The 15th International Symposium on Pervasive Systems, Algorithms and Networks (I-SPAN 2018)

Yichang, China, October 16-18, 2018

https://grid.chu.edu.tw/ispan2018/

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Message from I-SPAN 2018 General Chairs

Welcome to the 15th International Symposium on Pervasive Systems, Algorithms, and Networks (I-SPAN 2018). I-SPAN 2018 provides vibrant opportunities for scientists, researchers, and practitioners to share their research experience, original research results and practical development experiences to the design, use, analysis, and application of Pervasive Systems, Algorithms, and Networks.

It is the 15 anniversary of I-SPAN. Many changes and challenges have happened in the past years. In order to enlarge the scope of I-SPAN and meet the trend of research and technology, (1) 11 tracks - Track 1: Big Data Analytics and Applications, Track 2: Cloud, Fog and Edge Computing, Track 3: Health and Biomedical Informatics, Track 4: Parallel, Distributed Algorithms and Graph Computing, Track 5: Computer Networks, Web Service/Technologies, and Software Defined Networking, Track 6: Mobile Computing and Communication, Track 7: Artificial Intelligence and Nature-Inspired Computing, Track 8: Global Networking and Cyber Security, Track 9: Multimedia Communication and Computing, Track 10: Internet of Things, Smart City, and Cyber-physical Systems, and Track 11: Graphs and Networks, and (2) 5 workshops are associated with I-SPAN 2018.

I-SPAN2018 will be held on Oct. 16th-18th, 2018 in Yichang, Hubei, China. Yichang (Chinese: 宜昌) is a prefecture-level city located in western Hubei province, China. It is the second largest city in the province after the capital, Wuhan. The Three Gorges Dam is located within its administrative area, in Yiling District. Yichang has long been a major transit port and distribution center of goods, and serves as the economic hub of western Hubei province and an intermediary between the major cities of Chongqing and Wuhan. Participants of I-SPAN 2018 should feel Yichang from many aspects.

We hope that participants will take part in lively research discussions in I-SPAN 2018. We also hope that participants will find some time to enjoy the beauty of the Yichang city.

Ren-Hung Hwang, National Chung Cheng University, Taiwan
Jiannong Cao, Hong Kong Polytechnic University, Hong Kong
Ralf Klasing, CNRS LaBRI_Universite Bordeaux, France
I-SPAN 2018 General Chairs

Message from I-SPAN 2018 Program Chairs

It is our great pleasure to serve as Program Chairs for the 15th International Symposium on Pervasive Systems, Algorithms, and Networks (I-SPAN 2018), held in Yichang, China, October 16-18, 2018. I-SPAN is an interesting and engaging forum for scientists, engineers, researchers, and practitioners from across the globe to exchange ideas and research results related to the design, use, analysis, and application of pervasive systems, architectures, algorithms, networks, and Internet technologies. Through sharing ideas and exchanging research results, we hope I-SPAN 2018 will capture ongoing developments in emerging architectures, models, networks, and technologies for building pervasive systems. Topics of interest in this year focus on the following popular areas in particular, but are not limited to:

- Track 1: Big Data Analytics and Applications
- Track 2: Cloud, Fog and Edge Computing
- Track 3: Health and Biomedical Informatics
- Track 4: Parallel, Distributed Algorithms and Graph Computing
- Track 5: Computer Networks, Web Service/Technologies, and Software Defined Networking
- Track 6: Mobile Computing and Communication
- Track 7: Artificial Intelligence and Nature-Inspired Computing
- Track 8: Global Networking and Cyber Security
- Track 9: Multimedia Communication and Computing
- Track 10: Internet of Things, Smart City, and Cyber-physical Systems
- Track 11: Graphs and Networks

We received a great number of high-quality submissions and a rigorous review process was conducted. Each submission was reviewed by at least two program committee members. All accepted papers in the main tracks, workshops, special sessions and demos/posters will be published in an IEEE Computer Society proceedings (EI indexed). Extended versions of selected excellent papers will be invited for publication in special issues of prestige journals (SCI/EI indexed).

I-SPAN 2018 Program Chairs

Chyi-Ren Dow, Feng Chia University, Taiwan

Reinhard Klette, Auckland University of Technology, New Zealand

Md Zakirul Alam Bhuiyan, Fordham University, USA

Shibo He, Zhejiang University, China

Message from I-SPAN 2018 Steering Chairs

Welcome to the 15th International Symposium on Pervasive Systems, Algorithms and Networks (I-SPAN 2018). It is our great pleasure to have I-SPAN 2018 in YiChang, Hubei, China on October 16-18, 2018. I-SPAN has been successfully held in I-SPAN 1994 (Kanazawa, Japan), I-SPAN 1996 (Beijing, China), I-SPAN 1997 (Taipei, Taiwan), I-SPAN 1999 (Perth, Australia), I-SPAN 2000 (Dallas, Texas, USA), I-SPAN 2002 (Manila, Philippines), I-SPAN 2004 (Hong Kong, China), I-SPAN 2005 (Las Vegas, USA), I-SPAN 2008 (Sydney, Australia), I-SPAN 2009 (Kaoshiung, Taiwan), I-SPAN 2011 (Dalian, China), I-SPAN 2012 (San Marcos, Texas, USA), I-SPAN 2014 (Chengdu, China) and I-SPAN 2017 (Exeter, Devon, UK).

Pervasive systems, Algorithms, and Networks are the main research and investigation for next-generation ICT applications and services. The 15th International Symposium on Pervasive Systems, Algorithms, and Networks (I-SPAN 2018) is a platform for having international scientists, researchers, engineers and practitioners to present and exchange their innovative ideas, practical experiences and latest research results on Pervasive Systems, Algorithms, and Networks. I-SPAN 2018 provides a forum to covers a variety of topics in computing, informatics, communications, big data, cloud computing, AI, cyber security and state of the art applications and services.

A successful international conference cannot be organized well without the voluntary efforts of many people. As the I-SAPN 2018's Steering Chairs, we would like to thank Prof. Ren-Hung Hwang, Prof. Jiannong Cao, and Prof. Ralf Klasing for serving as General Chairs; Prof. Chyi-Ren Dow, Prof. Reinhard Klette, Prof. Md Zakirul Alam Bhuiyan and Prof. Shibo He for serving as Program Co-Chairs; Prof. Shou-Zhi Xu, Prof. Zhou Huan and Prof. Ren Dong for serving as local Co-Chairs. We also thank all the Workshop Chairs and Track Chairs and Program Committee members for their significant contribution to I-SPAN 2018.

Thank you so much for attending I-SPAN 2018 in YiChang, which is the starting city of touring the great China Three Gorges. We hope you enjoy the conference and YiChang.

I-SPAN 2018 Steering Chairs

Frank Hsu, Fordham University, USA

Chung-Ming Huang, National Cheng Kung University, Taiwan

Robert Hsu, National Chung Cheng University, Taiwan

Message from I-SPAN 2018 Workshop Chairs

This volume contains the proceedings of the workshops held in parallel with the 15th International Symposium on Pervasive Systems, Algorithms and Networks (I-SPAN 2018), in Yichang, China, October 16-18, 2018.

The following workshops have been selected to complement the spectrum of the main conference, providing a forum for international researchers and professionals from academia and industry to share their original research ideas and practical development experiences on new challenges and emerging topics in the field.

- HPCA 2018: International Workshop on High Performance Computing and Its Application
- SmartLT 2018: International Workshop on Smart Living Technology
- I2oT 2018: International Workshop on Intelligent Internet of Things
- IHC 2018: International Workshop on Intelligent Health Care: AI and Systems
- RealUSR 2018: International Workshop on Realization of University Social Responsibility

Each workshop is a variation on the theme of ubiquitous systems, algorithms, networks and applications, which is the overarching focus of this conference. All papers published in these workshop proceedings were carefully selected by the Program Committee based on independent referee reports. Each paper was evaluated on originality, quality, contribution, presentation and consistency with the theme of the workshops.

We would like to thank I-SPAN 2018 General Chairs, Prof. Ren-Hung Hwang, Prof. Jiannong Cao, and Prof. Ralf Klasing for their guidance and support and Program Chairs, Prof. Chyi-Ren Dow, Prof. Reinhard Klette, Prof. Md Zakirul Alam Bhuiyan, and Prof. Shibo He for their tireless assistance . Our thanks also go to the authors for their invaluable contributions and to all Program Committee members and reviewers for providing timely and insightful reviews. We hope you all enjoy your time in Yichang, China, and we appreciate your participation in I-SPAN 2018 workshops.

I-SPAN 2018 Workshop Chairs

HPCA 2018 Co-Chairs:
Che-Lun Hung, Providence University, Taiwan
Chun-Yuan Lin, Chang Gung University, Taiwan
Chih-Hong Chang, Providence University, Taiwan

SmartLT 2018 Co-Chairs:
Chung-Pin Hung, Nan Kai University of Technology, Taiwan
Pei-Jung Lin, Hungkuang University, Taiwan
Wei-Her Hsieh, Asia University, Taiwan

I2oT 2018 Chair:
Lai Tu, HUST, China

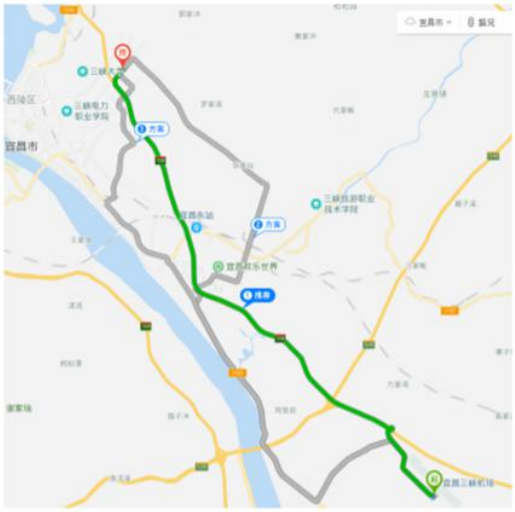
IHC 2018 Co-Chairs:
Daniel Sun, daniel.sun@data61.csiro.au, Commonwealth Scientific and Industrial Research Organisation, Australia

RealUSR 2018 Co-Chairs:
Sheng-Tsung Hou, Feng Chia University, Taiwan
Hui-Yu Chung, Feng Chia University, Taiwan
Hsi-Min Chen, hmchen@mail.fcu.edu.tw, Feng Chia University, Taiwan

How to Get to I-SPAN 2018 Symposium Site

1) Airport: Sanxia Airport (Yichang), You may transfer your flight from many cities, such as Wuhan, Beijing, Shanghai, Guangzhou, Shengzhen. 25 minutes, 70 Yuan RMB (from highway) by taxi, or 20 Yuan RMB40 minutes to Qingjiang Hotel by Airport Express then 12 yuan RMB to destination by Taxi.

2) Railway Station: Yichangdong Railway Station, 15 minutes, 26 Yuan RMB (from highway) by taxi, or 21 Yuan RMB (Trough the city), 50 minutes, 2 yuan RMB by BUS B68k orB68.



The conference venue: Great Wall Holiday Hotel
https://editor.360.b-force.cn/pano/53246?from=timeline
ADDRESS: No.62 Fazhan Avenue， High-Tech Zone, Yichang City, Hubei, 443000, China
TEL: 0717-6059599

Floor Plan of Conference Site

Registration: Reception Hall, 1st Floor

Room A: Main Meeting Room, 4th Floor

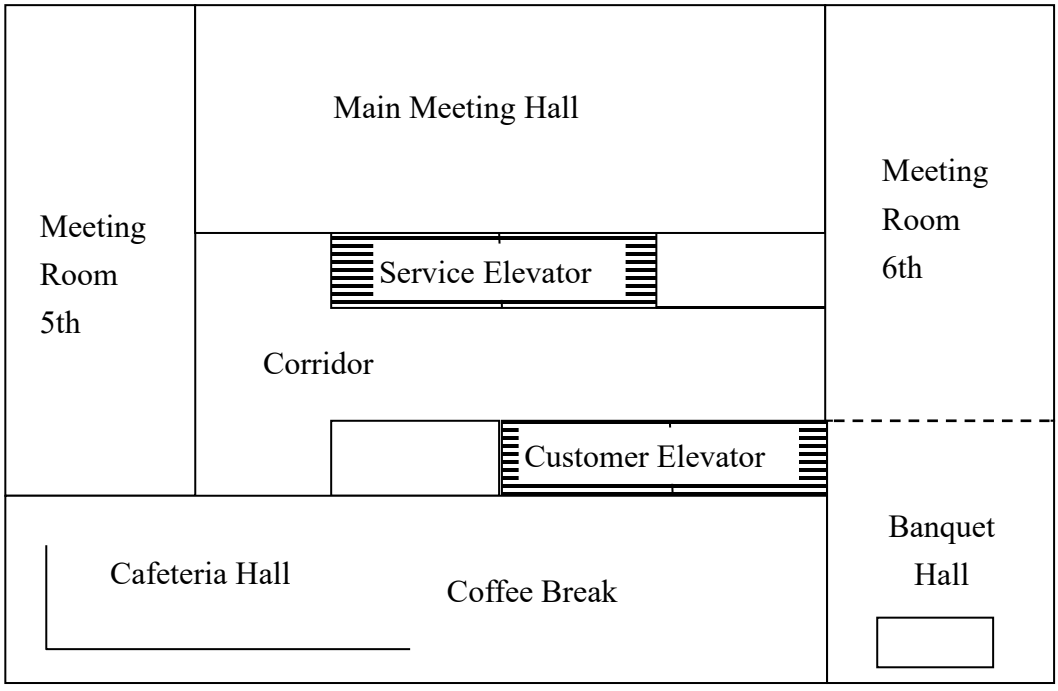
Room B: Meeting Room No.5, 4th Floor

Room C: Meeting Room No.6, 4th Floor

Cafeteria Hall: 4th Floor

Coffee Break: in Cafeteria Hall

Accommodation: Room At 5th to 15th floor



I-SPAN 2018 Program

16-Oct.-2018 (Tuesday)		
8:20-9:00	**Registration (Reception Hall, 1st Floor)**	
8:50-9:10	**Opening plenary** (Room A)	
9:10-10:00	**Keynote** : Jie Wu On NFV Middlebox Placement Problems in Software-Defined Networks Center for Networked Computing, Temple University (Room A)	
10:00-10:20	**Coffee Break (Cafeteria Hall)**	
10:20-12:00	Session 1: (Room A) Internet of Things, Smart City, and Cyber-physical Systems	Session 2: (Room B) SmartLT 2018;
12:00-13:20	**Lunch (Dining Hall)**	
13:20-15:00	Session 3: (Room C) Internet of Things, Smart City, and Cyber-physical Systems	Session 4: (Room B) SmartLT 2018; Global Networking and Cyber Security
15:00-15:20	**Coffee Break (Dining Hall)**	
15:20-17:00	Session 5: (Room C) Big Data Analytics and Applications Cloud, Fog and Edge Computing	Session 6: (Room B) HPCA 2018 Graphs and Networks

17-Oct.-2018 (Wednesday)		
8:20-9:00	**Registration (Reception Hall, 1st Floor)**	
9:00-9:50	**Keynote :** Victor C. M. Leung Content-centric Edge Caching for 5G Mobile Internet and Beyond The University of British Columbia, Vancouver, BC, Canada **(Room A)**	
9:50-10:40	Keynote: Jiming Chen Data-Driven Applications for Bike-sharing Systems Changjiang Scholars Chair Professor (MOE) with College of Control Science and Engineering, Vice Director of Faculty of Information Technology, Deputy Director of State Key Laboratory of Industrial Control Technology, and member of academic committee at Zhejiang University, China. **(Room A)**	
10:40-11:00	**Coffee Break (Dining Hall)**	
11:00-12:00	**Panel Discussion**	
12:00-13:20	**Lunch(Dining Hall)**	
13:20-15:00	Session 1: (Room C) Computer Networks, Web Service/Technologies, and Software Defined Networking	Session 2: (Room B) RealUSR 2018; Health and Biomedical Informatics
15:00-15:20	**Coffee Break(Dining Hall)**	
15:20-17:00	Session 3: (Room C) Computer Networks, Web Service/Technologies, and Software Defined Networking; Artificial Intelligence and Nature-Inspired Computing	Session 4: (Room B) Poster / Demo Paper

18-Oct.-2018 (Thursday)		
8:20-9:00	**Registration (Reception Hall, 1st Floor)**	
9:00-10:00		
10:00-10:20	**Coffee Break (Dining Hall)**	
10:20-12:00	Session 1: (Room C) Mobile Computing and Communication IHC 2018	Session 2: (Room B) I2oT 2018; Parallel, Distributed Algorithms and Graph Computing
12:00-13:20	**Lunch (Dining Hall)**	

16-Oct. Session 1: Internet of Things, Smart City, and Cyber-physical Systems
Session Chair: Shibo He

Design and Implementation of a Ubiquitous Home Controlling and Monitoring System
Yingwu Zhu; Xin Zhang

A Multi-frame Stereo Vision-based Road Profiling Technique for Distress Analysis
Amita Dhiman; Hsiang-Jen Chien; Reinhard Klette

Large-scale 3D Roadside Modelling with Road Geometry Analysis: Digital Roads New Zealand
Ines Ernst; Hongmou Zhang; Sergey Zuev; Martin Knoche; Amita Dhiman; Hsiang-Jen Chien; Reinhard Klette

Balancing Centrality and Similarity for Efficient Spread of Influence in Social Networks
Xiao Hu; Xiaoyan Yin; Yi Meng; Aiqin Hou; Tao Zhang; Baoying Liu

Distributed Asymptotically Synchronization Control for MIMO Nonlinear Multiagent Systems
Wenchao Meng; Heng Zhang; Huan Zhou; Peter X. Liu

16-Oct. Session 2: SmartLT 2018
Session Chair: Pei-Jung Lin

Improved Road Marking Detection and Recognition
Ling Ding, Huyin Zhang, Bijun Li, Jinsheng Xiao, Shejie Lu, Reinhard Klette

An Upper Extremity Rehabilitation System Using Virtual Reality Technology
Pei-Jung Lin, Stephen Hung, Zhen-You Wu, Kang-Hsin Peng, Chun-Chen Lin, Yu-Chen Wang, Han Yu Chen

Trust-based Three-tier Online E-commerce Design
Wei-Chih Hsu, Pao-Yuan Chao, Jia-Jun Cai

A Specific Targeted-Place Mining Method for a Famous Social Network Take Wang-Ye Worship in Taiwan for Example
Yung-Fa Huang, Jong-Shin Chen, Chuan-Bi Lin

Structure and Form in Design – A Workshop Presented to Undergraduate Fashion Students at Asia University
Wei-her Hsieh, M. A. HANN

16-Oct. Session 3: Internet of Things, Smart City, and Cyber-physical Systems
Session Chair: Oumaya Baala

More insights into communication issues in the Internet of Vehicles

Oumaya Baala; Chérifa Boucetta; Kahina Ait Ali; Alexandre Caminada

Media Transfer with Dynamic Bandwidth Adjustment in IoT-Based Home Networks

Chih-Lin Hu; Liangxing Guo; Lin Hui; Boonsit Yimwadsana; Thitinan Tantidham; Snit Sanghlao; Pattanasak Mongkolwat

Multi-feature Fusion based Anomaly electro-Data Detection in Smart Grid

Can Zhang; Fei Wang

Research and Implementation of Dispatch Algorithm for Intelligent Maintenance based on Internet of Things

Jia Cheng; Fang Deng

Biological Features De-identification in Iris Images

Heng Zhang; Huan Zhou; Wenming Jiao; Jie Shi; Qiyan Zang; Jing Sun; Jian Zhang

16-Oct. Session 4: SmartLT 2018; Global Networking and Cyber Security
Session Chair: Chiu-Chiao Chung

Community Interaction and Marketing Using 3D Coloring Augmented Reality in Zhongxing New Village

Cheng-Min Lin, Tzu-Chi Lin, Yu-Ching Lin, Chao-Ming Wang, Chyi-Ren Dow

Evaluation of Cross-disciplinary Course Module Designs for Smart Living Topics

Chiu-Chiao Chung

Practice of Tour Design Curriculum Base on Smart Tourism Development

Chung-pin *Hung; Cheng-Min Lin*

Nudging Data Privacy Management of Open Banking based on Blockchain

Shenglan Ma; Chaonian Guo; Hao Wang; Hong-Ning Dai; Shuhan Cheng; Ruihua Yi

The Wi-Fi Device Authentication Method based on Information Hiding

Wei Liu; Zhehao Yan; Yunhua He

16-Oct. Session 5: Big Data Analytics and Applications; Cloud, Fog and Edge Computing
Session Chair: Koki Kyo

Big Data Analysis of the Dynamic Effects of Business Cycles on Stock Prices in Japan

Koki Kyo

Bank Big Data Architecture based on Massive Parallel Processing Database

Shenglan Ma; Ran Tao; Fangkai Xie; Daicai Zeng; Tongsen Wang

Coordinated optimization of the performance of processors and memory in a heterogeneous system under energy constraints

Wang Zhuowei; Tao Wang; Genpin Zhao; Jinyao Li

A Survey and Implementation on Neural Network Visualization

Yin Chung Leung; Jui-Hung Chang; Ren-Hung Hwang

A Novel Server Consolidation Method Based on Local Storage Integrated with Resource Demand Prediction

Guoliang Zhang; Xiaomin Zhu; Weidong Bao; Dongfeng Tan; Huining Yan

16-Oct. Session 6: HPCA 2018; Graphs and Networks
Session Chair: Jong-Shin Chen

Improvement of Accuracy of Well-Known Convoluational Nerual Networks by Efficient Hybird Strategy

Ren-You Ya, Che-Lun Hung, Chun-Yuan Lin, Hsiao-Hsi Wang

Interference-Aware D2D Communications

Chia-Wei Hu, Feng-Tsun Chien, Chao-Tung Yang, Yu-Wei Chan, Geyong Min

Implementing Secret Sharing Scheme in Parallel

Shyong Jian Shyu, Ying Zhen Tsai

The Implementation of a Virtual Desktop Infrastructure with GPU Accelerated on OpenStack

Chao-Tung Yang, Jung-Chun Liu, Jheng-Yue Lee, Chih-Hung Chang

Fractional matching preclusion for (burnt) pancake graphs

Tianlong Ma; Yaping Mao; Eddie Cheng; Christopher Melekian

17-Oct. Session 1: Computer Networks, Web Service/Technologies, and Software Defined Networking
Session Chair: Robert Hsu

A Proportional Opportunity Based Packet Transmission Technique for IEEE 802.11ac WLAN
Summera Nosheen; Jamil Y Khan

Research and Design on Weighted Adaptive backoff Time Control Protocol for Underwater Acoustic Communication Networks
Jun Wan; Cifa Chen; Wei Li; Yue Sun

An SDN-Based Framework for Improving the Performance of Underprovisioned IP Video Surveillance Networks
Wilson Tan; Cedric Angelo Festin; Sharleen Joy Go

Sentiment Analysis of Chinese Microblog Based on Stacked Bidirectional LSTM
Yue Lu; Junhao Zhou; Hong-Ning Dai; Hao Wang; Hong Xiao

StateFit: A security framework for SDN programmable data plane model
Ren-Hung Hwang; Van-Linh Nguyen; Po-Ching Lin

17-Oct. Session 2: RealUSR 2018; Health and Biomedical Informatics
Session Chair: Sheng-Tsung Hou

Concerning People's Daily Life: Neighborhood Traffic Improvement Plan
Hui-Yu Chung, Shengwan Zhang

From Sharing Good to Build a Common Good Society: Take the Mobility Platform for Vulnerable Groups as an Example
Sheng-Tsung Hou, Hsin-Hung Chen

AR-based Taxi Recommendation by Leveraging Crowd Sharing Comments
Yan Ting Chen, Yu Ho, Yi Xiang Yan, Hsi-Min Chen

Slashing Cabbies through a Mobility Platform of Taiwan Taxi Academy Association
Sheng-Tsung Hou

The Best Practice of University and Community Cooperation in Open Source Software Project - TV Station Media Images Query System for Example
Feng-Cheng Lin; Hsi-Min Chen; Shih-Feng Lin; Hsing-Yi Chu

Unsupervised Optic Cup and Optic Disk Segmentation for Glaucoma Detection by ICICA

Mohammad Norouzifard; Amin Abdollahi Dehkordi; Mohammad Naderi Dehkordi; Hamid Gholamhosseini; Reinhard Klette

17-Oct. Session 3: Computer Networks, Web Service/Technologies, and Software Defined Networking; Artificial Intelligence and Nature-Inspired Computing
Session Chair: Shi-Min Chen

DDoS Attack Identification and Defense using SDN based on Machine Learning Method

LingFeng Yang; Hui Zhao

Design and Implementation of an Adaptive Flow Measurement for SDN-based Cellular Core Networks

Pang-Wei Tsai; Nian Xia; Chun-Yu Hsu; Shu-Wei Lee; Chu-Sing Yang

A Touring and Navigation Service Platform for Mobile Digital Culture Heritage (M-DCH)

Chung-Ming Huang; Yi-An Guo

Two-stage Color ink Painting Style Transfer via Convolution Neural Network

Chengyu Zheng; Yuan Zhang

Tag-based Personalized Music Recommendation

Mengsha Wang; Yingyuan Xiao; Wenguang Zheng; Ching-Hsien Hsu

17-Oct. Session 4: Poster / Demo Paper
Session Chair: Shouzhi Xu

A Beyond 5G Edge Network for Ultra-Low Latency Services

Qingmin Meng; Miao Jiang; Wenjing Yue; Yang Meng

Research on information class laboratory management based on cloud platform

Ting Huang

The disjoint path covers of two-dimensional Torus networks

Jing Li

Structure connectivity and substructure connectivity of (n,k)-star graph networks

Shangwei Lin; Chunfang Li; Shengjia Li

18-Oct. Session 1: Mobile Computing and Communication; IHC 2018
Session Chair: Huan Zhou

Radio Resource Allocation Scheme for Drone-Assisted AR Applications

Yang Meng; Qingmin Meng; Wenjing Yue; Yulong Zou; Xiaoming Wang

Multi-scene adaptive broadcasting optimization algorithm in VANETs

Xi Hu; Tao Wu

An Efficient Multi-keyword top-k Search Scheme over Encrypted Cloud Data

Jian Xu

Electronic Platform for Automatic Short Physical Performance Battery (SPPB) Test

Yicheng Bai, Nicholas R. Marco, Wenyan Jia, Janice Zgibor, Lora E. Burke, Steven M. Albert, Anne B. Newman, Zhi-Hong Mao, Mingui Sun, Hong Zhang, and Ding Yuan

Intelligent Healthcare Knowledge Resources in Chinese

Min Gao, Daniel Sun

Text Structuring Frameworks: A Survey

Jin Luo, Ruoyu Wang, Guoqiang Li

18-Oct. Session 2: I2oT 2018; Parallel, Distributed Algorithms and Graph Computing
Session Chair: Jian Zhang

Anomaly Detection of Target Dynamics Based on Clustering

Jian Zhang, Qing Ye, Ti Zhou

A cloud based intelligent logistics planning system

Jun Zhang, Fan Zhang, Lai Tu. LogCloud

Image Style Transfer with Multi-Target Loss for IoT applications

Wang Cui, He Mingxing

Correlation Analysis and Clustering of Wi-Fi Users in Campus

Xin Yu, Zibo Su

A High Performance Framework for Large-scale 2D Convolution Operation on FPGA

Dawang Zhang; Zhisong Bie

General Chairs
Ren-Hung Hwang, National Chung Cheng University, Taiwan
Jiannong Cao, Hong Kong Polytechnic University, Hong Kong
Ralf Klasing, CNRS LaBRI_Universite Bordeaux, France

Program Chair
Chyi-Ren Dow, Feng Chia University, Taiwan
Reinhard Klette, Auckland University of Technology, New Zealand
Md Zakirul Alam Bhuiyan, Fordham University, USA
Shibo He, Zhejiang University, China

Steering Chairs
Frank Hsu, Fordham University, USA
Chung-Ming Huang, National Cheng Kung University, Taiwan
Robert Hsu, National Chung Cheng University, Taiwan

Track 1 Chair - Big Data Analytics and Applications
Jinsong Wu, University de Chile, Chile
Hao Wang, Norwegian University of Science and Technology, Norway
Anna Kobusinska, Poznan University of Technology, Poland
Li Chen, University of the District of Columbia, USA

Track 2 Chair - Cloud, Fog and Edge Computing
Yuri Demchenko, University of Amsterdam, Netherlands
I-Hsin Chung, IBM Thomas J. Watson Research Center, USA
Ju Ren, China Central South University, China

Track 3 Chair - Health and Biomedical Informatics
Che-Lun Hung, Providence University, Taiwan
Alex Mu-Hsing Kuo, University of Victoria, Canada
Al-Sakib Khan Pathan, Southeast University, Bangladesh
Hamid GholamHosseini, AUT, Auckland

Track 4 Chair - Parallel, Distributed Algorithms and Graph Computing
Jemal Abawajy, Deakin University, Australia
Beniamino Di Martino, Second Univ. of Naples, Italy
Haijun Zhang, University of Science and Technology Beijing, China

Track 5 Chair - Computer Networks, Web Services, and SDN
Fu Xiao, NUPT, China
Xuyun Zhang, University of Auckland, New Zealand
Nurul I Sarkar, Auckland University of Technology, New Zealnd

Track 6 Chair - Mobile Computing and Communication

Neal Naixue Xiong, Northeastern State University, OK, USA
Fei Tong, Zhejiang University, China
Deepak Puthal, University of Technology Sydney, Australia

Track 7 Chair - Artificial Intelligence and Nature-Inspired Computing
Hui-Huang Hsu, Tam Kang University, Taiwan
Andrzej M.J. Skulimowski, AGH University of Science and Technology, Poland

Track 8 Chair - Global Networking and Cyber Security
Hong Li, Institute of Information Engineering, CAS, China
Christian Esposito, University of Salerno, Italy

Track 9 Chair - Multimedia Communication and Computing
Zhetao Li, Xiangtan University, China
Bharat Kshatriya, Penn State Abington, USA
Reinhard Koch, Kiel, Germany

Track 10 Chair - Internet of Things, Smart City, and Cyber-physical Systems
Ruilong Deng, University of Alberta, Canada
Peter Chong, Auckland University of Technology, New Zealand
Flavia C. Delicato, Federal University of Rio de Janeiro, Brazil

Track 11 Chair - Graphs and Networks
Eddie Cheng, Oakland University, USA
Xingde Jia, Texas State University, USA

Workshop Chairs
Yanyan Xu, MIT, USA
Xiaoyi Jiang, Muenster University, Germany
Kun-Chan Lan, NCKU, Taiwan

Publicity Chairs
Guan Yang, Zhejiang University, China
Wenjia Li, NYIT, USA
Domingo Mery, Catholic University Santiago, Chile
William Liu, Auckland University of Technology, New Zealand
Jong-Shin Chen, Chaoyang University of Technology, Taiwan

Publication Chairs
Cheng-Min Lin, Nan Kai University of Technology, Taiwan
Akihiro Sugimoto, NII, Japan

Local Arrangement Chairs
Shou-Zhi Hsu, China Three Gorges University, China
Huan Zhou, China Three Gorges University, China
Dong Ren, China Three Gorges University, China

HPCA 2018: International Workshop on High Performance Computing and Its Application
Co-Chairs:
Che-Lun Hung, clhung@gm.pu.edu.tw, Providence University, Taiwan
Chun-Yuan Lin, Chang Gung University, Taiwan
Chih-Hong Chang, Providence University, Taiwan

SmartLT 2018: International Workshop on Smart Living Technology
Co-Chairs:
Chung-Pin Hung, cphung@nkut.edu.tw, Nan Kai University of Technology, Taiwan
Pei-Jung Lin, Hungkuang University, Taiwan
Wei-Her Hsieh, Asia University, Taiwan

I2oT 2018: International Workshop on Intelligent Internet of Things
Chair:
Lai Tu, tulai.net@gmail.com, HUST, China

IHC 2018: International Workshop on Intelligent Health Care: AI and Systems
Co-Chairs:
Daniel Sun, daniel.sun@data61.csiro.au, Commonwealth Scientific and Industrial Research Organisation, Australia

RealUSR 2018: International Workshop on Realization of University Social Responsibility
Co-Chairs:
Sheng-Tsung Hou, Feng Chia University, Taiwan
Hui-Yu Chung, Feng Chia University, Taiwan
Hsi-Min Chen, hmchen@mail.fcu.edu.tw, Feng Chia University, Taiwan

Keynote Speech:

Content-centric Edge Caching for 5G Mobile Internet and Beyond

Victor C.M. Leung

The University of British Columbia, Vancouver, BC, Canada

Abstract:

Mobile data traffic is increasing explosively in recent years due to tremendous growth in demands from mobile users for multimedia contents. However, current mobile networking technologies, including network architectures and data transmission techniques, cannot support the anticipated traffic load without degrading mobile user's QoS/QoE. Much ongoing research efforts are targeted at developing technologies for 5G mobile Internets and beyond to overcome these limitations. Content-centric edge caching has recently emerged as a promising technique to satisfy the demands of popular multimedia contents that are requested repeatedly by multiple mobile users over a period of time. This talk will motivate and explore the design principles and goals of content-centric edge caching. We shall present a generalized architectural framework as a basis of differentiating different edge caching designs. We shall present several trace-driven case studies to illustrate the optimization of some design alternatives. We shall conclude the talk with a discussion of research opportunities and challenges in content-centric edge caching.

Speaker:

Victor C. M. Leung is a Professor and the holder of the TELUS Mobility Research Chair in Advanced Telecommunications Engineering in the Department of Electrical and Computer Engineering, the University of British Columbia. His research interests are in the areas of wireless networks and mobile systems. He has co-authored more than 1200 journal articles, conference papers, and book chapters, and edited several books in these areas. Several of his papers have been selected for best paper awards. Dr. Leung is a registered professional engineer in the Province of British Columbia, Canada. He is a Fellow of IEEE, the Royal Society of Canada, the Engineering Institute of Canada, and the Canadian Academy of Engineering. He was a Distinguished Lecturer of the IEEE Communications Society. He has served on the editorial boards of the IEEE Journal on Selected Areas in Communications, the IEEE Transactions on Computers, Wireless Communications, and Vehicular Technology, the IEEE Wireless Communications Letters, and currently serves on the editorial boards of the IEEE Transactions on Green Communications and Networking, IEEE Transactions on Cloud Computing, IEEE Network, IEEE Access, and several other journals. He has guest-edited many journal special issues, and served on the technical program committees and organizing committees of numerous international conferences. Dr. Leung is a winner of the IEEE Vancouver Section Centennial Award, the 2011 UBC Killam Research Prize, the 2017 Canadian Award for Telecommunications Research, and the 2018 IEEE TGCC Distinguished Technical Achievement Recognition Award. He co-authored papers that won the 2017 IEEE ComSoc Fred W. Ellersick Prize, the 2017 IEEE Systems Journal Best Paper Award, and the 2018 IEEE CSIM Best Journal Paper Award.

Keynote Speech:

On NFV Middlebox Placement Problems in Software-Defined Networks

Dr. *Jie Wu*

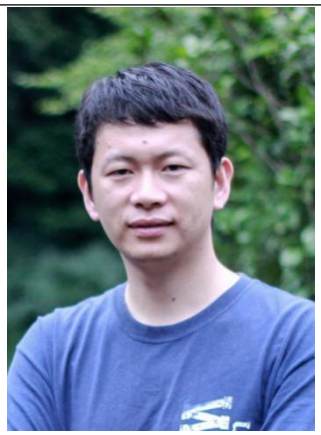
Center for Networked Computing, Temple University

Abstract:

This talk starts with a brief survey of various NFV middlebox placement problems in SDN networks. We then narrow down to a placement problem with a given set of flows in a tree topology. We assume that each flow needs to go through a given set of middleboxes, with or without a particular order. In addition, when a flow passes through a middlebox, its traffic may expand or diminish depending on the type of middlebox (this phenomenon is called traffic-changing effect). Multiple flows can share the same middlebox to save middlebox setup costs. The overall objective is to minimize the cost of setting up middleboxes and the cost of total bandwidth consumption by these flows. More specifically, we study a middlebox placement optimization problem for multiple flows with constraints of middlebox traffic-changing ratios and their dependency relations. We prove the NP-hardness of optimally placing even a single type of middlebox in a general network topology. We then focus on tree-structured networks. For homogeneous flows with the same bandwidth, we propose three optimal algorithms for three different cases, including placing a single middlebox (as a basic solution), a non-ordered middlebox set, and a totally-ordered middlebox set. The talk ends with some discussions on several on-going projects on middlebox placement problems.

Speaker:

Jie Wu is the Director of the Center for Networked Computing and Laura H. Carnell professor at Temple University. He also serves as the Director of International Affairs at College of Science and Technology. He served as Chair of Department of Computer and Information Sciences from the summer of 2009 to the summer of 2016 and Associate Vice Provost for International Affairs from the fall of 2015 to the summer of 2017. Prior to joining Temple University, he was a program director at the National Science Foundation and was a distinguished professor at Florida Atlantic University. His current research interests include mobile computing and wireless net- works, routing protocols, cloud and green computing, network trust and security, and social network applications. Dr. Wu regularly publishes in scholarly journals, conference proceedings, and books. He serves on several editorial boards, including IEEE Transactions on Service Computing and the Journal of Parallel and Distributed Computing. Dr. Wu was general co-chair for IEEE MASS 2006, IEEE IPDPS 2008, IEEE ICDCS 2013, ACM MobiHoc 2014, ICPP 2016, and IEEE CNS 2016, as well as program co-chair for IEEE INFOCOM 2011 and CCF CNCC 2013. He was an IEEE Computer Society Distinguished Visitor, ACM Distinguished Speaker, and chair for the IEEE Technical Committee on Distributed Processing (TCDP). Dr. Wu is a CCF Distinguished Speaker and a Fellow of the IEEE. He is the recipient of the 2011 China Computer Federation (CCF) Overseas Outstanding Achievement Award.



Keynote Speech:

Data-Driven Applications for Bike-sharing Systems

Dr. *Jiming Chen*

Changjiang Scholars Chair Professor (MOE) with College of Control Science and Engineering,

Vice Director of Faculty of Information Technology,

Deputy Director of State Key Laboratory of Industrial Control Technology, and member of academic committee at Zhejiang University, China.

Abstract:

As an innovative mobility strategy, public bike-sharing system (BSS) has grown dramatically worldwide. The primary issue for BSS is the uneven distribution of bicycles caused by the ever-changing usage and (available) supply. This bicycle imbalance issue necessitates efficient bike re-balancing strategies and effective user navigation, both highly depending on fine-grained usage prediction. In this talk, we first build a fine-grained tempo-spatial model and devise a traffic prediction mechanism on a per-station basis with sub-hour granularity. Then we design a novel end-to-end rebalancing mechanism based on a combination of human mobility analysis, fine-grained per-station demand predictions, data-driven simulation and network optimization. Furthermore, we consider how to proactively engage customers to balance bike usage by directing users to specific stations. All proposed approaches are tested on the massive real-world BSS dataset collected in Hangzhou, which consists of over 100 million usage records.

Speaker:

Jiming Chen (IEEE M'08-SM'11) received B.Sc. degree and Ph.D. degree both in Control Science and Engineering from Zhejiang University in 2000 and 2005, respectively. He was a visiting researcher at University of Waterloo from 2008 to 2010. Currently, he is a Changjiang Scholars Chair Professor (MOE) with College of Control Science and Engineering, Vice Director of Faculty of Information Technology, Deputy Director of State Key Laboratory of Industrial Control Technology, and member of academic committee at Zhejiang University, China. He serves/served associate editors for several international Journals including IEEE Transactions on Parallel and Distributed System, IEEE Network, IEEE Transactions on Control of Network Systems, etc. He is the recipient of Fok Ying Tung Young Teacher Award of Ministry of Education, IEEE ComSoc Asia-Pacific Outstanding Young Researcher Award, etc. He is IEEE VTS Distinguished Lecturer. His research interests include Internet of things, sensor networks, networked control, control system security, etc.