OPENING CEREMONY

November 3, Tuesday, 08:00-08:30, Venice Ballroom
Chair: Prof. Qinyu Zhang

General Chair
Xuemai Gu,
Professor,
Harbin Institute of Technology

General Chair
Xinsheng Zhang,
VP & Secretary
China Institute of Communications

TPC Chair
Qinyu Zhang,
Professor,
Harbin Institute of Technology

TPC Chair
Yu Cheng,
Associate Professor,
Illinois Institute of Technology

TPC Chair
Guang Shi,
Director of Dept. Academy,
China Institute of Communications

1. Welcome Message From Prof. Xuemai Gu
2. Welcome Message From Prof. Yu Cheng

KEYNOTE #1

Chair: Guang Shi, China Institute of Communications

Dr. Khaled B. Letaief
Chair Professor and Dean
School of Engineering
The Hong Kong University of Science and Technology
Date: November 3, Tuesday
Time: 08:30-09:15
Room: Venice Ballroom

Disruptive Technologies for 5G – The Next Wireless Frontier

Abstract: We are witnessing an exciting time for future wireless networks with the emergence of 5G. In contrast to 3G and 4G, which were mainly a continuation of their predecessors, 5G will represent a revolutionary leap and will have a huge impact on the transformation of wireless communications industries as well as vertical industries. In this talk, we will describe the vision and opportunities of 5G mobile and wireless networks. We will describe the key challenges and requirements such as uniform Gbps experience, reduced latency for delay sensitive services, and massive connectivity. We also describe some of the important technologies ranging from air technologies and network design to services that are needed to meet the demands of beyond 4G wireless networks and guarantee broadband ubiquitous communications of all things, including human-to-machine and machine-to-machine, for a connected living. The ongoing R&D and standardization activities such as METIS and IMT-2020 will also be introduced.

Biography: Dr. Letaief received his Ph.D. in Electrical Engineering from Purdue University in 1990. From 1990 to 1993, he was a faculty member at the University of Melbourne, Australia. Since 1993, he has been with HKUST where he has held numerous administrative positions, including Dean of HKUST School of Engineering, Head of the Electronic and Computer Engineering department, Director of the Center for Wireless IC Design, Director of Huawei Innovation Laboratory, and Director of the Hong Kong Telecom Institute of Information Technology. From September 2015, he joined HBKU as Provost to help establish a research-intensive university in Qatar in partnership with strategic partners that include Northwestern, Carnegie Mellon, Cornell, and Texas A&M. Dr. Letaief is an internationally recognized leader in wireless communications and networks. He served as consultants for different organizations including Huawei, ASTRI, ZTE, Nortel, PricewaterhouseCoopers, and Motorola. He is the founding Editor-in-Chief of the IEEE Transactions on Wireless Communications and has served on the editorial board of other prestigious journals including the IEEE Journal on Selected Areas in Communications – Wireless Series (as Editor-in-Chief).

KEYNOTE #2

Chair: Guang Shi, China Institute of Communications

Dr. Pingzhi Fan
Professor, Vice President of Southwest Jiaotong University
Date: November 3, Wednesday
Time: 09:15-10:00
Room: Venice Ballroom

Challenges & Opportunities of Communications, Computing and Storage

Abstract: In this talk, information systems consisting of communications, computing and storage subsystems are considered. In the past, the three subsystems were independently progressed, and each of them has reached a stage of certain limit. In computing, Moore's Law may run out of steam soon based on silicon technology; in communications, the Shannon's classical capacity limit has almost reached; in storage, although the optical disks and magneto-optical disks have developed very fast, it seems still a way to meet the rapid increase of big data. To cope with the impact of big data, it is proposed to integrate the traditionally individual computing, communications and storage subsystems, which are getting inevitably converged. An effective information system capacity is introduced and discussed, aimed at excavating potentials of information systems under a new paradigm with more degrees of freedom. In this talk, the convergence of computing, telecommunications and storage is investigated, and the effectiveness of data handling capability for a given information system is discussed.

Biography: Pingzhi Fan (IEEE Fellow) received his PhD degree in Electronic Engineering from the Hull University, UK. He is currently a professor and director of the institute of mobile communications, Southwest Jiaotong University, China. He is a recipient of the UK ORS Award, the Outstanding Young Scientist Award by NSFC, and the chief scientist of a national 973 program. He served as general chair or TPC chair of a number of international conferences, and is the guest editor-in-chief, guest editor or editorial member of several international journals. He is the founding chair of IEEE VTS BJ Chapter, founding chair of IEEE Chengdu Section. He also served as a board member of IEEE Region 10, IET(IEE) Council and IET Asia-Pacific Region. He has over 200 research papers published in various academic English journals (IEEE/IEE/IEICE, etc), and 8 books (incl. edited) published by John Wiley & Sons Ltd/RSP (1996), IEEE Press (2011, etc), Springer (2004) and Nova Science (2007), and is the inventor of 20 granted PCT and Chinese patents. His research interests include high mobility wireless communications, 5G techniques, convergence of telecommunications, computing and storage, signal design & coding, etc. He is an IEEE VTS Distinguished Lecturer (2015-2017), a fellow of IEEE, IET(IEE), CIE and CIC.

KEYNOTE #3

Chair: Prof. Yi Gong, South University of Science &Technology of China

Dr. Zhiquan (Tom) Luo
Professor and ADC Chair in Digital Technology
Department of Electrical and Computer Engineering
University of Minnesota, Twin Cites
Date: November 4, Tuesday
Time: 08:30-09:15
Room: Venice Ballroom

Optimal Joint Provision of Backhaul and Radio Access Networks

Abstract: We consider a cloud-based heterogeneous network of base stations (BSs) connected via a backhaul network of routers and wired/wireless links with limited capacity. The optimal provision of such networks requires proper resource allocation across the radio access links in conjunction with appropriate traffic engineering within the backhaul network. In this work we propose an efficient algorithm for joint resource allocation across the wireless links and the flow control over the entire network, taking into account the buffer size, half-duplex and interference constraints. The proposed algorithm, which maximizes the min-rate among all the transmitted commodities, is based on a decomposition approach that leverages both the asynchronous Alternating Direction Method of Multipliers (ADMM) and the weighted-MMSE (WMMSE) algorithm. We show that this algorithm is easily parallelizable and converges globally to a stationary solution of the joint optimization problem. The proposed algorithm can also be extended to networks with multi-antenna nodes and other utility functions.

Biography: Zhi-Quan (Tom) Luo received his B.Sc. degree in Applied Mathematics in 1984 from Peking University, Beijing, China. Subsequently, he was selected by a joint committee of the American Mathematical Society and the Society of Industrial and Applied Mathematics to pursue Ph.D study in the United States. After an one-year intensive training in mathematics and English at the Nankai Institute of Mathematics, Tianjin, China, he studied in the Operations Research Center and the Department of Electrical Engineering and Computer Science at MIT, where he received a Ph.D degree in Operations Research in 1989. From 1989 to 2003, Dr. Luo held a faculty position with the Department of Electrical and Computer Engineering, McMaster University, Hamilton, Canada, where he eventually became the department head and held a Canada Research Chair in Information Processing. Since April of 2003, he has been with the Department of Electrical and Computer Engineering at the University of Minnesota (Twin Cities) as a full professor. His research interests lies in the union of optimization algorithms, signal processing and digital communication. Currently, he is with the Chinese University of Hong Kong, Shenzhen, where he is a Professor and serves as the Vice President Academic. Dr. Luo is a fellow of IEEE and SIAM. He is a recipient of the 2004 and 2009 IEEE Signal Processing Society's Best Paper Awards, the 2011 EURASIP Best Paper Award and the 2011 ICC Best Paper Award. He was awarded the 2010 Farkas Prize from the INFRMS Optimization Society. Dr. Luo chaired the IEEE Signal Processing Society Technical Committee on the Signal Processing for Communications (SPCOM) from 2011-2012. He has held editorial positions for several international journals including Journal of Optimization Theory and Applications, SIAM Journal on Optimization, Mathematics of Computation and IEEE Transactions on Signal Processing. He is the current Editor-in-Chief for the journal IEEE Trans. Signal Processing. In 2014 he is elected to the Royal Society of Canada.

KEYNOTE #4

Chair: Prof. Yi Gong, South University of Science &Technology of China

Dr. Shanzhi Chen
Executive Vice President of Datang Telecom Technology & Industry Group
Director of State Key Laboratory of Wireless Mobile Communications
Date: November 4, Wednesday
Time: 09:15-10:00
Room: Venice Ballroom

TD-LTE Evolution and Future 5G Directions

Abstract: TD-LTE has been regarded as an important milestone for the Chinese telecommunication industry in the 4G era, and it has received considerable attention around the world and has shown astonishingly fast development in recent years. This presentation presents TD-LTE and its evolution, including key technologies, standardization progress, industry achievement and also TDD+ evolution. Furthermore, in order to meet the requirement of the information society in 2020 and beyond, a new generation (5G) mobile broadband system is promoted. After presenting an overview of 5G including scenarios, KPIs and technology routes, this presentation pays attention to TDD's role in 5G and finally presents a series of TDD priority technologies, such as massive MIMO, ultra dense network, high frequency band, flexible spectrum sharing and also Pattern Division Multiple Access (PDMA).

Biography: Shanzhi CHEN received his Ph.D. degree from Beijing University of Posts and Telecommunications (BUPT), China, in 1997. He got M.S. (1991) from China Academy of Posts and Telecommunications (CAPT), and B.E. (1987) from Xidian University, China. He is currently the Chief Technology Officer (CTO) of Datang Telecom Technology & Industry Group and China Academy of Telecommunication Technology (CATT). He is also the director of State Key Laboratory of Wireless Mobile Communications, and the board member of Semiconductor Manufacturing International Corporation (SMIC). He is a Guest Professor of BUPT and Beijing Institute of Technology (BIT). Dr. CHEN has more than 20 years of experience in broadband communication and wireless mobile communication, both in industry and academia. He was a visiting researcher at the Alcatel Bell research Center in Antwerp, Belgium in 1996. He joined Datang Telecom Technology & Industry Group in 1994, and has been serving as CTO since 2008. He devoted his researches and developments to TD-SCDMA 3G and TD-LTE-advanced 4G since 2004. He has authored/co-authored over 100 technical papers in journals and conference proceedings, and 20 invention patents. Dr. CHEN received the State Science and Technology Progress Award of China in 2001 and 2012 respectively, GuangHua Engineering Science and Technology Award from the Chinese Academy of Engineering in 2012, and Outstanding Young Researcher Award from Nature Science Foundation of China in 2014. Dr. Chen is a Fellow of the China Institute of Electronics (CIE), a Fellow of the China Institute of Communications (CIC), and a Senior Member of the IEEE. He is the Editor of the IEEE Network and the IEEE Internet of Things Journal, the Guest Editor of the IEEE Wireless Communications Magazine and the IEEE Communications Magazine. He is also the Editor of the China Communications and the Journal of Communication. He was a member of the steering expert group on information technology of the 863 Hi-Tech R&D Plan of China from 1999 to 2011. His current research interests include network architectures, 5G wireless mobile communications, Internet of Things (IoT) and vehicular network.