2018 海峡两岸物联网高峰论坛暨无线通信与物联网技术应用研讨会

2018 Workshop on Advanced Wireless Communications, Networks, and IOT Applications

会议通知

　　4G 即将成为过去，5G 时代则即将来临，全球各国积极发展 5G 技术，商用推进速度也达到了超预期。5G 并不只是网速的提升，而是让万物互联成为可能，并结合云端和人工智能等技术，推动社会变革，进入一个万物具有感知的智能社会。此次海峡两岸信息通信领域专家围绕 5G 关键技术、人工智能在物联网中应用、车联网等当前热点技术问题开展研讨，共同推进先进技术的实用化和产业化。

一、时间：2018 年 3 月 15-16 日

二、地点：厦门大学海韵园教学楼 504

三、会议议程

时间			议程	Notes
2018 年 3 月 15 日	上午 9:00-11:40	9:00-9:30	领导致辞	黄联芬教授主持
		9:30-10:00	庄卫华：5G Communication Networks: Some Recent Studies	
		10:00-10:30	赵涵捷：雾运算于 5G 的应用与发展	
		10:30-10:40	**茶歇**	
		10:40-11:10	陈山枝：5G 移动通信技术、标准与产业发展	
		11:10-11:40	林風： A Peer-to-Peer Architecture for Heterogeneous Social Networks	
赵涵捷教授主持				
	下午 2:30-4:40	14:30-15:00	彭胜龙：On the Load Balancing of Sensor Deployment for WSN	赵涵捷教授主持
		15:00-15:30	张志勇：联网在智能居家养老的机会与挑战	
		15:00-15:10	**茶歇**	
		15:10-15:40	吴庭育：人体无线网路(WBAN)之最佳化传输研究	
		15:40-16:10	赖槿峰：Big Data Analysis Experience based on GPU Cluster for Appliance Recognition	
		16:10-16:40	曾繁勋：A Rapid Auto-Scaling Mechanism for Fog Computing in IoT and Industrial Applications	

时间			Session / Talk Title	Notes
2018 年 3 月 16 日	上午 9:00-12:20	9:00-9:35	牛志升：AI-empowered Smart Networking for 5G and Beyond	唐余亮教授主持
		9:35-10:05	盛敏：When UDN meets UAV	
		10:05-10:20	**茶歇**	
		10:20-10:55	李洪伟：Heterogeneous Identity Alliance and Regulatory	
		10:55-11:30	陈彩莲：基于工业物联网的分布式感知与传输联合设计	
		11:30-12:05	程翔：Vehicular Communications and Networking: Where Benz Meets Marconi	

教授主持	下午 2:00-5:10	14:00-14:35	温蜜：Flexible and High-efficient Similarity Search over Encrypted Data in Multiple Clouds		庄卫华教授主持
		14:35-15:10	单杭冠：Design and Analysis of Ultra-Dense Small Cell Networks		
		15:10-15:45	艾渤：Intelligent HSR Services-Oriented 5G Key Technologies		
		15:45-16:00	**茶歇**		
		16:00-16:35	周盛：Exploiting the Moving Intelligence: Computation Offloading in Vehicular Networks		
		16:35-17:10	肖亮：UAV Relay in VANETs Against Smart Jamming with Reinforcement Learning		

四、附件：报告简介

报告简介

庄卫华

演讲题目：5G Communication Networks: Some Recent Studies

摘要：

The fifth generation (5G) communication network is expected to accommodate a wide range of emerging services with diverse service quality requirements. The network will integrate a variety of network resources and technologies to support

high transmission rate and to enhance quality of experience to mobile users. The traditional one-size-fits-all network architecture cannot efficiently meet the needs of different services, due to the poor scalability, limited adaptability, and inflexibility. Network function virtualization (NFV) over software defined networking (SDN) technology is a promising approach for an agile and flexible 5G networking infrastructure. In this presentation, we will provide an overview of several recent studies for 5G networks, including radio resource allocation in wireless network virtualization, computing and transmission resource slicing in the core network virtualization, and how to exploit device-to-device (D2D) communications to support data dissemination and offload traffic from the cellular system.   We will conclude this presentation with a brief discussion of some open research topics.

个人简介：

Dr. Weihua Zhuang has been with the Department of Electrical and Computer Engineering, University of Waterloo, Canada, since 1993, where she is a Professor and a Tier I Canada Research Chair in Wireless Communication Networks. She is the recipient of 2017 Technical Recognition Award from IEEE Communications Society Ad Hoc & Sensor Networks Technical Committee, one of 2017 ten N2Women (Stars in Computer Networking and Communications), and a co-recipient of several best paper awards from IEEE conferences. Dr. Zhuang was the Editor-in-Chief of IEEE Transactions on Vehicular Technology (2007-2013), Technical Program Chair/Co-Chair of IEEE VTC Fall 2017 and Fall 2016, and the Technical

Program Symposia Chair of the IEEE Globecom 2011. She is a Fellow of the IEEE, the Royal Society of Canada, the Canadian Academy of Engineering, and the Engineering Institute of Canada. Dr. Zhuang is an elected member in the Board of Governors and VP Publications of the IEEE Vehicular Technology Society.

赵涵捷

演讲题目:雾运算于 5G 的应用与发展

摘要:

　　随着移动终端设备的快速发展，未来将会有大量的设备需要连网，对于网络的服务需求也日渐增加，为了满足大量终端设备的网络服务请求，网络的传输效能与资源分配成为很重要的影响因素，过去的研究时常把运算和储存装置推向云端，虽然集中式运算能够提升运算效能，但是云端运算的容错及效能将会直接反应于用户身上，数据传输至云端的上传及下载过程也会造成大量的网络传输延迟，这对于车载通讯、直播等等需要低延迟的网络服务是一项重大挑战，为了解决网络等待时间的问题，雾运算在近年来被提出，本次的主题内容将着重雾运算于第 5 代行动通讯技术的发展与应用。

个人简介:

赵涵捷教授研究专长为第五代行动通讯、雾运算、无线网络、IPv6、等。赵教授曾申请获得二项新型专利，撰写或合着过五本已出版书籍，于顶尖学术指标(ESI，Essential Science Indicators)近十年计算机科学领域引用次数 Top 1%文章占有 2 篇。目前担任 IET Networks、Journal of Internet Technology、International Journal of Ad Hoc and Ubiquitous Computing International 与 Journal of Internet Protocol Technology 等期刊 Editor-in-Chief，担任 IEEE Systems Journal、Wireless Communications、Wireless Communications and Mobile Computing、International Journal of Communication Systems (IJCS)、The Journal of Information Processing Systems (JIPS)等期刊之 Associate Editor，并且担任 Mobile Networking and Applications (ACM MONET)、IEEE JSAC、IEEE Communications Magazine、Computer Communications、IEE Proceedings Communications、Telecommunication Systems、Wireless Personal Communications、Computer Journal and Wireless Communications & Mobile Computing 等期刊客座编辑。赵教授现为 IEEE 资深会员(Senior Member)，因研究成果优异也荣获国际工程技术学会(IET)与英国计算机学会(BCS)颁予会士(Fellow)荣誉，于 2017 年荣获 South East Asia Regional Computer Confederation (SEARCC)的 ICT researcher of year 奖项，此外，赵涵捷教授致力于偏乡地区的教育，荣获国际史怀哲基金会史怀哲人类贡献奖与美国光点美国总统终身成就奖。

陈山枝

演讲题目：5G 移动通信技术、标准与产业发展

摘要：

首先，回顾了 TD-LTE 4G 最新进展和我国移动通信的创新驱动、跨越发展。简要介绍 5G 需求、技术与标准研究进展，着重分析了 5G 无线和网络关键技术及其挑战，指出了时分复用（TDD）在 5G 中角色与优势。简要介绍了其团队提出的大规模波束赋形、图样分割多址接入（Pattern Division Multiple Access，PDMA）、用户为中心的超密集组网（UUDN）、软件定义去中心化移动网络架构（SoftNet）、LTE-V 车联网等 5G 关键技术。最后介绍了大唐在 5G 关键技术与标准研究及 5G 试验网进展。

个人简介：

Shanzhi CHEN received his Bachelor degree from Xidian University in 1991, and Ph.D. degree from Beijing University of Posts and Telecommunications (BUPT), China, in 1997. He joined Datang Telecom Technology & Industry Group and China Academy of Telecommunications Technology (CATT) in 1994, and has served as EVP R&D since 2008. He is the director of State Key Laboratory of Wireless Mobile Communications, and the board member of Semiconductor Manufacturing International Corporation (SMIC).

He is Member of China Association for science and Technology Committee, Senior Member of the IEEE, and Fellow

of China Institute of Electronics (CIE) and China Institute of Communications (CIC). He was a member of the steering expert group on information technology of the 863 Hi-Tech R&D Program of China from 1999 to 2011.

He is Editor of IEEE Network and IEEE Internet of Things Journal, Editor of China Communications and Journal on Communications, and the guest editor for IEEE Wireless Communications, IEEE Communications Magazine and IEEE TVT, and served as TPC Chair and Member of many international conferences.

He has contributed to the design, standardization, and development of 4G TD-LTE and 5G mobile communication systems. Dr. Chen's achievements have won multiple top awards by China central government and honors, he received The Ho Leung Ho Lee Foundation Award for Scientific and Technological Innovation in 2017, the National Awards for Science and Technology Progress in 2001, 2012 and 2016 respectively, the National Award for Technological Invention in 2015, and the Distinguished Young Scholar Award of the National Natural Science Foundation in 2014.

His current research interests include 5G mobile communications, network architectures, Vehicular communication Networks, Internet of Things (IoT).

林風

演讲题目： A Peer-to-Peer Architecture for Heterogeneous Social Networks

摘要:

The unprecedented growth and influence of Social Network Sites (SNSs) have opened the opportunity for researchers to explore a large amount of social and behavioral data. The heterogeneity of SNSs further sparks research innovations to develop methods and applications that integrate resources and offer more seamless services across SNSs. Specifically, aiming at the integration of social relationship data, a much less studied subject, in this talk, I will show a peer-to-peer architecture, namely *P2P-iSN*, to integrate the heterogeneous SNSs. The P2P-iSN allows users from heterogeneous SNSs to communicate without involving the SNS they have registered with. Under this architecture, I will present a Global Relationship Model (GRM) to capture the relationship strength between users and then develop a searching mechanism, namely *i-Search*, to find the optimal social path between any two users who are meaningfully connected in heterogeneous SNSs. We evaluate the performance of P2P-iSN and show that our P2P-iSN can effectively support many future applications such as improved trust/reputation metrics and integrated content-sharing. With the proposed P2P-iSN, SNS developers can design more effective user-centric SNS applications. The results of this work have been published in IEEE Network Magazine.

个人简介:

Phone Lin (M'02–SM'06-F'17) received the BS and Ph.D. degrees of Computer Science & Information Engineering

from National Chiao Tung University, Hsinchu, Taiwan, in 1996 and 2001, respectively. He is a Professor with National Taiwan University, Taiwan, holding a professorship within the Department of Computer Science and Information Engineering, Graduate Institute of Networking and Multimedia, and Telecommunications Research Center of College of EECS, and Graduate Institute of Medical Device and Imaging of College of Medicine.

Dr. Lin serves on the Editorial Board of several journals, such as IEEE Transactions on Vehicular Technology, IEEE Network Magazine, IEEE Internet of Things Journal, Computer Networks Journal, etc. He has also been involved in several prestigious conferences, such as Local Arrangement Co-Chair, IEEE VTC2010-Spring, Taipei, Taiwan, the Technical Program Chair of WPMC 2012, Co-Chair of the Wireless Networking Symposium of IEEE Globecom 2014, and TPC member of IEEE Infocom 2010-2017. He was Chair of IEEE Vehicular Technology Society Taipei Chapter 2014-2015.

Lin has received many prestigious research awards, such as the Outstanding Research Award, Ministry of Science and Technology, Taiwan in 2016, the Best Young Researcher of IEEE ComSoc Asia-Pacific Young Researcher Award in 2007, the Distinguished Electrical Engineering Professor Award of the Chinese Institute of Electrical Engineering in 2012, the Ten Outstanding Young Persons Award of Taiwan (Science & Technology) in 2009, the Junior Researcher Award from Academia Sinica, R.O.C. in 2010. He has been an IEEE Fellow and ACM Senior Member since 2017 and 2012, respectively.

彭勝龍

演讲题目：On the Load Balancing of Sensor Deployment for WSN

摘要：

The Internet of things (IoT) is a network concept proposed for integrating physical devices, vehicles, home appliances, items embedded with electronics, and so on such that in IoT these device objects can connect and exchange data. On the other hand, a wireless sensor network (WSN) is a network formed by a large number of sensor nodes such that information obtained by sensors can be collected to a sink server for analysis. It is believed that WSN is a key technology for realizing IoT.

Deployment of sensor nodes, in particular, relay nodes or gateways, is an important issue in studying WSN. For example, clustering and area coverage on WSN are two extensively studied problems. Some balancing issues are also discussed in recent studies. In this talk, we consider a more general problem, namely, graph partitioning problem with load balancing issue. Note that sensors in WSN with their link abilities can define a graph. In this presentation, we will cover both algorithmic aspects and experimental studies for the problem. We hope this talk can trigger some ideas for audience to further study on this research topic.

个人简介：

Sheng-Lung Peng is a full Professor of the Department of Computer Science and Information Engineering at National Dong Hwa University, Taiwan. He received the BS degree in Mathematics from National Tsing Hua University, and the MS and PhD degrees in Computer Science and Information Engineering from the National Chung Cheng University and National Tsing Hua University, Taiwan, respectively. His research interests are in designing and analyzing algorithms for Combinatorics, Bioinformatics, and Networks.

Dr. Peng has edited several special issues for journals, such as Soft Computing, Journal of Internet Technology, Journal of Computers and MDPI Algorithms. He is also a reviewer for more than 10 journals such as IEEE Transactions on Emerging Topics in Computing, Theoretical Computer Science, Journal of Computer and System Sciences, Journal of Combinatorial Optimization, Journal of Modelling in Management, Soft Computing, Information Processing Letters, Discrete Mathematics, Discrete Applied Mathematics, Discussiones Mathematicae Graph Theory, and so on. He published more than 100 international conferences and journal papers.

Dr. Peng is now the director of the Library and Information Center of NDHU and an honorary Professor of Beijing Information Science and Technology University of China. He is a secretary general of Institute of Information and Computing Machinery (IICM) in Taiwan. He is also a director of the ACM-ICPC Contest Council for Taiwan. Recently, he is elected as a supervisor of Chinese Information Literacy Association and of Association of Algorithms and Computation

Theory (AACT). He has been serving as a secretary general of Taiwan Association of Cloud Computing (TACC) from 2011 to 2015 and of AACT from 2013 to 2016. He was also a convener of the East Region of Service Science Society of Taiwan from 2014 to 2016.

张志勇

演讲题目： 物联网在智能居家养老的机会与挑战

摘要：

　　物联网在近年来已受到政府、产业界及学术界的高度重视，万物联网的时代被预期在 2020 年即将来临。于此同时，越来越多的穿戴式装置，也随时传递着生理信息(血压、心跳、血糖等)及运动信息(如卡洛里消耗、运动里程、经过的位置、运动时间与频率等)，此外，物联网中的大量的智能物体，如联网的自动驾驶车、机器人、脚踏车、冰箱、饮水机、电表、水表、冷气等，无时无刻地传送讯息至网络上，这些大量的讯息，若能透过大数据分析的技术，进行特征与关连性分析，最后提供给普罗大众、企业、政府进行策略的决定，将可为人们的生活带来便利，也可为企业在未来潜在的市场带来很多的商机，更可为政府营造出效率与透明。本次讲座，首先介绍物联网的发展历程与其重要性，接着将展现许多未来的应用，并以物联网在居家健康照护的应用为例，说明物联网的系统建置对居家长辈在安全、健康、舒适、便利等方面的照护。最后，我们将说明物联网与大数据的综合应用在未来可能面临的机会与挑战。

个人简介：

　　张志勇教授，1964 年生，河南临汝人，博士，台湾淡江大学教授、淡江大学工学院物联网与大数据研究中心主任、博士生导师、安徽省三类领军人才、台湾 ACM SIG MOBILE Chapter 国际组织的共同主席。

担任许多 SCI 索引知名期刊之编辑委员与客座编辑，亦曾担任台湾多项大型研究计划主持人或共同主持人。发表 300 多篇论文，其中 80 多篇发表在国际著名的 SCI 索引期刊，包括许多 IEEE 或 ACM Transactions 期刊论文，100 多篇发表在 IEEE/ACM 国际知名会议，曾获多项最佳论文奖。多次主办国际或两岸会议，担任重要职务。

出版全台湾第一本「物联网概论」的书籍(碁峰图书公司)，该书亦转译为简体字，在中国出版及使用，多次接受各电视、平面与数字媒体竞相报导或专稿发表物联网相关评论。此外，亦在台湾内近六十所大学、大陆近二十所大学，受邀担任物联网主题方面的演讲及论坛。

多次主办两岸物联网研讨会及皖台物联网研讨会，推动两岸物联网之发展。受邀于台湾教育部，主导规画与推动台湾高校物联网学程，为物联网产业培育人才。获台湾教育部「物联网概论」优等奖及「嵌入式无线感测课程模块」特优奖。指导高校学生获台湾科技部 94、96、97、99 及 100 学年度大专学生研究计划研究创作奖。多次带领同学参加比赛获得最佳论文及实作一等奖。

主要研究领域包括物联网、无线传感器网路、智慧居家照护、人工智慧与数据分析等。

吳庭育

演讲题目：人體無線網路(WBAN))之最佳化傳輸研究

摘要：

　　早期火紅的無線感測網路(WSN)的技術，在近期研究人員將監測環境轉移至人體或動物身上，於是制訂出無線人體區域網路(WBAN)，而這樣的技術將所有感測節點使用在人體周遭、皮膚表面或者是嵌入到體內以得到更多生理訊息，並透過無線網路將資料傳輸到後端資料庫的部分供醫護人員所使用。但這樣的應用將面臨一些新的挑戰；因為使用在人體需要留意電磁波所產生的特定吸收率(Specific Absorption Rate SAR)、電力消耗以及傳輸干擾等問題。本演講將說明如何利用賽局理論中的非零和合作賽局的方法來控制系統的傳輸功率，以降低不同傳輸間的干擾程度，並解決不同訊息間互相競爭的問題。並另外探討無線人體區域網路標準下雙躍(Two-hop)傳輸的傳輸路徑機制，利用計算整體感測節點的平均剩餘電量來切換感測節點作為中繼節點啟動機制與否的條件選擇路徑之電量消耗與 SAR 值平衡後產生較佳之路徑選擇，以達到無線人體區域網路整體網路生命週期之均衡以延長系統中節點的存活時間。

个人简介：

　　吳庭育教授現任職於宜蘭大學資訊工程學系並兼任多媒體網路通訊數位學習碩士在職專班班主任，具有 5G 通訊、行動計算、大數據、雲端運算、物聯網、嵌入式系統應用服務開發等專長，曾榮獲宜蘭大學 106 年度教學傑出教師。宜蘭大學 105 年度績優研究獎、科技部 104、105、106 年度宜蘭大學-大專校院獎勵特殊優秀人才獎勵人員。

此外吳教授這幾年主持過多項國家型科技計畫及個別型科技部研究案。在研究方面: 已發表國際期刊論文共 75 篇、國際會議論文共 67 篇、國內會議論文共 43 篇、專書章節共 2 篇等。這幾年也積極參與國際研究合作及相關研究之國際會議, 目前擔任 International Journal of Communication Systems (IJCS) 期刊、Journal of Internet Technology (JIT) 期刊、Security and Privacy 期刊及 Journal of Computer Systems, Networks, and Communications 期刊的 Associate Editor 職務。

赖槿峰

演讲题目: Big Data Analysis Experience based on GPU Cluster for Appliance Recognition

摘要:

由于智慧联网技术日渐成熟在应用范围与使用者快速扩展的状况下所产生的电力资讯也会急速上升在长时间资料蒐集与资料运算分析应用上原有资料库面临运算效能之瓶颈。为解决上述问题本计划主要目的在近年来由于机器学习相关领域愈来愈热络许多研究单位也积极投入该方面相关之研究。深度学习跳脱传统机器学习的概念而成为现今在机器学习上成效最为显著的解决方案。然而深度学习在实际运作上仍然还有许多挑战包含基础设备建置成本庞大、学习所需耗费之时间过长等且现阶段多数深度学习之环境仍然建置在单一主机上。相较于前者若是能提供一套分散式异质运算系统之框架便可大幅提升在智慧联网资料库在分析与推论之效率。

个人简介:

副教授研究专长为嵌入式软硬体设计、多媒体云端网路与智慧物联网应用的研究。其发表 IEEE/ACM 等 JCR 一區国际期刊三十几篇、其他 SCI-index 期刊六十餘篇、专利三件以及会议论文共三十餘篇并荣获 IEEE 17th CCSE, 2014 International Conference on Cloud Computing, IEEE 10th EUC, IEEE 12th CIT 最佳论文 Google 学术论文引用率为 1748 更于 2013 至 2017 年共有 6 篇论文被列入 ESI 高度被引用的 TOP 1%文章。申请人积极参与国内外学术活动经常被邀请于国内外研讨会与研究机构中发表演说目前担任 Journal of Internet Technology 执行副主编辑以及 KSII

Transactions on Internet and Information Systems、International Journal of Communication Networks and Distributed Systems 及 Journal of Telecommunications Management 等之期刊编辑与多项国际研讨会议程委员。其主要学理创新贡献包含于动态功率演算法之设计、多媒体串流服务之设计、云端仲介环境设计及物联网服务。后学现为 IEEE Senior Member 并于 2012 年入选科技部优秀青年学者,2015 年获选台综大年轻学者以及 2017 年获选台湾电脑学会优秀青年学者奖。

曾繁勛

演讲题目: A Rapid Auto-Scaling Mechanism for Fog Computing in IoT and Industrial Applications

摘要:

Fog computing provides a more flexible and elastic service environment than cloud computing. The lightweight fog environment is suitable for IoT and industrial applications. In order to strengthen service scalability, container virtualization technology has been proposed and studied in recent years. It is vital to explore the trade-off between service scalability and operating expenses. The talk presents an auto-scaling mechanism for fog computing in IoT and industrial application, viz fuzzy-based real-time auto-scaling (FRAS). In addition, an integrated virtualization (IV) platform is implement to realize the FRAS mechanism. The framework provides a better service scalability with less average delay and error rate for IoT and industrial applications compared to other auto-scaling schemes.

个人简介:

曾繁勛為國立中央大學資訊工程學系博士，現為國立臺灣師範大學科技應用與人力資源發展學系助理教授，其主要研究領域涵蓋雲端運算與霧運算、物聯網應用、第五代行動網路，現為電腦學刊副總主編。

Fan-Hsun Tseng received his Ph.D. degree in Computer Science and Information Engineering from National Central University, Taoyuan, Taiwan, in 2016. He is currently an assistant professor with the Department of Technology Application

and Human Resource Development, National Taiwan Normal University, Taipei, Taiwan. Dr. Tseng has been the Associate Editor-in-Chief for Journal of Computers since May 2016. His research interests include cloud and fog computing, IoT applications, 5G mobile networks.

牛志升

演讲题目：AI-empowered Smart Networking for 5G and Beyond

摘要：

Abstract: The advent of 5th generation (5G) mobile networks will necessitate the network to more flexibly adapt to a wide range of services, from low-latency, high data rate services to sporadic updates generated from a large number of Internet of Things (IoT) devices. To realize that, the sensors and the network elements in IoT need to be more smart so as to autonomously adapt to the diversified services and varying network conditions.   As a result, artificial intelligence (AI) will play a key role in the future evolvement of IoT, i.e., IoT will evolve eventually to Internet of Intelligence (IoI), where the intelligent network elements will be inter-connected. This talk will talk about the fundamental issues and potential solutions in IoI.

个人简介：

Zhisheng Niu graduated from Beijing Jiaotong University, China, in 1985, and got his M.E. and D.E. degrees from Toyohashi University of Technology, Japan, in 1989 and 1992, respectively. During 1992-94, he worked for Fujitsu Laboratories Ltd., Japan, and in 1994 joined with Tsinghua University, Beijing, China, where he is now a professor at the Department of Electronic Engineering. His major research interests include queueing theory, traffic engineering, mobile Internet, radio resource management of wireless networks, and green communication and networks.

Dr. Niu has been an active volunteer for various academic societies, including Director for Asia-Pacific Board (2008-09), Director for Conference Publications (2010-11), and Chair of Emerging Technology Committee (2014-15) of IEEE Communication Society. He has served as associate editor-in-chief of IEEE/CIC joint publication *China Communications* (2012-16) and editor of *IEEE Wireless Communication* (2009-13), and currently serving as area editor of *IEEE Trans. Green Commun. & Networks*. He also served as a distinguished lecturer (2012-15) of IEEE Communication Society and a distinguished lecturer (2014-16) of IEEE Vehicular Technologies Society. Dr. Niu received the Outstanding Young Researcher Award from Natural Science Foundation of China in 2009 and the Best Paper Award from IEEE Communication Society Asia-Pacific Board in 2013. He was the Chief Scientist of the National Basic Research Program (so called "973 Project") of China on "*Fundamental Research on the Energy and Resource Optimized Hyper-Cellular*

Mobile Communication System" (2012-2016), which is the first national project on green communications in China. He is a fellow of both IEEE and IEICE.

盛敏

演讲题目：When UDN meets UAV

摘要：

Due to their high mobility and low deployment expenditure, unmanned aerial vehicles (UAVs) have found extensive application over the past few years and are expected to serve as efficient complementary to terrestrial heterogeneous wireless networks (HetNet). The formed new architecture, termed multi-layer heterogeneous wireless network (MHetNet), is promising to provide better terrestrial coverage, enhanced network capacity, and scalable network architecture. In this talk, we present the architecture of MHetNet and provide our view on the integration of UAVs into terrestrial ultra-dense networks (UDN). Results show that it is not always beneficial to deploy UAVs in UDN due to the overwhelming interference. Meanwhile, there exists a critical height of UAVs, which impacts the network capacity scaling law of MHetNet. New technical challenges and potential applications of MHetNet in future wireless networks will be fully discussed.

个人简介：

Min Sheng (M′ 03 – SM′ 16) received the M.S. and Ph.D. degrees in communication and information systems from Xidian University, Shaanxi, China, in 2000 and 2004, respectively. She has been a faculty member of the School of Telecommunications Engineering at Xidian University since 2000, where she is currently a Full professor with the State Key Laboratory of ISN. Her current research interests include interference and resource management in heterogeneous networks, ultra dense networks (UDN), self-organizing networks (SON), big data processing, green communications, and satellite networks. She has published 3 books and over 160 papers in refereed journals and conference proceedings. She was honored with the Second Prize for the State Technological Innovation Award in 2014 and 2017, the New Century Excellent Talents in University by the Ministry of Education of China, the Young Teachers Award from the Fok Ying-Tong Education Foundation, China, in 2008,the Cheung Kong Professor of Ministry of Education, China, 2016, the Winner of the National Science Fund for Distinguished Young Scholars (2018-2022), NSFC, China, and the Best Paper Award at IEEE/CIC ICCC 2013.

李洪伟

演讲题目：Heterogeneous Identity Alliance and Regulatory

摘要：

Network identity management is the key to realizing the integration of the real world and the cyberspace, and providing the trust service and behavior supervision. It is also the basis for the implementation of cyberspace governance. Each country attaches great importance to the network identity management and successively elevates it to the national strategic level. In the newly released "National Cyberspace Security Strategy", our country will build a network trust system and improve the standardized management of network science as one of the nine strategic tasks. Current network identity management technologies have established their own management and service systems in the government, banking, e-commerce, social networking and other fields, but still have the following problems: identity management platforms are diverse and not interoperable; identity information is easily copied and forged; Identity and privacy information is easily misused. How to unify the management of multi-modal and multi-domain identities has become a challenging problem. This project is devoted to constructing a large-scale heterogeneous identity management and cyberspace ecosystem, breaking "islands of identity", establishing "trust islands" and realizing the multi-modal multi-domain cyberspace with the joint identity management for the country to provide cyberspace governance support.

个人简介：

Dr. Hongwei Li is the Joint Chief Scientist of National Key R&D Program of China（the 973 Project). he is Currently the Head and a Professor at Department of Information Security, School of Computer Science and Engineering, University of Electronic Science and Technology of China. He received the PhD degree from University of Electronic Science and Technology of China in June 2008. He worked as a Postdoctoral Fellow at the University of Waterloo from October 2011 to October 2012. His research interests include network security and applied cryptography. His research is supported by National Science Foundation of China, and Ministry of Science and Technology of China, and Ministry of Industry and Information Technology, and China Unicom. Dr. Li serves as the Associate Editor of Peer-to-Peer Networking and Applications, the Guest Editor for IEEE Internet of Things Journal and IEEE Network. He also serves on the technical program committees for many international conferences, such as IEEE INFOCOM, IEEE ICC, IEEE GLOBECOM, IEEE WCNC, IEEE SmartGridComm, BODYNETS and IEEE DASC. He won the Best Paper Award from IEEE HELTHCOM'15.

陈彩莲

演讲题目：基于工业物联网的分布式感知与传输联合设计

Joint Design of Distributed Sensing and Transmission Based on Industrial Internet of Things

摘要：

工业系统的实时精确协同控制严重依赖于离散信息系统与连续物理系统的交互与融合，工业物联网正是量化其交互依赖、体现其融合演化的关键手段。报告将针对典型工艺过程的监控需求和工艺特点，探讨级联的有线/无线融合网络架构、确保无线控制系统性能的可靠传输技术和控制器调度技术等多个关键问题，并介绍具有自主知识产权的MicroRF工业无线协议栈、相关实验平台及工业物联网监控系统的示范应用。

Real-time and precise cooperative control of industrial systems relies heavily on the interaction and integration of discrete information systems and continuous physical systems. Industrial Internet of Things (IIoT) is one of the key enabling ways to quantify the interdependence and reflect evolution of physical systems and information systems. This talk is concerned with the network architecture of IIoT, reliable transmission and scheduling techniques for wireless control systems. The MicroRF Industrial Wireless Network Protocol Stack with Independent Intellectual Property is to be introduced as well as the related experimental platform and demonstrative applications of IIoT based monitoring systems.

个人简介：

cailian Chen is currently a Full Professor of Department of Automation, Shanghai Jiao Tong University, Shanghai, P. R. China. She was a senior research associate in City University of Hong Kong (2006) and postdoctoral research associate in University of Manchester, U. K. (2006-2008). She was a Visiting Professor in University of Waterloo, Canada (September 2013-March 2014).

Prof. Chen's research interests include industrial Internet of Things, computational intelligence and distributed situation awareness, and Internet of Vehicles and applications in intelligent transportation. She has authored and/or coauthored 2 research monographs and over 100 referred international journal and conference papers. She is the inventor of more than 20 patents. Dr. Chen received the prestigious "IEEE Transactions on Fuzzy Systems Outstanding Paper Award" in 2008, and "Best Paper Award" of the conference WCSP 2017. She won the First Prize of Natural Science Award twice from The Ministry of Education of China in 2006 and 2016, respectively, and awarded the First Prize of Technological Invention from Science and Technology Commission of Shanghai Municipality, China in 2017. She was honored "Changjiang Young Scholar" by Ministry of Education of China in 2015 and "Excellent Young Researcher" by NSF of China in 2016.

Prof. Chen has been actively involved in various professional services. She serves as Associate Editor of IEEE Transactions on Vehicular Technology, Peer-to-peer Networking and Applications (Springer), The World Scientific Journal: Computer Science, and ISRN Sensor Networks. She also served as Guest Editor of IEEE Transactions on Vehicular Technology, Symposium TPC Co-chair of IEEE Globecom 2016 and VTC2016-fall, Workshop Co-chair of WiOpt'18, and TPC member of many flagship conferences including IEEE Globecom, IEEE ICC, IEEE VTC, ICCVE and IEEE WCCI.

程翔

演讲题目：Vehicular Communications and Networking: Where Benz Meets Marconi

摘要：

Recently, we are witnessing the overwhelming research and development in automobile technology, energy research as well as artificial intelligence towards an era of transportation involving smart vehicles, automatic driving, and electric vehicles. All these urgently call for advanced vehicular communications capable of supporting massive data exchanges at highly stringent latency requirements. 130 years since Karl Benz invented motor cars, and 120 years since Marconi's first demonstration of wireless, time eventually seems to come for the two great human inventions to integrate to revolutionize today's transportation.

As such, it is not surprising that this area is gaining significant attention from both industry and academia for its essential role in, and great potential of bringing to reality, the intelligent transportation revolution envisioned in the coming decade. Vehicular environments are inherently challenging with doubly selective physical channels, constrained radio spectrum bandwidth resources, and constantly changing network connectivity and topology. Hence, research in this area is essential for bringing to reality the many demanding vehicular applications that consist of the gateway towards the ultimate

connected mobility. In this talk, fundamentals of vehicular channels will be comprehensively analyzed, based on which various practical communications and networking techniques will be introduced. Challenges and opportunities in this field will also be discussed to stimulate future research and development from various industry and academia sectors.

个人简介：

Dr. Xiang Cheng (S'05-M'10-SM'13) received the PhD degree from Heriot-Watt University and the University of Edinburgh, Edinburgh, U.K., in 2009, where he received the Postgraduate Research Thesis Prize. He is currently a Professor at Peking University. His general research interests are in areas of channel modeling, wireless communications and data analytics, subject on which he has published more than 160 journal and conference papers (including 2 ESI hot papers and 13 ESI highly cited papers), 3 books and 6 patents. Dr. Cheng was the recipient of the IEEE Asia Pacific (AP) Outstanding Young Researcher Award in 2015, the co-recipient for the 2016 IEEE JSAC Best Paper Award: Leonard G. Abraham Prize, the NSFC Outstanding Young Investigator Award, the Second-Rank Award in Natural Science, Ministry of Education in China. He has also received Best Paper Awards at IEEE ITST'12, ICCC'13, ITSC'14, ICC'16, and ICNC'17. He has served as Symposium Leading-Chair, Co-Chair, and a Member of the Technical Program Committee for several international conferences. He is currently an Associate Editor for IEEE Transactions on Intelligent Transportation Systems.

温蜜

演讲题目：Flexible and High-efficient Similarity Search over Encrypted Data in Multiple Clouds

摘要：

In cloud computing, a cloud user can improve a system's reliability by utilizing services from multiple clouds, known as the multi-cloud service model. This model, however, causes serious security concerns since multi-clouds increase the chance of being attacked. To maintain data security, a commonly-used strategy is to encrypt data stored in clouds. Yet, issues such as inconsistent data storage (Byzantine faults), dynamic data update, and inefficient data retrieval among multiple clouds, have remained as open challenges. In this paper, we propose a multi-cloud secure similarity search (MC3S) method to effectively and efficiently utilize the encrypted data over multiple clouds. To achieve secure, flexible and high-efficient data search, MC3S utilizes two novel data structures, called gram-filter and prefix-ring. Different from prior works in secure data search, we address the problem of Byzantine faults among multiple clouds, and our algorithm enables dynamic data index insertion and revocation without decryption. We prove that MC3S can resist chosen-keyword attacks and achieve non-adaptive semantic security. Finally, we evaluate the efficiency of MC3S with real world datasets.

个人简介：

Mi Wen. Professor, master supervisor, Executive Vice-president of college of computer science and technology. Winner of the Shanghai dawn project and Shanghai talent development fund. She received the M.S. degree in Computer Science from University of Electronic Science and Technology of China in 2005 and the Ph.D. degree in computer science from Shanghai Jiao Tong University, Shanghai, China in 2008. She is currently an Associate Professor of the College of Computer Science and Technology, Shanghai University of Electric Power. From May 2012 to May 2013, she was a visiting scholar at University of Waterloo, Canada. She serves Associate Editor of Peer-to Peer Networking and Applications (Springer). She keeps acting as the TPC member of some flagship conferences such as IEEE INFOCOM, IEEE ICC, IEEE GLOEBECOM, etc from 2012. Her research interests include privacy preserving in wireless sensor network, smart grid etc.

温蜜，女，博士，教授，硕士生导师，现任上海电力学院计算机科学与技术学院常务副院长。上海市曙光计划、上海市人才发展基金获得者。目前担任 PPNA 副主编，IEEE INFOCOM，ICC，GLOBECOM 等国际会议 TPC 成员。研究方向是：应用密码学、智能电网、无线传感器网络、电力大数据隐私保护等。主持了包括教育部留学回国科研启动基金、国家自然科学基金在内的 10 余项国家及省部级课题。获得上海市科技进步奖 1 项。先后在 IEEE TETC、TIIS 、IEEE GLOBECOM、ICC 等国际著名学术期刊和会议上发表论文 40 余篇，其中近被 SCI、EI 检索 30 余篇。撰写学术著作 2 部。申请国家发明专利多项。曾被评选为上海电力学院学术骨干教师、科研新星、三八红旗手等。

单杭冠

演讲题目：Design and Analysis of Ultra-Dense Small Cell Networks

摘要：

Network densification is one of the dominant evolutions to increase network capacity toward future cellular networks. In this talk, we present recent studies on understanding performance tradeoff for quality-of-service aware ultra-dense small cell network design. First, we present a novel analytical framework to unearth delay and reliability tradeoff in a heterogeneous cellular network, composed of both small cell base stations (BSs) and macro cell BSs. In the proposed model, both temporal correlation of transmissions and BS activity are taken into account. Second, we present backhaul models for four main backhaul technologies, fiber, xDSL, millimeter wave, and sub-6 GHz, based on which we study the performance of a backhaul-aware BS association policy. Third, we study how to maximize benefit of small cell networks under dynamic time-division duplex (D-TDD) transmission by appropriately grouping cells into clusters. In specific, to better characterize the network, not only impact of the spatial distributions of users and BSs but also that of the temporal randomness of traffic are taken into consideration.

个人简介：

Hangguan Shan has been with the College of Information Science & Electronic Engineering, Zhejiang University,

Hangzhou, China, since 2011, where he is an Associate Professor. His current research focuses on cross-layer protocol design, resource allocation, and quality-of-service provisioning in wireless networks. He coreceived the Best Industry Paper Award from the 2011 IEEE WCNC. Dr. Shan is currently an Editor for the IEEE Transactions on Green Communications and Networking. He has served on the Technical Program Committee as a member in various international conferences. He served as the Track Leading Cochair for "Future Trends and Emerging Technologies" Track of IEEE VTC 2017-Fall and Track Cochair for "Green Communications and Networks" Track of IEEE VTC 2016-Fall.

艾渤

演讲题目：Intelligent HSR Services-Oriented 5G Key Technologies

摘要：

Abstract: British Rail Transit Development Report issued in 2012. In 2013, a standard for "Positive Train Control (PTC)" has been developed within IEEE 802.15 Task Group. The Horizon 2020 project invested 920 million euros to support the evolution of rails to a new era where infrastructure, trains, travelers and goods will be increasingly interconnected to provide high comfort at higher safety. 5G do have close relation with the scenarios and the requirements. Oriented to the

intelligent rail traffic services and applications, how is about the future rail traffic development by use of 5G? We will talk about it in this presentation.

个人简介：

Prof. Bo Ai is now working as a full Professor and Ph.D. supervisor at Beijing Jiaotong University, where he is a deputy director of State Key Lab. of Rail Traffic Control and Safety, and a deputy director of Rail Traffic International Joint Research Center permitted by the National Ministry of Science and Technology. He is a member of US-Asia Innovation Gateway. He is the vice chair of IEEE VTS Beijing Chapter and IEEE VTS Distinguished Lecturer. His main research interests are the wireless and mobile communications for Rail traffic and intelligent transportation systems with emphasis on the wireless mobile communication for dispatching, safety, control and services in rail transportation, including GSM-M for railway (GSM-R), LTE for railway (LTE-R), 5G mobile communications for railway (5G-R), communication-based train control (CBTC) etc.

He was a visiting professor at EE Department, Stanford University during March, 2015 and September, 2015. During his visiting period, he has been invited by University of South California, Stanford International Developing Center, UC Berkeley, Harvard University, University of Maryland, Georgia Tech. for the academic presentations on in the area of key technologies for future high-speed railways. The following pictures presented some of the reports for academic

presentations.

He has authored 6 books and published over 300 scientific research papers in his research area including over 80 IEEE Transactions or Journal papers. He has hold 26 invention patents. He has been the research team leader for over 30 national projects and has won some scientific research prizes such as the Outstanding Youth Fund from National Science Foundation of China. He is serving as an associate editor for *IEEE Transactions on Consumer Electronics* and an editorial member of *Wireless Personal Communications*. He has also been Feature Interviewed by IET Electronics Letters for his work in the area of channel modeling under rail traffic scenarios.

周盛

演讲题目：Exploiting the Moving Intelligence: Computation Offloading in Vehicular Networks

摘要：

To satisfy the emerging need for autonomous driving, future vehicles will not only have rich on-board sensors like cameras and radars, but also be equipped with strong computing power to process the sensing data and make driving decisions. These computing resources can be shared among vehicles and for pedestrians on the road side, providing wide range of applications beyond autonomous driving. However, the dynamic environment of vehicular networks makes it

challenging to guarantee the latency, which consists of communication and computing delays. In this talk, aiming at timely computing in vehicular networks, we will illustrate how to use online reinforcement learning to address the difficulties of acquiring system information in dynamic vehicular environment. We will also elaborate the way of further exploiting the mobility vehicles with opportunistic computation offloading and task replica.

个人简介：

Sheng Zhou is an associate professor in Electronic Engineering Department at Tsinghua University, Beijing, China. He received his B.S. and Ph.D. degrees in Electronic Engineering from Tsinghua University, in 2005 and 2011, respectively. His research interests include cross-layer design for multiple antenna systems, mobile edge computing, vehicular networks, and green wireless communications. He is serving as an associate editor for IEEE Wireless Communications Letters. He serves as the track/symposium co-chair of IEEE Globecom'18, PIMRC'17, APCC'17 and ICCC'15. He is a co-recipient of the Best Paper Award from APCC in 2009 and 2013, ICCT in 2011, and ITC in 2013. He received the 2017 IEEE ComSoc Asia-Pacific Outstanding Young Researcher Award.

肖亮

演讲题目：UAV Relay in VANETs Against Smart Jamming with Reinforcement Learning

摘要：

Traditional anti-jamming techniques are not always applicable in vehicular ad-hoc networks (VANETs) due to the high mobility of onboard units (OBUs) and the large-scale network topology. In this work, we use unmanned aerial vehicles (UAVs) to relay the message of an OBU and improve the communication performance of VANETs against smart jammers that observe the ongoing OBU and UAV communication status and even induce the UAV to use a specific relay strategy and then attack it accordingly. More specifically, the UAV relays the OBU message to another roadside unit (RSU) with a better radio transmission condition if the serving RSU is heavily jammed or interfered. In the anti-jamming UAV relay game, the UAV decides whether or not to relay the OBU message to another RSU. A hotbooting policy hill climbing (PHC)-based UAV relay strategy is proposed to help the VANET resist jamming in the dynamic game without being aware of the VANET model and the jamming model. Simulation results show that this scheme can efficiently reduce the bit error rate of the OBU message and thus increase the utility of the VANET compared with the Q-learning based scheme.

个人简介：

Liang Xiao is currently a Professor in the Department of Communication Enginnering, Xiamen University, Fujian,

China. She is an IEEE Senior member, and member of IEEE Technical Committee on Big Data. She has served in several editorail roles, including an associate editor of IEEE Trans. Information Forensics & Security and IET Communications. Her research interests include wireless security, smart grids, and wireless communications. She won the best paper award for 2016 IEEE INFOCOM Bigsecurity WS. She received the B.S. degree in communication engineering from Nanjing University of Posts and Telecommunications, China, in 2000, the M.S. degree in electrical engineering from Tsinghua University, China, in 2003, and the Ph.D. degree in electrcal engineering from Rutgers University, NJ, in 2009. She was a visiting professor with Princeton University, Virginia Tech, and University of Maryland, College Park.