

The 3rd IEEE International Conference on Cyber Security and Cloud Computing IEEE CSCloud 2016

The 2nd IEEE International Conference of Scalable and Smart Cloud IEEE SSC 2016

June 25th – 27th, 2016
Beijing, China

Conference Program and Information Booklet



Organized By

IEEE CSCloud/SSC 2016 Committees

Sponsored By

IEEE, IEEE TCSC, IEEE Computer Society,
Pace University, Beihang University,
Longxiang High Tech Group Inc.
North America Chinese Talents Association



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Conference Affairs

➤ Registration

Time & date: 8:00-21:00, 24th - 25th, June. (Main registration day: June 25th, 2016)

Address: The Hall of Beihang Training Center (at Beihang University)

Tel: 010-82337925

Contact person: Yunchao Gu

Mobile: 18612629695

Process: Sign in → verification on participant IDs → getting Representative card and meal tickets → getting Conference program, Proceedings Flash → Check in at the reception of Beihang Training Center

➤ Train tickets/air tickets

Unit: Tickets office (Garden Road) .

Address: 100 meters east of the southeast gate of Beihang University (Next to McDonald)

Contact mobile: +86 10 62305198

➤ Photos

Time & address: 10:30-10:40, 25th, June. in front of the Beihang Gymnasium

Time for getting the photo: 10:20-10:40 (during the break time), 26th. June

Getting photo: each participant can get digital photo at the reception of your parallel session by showing the Representative card

➤ Dining

Address: 3rd Dining Hall of Beihang Training Center

Time: 25th, June: 12:00-13:30 (Lunch); 17:30-19:00 (Banquet)

26th, June: 12:00-13:30 (Lunch)

➤ Conference affair member

Jianwei Niu Mobile: 13801164109

Ying Li Mobile: 13488805588

➤ Attentions

1) Please prepare your presentation file and copy it to the public computer before the session starts.

2) Please wear your Representative card during the conference

3) Sessions will be held in English



CSCloud/SSC 2016 Program at a Glance

Saturday, June 25

	Auditorium Room	Room F113	Room G1039
8:30 – 9:00	Opening	—	—
9:00 – 9:50	Keynote 1	—	—
9:50 – 10:10	Coffee Break		
10:10 – 11:00	Keynote 2	—	—
11:00 – 12:15	CSCloud 1	CSCloud 2	SSC 1
12:15 – 14:00	Lunch Break		
14:00 – 15:15	—	CSCloud 3	SSC 2
15:15 – 16:30	—	CSCloud 4	CSCloud 5
16:30 – 16:50	Coffee Break		
16:50 – 18:05	—	CSCloud 6	CSCloud 7
19:00 – 21:00	Banquet (Award Announcement)		

Sunday, June 26

	Room F113	Room G1039
9:00 – 10:15	CSCloud 8	SSC 3
14:00 – 18:00	Travel	

Monday, June 27

	Room F113	Room G1039
9:00 – 17:00	Tutorial	



CSCloud/SSC 2016 Keynote

June 25th, Saturday, 09:00, Auditorium Room.



Compressive Privacy Based on Joint Optimization of Differential Utility/Cost

Sun-Yuan Kung

IEEE Fellow, Princeton University, USA

Professor S.Y. Kung received his Ph.D. Degree in Electrical Engineering from Stanford University in 1977. In 1974, he was an Associate Engineer of Amdahl Corporation, Sunnyvale, CA. From 1977 to 1987, he was a Professor of Electrical Engineering-Systems of the University of Southern California, L.A. Since 1987, he has been a Professor of Electrical Engineering at the Princeton University. In addition, he held a Visiting Professorship at the Stanford University (1984); and a Visiting Professorship at the Delft University of Technology (1984); a Toshiba Chair Professorship at the Waseda University, Japan (1984); an Honorary Professorship at the Central China University of Science and Technology (1994); and a Distinguished Chair Professorship at the Hong Kong Polytechnic University since 2001. His research interests include VLSI array processors, system modelling and identification, neural networks, wireless communication, sensor array processing, multimedia signal processing, bioinformatic data mining and biometric authentication. Professor Kung has authored more than 400 technical publications and numerous textbooks, Professor Kung has co-authored more than 400 technical publications and numerous textbooks including "VLSI and Modern Signal Processing," with Russian translation, Prentice-Hall (1985), "VLSI Array Processors", with Russian and Chinese translations, Prentice-Hall (1988); "Digital Neural Networks", Prentice-Hall (1993); "Principal Component Neural Networks", John-Wiley (1996); and "Biometric Authentication: A Machine Learning Approach", Prentice-Hall (2004). Professor Kung is a Fellow of IEEE since 1988.

This talk explores the rich synergy among signal processing, information theory, estimation theory, and machine learning and, thereafter, presents a novel privacy preserving methodology, named compressive privacy (CS). The objective is to build user-collaborative machine learning systems to facilitate the intended function while protecting the privacy of owner's sensitive information. It involves the joint optimization over three design spaces: (i) Feature Space (ii) Utility Subspace; and (iii) Cost Subspace (i.e. Privacy Subspace). Mathematically, the optimal query can be derived from the joint optimization formulation where the query should be chosen to simultaneously maximize the utility and minimize the cost. In order to derive a closed form analysis/solution, we recast the information theoretical criterion (such as the log-likelihood or mutual information) in terms of (differential) error covariance matrix used in the estimation theory. More exactly, the optimal query search (or feature selection) becomes a problem of maximizing a Differential Utility/Cost (DUC) ratio, a criterion function commonly adopted by economists. More exactly, DUC is defined as the ratio between Differential Utility and Differential Cost. The DUC formulation can be extended to Machine Learning applications, where the Differential Utility and Cost are characterized by the given supervised training dataset. Furthermore, the DUC optimization can be reformulated in the kernel learning models, where nonlinear kernels afford a much expanded search space to enhance the optimized DUC ratio. Simulation results based on facial image classification (utility) and reconstruction (privacy) will be demonstrated.



CSCloud/SSC 2016 Keynote

June 25th, Saturday, 10:10, Auditorium Room.



Fast Data Access Service in Cloud Systems

Xiaodong Zhang

IEEE Fellow, Robert M. Critchfield Professor in Engineering
The Ohio State University, USA

Xiaodong Zhang is the Robert M. Critchfield Professor in Engineering and Chair of the Computer Science and Engineering Department at the Ohio State University. His research interests focus on data management in computer and distributed systems. He has made strong efforts to transfer his academic research into advanced technology to update the design and implementation of major general-purpose computing systems. He received

his Ph.D. in Computer Science from University of Colorado at Boulder, where he received Distinguished Engineering Alumni Award in 2011. He is a Fellow of the ACM, and a Fellow of the IEEE

Cloud computing provides us with basic and indispensable service in daily life. Taking the iPhone as an example, each daily used app on the phone, such as calendar, weather, text message, Wechat, and many others, connects to a data center. Today's concept of computing is data processing in practice. This presentation will focus on fundamental issues of data processing in the context of big data.

A major goal of algorithms analysis and implementation in data processing is to read and write data records from memory or storage in high speed at a low cost for a given data storage format. As the data volume generated in the society continues to grow in an increasingly rapid way, we have reevaluated several commonly used data accessing methods including LSM-tree for sequentially archived data, relational data model, and storing/retrieving methods for key-value stored data. In this talk, I will show their limits and inabilities to handle big volume of data in a scalable way. I will also present three new research results: (1) re-enabling buffer caching capability for LSM-tree to achieve high performance of both reads and writes to process sequentially archived data, (2) balancing both network bandwidths and storage transfers for relational tables in large clusters, and (3) maximizing throughput of in-memory key-value stores by GPUs. All the related algorithms and software implementations are open sourced, some of which have been adopted in production systems.



Opening Schedule

June 25th, Saturday, 8:30 - 9:00, Auditorium Room

Schedule:

- 8:30 AM – 8:40 AM Opening Greetings (Weifeng Lv)
- 8:40 AM – 8:50 AM General Chair Program Introduction (Meikang Qiu)
- 8:50 AM – 9:00 AM Program Chair Greetings (Jianwei Niu)

General Chair:



Weifeng Lv, Professor in School of Computer Science of Engineering, Beihang University, Beijing, China. Dean of School of Computer Science of Engineering, Beihang University. The leader of the “Smart Cities (Phase II)” project supported by the National High Technology Research and Development Program of China (the 863 Program). He has published 40+ journal and conference papers.



Meikang Qiu received the BE and ME degrees from Shanghai Jiao Tong University, China in 1992 and 1998. He received the M.S. and Ph.D. degree of Computer Science from University of Texas at Dallas in 2003 and 2007, respectively. Currently, he is an Associate Professor of Computer Science at Pace University and Adjunct Professor at Columbia University. He had worked at Chinese Helicopter R&D Institute, IBM, etc. for 9 years. Currently, he is an IEEE Senior member and ACM Senior member. His research interests include cloud computing, big data storage and security, embedded systems, cyber security, hybrid memory, heterogeneous systems, mobile and sensor networks, etc. He has published 4 books, 330 peer-reviewed journal and conference papers (including 150 journal articles, 180 conference papers, 40+ IEEE/ACM Transactions papers), and 3 patents. He has won ACM Transactions on Design Automation of Electrical Systems (TODAES) 2011 Best Paper Award. His paper about cloud computing has been published in JPDC (Journal of Parallel and Distributed Computing, Elsevier) and ranked #1 in Top Hottest 25 Papers of JPDC 2012. He has won another 8 Conference Best Paper Award (IEEE/ACM ICSS'12, IEEE GreenCom'10, IEEE EUC'10, IEEE CSE'09, CSCloud'16, BigDataSecurity'15). Currently he is an associate editor of IEEE TOC and IEEE TCC. He is the General Chair of IEEE HPCC/ICSS/CSS 2015, IEEE CSCloud'15, NSS'15, IEEE BigDataSecurity'15, and Program Chair of IEEE SOSE/MobileCloud/BigData 2015. He has won Navy Summer Faculty Award in 2012 and Air Force Summer Faculty Award in 2009. His research is supported by US government such as NSF, Air Force, Navy and companies such as Nokia, NVIDIA, and Cavium.

Program Chair:



Jianwei Niu received his Ph.D. degrees in 2002 in computer science from Beijing University of Aeronautics and Astronautics (BUAA, now Beihang University). He was a visiting scholar at School of Computer Science, Carnegie Mellon University, USA from Jan. 2010 to Feb. 2011. He is a professor in the School of Computer Science and Engineering, BUAA. He is now an IEEE senior member. He has published more than 100 referred papers on such as IEEE TPDS, IEEE INFOCOM, ACM Sensys, ACM SIGCHI, ACM Multimedia, TII, TECS, JPDC, Neurocomputing, WCMC, JNCA, and etc., and filed more than 30 patents in mobile and pervasive computing. He has served as an associate editor of Int. J. of Ad Hoc and Ubiquitous Computing, Journal of Internet Technology, Journal of Network and Computer Applications (Elsevier). He has got five grants from NSFC, seven grants from National 863 Plan of China. He received the New Century Excellent Researcher Award from Ministry of Education of China 2009, the first prize of technical invention of the Ministry of Education of China 2012, Innovation Award from Nokia Research Center, and won the best paper award in IEEE ChinaCom 2014, ICC 2013, WCNC 2013, ICACT 2013, CWSN 2012 and GreenCom 2010. His current research interests include mobile and pervasive computing, mobile video analysis.



Technical Program

The 3rd IEEE International Conference on Cyber Security and Cloud Computing (CSCloud 2016)

CSCloud 1:

Saturday 11:30, Auditorium Room

Session Chair: Thierry Mbelli

Cyber Security, A Threat to Cyber Banking In South Africa

Thierry Mbelli and Barry Dwolatzky

Wormhole Detection in Secured BGP Networks

Youssef Gahi, Junaid Israr and Mouhcine Guennoun

Electricity Cost Management for Cloud Data Centers under Diverse Delay Constraints

Yuqi Fan, Yongfeng Xia, Yuheng Liu and Xiaohui Yuan

SE-ORAM: A Storage-Efficient Oblivious RAM for Privacy-Preserving Access to Cloud Storage

Qiumao Ma, Jinsheng Zhang, Yang Peng, Wensheng Zhang, and Daji Qiao

CSCloud 2:

Saturday 11:30, Room F113

Session Chair: Bo Li

Controlling a Car Through OBD Injection

Yu Zhang, Binbin Ge, Xiang Li, Bin Shi and Bo Li

A Novel Software Defined Networking Approach for Cloud Environments

Yukun Zhang and Bo Li

Saphena: An Approach for Analyzing Similarity of Heterogeneous Policies in Cloud Environment

Li Lin, Jian Hu, Xinya Mao, and Jianbiao Zhang

A Cluster-based Intrusion Detection Framework for Monitoring the Traffic of Cloud Environments

Bo Li, Peng Liu, and Li Lin

Toward an Improved Bloom Filter Data De-duplication and Encryption for Big Data

Kaixin Wang, Hao Zhang, Jun Song and Lizhe Wang

CSCloud 3:

Saturday 14:00, Room F113

Session Chair: Zhe Wang

Towards an Out-of-the-box Cloud Application Monitoring Framework

Jianjun Li, Wei Li, and Ming Li

A Cloud Auditing Framework based on Nested Virtualization

Zhe Wang, Jin Zeng, Tao Lv, Bin Shi, and Bo Li

A New Block-based Data Distribution Mechanism in Cloud Computing

Chandrima Dadi, Ping Yi, Zongming Fei and Hui Lu

An Analysis of Server-side Design for Seed-based Mobile Authentication

Longbin Chen, Li-Chiou Chen, Nader Nassar and Meikang Qiu

Efran (Ω): "Efficient Scalar Homomorphic Scheme on MapReduce for Data Privacy Preserving"

Konan Martin, Wenyong Wang, and Brighter Agyemang



CSCloud 4:

Saturday 15:15, Room F113

Session Chair: Ady Wahyudi Paundu

MongoDB NoSQL Injection Security Threat Analysis and Detection

Boyu Hou, Kai Qian, Lei Li, Yong Shi, Lixin Tao, and Jigang Liu

A framework Research of Power Grid Knowledge Recommendation and Situation Reasoning based on Cloud Computing and CEP

Jian Su, Yu Huang, Guangxian Lv, Haitao Liu and Peng Jin

Sequence-based Analysis of Static Probe Instrumentation Data for a VMM-based Anomaly Detection System

Ady Wahyudi Paundu, Takeshi Okuda, Youki Kadobayashi and Suguru Yamaguchi

A Review of Intrusion Detection in 802.15.4-based Wireless Sensor Networks

Mounib Khanafer, Youssef Gahi, Mouhcine Guennoun, and Hussein T. Mouftah

Security Vulnerabilities and Countermeasures for Time Synchronization in IEEE802.15.4e Networks

Wei Yang, Qin Wang, Yadong Wan and Jie He

CSCloud 5:

Saturday 15:15, Room G1039

Session Chair: Junjie Peng

A Threshold Multi-Server Protocol for Password-Based Authentication

Mengxiang Guan, Jiaxing Song and Weidong Liu

Shortest Processing Time First Algorithm for Hadoop

Laurent Bobelin, Patrick Martineau, Di Zhao and Haiwu He

Resource optimization strategy for CPU intensive applications in cloud computing environment

Junjie Peng, Jinbao Chen, Shuai Kong, Danxu Liu and Meikang Qiu

Empirical Study of Using Big Data for Business Process Improvement at Private Manufacturing Firm in Cloud Computing

Ziqi Wang and Haihui Zhao

On-demand Pseudonym Systems in Geo-distributed Mobile Cloud Computing

Jiawen Kang, Rong Yu, Xumin Huang, Sabita Maharjan and Yan Zhang

CSCloud 6:

Saturday 16:50, Room F113

Session Chair: Delong Cui

A Reinforcement Learning-based Mixed Job Scheduler Scheme for Cloud Computing under SLA Constraint

Zhiping Peng, Delong Cui, Yuanjia Ma, Jianbin Xiong, Bo Xu, and Weiwei Lin

A Multi-level Intelligent Selective Encryption Control Model for Multimedia Big Data Security in Sensing System with Resource Constraints

Chen Xiao, Lifeng Wang, Zhu Jie, and Tiemeng Chen

A Consolidation Strategy Supporting Resources Oversubscription in Cloud Computing

Ying Liu

R-learning and Gaussian Process Regression Algorithm for Cloud Job Access Control

Zhiping Peng, Delong Cui, Yuanjia Ma, Jianbin Xiong, Bo Xu, and Weiwei Lin

Survey on Data Integrity in Cloud

Kamile N. Sevis and Ensar Seker



CSCloud 7:

Saturday 16:50, Room G1039

Session Chair: Hongliang Liang

A Correctness Verification Method for C Programs Based on VCC

Hongliang Liang, Daijie Zhang, Xiaoxiao Pei, Xiaodong Jia, Guangyuan Li and Jiuyun Xu

Mobile App collusions and its cyber security implications

Abdullahi Arabo

A Universal Algorithm to Secure Stolen Mobile Devices Using Wi-Fi in Indoors Environments

Wei Ding, José Arriaga

Toward a Big Data security analytics in a Cloud Environment

Hassan El Alloussi, Laila Fetjah, Abderrahim Sekkaki, Othman El Warrak, Said Jai Andaloussi and Karim Benzidane

CSCloud 8:

Sunday 09:00, Room F113

Session Chair: Hongjun Dai

Energy-Aware Optimal Task Assignment for Mobile Heterogeneous Embedded Systems in Cloud Computing

Keke Gai, Meikang Qiu, Hui Zhao, and Meiqin Liu

Keystroke Biometric User Verification Using Hidden Markov Model

Md Liakat Ali, Kutub Thakur, Charles C. Tappert, and Meikang Qiu

An Analysis of Information Security Event Managers

Kutub Thakur, Sandra Kopecky, Moath Nuseir, Md Liakat Ali, and Meikang Qiu

Preparation of Graphene and Its Performance Analysis

Wan Sheng

Dynamic Android Malware Classification Using Graph-Based Representations

Lifan Xu, Dongping Zhang, Marco A. Alvarez, Jose Andre Morales, Xudong Ma, and John Cavazos



The 2nd IEEE International Conference of Scalable and Smart Cloud (SSC 2016)

SSC 1:

Saturday 11:30, Room G1039

Session Chair: Claude Asamoah

Senslaas: A Sensor-Cloud Infrastructure with Sensor Virtualization

Sunanda Bose and Nandini Mukherjee

Powering Filtration Process of Cyber Security Ecosystem Using Knowledge Graph

Claude Asamoah, Lixin Tao, Keke Gai and Ning Jiang

Scalable Fog Computing with Service Offloading in Bus Networks

Dongdong Ye, Maoqiang Wu, Shensheng Tang and Rong Yu

A Remote Backup Approach for Virtual Machine Images

Zhe Wang, Jin Zeng, Tao Lv, Bin Shi, and Bo Li

An Improved Matrix Encoding Steganography Algorithm Based on H.264 Video

Liyun Qian, Zhitang Li, Pei Zhou, and Jian Chen

SSC 2:

Saturday 14:00, Room G1039

Session Chair: Parul Khanna

A Semantic Approach to Intelligent and Personal Tutoring System

Maria Sette, Lixin Tao, Keke Gai and Ning Jiang

Reducing Complexity of Diagnostic Message Pattern Specification and Recognition on In-Bound Data Using Semantic Techniques

Gilbert Alipui, Lixin Tao, Keke Gai and Ning Jiang

Privacy-Aware Adaptive Data Encryption Approach of Big Data in Cloud Computing

Keke Gai, Meikang Qiu, Hui Zhao, and Jian Xiong

Improving Data Governance in Large Organizations through Ontology and Linked Data

Richard J. Destefano, Lixin Tao and Keke Gai

Experimental Analysis of Tools Used for Doxing and Proposed New Transforms to Help Organizations Protect against Doxing Attacks

Parul Khanna, Pavol Zavarsky and Dale Lindskog

SSC 3:

Sunday 09:00, Room G1039

Session Chair: Hongjun Dai

Drug Side Effects Data Representation and Full Spectrum Inferencing using Knowledge Graphs in Intelligent Telehealth

Saravanan Jayaraman, Lixin Tao, Keke Gai and Ning Jiang

Understanding Taxonomy of Cyber Risks for Cybersecurity Insurance of Financial Industry in Cloud Computing

Sam Elnagdy, Meikang Qiu and Keke Gai

Risk Classifications Using Ontology-Based Knowledge Representation for Cybersecurity Insurance in Financial Industry

Sam Elnagdy, Meikang Qiu and Keke Gai

Tutorial Seminar 1

Monday, 09:00 - 17:00, Room F113

Session Chair: Ying Li

Title:

Presenter: Bo Li



General Information

Registration Desk

The Registration Desk will be open to assist you at the following times:

- Friday, June 24, 2016, 08:00 – 21:00
- Saturday, June 25, 2016, 08:00 – 21:00

Location: **Main Lobby**

Conference materials, name badges, and the proceedings will be distributed at the registration desk.

Name Badges

All delegates, sponsors, speakers, and attendees of CSCloud/SSC 2016, associated workshops, and summit will be provided with a name badge, to be collected upon registration. This badge must be worn at all times as it is your official pass to all sessions of the conferences, lunches, morning and afternoon coffee breaks, and banquets.

Presentation Instruction

You are required to arrive at the room (in which you will deliver your talk) at least 15 minutes before the commencement of the session. Upon arrival please confirm your attendance with the Session Chair and familiarize yourself with the venue. Upon arrival, please copy your slides file to the presentation computer. If you plan to use your own equipment, please ensure it is ready to go prior to the session commencing, since there is very little time between presentations. If you have requested optional equipment, ensure that is in the room. For all assistance, please speak to the Session Chair.

Message Board

Any program changes or urgent announcements from the secretariat and private messages will be posted on the message board in the registration area. Please check the message board occasionally.

Social Events

The Banquet Dinner starts from 19:00 June 25th at Beihang University campus.
Best paper awards and service appreciation awards will be announced at the banquet.



Appendix 1: Routes

The Beijing Capital International Airport (PEK) is located in northeast of Beijing, capital of People's Republic of China, and 25.35km (15.75mi) from the Tiananmen Square, center of Beijing city. Both taxi and airport bus services are available to get to and from the airport.

Directions from the Beijing Capital International Airport to the Beihang University: The Beihang University is 30Km from the Beijing Capital International Airport. You can reach the school either by airport bus or taxi:

Airport Bus: Take the Line 5 “Zhong Guan Cun to Airport” at the north gate of the Beihang University. Get off at the Airport Stop. The bus starts every 20 minutes and the cost is RMB 16 one-way.

Taxi: The estimated fare is RMB 100 one-way (The rates maybe varied depending on the traffics).
Note: If you do not speak Chinese, please print the following slip and show it to the taxi driver about where you go:

“Please take me to the capital international Airport. Thank you!”

“请带我去首都国际机场。谢谢！”



Map of Beihang University Neighborhood and Beijing Capital International Airport



Appendix 2: Beihang University Map



Plane Figure of Beihang University

Note:

- | | |
|---|---------|
| 1. Training Center | 培训中心 |
| 2. Ruxin Conference Center (Venue) | 如心会议中心 |
| 3. Dining Hall of Beihang Training Center | 培训中心餐厅 |
| 4. Conference Center of New Main Building | 新主楼会议中心 |
| 5. Vision Hotel | 唯实宾馆 |

