The 6th International Conference on Smart Computing and Communication (SmartCom 2021)

December 29 - 31, 2021
New York, USA

Conference Program and Information Booklet

Organized By
SmartCom 2021 Committee

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Springer
Lecture Notes in Computer Science
Longxiang High Tech Group Inc.
North America Chinese Talents Association

Smartcom 2021 Program at a Glance

Wednesday, December 29th, 2021		
	Room A	Room B
15:00 -17:00	Registration	
Thursday, December 30th, 2021		
	Room A	Room B
8:30 – 8:45	Opening	
8:45 – 9:45	Keynote	
9:45 – 10:00	Award Announcement	
	Break	
11:00 – 12:00	SmartCom 1	SmartCom 2
12:00 – 13:00	SmartCom 3	SmartCom 4
13:00 – 14:00	SmartCom 5	SmartCom 6
14:00 – 15:00	SmartCom 7	SmartCom 8
15:00 – 16:00	SmartCom 9	SmartCom 10
16:00 – 17:00	SmartCom 11	SmartCom 12
Friday, December 31st, 2021		
9:00 – 12:00	Group discussion	

Registration:

Online Registration System
(http://www.cloud-conf.net/smartcom/2021/registration.html)

Presentation Online Rooms:

Zoom (https://zoom.us/)

Virtual Conference Link:
TBD

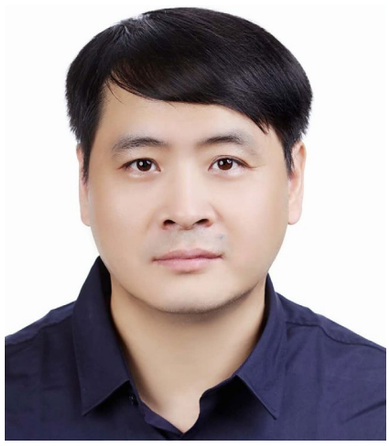
Important Notice:

Due to the outbreak of COVID-19, this year the SmartCom 2021 will be a virtual conference online.

For all participants, please do notice all the time mentioned in this booklet is based on the time zone of east USA which is **Eastern Daylight Time (EDT), UTC -4. Please be careful on the conference time.**

Smartcom 2021 Keynote

Dec. 30th, 2021, 8:45, Room A



Topic: Cyber-Physical-Social Intelligence: Design, Analytics, Security and Privacy

Prof. Laurence T. Yang

St. Francis Xavier University, Canada

Distinguished Professor, IEEE Fellow

加拿大工程院院士, 加拿大工程研究院院士

Bio: The booming growth and rapid development in embedded systems, wireless communications, sensing techniques and emerging support for cloud computing and social networks have enabled researchers and practitioners to create a wide variety of Cyber-Physical-Social Systems (CPSS) that reason intelligently, act autonomously, and respond to the users' needs in a context and situation-aware manner. The CPSS are the integration of computation, communication and control with the physical world, human knowledge and sociocultural elements. It is a novel emerging computing paradigm and has attracted wide concerns from both industry and academia in recent years. Currently, CPSS are still in their infancy stage. Our first ongoing research is to study effective and efficient approaches for CPSS modeling and general system design automation methods, as well as methods analyzing and/or improving their power and energy, security, trust and reliability features. Once the CPSS have been designed, they collect massive data (Volume) from the physical world by various physical perception devices (Variety) in structured/semi-structured/unstructured format and respond the users' requirements immediately (Velocity) and provide the proactive services (Veracity) for them in physical space or social space. These collected big data are normally high dimensional, redundant and noisy, and many beyond the processing capacity of the computer systems. Our second ongoing research is focused on the Big Data-as-a-Service framework, which includes data representation, dimensionality reduction, incremental and distributed processing, security and privacy, deep learning, clustering, prediction and proactive services, aiming at representing and processing big data generated from CPSS, providing more valued smart services for human and refining the previously designed CPSS. This talk will present our latest research on these two directions. Corresponding case studies in some applications such as smart traffics will be shown to demonstrate the feasibility and flexibility of the proposed system design methodology and analytic framework.

Abstract: Laurence T. Yang got his BE in Computer Science and Technology and BSc in Applied Physics both from Tsinghua University, China and Ph.D in Computer Science from University of Victoria, Canada. He is a professor and W.F. James Research Chair at St. Francis Xavier University, Canada. His research includes parallel, distributed and cloud computing, embedded and ubiquitous/pervasive computing, and big data. He has published 200+ papers in the above areas on top IEEE/ACM Transactions/Journals including 6 and 25 papers as top 0.1% and top 1% highly-cited ESI papers, respectively. He has been involved actively act as a steering chair for 10+ IEEE international conferences. He is the chair of IEEE CS Technical Committee of Scalable Computing (2008-2011, 2018-), the co-chair of IEEE SMC Technical Committee on Cybermatics (2016-) and the vice-chair of IEEE CIS Technical Committee on Smart World (2016-2019). In addition, he is serving as an editor for many international journals and is an author/co-author or an editor/co-editor of more than 25 books from well-known publishers, invited to give around 50 keynote talks at various international conferences and symposia. His recent honours and awards include IEEE Canada C. C. Gotlieb Computer Medal (2020), Fellow of Institute of Electrical and Electronics Engineers (2020), IEEE TCCPS Most Influential Paper Award on Cyber-Physical Systems (2020), IEEE SCSTC Most Influential Paper Award on Smart Computing (2019), IEEE TCBD Best Journal Paper Award on Big Data (2019), Clarivate Analytics (Web of Science Group) Highly Cited Researcher (2019), Fellow of Engineering Institute of Canada (2019), AMiner Most Influential Scholar Award for Internet of Things (2018), IEEE TCCPS Distinguished Leadership Award on Cyber-Physical Systems (2018), IEEE SCSTC Life-Career Achievement Award on Smart Computing (2018), Fellow of Canadian Academy of Engineering (2017), IEEE System Journal Best Paper Award (2017), IEEE TCSC Award for Excellence in Scalable Computing (2017), Elsevier JCSS Journal Most Cited Paper Award (2017) and the PROSE Award on Engineering and Technology (2010).

Technical Program

The 6th International Conference on Smart Computing and Communication (SmartCom 2021)

SmartCom – Session 1

12/30/2021 11:00-12:00, Room A

86 **AreaTransfer: A Cross-City Crowd Flow Prediction Framework Based on Transfer Learning**
Xiaohui Wei, Tao Guo, Hongmei Yu, Zijian Li, Hao Guo and Xiang Li

115 **High-performance and customizable vector retrieval service based on Faiss in power grid scenarios**
Pengyu Zhang

117 **An Automatic Design Method of Similarity Fusion Neural Network based on SG-CIM Model**
Xiaoqi Liao, Xinliang Ge, Yufei Li, Wenhui Hu, Xin He, Shijie Gao, Xiaoming Chen and Xueyang Liu

156 **OPN-DTSP: Optimized Pointer Networks for Approximate Solution of Dynamic Traveling Salesman Problem**
Zhixiang Xiao, Mingming Lu and Wenyong He

SmartCom – Session 2

12/30/2021 11:00-12:00, Room B

49 **A Multi-attribute Decision Handover Strategy for Giant LEO Mobile Satellite Networks**
Tingting Zhang, Lintao Yang, Tao Dong, Jie Yin, Zhihui Liu and Zhanwei Wang

160 **The Development and Trend of Vehicle Functional Safety**
Jun Guo, Gejing Xu, Junjie Wu and Lan Yang

82 **Research on Data Fault-tolerance Method Based on Disk Bad Track Isolation**
Xu Zhang, Li Zheng and Sujuan Zhang

77 **Sci-Base A resource aggregation and sharingecology for software on discovery science**
Meng Wan, Jiaheng Wang, Jue Wang, Rongqiang Cao, Yangang Wang and He Li

SmartCom – Session 3

12/30/2021 12:00-13:00, Room A

22 **Efficient online service based on go-tensorflow in the middle-station scenario of grid service**

Peng Liu, Yiming Lu, Guoqing Wang and Wang Zhou

79 **Trust Evaluation Method Based on the Degree of Code Obfuscation** Lu Chen, Zaojian Dai, Nige Li and Yong Li

50 **ML-ECN: Multilayer Emergency Communication Network Based on the Combination of Space and Earth**
Liang Zhou, Hao Li, Jianguo Zhou, Changjia Zhou and Tianzhu Shi

84 **Research on the Influence of Enterprise Financial Accounting Based on Modern Information Technology**
Jie Wan

SmartCom – Session 4

12/30/2021 12:00-13:00, Room B

155 **Muti-agent Offloading Optimization for UAV Assisted MEC Systems via Deep Reinforcement Learning**
Hang He, Tao Ren, Yuan Qiu, Zheyuan Hu and Yanqi Li

158 **A Novel Secure Speech Biometric Protection Method**
Lan Yang, Zongbo Wu and Jun Guo

25 **Energy-Efficient Federated Learning in IoT Networks**
Deyi Kong, Zehua You, Qimei Chen, Juanjuan Wang, Jiwei Hu, Yunfei Xiong and Jing Wu

113 **Seamless Group Pre-Handover Authentication Scheme for 5G High-Speed Rail Network**
Zongxiao Li, Di Liu, Peiran Li, Dawei Li, Yu Sun, Zhenyu Guan, Jianwei Liu and Jie Gao

SmartCom – Session 5

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110 **A Hop-Parity-involved Task Schedule for Lightweight Racetrack-Buffer in Energy-Efficient NoCs**
Wanhao Cao, Jihe Wang, Danghui Wang and Kuizhi Mei

114 **Anomaly Detection System of Controller Area Network (CAN) Bus Based on Time Series Prediction**
Xiangtian Tan, Binbin Ge, Chen Liu and Bo Li

73 **Defects Detection System of Medical Gloves based on Deep Learning**
Jing Wang, Meng Wan, Jue Wang, Xiaoguang Wang, Yangang Wang, Fang Liu, Weixiao Min, Lei He and Lihua Wang

85 **Research on Financial Information Management under Big Data**
Dansheng Rao and Jie Wan

SmartCom – Session 6

12/30/2021 13:00-14:00, Room B

129 **A Detection Method for I-CIFA Attack in NDN Network** **Meng**
Yue, Han Zheng, Wenzhi Fen and Zhijun Wu

152 **Vertical Handover of Satellite-Ground Fusion Network Based on Time and Location under Early Access Strategy**
Yun Liu, Shenghao Ding, Jiaxin Huang, Hao Jiang, Jing Wu, Ruiliang Song, Ningning Lu and Zhiqun Song

48 **Link-Efficiency Multi-Channel Transmission Protocol for Data Collection in UASNs**
Xiaohui Wei, Xiaonan Wang, Haixiao Xu, Xingwang Wang and Hao Guo

157 **A Novel Client Sampling Scheme for Unbalanced Data Distribution under Federated Learning**
Bo Chen, Xiaoying Zheng, Yongxin Zhu and Meikang Qiu

SmartCom – Session 7

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78 **Joint Accuracy and Resource Allocation for Green Federated Learning Networks**
Xu Chu, Xiaoyang Liu, Qimei Chen, Yunfei Xiong, Juanjuan Wang, Han Yu and Xiang Hu

89 **Achieving Threshold Traceability in Anonymous Consortium Blockchain**
Yunwei Guo, Haokun Tang, Andi Tan, Keke Gai and Xiongwei Jia

161 **Design and Development of Simulation Software based on AR-based Torricelli Experiment**
Yan Hui and Jie Zhan

46 **Chinese Fine-Grained Sentiment Classification Based on Pre-Trained Language Model and Attention Mechanism**
Faguo Zhou, Jing Zhang and Yanan Song

SmartCom – Session 8

12/30/2021 14:00-15:00, Room B

87 **Parallel improved quantum evolutionary algorithm for complex optimization problems**
Sun Yapeng

23 **Resource Modeling of Power Communication Packet Optical Transport Network**
Zhixin Lu, Lianyu Fu, Yizhao Liu and Xiyang Yin

83 **Charge prediction for Criminal Law with semantic attributes**

Cong Zhou, Weipeng Cao and Zhiwu Xu

76 **A Survey of Machine Learning and Deep Learning Based DGA Detection Techniques**

Amr Mh Saeed, Danghui Wang, Hamas Am Alnedhari, Kuizhi Mei and Jihe Wang

SmartCom – Session 9

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80 **An SG-CIM Model Table Classification Method Based on Multi Feature Semantic Recognition Technology**

Pengyu Zhang, Chunmei Wang, Baocong Hao, Wenhui Hu, Xueyang Liu and Lizhuang Sun

154 **Federated Learning and MADDPG based on Computational Offloading and Resource Allocation in MEC**

Yiming Yao, Tao Ren, Yuan Qiu, Zheyuan Hu and Yanqi Li

159 **Thunderstorm Recognition Based on Neural Network PRDsNET Model**

Shengchun Wang, Danyi Hu, Changqing Zhou and Jingyu Xu

75 **Secure Shell Remote Access for Virtualized Computing Environment**

He Li, Rongqiang Cao, Hanwen Xiu, Meng Wan, Kai Li, Xiaoguang Wang, Yangang Wang and Jue Wang

SmartCom – Session 10

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112 **A novel deception defense-based honeypot system for power grid network**

Mingjun Feng, Buqiong Xiao, Bo Yu, Jianguo Qian, Xinxin Zhang, Peidong Chen and Bo Li

81 **BBCT: A Smart Blockchain-based Bulk Commodity Trade System**

Jian Yang, Yawen Lu, Zhihui Lu, Jie Wu, and Hui Zhao

153 **Research on Graph Structure Data Adversarial Examples Based on Graph Theory Metrics**

Wenyong He, Mingming Lu, Yiji Zheng, Neal N. Xiong

111 **Analysis and Discussion on Standard Cost Allocation Model in State Grid**

Shaojun Jin, Jun Pan, Qian Chen and Bo Li

SmartCom – Session 11

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74 **Mobile Terminal Identity Authentication Method Based on IBC**

Xuqiu Chen, Wei Wang, Wei Gan, Yi Yang, Su Yuan and Meng Li

116 **APT attack heuristic induction honeypot platform based on Snort and OpenFlow**
Bo Dai, Zhenhai Zhang, Ling Wang and Yuan Liu

51 **Multi-attribute authentication method based on continuous trust evaluation**
Jing Guo, Bingsen Li, Ping Du, Ziyi Xin, Jianjun Zhang and Jiawei Chen

SmartCom – Session 12

12/30/2021 16:00-17:00, Room B

38 **A Gossip Based Inter-Grid Architecture**
Abdulrahman Azab

39 **Analyzing Unikernel Support for HPC:Experimental Study of OpenMP**
Abdulrahman Azab

47 **Study on the Organization and Governance of Bigdata for Lifelong Education**
Li Ma, Huihong Yang, Wenyin Yang, Zexian Yang and Qidi Lao

118 **Fault Location Technique of Distribution Power Network Based on Traveling Wave Measurement**
Chunyi Lu, Kaili Yan and Mi Zhou