Factors**
Teng Pu, Gang He, Honghao Cai, Yinghua Luo and Minqi Wu (Southwest University of Science and Technology, China)

***An End-To-End Method for Teenagers Potential Depression Detection on Social Media**
Stephanie Lei (Marquette High School, USA), Wenyi Su (Whittle School and Studios, China)

KEYNOTE SPEAKER

09:00-10:00 Chair: Ningfang Mi

Blockchains with AI for Risk Management: Professor Raj Jain

Barbara J. and Jerome R. Cox, Jr. Professor of Computer Science and Engineering, Washington University in Saint Louis

Session 6a: Scheduling and System Optimization

10:00-12:00 Chair: Xiaomei Zhang

A Service Migration Method for Resource Competition in Mobile Edge Computing

JiRun Duan, Ke Ren, Wei Zhou, Yueyue Xu and Wanchun Dou (Nanjing University, China)

Multi-objective Dynamic Auction Mechanism for Online Advertising

Yiqing Wang (Shanghai Jiao Tong University, China), Junqi Jin (Alibaba Group, China), Zhenzhe Zheng (Shanghai Jiao Tong University, China), Haiyang Xu (Alibaba Group, China), Fan Wu (Shanghai Jiao Tong University, China), Yuning Jiang (Alibaba Group, China), Guihai Chen (Shanghai Jiao Tong University, China)

FACTS: Power-Aware Charging Time Scheduling in Wireless Rechargeable UAV Networks

Mengqi Li, Liang Liu, Yanlin Wang, Jie Xi, Lisong Wang (Nanjing University of Aeronautics and Astronautics, China)

VideoKV: A Fast Key-Value Store For Intelligent Video Surveillance Terminals

Zhenli Cui and Yu Luo (National University of Defense Technology, China)

***A millimeter-wave Multi-channel MAC with Dynamic Spectrum Access Capability for Mobile Self-organizing Heterogeneous Networks**

Peng Feng, Yuebin Bai, Zerui Guo and Xiaolin Wang (Beihang University, China), Yining Zhang (Beijing Institute of Technology, China), Bojian Bai (Harbin Engineering University, China), Junmin Zhang (Beihang University, China)

***Adaptive Video Streaming with Scalable Video Coding using Multipath QUIC**

Wang Yang and Jing Cao (Central South University, China), Fan Wu (Tsinghua University, China)

Session 6b: System Security

10:00-12:00 Chair: Luca Davoli

ALLPC: A Lightweight Block Cipher Based on Generalized Feistel Networks for IoT

Junhua Cheng, Songtao Guo and Jing He (Chongqing University, China)

JointCloud Cross-chain Verification Model of Decentralized Identifiers

Tao Zhong, Junsheng Chang and Peichang Shi (National University of Defense Technology, China)

Three-party Integer Comparison and Applications

Jie Ma, Bin Qi and Kewei Lv (University of Chinese Academy of Sciences, China)

Benchmarking of Pre- and Post-quantum Group Encryption Schemes with Focus on IoT

Thomas Prantl, Dominik Prantl, André Bauer, Lukas Iffländer and Alexandra Dmitrienko (University of Würzburg, Germany), Christian Krupitzer (University of Hohenheim, Germany), Samuel Kounev (University of Würzburg, Germany)

The Diminished Importance of Connection-based Features in Intrusion Detection

Jessil Fuhr and Isaac Hanna, Feng Wang (Liberty University, USA), Yongning Tang (Illinois State University, USA)

***Encrypted All-reduce on Multi-core Clusters**

Mohsen Gavahi, Abu Naser, Cong Wu, Mehran Sadeghi Lahijani, Zhi Wang and Xin Yuan (Florida State University, USA)

Lunch Break: 12:00-13:00

IPCCC 2021 Day Two [continued] – Friday, October 29

IPCCC 2021 Virtual Conference Program [US Central Daylight Time]

Session 7a: Distributed Systems

13:00-15:00 Chair: Honggang Zhang

A Scalable Approach to Service Placement in Fog/Cloud Environments

Shehenaz Shaik and Sanjeev Baskiyar (Auburn University, USA)

Enel: Context-aware Dynamic Scaling of Distributed Dataflow Jobs Using Graph Propagation

Dominik Scheinert, Houkun Zhu, Lauritz Thamsen, Morgan Karl Geldenhuy, Jonathan Will, Alexander Acker, Odej Kao (Berlin Institute of Technology, Germany)

One Layer for All: Efficient System Security Monitoring for Edge Servers

Lele Ma (William and Mary, USA)

Zero-bias Deep Neural Network for Quickest RF Signal Surveillance

Yongxin Liu (Auburn University at Montgomery, USA), Yingjie Chen (Qingdao University, China), Jian Wang, Shuteng Niu, Dahai Liu and Houbing H Song (Embry-Riddle Aeronautical University, USA)

***CODS: Cloud-assisted Object Detection for Streaming Videos on Edge Devices**

Tengpeng Li and Xiaoqian Zhang (University of Massachusetts, USA), Nam S Nguyen (University of Wisconsin-Stout, USA), Bo Sheng (University of Massachusetts, USA)

***QoSP: A Priority-based Queueing Mechanism in Software-defined Networking Environments**

Mohamed Rahouti (Fordham University, USA), Kaiqi Xiong (University of South Florida, USA), Yufeng Xin (University of North Carolina, USA), Nasir Ghani (University of South Florida, USA)

Session 7b: High Performance Computing

13:00-15:00 Chair: Arup Chakraborty

A Simulation Study of Hardware Parameters for Future GPU-based HPC Platforms

Saptarshi Bhowmik (Florida State University, USA), Nikhil Jain (Lawrence Livermore National Laboratory, USA), Xin Yuan (Florida State University, USA), Abhinav Bhatele (University of Maryland, USA)

An Efficient Shuffle-light FFT Library

Xiaoming Li and Salvatore Servodio (University of Delaware, USA)

Differential Shadowing: A Resilience Framework for Extreme-scale, Heterogeneous Environments with Non-uniform Node Failure Distribution

Longhao Li, Taieb Znati and Rami Melhem (University of Pittsburgh, USA)

SCB: Flexible and Efficient Asymmetric Computations Utilizing Symmetric Cryptosystems Implemented with Intel SGX

Wenyi Ouyang (University of Chinese Academy of Sciences, China), Qiong Xiao Wang, Wei Wang and Jingqiang Lin (Chinese Academy of Sciences, China), Yaxi He (University of Chinese Academy of Sciences, China)

***A General and Practical Framework for Realization of SDN-based Vehicular Networks**

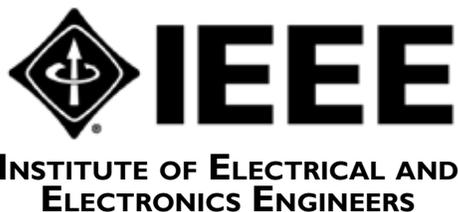
Juan Leon and Oscar Bautista (Florida International University, USA), Abdullah Aydeger (Southern Illinois University, USA), Suat Mercan and Kemal Akkaya (Florida International University, USA)

***SNIS: Storage-network Iterative Simulation for Disaggregated Storage Systems**

Danlin Jia (Northeastern University, USA), Tengpeng Li and Xiaoqian Zhang (University of Massachusetts, USA), Li Wang and Mahsa Bayati (Northeastern University, USA), Ron Lee (Samsung Semiconductor Inc., USA), Bo Sheng (University of Massachusetts, USA), Ningfang Mi (Northeastern University, USA)

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IPCCC 2021 Day Three – Saturday, October 30

IPCCC 2021 Virtual Conference Program [US Central Daylight Time]

Session 8a: Workshop on Edge Intelligence for 6G Networks

08:00 - 10:00 Chair: Wen Wu

Communication-efficient Quantized SGD for Learning Polynomial Neural Network

Zhanpeng Yang, Yong Zhou, Youlong Wu and Yuanming Shi (Shanghai Tech University, China)

Incentive Mechanism Design for Blockchain Enabled Distributed Content Caching

Jia Guo, Wei Wang, Zuguang Li and Shan Sun (Nanjing University of Aeronautics and Astronautics, China)

NOMA-assisted Wireless Caching in Vehicular Networks: A Online Scheduling Strategy

Yanglong Sun, Jianxin Zhang and Yuliang Tang (Xiamen University, China)

Resource Allocation Algorithm for MEC Based on Deep Reinforcement Learning

Yijie Wang, Xin Che, Ying Chen and Shougang Du (Beijing Information Science and Technology University, China)

Two-layer Federated Learning for Scene Text Detection

Haolin Wang, Xiao Xiao, Yilong Hui, Zhisheng Yin and Nan Cheng (Xidian University, China)

Session 8b: Workshop on Management, Measurement and Data Transmission of IoT

08:00 - 10:00 Chair: Fu Chen

A Traceability System of Livestock Products Based on Blockchain and the Internet of Things

Yuejing Chen, Ailian Zhou, Xiaohe Liang, Nengfu Xie, Huijuan Wang and Xiaoyu Li (Chinese Academy of Agricultural Sciences, China)

Methodological Principles for Deep Learning in Software Engineering

Tao Lin (Tao Algorithm, USA), Fu Chen (Central University of Finance and Economics, China), Xue Fu (Tao Algorithm, USA)

MQTT based Wi-Fi Communication Between Microcontroller and FPGA

Brendan P. Beauchamp (Grand Valley State University, USA)

Research on Tag Method for Joint Extraction of Domain-oriented Entity and Relation

Yuxin Shi, Ailian Zhou, Xiaohe Liang, Nengfu Xie, Saisai Wu and Xiaoyu Li (Chinese Academy of Agricultural Sciences, China)

Session 8c: Workshop on Security and Privacy for Internet of Things and Cyber-Physical Systems

8:00 - 10:00 Chair: Bin Jiang

Identification of Cotton Growing Stage Based on Faster-RCNN

Zekai Feng, Gaobi Kang, Fanguo Zeng, Xuejun Yue (South China Agriculture University, China)

Learning to Detect: A Data-driven Approach for Network Intrusion Detection

Zachary Tauscher, Yushan Jiang, Kai Zhang, Jian Wang and Houbing H Song (Embry-Riddle Aeronautical University, USA)

Performance Evaluation for a Post-quantum Public-key Cryptosystem

Thomas Prantl, Dominik Prantl, Lukas Beierlieb and Lukas Iffländer (University of Würzburg, Germany), Christian Krupitzer (University of Hohenheim, Germany), Alexandra Dmitrienko, Samuel Kounev (University of Würzburg, Germany)

Software Defined Radio Based Security Analysis for Unmanned Aircraft Systems

Harry Romesburg (St. Bonaventure University, USA), Jian Wang and Yushan Jiang (Embry-Riddle Aeronautical University, USA), Huihui H Wang (St. Bonaventure University, USA), Houbing H Song (Embry-Riddle Aeronautical University, USA)

Spectral Data Classification By One-dimensional Convolutional Neural Networks

Fanguo Zeng, Wen Peng, Gaobi Kang, Zekai Feng and Xuejun Yue (South China Agriculture University, China)

Transfer Learning Based Crop Disease Identification Using State-of-the-art Deep Learning Framework

Gaobi Kang (South China Agriculture University, China), Jian Wang (Embry-Riddle Aeronautical University, USA), Xuejun Yue, Fanguo Zeng and Zekai Feng (South China Agricultural University, China)

End of the IPCCC 2021 Virtual Conference

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PAPER ABSTRACT DUE: June 15th, 2022

FULL PAPER DUE: June 30th, 2022

ACCEPTANCE NOTIFICATION: August 15th, 2022

CAMERA READY DUE: August 30th, 2022

IPCCC 2021: KEYNOTE SPEAKER

Blockchains with AI for Risk Management: Professor Raj Jain

Barbara J. and Jerome R. Cox, Jr. Professor of Computer Science and Engineering, Washington University in Saint Louis

Friday, October 29 09:00-10:00 AM CDT

ABSTRACT

Blockchains has found numerous applications in Fintech, supply chains, and contracts because it is an ideal distributed consensus where all nodes agree on the validity of transactions in a block without needing a central trusted party. The consensus is binary - agree or disagree - True or False.

In this era of big data, we need to move blockchains beyond data storage to provide knowledge. In the real world, there are many situations in which various participants may not fully agree, and their opinions may be probabilistic, leading to probabilistic agreements. In this talk, Prof. Jain will present his recent extensions using AI that allow blockchains to be used for group decisions that may not be binary. These extensions enable blockchains to be used for group decision making and risk management when the group sizes are large, and group members may want to remain anonymous.

In particular, Prof. Jain will describe numerous use cases of this idea. Such situations frequently arise in network security and risky investments.

BIOGRAPHY

Raj Jain is currently the Barbara J. and Jerome R. Cox, Jr., Professor of Computer Science and Engineering at Washington University in St. Louis. Dr. Jain is a Life Fellow of IEEE, a Fellow of ACM, a Fellow of AAAS, a recipient of the 2018 James B. Eads Award from St. Louis Academy of Science, 2017

ACM SIGCOMM Life-Time Achievement Award.

Previously, he was one of the Cofounders of Nayna Networks, Inc., a Senior Consulting Engineer at Digital Equipment Corporation in Littleton, Mass, and then a professor of Computer and Information Sciences at Ohio State University in Columbus, Ohio. With 34,000+ citations, according to Google Scholar, he is one of the highly cited authors in computer science.

Further information: www.cse.wustl.edu/~jain/





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- Fundamental Theory and Algorithms
- Internet of Things
- Internet Services and Network Management
- Mobile Ad Hoc, Sensor and Mesh Networks
- Multimedia Networking
- Many-core and Heterogeneous Computing
- Network Data Mining
- Network Information Assurance and Security
- Network Protocols
- Online Social Network Analysis
- Parallel and Distributed Systems
- Performance Evaluation and Modeling
- Security and Privacy
- Smart Grid and Intelligent Mission Critical Operations
- Smart Health Systems, Wearable, and Implantable Systems
- Smartphone and Mobile Applications
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