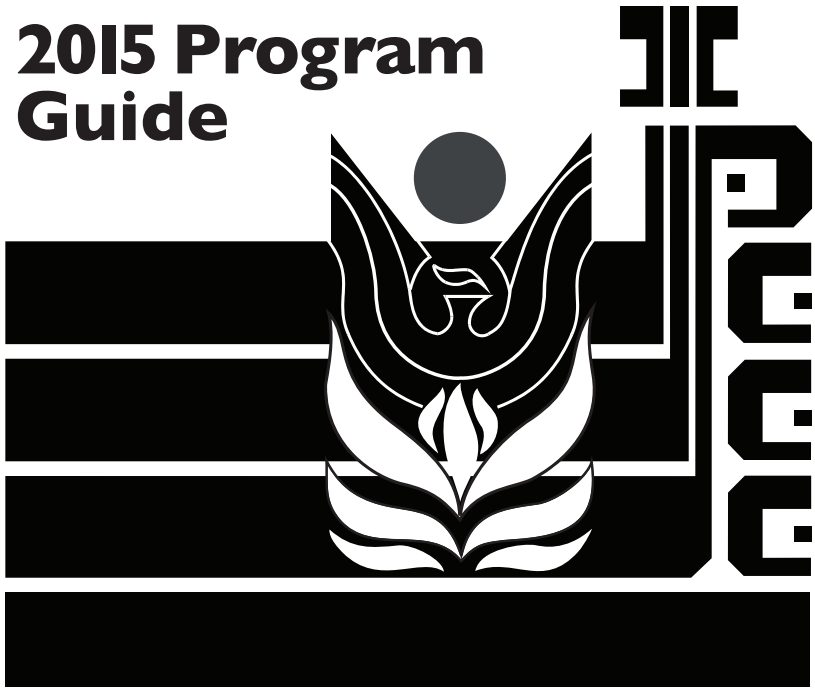
IPCCC.ORG

34TH IEEE INTERNATIONAL PERFORMANCE, COMPUTING AND COMMUNICATIONS CONFERENCE

2015 Program Guide



IEEE IPCCC 2015

Nanjing, China

December 14-16, 2015

The International Performance, Computing and Communications Conference is the premier IEEE conference presenting research in the performance of computer and communications systems. For more than three decades IPCCC has been a research forum for academic, industrial and government researchers.

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IEEE IPCCC 2015

Message from the IPCCC 2015 General Chairs

Welcome to the 34th IEEE International Performance, Computing, and Communications Conference (IPCCC 2015) at Nanjing, China. IPCCC brings together researchers from academia, government and industry from all over the world, to exchange information about recent research outcomes in the performance of computer and communication systems. We are very happy to see a high quality conference program, including two keynote speeches, 81 papers in the main technical program and 16 posters.

First, we would like to thank our Honorary Chair, Prof. Jian Lu, for his continuous support of IPCCC. Without his backing we would not be able to bring this event to Nanjing. Next, we sincerely thank Program Co-Chairs, Prof. Kui Ren and Prof. Tommaso Melodia, and all Technical Program Committee members for their hard work in selecting papers from the large numbers of submissions. Also, we thank Industrial Track Chair, Dr. Ye Wu, for organizing an excellent, unprecedented Industrial Track. In addition, we thank EDAS Chair Prof. Jiqiang Liu, Poster Chair Prof. Yongbin Zhou, Publications Chairs Prof. Liehuang Zhu and Prof. Tingting Chen, Publicity Chair Prof. Qian Wang, Web Chair Neil Nelson, Financial Chair Nasr Ullah, Registration Chair Jack Chen, Local Arrangement Chair Prof. Panlong Yang and Local Arrangement Associate Chairs Prof. Shaopeng Guan and Dr. Kun Wang. Finally and maybe most importantly, we are truly grateful to Baidu Inc., for its generous support.

Dear friends, colleagues, ladies and gentlemen, we thank all of you for attending IPCCC 2015. We hope you all have a wonderful time in Nanjing.

> Guoliang Xue and Sheng Zhong – IPCCC 2015 General Chairs

Message from the IPCCC 2015 Technical Program Chairs

It is our great pleasure to welcome you to Nanjing, China and to introduce the Proceedings of the 34th edition of the IEEE International Performance Computing and Communications Conference (IPCCC).

The conference provides a forum to exchange new ideas and results among researchers, developers and practitioners working in all aspects of performance evaluation of computer and communication systems. This year we received a record number of 298 submissions (up 50 percent from previous years) from 32 countries and regions. These are (in descending order of the number of registered authors from that country/region): P.R. China, USA, Korea, India, Canada, Germany, Sri Lanka, Taiwan, Australia, Tunisia, France, Hong Kong, United Kingdom, New Zealand, Japan, Egypt, Brazil, Algeria, Russia, Switzerland, Israel, Finland, Portugal, Palestine, Saudi Arabia, Ecuador, Malaysia, Ireland, Vietnam, UAE, Cameroon, Indonesia, Bangladesh and Thailand.

The technical program committee accepted 81 submissions for oral presentation at the conference, representing an acceptance rate of 27 percent. All manuscripts submitted for the conference went through a thorough review process by our technical program committee members and external reviewers. We were only able to accept the papers that were highly ranked and received broad support from the reviewers.

The final technical program contains 20 technical sessions and one poster session. Additionally, the conference includes keynote addresses by two distinguished speakers, Professor Elisa Bertino from Purdue University and Professor Mauro Barni from the University of Siena.

We are deeply indebted to all the members of the Technical Program Committee for their hard work and their tremendous efforts reviewing and discussing each paper. We would also like to thank the external reviewers for volunteering their time to review the submissions. In addition, we are also grateful to the Honorary Chair Jian Lu, to the General Chairs of the conference, Prof. Guoliang Xue and Prof. Sheng Zhong for their leadership, to the Industrial Track Chair Ye Wu, to and to Financial Chair Nasr Ullah, Publications Chairs Liehuang Zhu and Tingting Chen, Publicity Chair Qian Wang, Poster Chair Yongbin Zhou, Web Chair Neil Nelson, and Registration Chair Jack Chen, as well as Local Arrangements Chairs Panlong Yang, Shaopeng Guan and Dr. Kun Wang for their hard work in making IPCCC 2015 a successful event.

Last but not least, we would like to thank all the authors for presenting their work at the conference, it would not have been possible without their hard work and intellectual curiosity.

> Kui Ren and Tommaso Melodia – IPCCC 2015 Technical Program Chairs

Program Contents

The conference will be held at the
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Nanjing University

Dr. Yupu Zhang
HP Labs

Prof. Gang Zhou
College of William and Mary

2015 IPCCC Schedule Day One – Monday, December 14

Day One Conference Coordinator: Professor Panlong Yang

> 08:00 – Opening Remarks (Chair: Sheng Zhong)

> 08:15-09:15 – Keynote I: Elisa Bertino, Purdue University – Big Data Security & Privacy

(Chair: Kui Ren)

> Sessions 1.1 (Room: Jiang Hai Yuan) & 1.2 (Room: Su Xiu) – 09:15-10:35

Session 1.1 (Chair: Bo Sheng) Fundamental Theory & Algorithms

An Enhanced Algorithm Based On Paths Algebra Strategy To Solve the VNE Problem:
Canhui Wang (University of Shandong); Fangjin Zhu (ShanDong University); Qijia Zhang (Shandong University)

A Novel Algorithm for Pattern Matching with Back References: Liu Yang (Baidu, Inc.); Vinod Ganapathy (Rutgers University); Pratyusa K Manadhata (Hewlett Packard); Ye Wu (Baidu, Inc.)

Lifetime Maximization in Rechargeable Wireless Sensor Networks with Charging Interference: Yi Qu and Ke Xu (Tsinghua University); Haiyang Wang (University of Minnesota at Duluth); Dan Wang (The Hong Kong Polytechnic University); Bo Wu (Tsinghua University)

Privacy-preserving Min and k-Min Computations with Fully Homomorphic Encryption: Bingbing Jiang and Yuan Zhang (Nanjing University)

Session 1.2 (Chair: Panlong Yang) Big Data Processing & Analytics

SpeedStream: A Real-Time Stream Data Processing Platform in The Cloud: Li Zhao (Institute of Information Engineering, Chinese Academy of Sciences); Zhang Chuang (Institute of Information Engineering Chinese Academy of Sciences); Xu Kefu (Institute of Information Engineering, Chinese Academy of Sciences)

Efficient TV White Space Database Construction via Spectrum Sensing and Spatial Inference: Mengyun Tang, Ze Zheng, Guoru Ding and Xue Zhen (PLA University of Science and Technology)

Mining Friendships Through Spatial-temporal Features in Mobile Social Networks: Jianwei Niu (Beihang University); Danning Wang (BeiHang University); Jie Lu (Beihang University)

Parallel and Distributed Normalization of Security Events for Instant Attack Analysis: David Jaeger (Hasso Plattner Institute); Andrey Sapegin (Hasso Plattner Institute, University of Potsdam); Martin Ussath (Hasso Plattner Institute); Feng Cheng (University of Potsdam); Christoph Meinel (Hasso Plattner Institute, University of Potsdam)

> Sessions 1.3 (Room: Jiang Hai Yuan) & 1.4 (Room: Su Xiu) – 10:40-12:00

Session 1.3 (Chair: Fan Wu) Network Protocols

Energy Cost Minimization via Intelligent Temporal and Spatial Resource Allocation in Green Heterogeneous Cellular Networks: Qiang Yang and Bang Wang (Huazhong University of Science and Technology)

Comparative Analysis of Big Data Transfer Protocols in an International High-Speed Network: Se-young Yu, Nevil Brownlee and Aniket Mahanti (University of Auckland)

Controller Placement for Multi-States Software-Defined Networks: Guo Sheng, Shu Yang and Qi Li (Tsinghua University); Yong Jiang (Graduate School at Shenzhen, Tsinghua University)

On Secure Shared Key Establishment for Mobile Devices using Contextual Information: Ala Altaweel, Radu Stoleru and Subhajit Mandal (Texas A&M University)

Session 1.4 (Chair: Kesheng Wu) Cache, Memory & Disk Storage Systems

Integrated Caching and Tiering According to Use and QoS Requirements: Mark Abashkin (Ben-Gurion University of the Negev); Assaf Natanzon (EMC Corp. and Ben-Gurion University of the Negev); Eitan Bachmat (Ben-Gurion University)

PASSI: A Parallel, Reliable and Scalable Storage Software Infrastructure for Active Storage System and I/O Environments: Song Fu (University of North Texas); Hsing-bung HB Chen (Los Alamos National Lab)

P-CLS: A Popularity-driven Caching Location and Searching Scheme in Content Centric Networking: Yuemei Xu (Beijing Foreign Studies University); Shuai Ma (University of Southern California); Yang Li (Institute of Information Engineering, Chinese Academy of Sciences); Fu Chen (Beijing Foreign Studies University & CS); Song Ci (University of Nebraska-Lincoln)

WAlloc: An Efficient Wear-Aware Allocator for Non-Volatile Main Memory: Songping Yu, Nong Xiao, Mingzhu Deng, Yuxuan Xing and Fang Liu (National University of Defense Technology); Zhiping Cai (University of Florida & National University of Defense Technology); Wei Chen (National University of Defense Technology)

> Lunch (Room 2F) 12:05-13:15

> Sessions 1.5 (Room: Jiang Hai Yuan) & 1.6 (Room: Su Xiu) – 13:15-15:00

Session 1.5 (Chair: Jehan-François Pâris) Data Centers & Cloud Computing

Efficient Switch-Assisted Congestion Control for Data Centers: an Implementation and Evaluation: Ahmed M. Abdelmoniem and Brahim Bensaou (The Hong Kong University of Science and Technology)

SDN-based TCP Congestion Control in Data Center Networks: Yifei Lu and Shuhong Zhu (Nanjing University of Science and Technology)

Bandwidth Guaranteed Virtual Network Function Placement and Scaling in Datacenter Networks: Fangxin Wang, Ruilin Ling, Jing Zhu and Dan Li (Tsinghua University)

Dynamic Flow Consolidation for Energy Savings in Green DCNs: Chao Zhu (Tsinghua University,); Yu Xiao (Aalto University); Yong Cui (Tsinghua University); Zhenjie Yang (Dalian University of Technology,); Shihan Xiao (University of Tsinghua); Antti Yla-Jaaski (Aalto University)

Towards Shorter Task Completion Time in Datacenter Networks: Yuchao Zhang and Ke Xu (Tsinghua University); Haiyang Wang (University of Minnesota at Duluth); Meng Shen (Beijing Institute of Technology)

Session 1.6 (Chair: Fan Wu) Parallel & Distributed Systems

OMO: Optimize MapReduce Overlap with a Good Start (Reduce) and a Good Finish (Map): Jiayin Wang (University of Massachusetts Boston); Yi Yao (Northeastern University); Ying Mao and Bo Sheng (University of Massachusetts Boston); Ningfang Mi (Northeastern University)

Towards Adaptive Elastic Distributed Software Defined Networking: Yanyu Chen (Tsinghua University); Qing Li (Graduate School at Shenzhen, Tsinghua University); Yuan Yang and Qi Li (Tsinghua University); Yong Jiang and Xi Xiao (Graduate School at Shenzhen, Tsinghua University)

Pirogue, a Lighter Dynamic Version of the Raft Distributed Consensus Algorithm: Jehan Francois Paris (University of Houston); Darrell Long (University of California at Santa Cruz)

SkipMon: a Locality-Aware Collaborative Intrusion Detection System: Emmanouil Vasilomanolakis, Matthias Kruegl and Carlos Garcia Cordero (Technische Universität Darmstadt); Max Muehlhaeuser (Technical University Darmstadt); Mathias Fischer (International Computer Science Institute)

Decentralized Multi-Charger Coordination for Wireless Rechargeable Sensor Networks: Lei Mo and Pengcheng You (Zhejiang University); Xianghui Cao (Southeast University); Jiming Chen (Zhejiang University); YeQiong Song (LORIA-University of Lorraine)

> Break 15:00-15:20

> Sessions 1.7 (Room: Jiang Hai Yuan) & 1.8 (Room: Su Xiu) – 15:25-17:00

Session 1.7 (Chair: Jingyu Hua) Network Protocols

Detect and Analyze Large-scale BGP Events by Bi-clustering Update Visibility Matrix: Meng Chen and Mingwei Xu (Tsinghua University); Qing Li (Graduate School at Shenzhen, Tsinghua University); Xirui Song (Beijing University of Posts and Telecommunications); Yuan Yang (Tsinghua University)

Building Smartphone Ad-Hoc Networks With Long-range Radios: Ying Mao, Jiayin Wang and Bo Sheng (University of Massachusetts Boston); Fan Wu (Shanghai Jiao Tong University)

Scalable Name-Based Inter-Domain Routing for Information-Centric Networks: Sangmun Kim and Zhenhai Duan (Florida State University); Fernando Sanchez (Universidad San Francisco de Quito)

RAPIT: RTT-Aware Pending Interest Table for Content Centric Networking: Yalei Tan, Qing Li and Yong Jiang (Graduate School at Shenzhen, Tsinghua University); Shutao Xia (Tsinghua University)

Traffic-Aware Networking for Video Streaming Service using SDN: Calvin Hue, Yu-Jia Chen and Li-Chun Wang (National Chiao Tung University)

Session 1.8 (Chair: Wei Yu) Cyber Physical Systems

On Stochastic Optimal Bidding Schemes for Microgrids: Qingyu Yang and Dou An (Xi'an Jiaotong University); Wei Yu (Towson University); Xinyu Yang (Xi'an Jiaotong University); Xinwen Fu (University of Massachusetts Lowell)

Sensor Placement based on Delaunay Triangulation for Complete Confident Information Coverage in An Area with Obstacles: Lu Dai and Bang Wang (Huazhong University of Science and Technology)

Defending against Energy Dispatching Data Integrity Attacks in Smart Grid: Xiaofei He, Xinyu Yang and Jie Lin (Xi'an Jiaotong University); Linqiang Ge (Computer and Information Sciences, Towson University); Wei Yu (Towson University); Qingyu Yang (Xi'an Jiaotong University)

Power-free Structural Health Monitoring via Compressive Sensing: Ju-min Zhao, Deng-ao Li and Tian Cao (Taiyuan University of Technology)

Distributed Load Scheduling in Smart Community With Capacity Constrained Local Power Supplier: Nuo Yu, Lan Mu and Yuting Miao (Harbin Institute of Technology Shenzhen Graduate School); Hejiao Huang (Harbin Institute of Technology); Hongwei Du (Harbin Institute of Technology Shenzhen Graduate School); Xiaohua Jia (City University of Hong Kong)

> Dinner (Room 2F) – 18:00

2015 IPCCC Schedule Day Two – Tuesday, December 15

Day Two Conference Coordinator: Professor Kun Wang;

> 08:00-09:00 Keynote II: Mauro Barni, University of Siena – Adversarial Signal Processing & the Hypothesis Testing Game

(Chair: Sheng Zhong)

> Sessions 2.1 (Room: Su Xiu) & 2.2 (Room: Yun Jin) – 09:15-10:55

Session 2.1 (Chair: Kun Wang) Cloud Computing & Big Data Processing

Performability Analysis of a Cloud System: Xiwei Qiu, Peng Sun, Xun Guo and Yanping Xiang (University of Electronic Science and Technology of China)
How Green Are Cloud Patterns?: S. Amirhossein Abtahizadeh (École Polytechnique Montreal); Foutse Khomh (École Polytechnique Montreal); Yann-Gaël Guéhéneuc (École Polytechnique Montreal)
Virtual Machine Placement Based on the VM Performance Models in Cloud: Hui Zhao, Qinghua Zheng, Weizhan Zhang, Yuxuan Chen and Yunhui Huang (Xi'an Jiaotong University)
Minimizing Response Latency via Efficient Virtual Machine Placement in Cloud Systems: Hou Deng, Liusheng Huang, Chenkai Yang, Hongli Xu and Bing Leng (University of Science and Technology of China)
A Customizable MapReduce Framework for Complex Data-Intensive Workflows on GPUs: Zhi Qiao and Shuwen Liang (University of North Texas); Hai Jiang (Arkansas State University); Song Fu (University of North Texas)

Session 2.2 (Chair: Yuan Zhang) Wireless Communication & Networks I

Charging Your Smartphones on Public Commuters via Wireless Energy Transfer: Wenzheng Xu (Sichuan University & Australian National University); Weifa Liang (The Australian National University); Su Hu and XiaoLa Lin (Sun Yat-Sen University); Jian Peng (Sichuan University)
Efficient RSS Measurement in Wireless Networks based on Compressive Sensing: Yanchao Zhao (Nanjing University of Aeronautics and Astronautics & Nanjing University); Wenzhong Li (Nanjing University); Jie Wu (Temple University); Sanglu Lu (Nanjing University)
On the Coexistence of 802.11 and 802.15.4 Networks with Delay Constraints: Wei Zhang, Mahima Agumbe Suresh, Yuhan Zhou, Raghavan Veera and Radu Stoleru (Texas A&M University)
Stochastic Duty Cycling for Heterogenous Energy Harvesting Networks: Jianhui Zhang (Hangzhou Dianzi University); Mengmeng Wang (Hangzhou Dianzi University); Zhi Li (Hanghzou Dianzi University)
Traffic Condition Estimation Using Vehicular Crowdsensing Data: Lu Shao (Tongji University); Cheng Wang (Tongji University, Shanghai); Zhong Li and Changjun Jiang (Tongji University)

> Sessions 2.3 (Room: Su Xiu) & 2.4 (Room: Yun Jin) – 11:00-12:00

Session 2.3 (Chair: Yuan Zhang) Internet of Things

Class-Based Delta-Encoding for High-Speed Train Data Stream: Yangxin Lin, Meng Ma, Ping Wang and Jinlong Lin (Peking University); Lin Ma (National Railway Research & Design Institute of Signal & Communication Ltd.)
On the Channel Capacity of MIMO-Radar-Based Communications: Renhui Xu (Nanjing Institute of Communication Engineering); Peng Laixian (Institute of Communication Engineering); Wendong Zhao (Institute of Communications Engineering)
Network Coding based Transmission Schemes in DTNs with Group Meetings: Abdurrahman Arikan and Yuexin Mao (University of Connecticut); Xiaolan Zhang (Fordham University); Bing Wang, Shengli Zhou and Song Han (University of Connecticut)

Session 2.4 (Chair: Wei Tong) Mobile Ad Hoc, Sensor & Mesh Networks

R-PMD: Robust Passive Motion Detection Using PHY Information with MIMO: Hai Zhu, Fu Xiao, Lijuan Sun and Xiaohui Xie (Nanjing University of Posts and Telecommunications); Panlong Yang (Institute of Communication Engineering, PLAUST); Ruchuan Wang (Nanjing University of Posts and Telecommunications)
A Goodput Distribution Model For IEEE 802.11 Wireless Mesh Networks: Ying Qu, Bryan Ng and Winston K.G. Seah (Victoria University of Wellington)
New Tight Upper Bounds on the Capacity for General Deterministic Dissemination in Wireless Ad Hoc Networks: Cheng Wang (Tongji University, Shanghai); Jieren Zhou (Tongji University); Tianci Liu (Tsinghua University); Lu Shao (Tongji University); Huiya Yan (University of Wisconsin-La Crosse)

> Lunch (Room 2F) – 12:05-13:15

> Sessions 2.5 (Room: Su Xiu) – 13:20-15:00

Session 2.5 (Chair: Yongbin Zhou) Wireless Communication & Networks II

On Balancing the Energy Consumption of Routing Protocols for Opportunistic Social Networks: Chen Yang and Radu Stoleru (Texas A&M University)
Adaptive Partial Frequency Reuse in LTE-Advanced Relay Networks: Chen Sun (Nanchang Hangkong University); Xiaojun Wang (Dublin City University); Zhiyong Yang (Nanchang Hangkong University)
Optimum Reference Node Deployment for Indoor Localization Based on the Average Cramer-Rao Bound Minimization: Fei Long (Western University); Aydin Behnad (The University of Western Ontario); Xianbin Wang (Western University)
Network Performance Isolation Scheme for QoE in a Mobile Device: Woonghee Lee, Hyunsoon Kim, Joon Yeop Lee and Albert Chung (Korea University); Yong Seok Park (Samsung Electronics); Hwangnam Kim (Korea University)
Network Intrusion Detection And Prevention Middlebox Management In SDN: Wen Wang and Wenbo He (McGill University); Jinshu Su (National University of Defense Technology)

> Break 15:00-15:20

> Session 2.6 (Room: Su Xiu) – 15:20-17:00

Session 2.6 (Chair: Hong Zhou) Performance Tools & Evaluation

PATHA: Performance Analysis Tool for HPC Applications: Wucherl Yoo (Lawrence Berkeley National Laboratory): Michelle Koo (University of California, Berkeley); Yi Cao (California Institute of Technology); Alex Sim (Lawrence Berkeley National Laboratory); Peter Nugent (LBNL & UC Berkeley); Kesheng Wu (Lawrence Berkeley National Laboratory)
Energy-Efficient, Delay-aware Packet Scheduling in High-Speed Networks: Qun Yu and Taieb Znati (University of Pittsburgh); Wang Yang (Southeast University)
Spatio-Temporal Tensor Completion for Imputing Missing Internet Traffic Data: Zhou Huibin and Dafang Zhang (Hunan University); Kun Xie and Yuxiang Chen (State University of New York at Stony Brook)
ATLAS: An Adaptive Failure-Aware Scheduler for Hadoop: Mbarka Soualhia (Concordia University); Foutse Khomh (École Polytechnique, Montreal); Sofiene Tahar (Concordia University)
ScalaSEM: A Testing Framework for Large Scale Datacenter SDN Design: Nan Zhu and Wenbo He (McGill University)

> Industrial Track (Room: Yun Jin) – 13:20-17:00

Industrial Track (Chair: Ye Wu)

Industrial Track Chair
Ye Wu, Senior Architect of Operation Department, Baidu, Inc.
Honored Guest (welcome speech at reception event)
Shuo Li, Managing Director of Operation Department, Baidu, Inc.

Spark ONE: Unleash the Power of Big Data Intelligence (Keynote)
James Peng, Baidu TC General Chair, Baidu USA LLC.
Dr. Peng has previous working experience at Stanford University and Google Inc. He received his Ph.D. from Stanford University.

IT Operation Analytics: Real-time Log Search and Analytics
Jun Chen, CEO of Yottabyte.
Mr. Chen has previous working experience at Cisco, Google, Tencent, and AutoNavi. He received his M.Sc. from the University of Southern California.

Intelligent System Operation in Baidu
Dong Wang, Principal Architect of Operation Department, Baidu Inc.
Dr. Wang has previous working experience at Bell Labs and Google Inc. He received his Ph.D. from Peking University.

The Challenge of Vehicle Routing in O2O Delivery Service
Huaxia Xia, Scientist at Meituan.
Dr. Xia has previous working experience at Google Inc. and Baidu Inc. He received his Ph.D. from the University of California, San Diego.

Distributed Access Control and its Applications in Enterprise Security
Yifei Yang, Architect of Operation Department, Baidu Inc.
Mr. Yang has previous working experience at Tencent. He received his M.Sc. from Xi'an Jiao Tong University.
Ye Wu, Senior Architect of Operation Department, Baidu Inc.
Dr. Wu has previous working experience at SIT and Tencent. He received his Ph.D. from Stevens Institute of Technology.

> Baidu Inc. Reception (Chair: Ye Wu) & Poster Session* (Chair: Yongbin Zhou) – Room 2F – 18:00

*Poster Session Papers listed on Page 6

2015 IPCCC Schedule Day Three – Wednesday, December 16

Day Three Conference Coordinator Dr. Jingyu Hua

> Session 3.1 (Room: Su Xiu) – 08:00-09:40

Session 3.1 (Chair: Yu Chen) Internet Services & Network Management

Narrowing Down the Debugging Space of Slow Search Response Time: Dapeng Liu, Youjian Zhao, Dan Pei and Chengbin Quan (Tsinghua University,); Qingqian Tao, Pei Wang, Xiyang Chen and Dai Tan (Baidu, Inc.); Xiaowei Jing (PetroChina); Mei Feng (Petro China)

Pricing and Revenue Sharing for Secondary Market Mobile Users Internet Access: Hengky Susanto (Hong Kong University of Science and Technology); Benyuan Liu (University of Massachusetts Lowell); Byung-Guk Kim (University of Massachusetts at Lowell); Honggang Zhang (University of Massachusetts Boston); Xinwen Fu (University of Massachusetts Lowell)

Incremental Deployment for Traffic Engineering in Hybrid SDN Network: Yingya Guo, Zhiliang Wang, Xia Yin, Xingang Shi and Jianping Wu (Tsinghua University); Han Zhang (Tsinghua University, Beijing)

Complete Font Generation of Chinese Characters in Personal Handwriting Style: Jeng-Wei Lin (Tunghai University); Chian-Ya Hong and Ray-I Chang (National Taiwan University); Yu-Chun Wang, Shu-Yu Lin and Jan-Ming Ho (Academia Sinica)

Learning Thresholds for PV Change Detection from Operators' Labels: Dapeng Liu, Youjian Zhao, Kaixin Sui, Shiwen Cheng, Dan Pei and Chengbin Quan (Tsinghua University); Jiao Luo (Baidu Inc.); Xiaowei Jing (PetroChina); Mei Feng (Petro China)

> Break 09:40-10:00

> Session 3.2 (Room: Su Xiu) – 10:00-12:00

Session 3.2 (Chair: Jingyu Hua) Security & Privacy I

How to Protect Query and Report Privacy without Sacrificing Service Quality in Participatory Sensing: Meng Li (Beijing Institute of Technology); Fan Wu and Guihai Chen (Shanghai Jiao Tong University); Liehuang Zhu and Zijian Zhang (Beijing Institute of Technology)

A Secure OFDM Transmission Scheme Based on Chaos Mapping: Xiaozhong Zhang, Ying Wang, Juan Zeng and Yongming Wang (Institute of Information Engineering, Chinese Academy of Sciences)

Exploring Sensor Usage Behaviors of Android Applications Based on Data Flow Analysis: Xing Liu and Wei Wang (Beijing Jiaotong University); Jiqiang Liu (Beijing Jiao Tong University)

PROTA: A Privacy-Preserving Protocol for Real-Time Targeted Advertising: Yiming Pang, Bo Wang, Fan Wu and Guihai Chen (Shanghai Jiao Tong University); Bo Sheng (University of Massachusetts)

Self-Adaptive Anonymous Communication Scheme Under SDN Architecture: Tingting Zeng, Meng Shen, Mingzhong Wang, Liehuang Zhu and Fan Li (Beijing Institute of Technology)

> Lunch (Room 2F) – 12:05-13:00

> Session 3.3 (Room: Su Xiu) – 13:00-14:20

Session 3.3 (Chair: Ye Wu) Processor Architecture

Reducing Inter-Task Interference Delay by Optimizing Bank-to-Core Mapping: Jizan Zhang, Zhimin Gu and Mingquan Zhang (Beijing Institute of Technology)

Optimization Strategies for Inter-Thread Synchronization Overhead on NUMA Machine: Song Wu, Jun Zhang, Yaqiong Peng, Hai Jin and Wenbin Jiang (Huazhong University of Science and Technology)

Resilient and Efficient Communication in Many-Core Systems using Network Coding: Sadia Moriam (Vodafone Chair for Mobile Communications Technische Universität Dresde); Yexin Yan (Technische Universität Dresden); Erik Fischer (Technische Universität Dresden); Elke Franz and Gerhard Fettweis (Technische Universität Dresden)

A Low-Latency Fine-Grained Dynamic Shared Cache Management Scheme for Chip Multi-Processor: Jinbo Xu, Zhengbin Pang and Weixia Xu (National University of Defense Technology)

> Session 3.4 (Room: Su Xiu) – 14:30-16:10

Session 3.4 (Chair: Yunlong Mao) Security & Privacy II

Identify User Variants Based on User Behavior on Social Media: Haoran Xu and Yuqing Sun (Shandong University)

Privacy Preserving Big Histogram Aggregation for Spatial Crowdsensing: Shaowei Wang, Liusheng Huang, Pengzhan Wang, Yao Shen, Hongli Xu and Wei Yang (University of Science and Technology of China)

Detecting BGP Instability Using Recurrence Quantification Analysis (RQA): Bahaa Al-Musawi (Centre for Advanced Internet Architectures & Swinburne University of Technology); Philip Branch and Grenville Armitage (Swinburne University of Technology)

Replication Attack Detection with Monitor Nodes in Clustered Wireless Sensor Networks: Guo Cheng and Songtao Guo (Southwest University); Yuanyuan Yang (Stony Brook University); Fei Wang (Southwest University)

Ultra-Lightweight Deep Packet Anomaly Detection for Internet of Things Devices: Douglas Summerville (State University of New York at Binghamton); Kenneth Zach and Yu Chen (Binghamton University)

End Of Conference

> Poster Session: Tuesday, Dec. 15 – 18:00

1. Characterizing I/O Workloads of HPC Applications Through Online Analysis: Wenrui Dong, Guangming Liu, Jie Yu and You Zuo (National University of Defense Technology)

2. Blind Identification of Helical Interleaving of the First Type: Li Huang (University of Science and Technology of China); Wengu Chen and Hong Chen (Institute of Applied Physics and Computational Mathematics)

3. Measuring the Internet Routing Scalability from the Perspective of Address Allocation: Dan Wu, Zhiliang Wang, Xia Yin, Xingang Shi and Jianping Wu (Tsinghua University)

4. Latency-Aware Routing with Bandwidth Assignment for Software Defined Networks: Qiongyu Zhang, Liehuang Zhu, Meng Shen, Mingzhong Wang and Fan Li (Beijing Institute of Technology)

5. A Non-orthogonal Waveform Superposition Scheme for High Efficient and Reliable Communications: Ying Wang, Yongming Wang and Weihua Zhou (Institute of Information Engineering, Chinese Academy of Sciences)

6. Fincher: Elephant Flow Scheduling based on Stable Matching in Data Center Networks: Yuxiang Zhang, Lin Cui and Qiao Chu (Jinan University)

7. An ASIP Based Physical Layer Virtualization Method of Centralized Radio Access Network: Fang Xiao, Yiqing Zhou, Shan Huang, Jiangnan Lin and Lin Liu (Institute of Computing Technology, Chinese Academy of Sciences)

8. An Effective Service Discovery Approach Based on Field Theory and Contribution Degree in Unstructured P2P Networks: Wanchun Yang, Chenxi Zhang and Jiangfeng Li (Tongji University)

9. A Dominating-set-based and Popularity-driven Caching Scheme in Edge CCN: Weiyuan Li and Yang Li (Institute of Information Engineering, Chinese Academy of Sciences); Wei Wang (Institute of Telecommunication Satellite, China Academy of Space Technology); Yonghui Xin and Tao Lin (Institute of Information Engineering, Chinese Academy of Sciences)

10. Reducing the Read Latency of In-line Deduplication File System: Yongtao Zhou, Yuhui Deng, Yan Li and Junjie Xie (Jinan University)

11. Proactive Complex Event Processing for Transportation Internet of Things: Yongheng Wang (College of Information Science and Engineering, HuNan University); Qian LI (Hunan University & College of Information Science and Engineering)

12. A Domestic Adaptable Infant Monitoring System (AIMS) Using Wireless Sensor Networks: Hong Zhou (University of Southern Queensland); Brad Goold (University of Southern Queensland)

13. Minimizing Energy Cost for Green Cloud Data Centers by Using ESDs: Chonglin Gu, Lingmin Zhang (Harbin Institute of Technology Shenzhen Graduate School); Hejiao Huang (Harbin Institute of Technology); Zhixiang He (Harbin Institute of Technology Shenzhen Graduate School); Xiaohua Jia (City University of Hong Kong, Hong Kong)

14. Distributed Access Control and its Applications in Enterprise Security: Yifei Yang and Ye Wu, Baidu Inc.

15. Cloud-based Construction of Intelligent Data Center: Dianming Hu and Yongxin Cui, Baidu Inc.

16. Network-based Intrusion Detection and Prevention System: Jiaoren Wu and Yongxin Cui, Baidu Inc.

Keynote Speakers

Big Data Security and Privacy

Elisa Bertino, Purdue University

Monday December 14, 08:15

Abstract:

Technological advances and novel applications, such as sensors, cyber-physical systems, smart mobile devices, cloud systems, data analytics, and social networks, are making it possible to capture, and to quickly process and analyze huge amounts of data from which to extract information critical for security-related tasks. In the area of cyber security, such tasks include user authentication, access control, anomaly detection, user monitoring, and protection from insider threat. By analyzing and integrating data collected on the Internet and Web one can identify connections and relationships among individuals that may in turn help with homeland protection. By collecting and mining data concerning user travels and disease outbreaks one can predict disease spreading across geographical areas. And those are just a few examples; there are certainly many other domains where data technologies can play a major role in enhancing security. The use of data for security tasks is however raising major privacy concerns. Collected data, even if anonymized by removing identifiers such as names or social security numbers, when linked with other data may lead to re-identify the individuals to which specific data items are related to. Also, as organizations, such as governmental agencies, often need to collaborate on security tasks, data sets are exchanged across different organizations, resulting in these data sets being available to many different parties. Apart from the use of data for analytics, security tasks such as authentication and access control may require detailed information about users. An example is multi-factor authentication that may require, in addition to a password or a certificate, user biometrics. Recently proposed continuous authentication techniques extend access control systems. If this information is misused or stolen it can lead to privacy breaches. It would then seem that in order to achieve security we must give up privacy. However this may not necessarily be the case. Recent advances in cryptography are making it possible to work on performing analytics on encrypted data. However much more needs to be done as the specific data privacy techniques used are heavily dependent on the security tasks at hand. Also current techniques are still not able to meet the efficiency requirement for use with big data sets. In this talk we will discuss methods and techniques to make this reconciliation possible and identify research directions.

Biography

Elisa Bertino is professor of computer science at Purdue University, and serves as Director of Purdue Cyber Center and Research Director of the Center for Information and Research in Information Assurance and Security (CERIAS). She is also an adjunct professor of Computer Science & Info tech at RMIT. Prior to joining Purdue in 2004, she was a professor and department head at the Department of Computer Science and Communication of the University of Milan. She has been a visiting researcher at the IBM Research Laboratory (now Almaden) in San Jose, at the Microelectronics and Computer Technology Corporation, at Rutgers University, and at Telcordia Technologies. Her recent research focuses on data security and privacy, digital identity management, policy systems, and security for the Internet-of-Things. She is a Fellow of ACM and of IEEE. She received the IEEE Computer Society 2002 Technical Achievement Award, the IEEE Computer Society 2005 Kanai Award, and the ACM SIGSAC 2014 Outstanding Contributions Award. She is currently serving as EiC of IEEE Transactions on Dependable and Secure Computing.

Adversarial Signal Processing and the Hypothesis Testing Game

Professor Mauro Barni, University of Siena

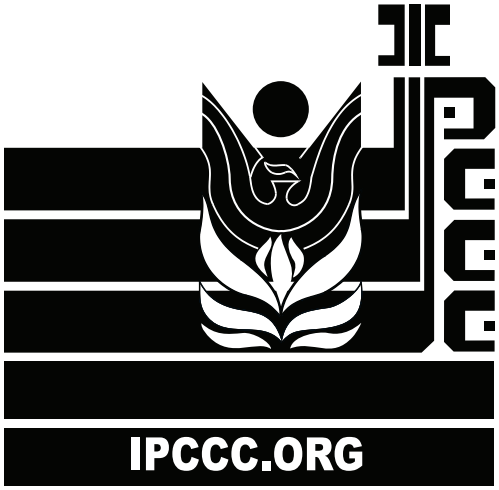
Tuesday December 15, 08:00

Abstract:

Security-oriented applications of signal processing have received increasing attention in the last few years. Digital watermarking, steganography and steganalysis, multimedia forensics, biometric security, are just a few examples of such an interest. In many cases though, researchers have failed to recognize the single most unique feature behind any security-oriented application, i.e., the presence of one or more adversaries aiming at making the system fail. One of the most evident consequences is that security requirements are misunderstood, e.g., quite often security is exchanged for robustness. Even when the need to cope with the actions of a malevolent adversary is taken into account, the proposed solutions are often ad-hoc, failing to provide a unifying view of the challenges that such scenarios pose from a signal processing perspective. Times are ripe to go beyond this limited view and lay the basis for a general theory that takes into account the impact that the presence of an adversary has on the design of effective signal processing tools, i.e., a theory of adversarial signal processing.
It is the aim of this talk to:
i) motivate the need for the development of a general theory of adversarial signal processing;
ii) propose a unifying framework based on game-theory;
iii) present some recent results regarding adversarial hypothesis testing.

Biography

Mauro Barni graduated in electronic engineering at the University of Florence in 1991. He received a Ph.D. in informatics and telecommunications in October 1995. He has carried out his research activity for over 20 years, first at the Department of Electronics and Telecommunication of the University of Florence, then at the Department of Information Engineering of the University of Siena. During the last decade he has been studying the application of image processing techniques to copyright protection and authentication of multimedia, and the possibility of processing signals that have been previously encrypted without decrypting them. Lately he has been working on theoretical and practical aspects of adversarial signal processing. He is author/co-author of almost 300 papers published in international journals and conference proceedings, and holds four patents in the field of digital watermarking and image authentication. He is co-author of the book *Watermarking Systems Engineering: Enabling Digital Assets Security and other Applications*, published by Dekker Inc. in February 2004. He participated in several National and European research projects on diverse topics, including computer vision, multimedia signal processing, remote sensing, digital watermarking, IPR protection. He was the funding editor of the EURASIP Journal on Information Security. He is the Editor in Chief of the IEEE Transactions on Information Forensics and Security for the years 2015-2017. He has been serving as associate editor of many journals including several IEEE Transactions. Prof. Barni has been the chairman of the IEEE Information Forensic and Security Technical Committee (IFS-TC) from 2010 to 2011. He is a fellow member of the IEEE and a member of EURASIP. He was appointed DL of the IEEE SPS for the years 2013-2014. He was also the technical program chair of ICASSP 2014.



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