2017 年信息物理融合系统与物联网国际前沿技术研讨会邀请函
The International Workshop on Frontiers of Cyber-Physical Systems and Internet of Things (IWFCI 2017)

尊敬的＿＿＿＿＿＿专家：

　　"2017 年信息物理融合系统与物联网国际前沿技术研讨会"将于 2017 年 6 月 5 日在南京市举行，由南京航空航天大学计算机科学与技术学院与江苏省计算机学会网络与分布计算专委会共同主办。

　　信息物理系统（CPS）是一个综合计算、网络和物理环境的多维系统，需要物理过程、计算和通信之间的有机融合与深度协作。近年来，信息物理系统和物联网（IoT）在许多关键领域（包括建筑、运输、健康、能源和环境等）日益趋于一致。信息物理系统和物联网的普及正在改变着我们与物理世界的互动方式，如同互联网正深刻改变着我们之间的交流方式。利用这种系统的能力，可能会带来巨大的社会和经济影响。

　　本次研讨会跨多个学科，聚集了来自多个领域的海内外高级专家，讨论与下一代 CPS 和 IoT 相关的系统设计和实现中的挑战、技术和新兴方向。诚挚邀请您参加本次会议！

一、会议时间、地点

　　2017 年 6 月 5 日，南京航空航天大学将军路校区，图书馆 1 楼报告厅

二、会议日程安排

2017 年 6 月 5 日 （图书馆 1 楼报告厅）		
时间	报告人	报告题目
8:15 – 8:30		开幕式
8:30 – 9:15	Yanyong Zhang	Towards Internet of Medical Things
9:15 – 10:00	Lin Zhong	Problems in the gut of embedded systems
10:00 – 10: 20	茶歇	
10:20 – 11:15	Rong Zheng	Sensing and Data Acquisition in the Big Data Era: What, Where and When
11:15 – 12:00	Pei Zhang	Physical Knowledge Discovery in Cyber-Physical Systems
12:00 – 14:00	午餐 （地点：和园餐厅 3 楼自助餐）	
14:00 – 14:45	孙志刚	弹性智能网络互联技术
14:45 – 15:30	Shaojie Shen	Autonomous Aerial Navigation using Monocular Visual-Inertial Fusion
15:30 – 15:50	茶歇	
15:50 – 16:50	Panel Discussion： Vision for drone research and applications in the era of IoT (Guoliang Xing, Lin Zhong, Shaojie Shen, Pei Zhang, 孙志刚)	
16:50 – 17:00	闭幕式	

三、报到事宜

    1. 报到时间：2017 年 6 月 4 日 14：00-18：00

    2. 报到地点：南京航空航天大学江宁校区，计算机科学与技术学院 1 楼大厅

          （6 月 5 号报到请前往会议地点）

    3. 参会费用：800 元/人 （5 月 29 号前注册提交）

           1000 元/人 （5 月 28 号后注册提交）

    （参会费用含 4 号晚餐，5 号午餐+晚餐，住宿交通费请自理）

    请采用银行汇款或转帐的方式汇至：

        账户名称：南京航空航天大学

        开户银行：交通银行南京御道街支行

        银行账号：320006639010149000354

    （ 请参会者务必在汇款备注栏填入：iwfci 会议注册费+参会代表姓名，请将汇款后的银行回单扫描后，连同"参会回执表"一起发到会务邮箱 iwfci2017@nuaa.edu.cn ）

    4. 住宿：南京爱丁堡饭店（南京市江宁区天元西路与通淮街交界处），340 元/天（单人房或标准间，会议协议价，请填写参会回执单，会务组代为预定）

四、联系方式

    会议联系人：谢健，赵彦超

    电话：025-848928848

    邮箱：iwfci2017@nuaa.edu.cn

    附件：一、专家报告；二、开会与住宿地点地图；三、参会回执表。

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江苏省计算机学会网络与分布计算专委会

南京航空航天大学计算机科学与技术学院

2017 年 5 月 12 日

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附一：专家报告

报告一

题目： Towards Internet of Medical Things

报告人：Yanyong Zhang

报告摘要：The Internet of medical things promises to change the way we manage our health, shifting from reactive treatment to proactive wellness monitoring and early intervention. Fortunately, technologies in areas such as sensing, communications, data mining, privacy protection, and user interfaces, have recently made great advances. It is thus time to harvest these technologies to realize the vision of managing our own health, preferably at our own home.

In this talk, we introduce several recent studies in this general direction. First, we present HB-Phone, which is a bed-mounted sensor and can monitor a person's heartbeats during sleep, by detecting the vibrations caused by heartbeats that are propagated through mattress. Second, we present Motion-Scale, which are mounted at bed legs and can detect body and limb motions on bed. These two sensors can continuously monitor a person's vital signs and motions even when they are asleep. Finally, we present head-banger, a user authentication system for head-mounted smart devices, which can help protect user data privacy.

报告人简介：Yanyong Zhang has spent 15 yeras in the Electrical and Computer Engineering Department at Rutgers University, where she is currently a Professor. She is also a member of the Wireless Information Networks Laboratory (Winlab). She has 20 years of research experience in the areas of sensor networks, mobile computing and high-performance computing, and has published more than 100 technical papers in these fields. She is an Associate Editor for IEEE TMC, IEEE TSC, IEEE/ACM ToN, and Elsevier Smart Health. She is a recipient of NSF CAREER award. She received her Ph.D. from Penn State in 2002.

报告二

题目：Problems in the gut of embedded systems

报告人：Lin Zhong

报告摘要：Energy-constrained embedded systems are the frontier facing the complexity at the hardware/software boundary. This talk describes our ongoing efforts in analyzing and managing this complexity. We show that the fundamental problem is the knowledge transfer between hardware and software and between hardware engineers and software engineers. Using our recent work on runtime power management as an example, we demonstrate the effectiveness of two principles toward coping this problem. First, while the conventional wisdom suggests complexity be moved from hardware to software, we show, as a caveat, that better hardware can lead to significantly simpler software. Second, by separating hardware knowledge from the software logic, low-level software such as driver functions can be refactored into a centralized architecture that is small and easy to verify and evolve.

报告人简介：Lin Zhong is Professor of Electrical & Computer Engineering with Rice University. He received his B.S and M.S. from Tsinghua University and Ph.D. from Princeton University. He has been with Rice University since September 2005. At Rice, he leads the Efficient Computing Group to make computing, communication, and interfacing
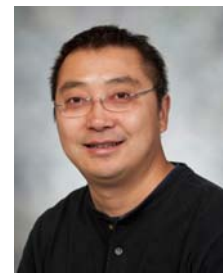
more efficient and effective. He and his students received the best paper awards from ACM MobileHCI, IEEE PerCom, and ACM MobiSys (3), and ACM ASPLOS. He is a recipient of the NSF CAREER Award, the Duncan Award from Rice University, and the RockStar Award from ACM SIGMOBILE. More information about his research can be found at http://www.recg.org.

报告三
题目：Sensing and Data Acquisition in the Big Data Era: What, Where and When
报告人：Rong Zheng
报告摘要：Despite the explosive growth in the quantity of data available, acquiring quality data remains a challenge and can be costly in terms of latency incurred, excessive network traffic and extra human efforts. In this talk, I argue for the need to drive sensing and data acquisition decisions by the utility of data pertaining to application contexts. First, I examine sequential learning strategies that tradeoff exploitation and exploration in determining optimal channel assignment of sniffers to monitor multi-channel/band wireless networks. Second, I discuss our work on distributed active learning for mobile crowdsensing.

报告人简介：Rong Zheng received her Ph.D. degree from Dept. of Computer Science, University of Illinois at Urbana-Champaign and earned her M.E. and B.E. in Electrical Engineering from Tsinghua University, P.R. China. She is now an Associate Professor in the Dept. of Computing and Software, an associate member of the Dept. of Electrical and Computer Engr., and a member of the School of Computational Science and Engineering in McMaster University, Canada. Rong Zheng is a Joseph Ip Distinguished Engineering Fellow from July 1, 2015 to June 30th, 2018. Rong Zheng's research interests include Cyber Physical Systems, mobile computing and networked systems. She received the National Science Foundation CAREER Award in 2006. She serves on the technical program committees of leading networking conferences including INFOCOM, ICDCS, ICNP, etc. She is an editor of IEEE Transactions on Wireless Communications, and has served as a guest editor for EURASIA Journal on Advances in Signal Processing, Special issue on wireless location estimation and tracking, Elsevlers Computer Communications – Special Issue on Cyber Physical Systems.

报告四
题目：Physical Knowledge Discovery in Cyber-Physical Systems
报告人：Pei Zhang
报告摘要：In many sensing scenarios, direct sensing of desired events is difficult and often impossible. This is often due to deployment difficulties, lack of available sensors, and cost of maintenance. This talk will explore indirect sensing framework that infers information from physical inertial sensing. This approach reduces the number of per-node sensors, reduce the number of devices needed, and utilize physical media information to improve sensing. The talk then explores this framework through three projects. 1) The SensorFly system, a low-cost, miniature aerial sensor network that aims to be autonomous in deployment, maintenance, and adaptation to the environment. By

modeling the motion and movement, these sensors collaboratively localize and navigate indoors using inertial sensors. 2) Landing the sensors inside the building, the same sensor sets can be used to discover occupant information including location, identity, status,etc. 3) The same sensors on the human body, the system can inference muscle activity and fatigue level. The talk will explore the commonalities of data understanding and inferencing.

报告人简介：Pei Zhang is an associate research professor in the ECE departments at Carnegie Mellon University. He received his bachelor's degree with honors from California Institute of Technology in 2002, and his Ph.D. degree in Electrical Engineering from Princeton University in 2008. While at Princeton University, he developed the ZebraNet system, which is used to track zebras in Kenya. It was the first deployed, wireless, ad- hoc, mobile sensor network. His recent work includes SensorFly (focus on groups of autonomous miniature-helicopter based sensor nodes) and MARS (Muscle Activity Recognition). Beyond research publications, his work has been featured in popular media including CNN, Science Channel, Discovery Channel, CBS News, CNET, Popular Science, BBC Focus, etc. He is also a co-founder of the startup Vibradotech. In addition, he has won several awards including the NSF CAREER, Google faculty awards, Edith and Martin B. Stein Solar Energy Innovation Award, and a member of the Department of Defense Computer Science Studies Panel.

报告五
题目：弹性智能网络互联技术（RiNET）

报告人：孙志刚

报告摘要：为应对当前网络面临的安全性，灵活性和可扩展性等多方面挑战，我们提出了新型弹性智能网络互联技术——RiNET（Resilient Intelligent Networking）。RiNET 基本思想是在保持现有网络不变的前提下，综合运用软件定义网络、大数据分析和机器学习等使能技术，实现"人在环外"的网络管控，解决安全威胁自防御，故障自修复和网络接入自配置等难题。报告分析了 RiNET 中边缘核心分离，零配置网络接入，主动网络测量，智能管控决策，以及动态赋能网关设备等核心机制，介绍了 RiNET 相关的开源项目、RiNET 原型设计和实验情况的进展等。

报告人简介：孙志刚，男，1973 年生，江苏东海人。国防科学技术大学计算机学院网络与信息安全研究所副所长，研究员，博士生导师。2000 年毕业与国防科学技术大学，获博士学位。主要研究方向为下一代互联网体系结构与协议、高性能网络设备实现技术等。是"银河玉衡9108核心路由器"、"新一代互联网高性能路由器"以及"T比特级开放可重构路由器系统"等国家 863 重大和重点课题的主要完成人；是"天河一号/二号"高性能计算机系统负责数据中心以太网和存储网络的主任设计师；是"十二五"国家 863 信息领域主题项目"新型动态可信网络关键技术和验证"的首席专家；长期从事计算机网络实验教学，获军队育才奖银奖；是开放可编程网络实验平台 NetMagic 和 SDN 交换开源项目 FAST 的主要研制者和推动者。获新世纪优秀人才支持计划资助；获国家科技进步特等奖 1 次，国家科技进步二等奖 2 次，部委级科技进步一等奖 1 次，二等奖 5 次。发表论文 60 多篇，获专利授权 10 项。

报告六

题目：Autonomous Aerial Navigation using Monocular Visual-Inertial Fusion

报告人：Shaojie Shen

报告摘要：I will present recent results in the HKUST UAV group towards robust autonomous navigation using only the sensory information from a monocular camera and an IMU. We argue that this is the minimum sensor suite that enables the full capability for autonomous navigation, including state estimation, dense mapping, trajectory planning, and feedback control. We will present a self-calibrating visual-inertial estimator that handles high-speed motion, and is stable from the ground level to high altitude. We pay special attention to the initialization problem and propose a numerically stable method for high-altitude estimator initialization and failure recovery. Building on top of the estimator, we propose an onboard method to generate large-scale dense maps that are sufficient for obstacle detection and avoidance. We close the perception-action loop by an optimization-based trajectory generation method that finds safe trajectories in an online fashion. Experimental results are demonstrated on our custom-built quadrotor testbed.

报告人简介：Shaojie Shen, Assistant Professor, HKUST, Director, HKUST-DJI Joint Innovation Laboratory. Shaojie Shen received his B.Eng. degree in Electronic Engineering from the Hong Kong University of Science and Technology in 2009. He received his M.S. in Robotics and Ph.D. in Electrical and Systems Engineering in 2011 and 2014, respectively, all from the University of Pennsylvania. He joined the Department of Electronic and Computer Engineering at the Hong Kong University of Science and Technology in September 2014 as an Assistant Professor. He is the founding director of the HKUST-DJI Joint Innovation Laboratory. His research interests are in the areas of robotics and unmanned aerial vehicles, with focus on state estimation, sensor fusion, computer vision, localization and mapping, and autonomous navigation in complex environments. He and his research team won the best paper finalist in ICRA2011, best paper award in SSRR2015 and SSRR2016, and first price in IARC2015. He was the program co-chairs of SSRR2015, SSRR2017, and SAC2017-IRMAS. He also serves as a senior consultant for DJI, and provides technical advices for DJI's intelligent consumer drone products such as Phantom 4 and Mavic Pro.
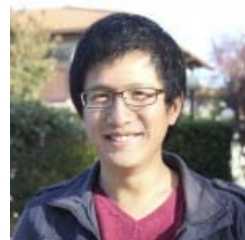
附二：开会与住宿地点地图

1. 开会地址

南京航空航天大学将军路校区，图书馆 1 楼报告厅

2. 住宿地址

南京爱丁堡饭店，南京市江宁区天元西路与通淮街交界处，联系电话：13813976722，陈东方，单人房或标准房：340 元/天（会议协议价，请填写参会回执表，会务组代为预定）。

交通路线（从开会地址到酒店，约 1.8km）

附三： 2017 年信息物理融合系统与物联网国际前沿技术研讨会-参会回执表

姓名		性别		职称		
工作单位				Email		
手机						
酒店预订需求（住宿费自理）	南京爱丁堡饭店	双人标间/大床房	约 340 元/间	6 月 4 日晚	是否需要	
				6 月 5 日晚	是否需要	
晚餐	6 月 4 日晚		是否需要			
	6 月 5 日晚		是否需要			

会议时间：2017年6月5日
会议地点：江苏省南京市江宁区南京航空航天大学将军路校区图书馆1楼报告厅

请填写注册表信息并发送到 iwfci2017@nuaa.edu.cn