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一、將來文上傳本校公文系統，

發文字號：交大研產學字第1011005151號

公告週知。

速別：普通件

專員王淑娟

副校長陳閱後存

組長林平溪

密等及解密條件或保密期限：

附件：如說明一（10110051510-0-1.PDF、10110051510-0-0.PDF，共2個電子檔案）

主旨：為促進我國資通訊領域研究發展，本校訂於今(100)年6月8日(週五)辦理「教育部邁向頂尖大學 交大智慧資通訊研究中心2012年成果發表會」，敬邀 貴單位相關領域師生及研究人員等踴躍參加，請 查照。

說明：

- 一、為推廣本校資通訊領域研發成果與我國產、學、研各界分享，本校產學運籌中心及智慧資通訊研究中心合作辦理「教育部邁向頂尖大學 交大智慧資通訊研究中心2012年成果發表會」，期強化資通訊領域各方連結，促成跨界合作之機會。本次成果發表會訂於6月8日(週五)下午1時，於本校電資大樓國際會議廳(新竹市大學路1001號交通大學光復校區)舉行，相關活動訊息如附件。
- 二、本活動採線上報名，報名時間自即日起至今年6月6日(週三)止。報名網址<http://aic.nctu.edu.tw/?sn=476&lang=zh-TW&c=&n=35&preview=1>。
- 三、活動相關事宜，請洽智慧資通訊研究中心黃小姐 (03)5712121分機54612。

正本：公私立大專校院、財團法人工業技術研究院、財團法人資訊工業策進會
副本：本校產學運籌中心、本校智慧資通訊研究中心

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13:00:52

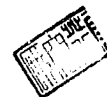
101 年 5 月 25 日暨收文總字第 010006609 號

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交通大學
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本案依分層負責規定授權單位主管代為決行



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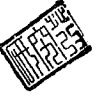


教育部邁向頂尖大學 交大智慧資通訊研究中心 2012年成果發表會

101年6月8日(星期五)13:00~16:30 (13:00-13:20報到)
假於交大電資大樓國際會議廳舉行，敬邀各位先進蒞臨指導
報名網址：<http://aic.nctu.edu.tw/> (請進入活動訊息報名)

Time	Oral Presentation	Time	Demo
13:20-13:30	Opening Ceremony Prof. Bao-Shuh Paul Lin	14:15-14:50	Performance Evaluation of LTE Devices under MIMO OTA Test System
Session I : Advanced Wireless Systems and Applications			3GPP SCM Channel Emulator
13:30-13:45	4G MIMO OTA Test System Executive Director I-Wei Chen		Mashing-Up Social and Mobile Clouds for Immediate Meet-Up Service
13:45-14:00	3GPP SCM Channel Emulator Prof. Ta-Sung Lee		Pattern-aware trip planning
14:00-14:15	Mashing-Up Social and Mobile Clouds for Immediate Meet-Up Service. Prof. Li -Chun Wang		3-D model Reconstruction for Indoor Environment Using Color-Depth Sensor
14:15-14:50	4G MIMO Lab Tour and Coffee Break		A New Scene Imaging and Browsing System Using a Portable Two-camera Omni-imaging Device for Human-reachable Environments
Session II : Emerging Video and Traffic Information Technologies			Fast Multi-Camera People Localization Based on Vanishing Points
14:50-15:05	Technologies, Standards, and Implementation of Virtual-view 3D Systems Prof. Hsueh-Ming Hang		
15:05-15:20	Two-Tier Peer-to-Peer Traffic Information System Prof. Shiao-Li Tsao		
15:20-15:35	Trajectory Pattern Mining from Social Media Prof. Wen-Chih Peng		
15:35-15:50	Mobile Traffic and Road Sensing Prof. Chih-Wei Yi		
15:50-16:30	Panel Discussion and Q&A		





教育部邁向頂尖大學 交大智慧資訊研究中心

2012 年成果發表會

Oral Presentation_ Abstract



Executive Director I-Wei Chen

4G MIMO OTA Test System

Mobile subscribers are increasingly using the data services and high data rate applications. New 4G/LTE mobile terminals will utilize multi-antenna techniques to improve the system performance, in which spatial correlation plays the key role. Spatial correlation is a function of antenna and propagation characteristics. Both of them are required in testing.

MIMO Over-the-Air (OTA) testing provides the possibility to measure the true 4G/LTE mobile terminal performance without using artificial cabling in the test setup. (No need to break the terminal case.) MIMO OTA testing is the only way to truly evaluate the end-user experience of the final product, e.g., in terms of data throughput, against realistic radio channel conditions. All critical parts of the mobile terminal design (antennas, RF front end, baseband processing) are tested at once. Standardization of MIMO OTA is ongoing in 3GPP and CTIA.

NCTU, as the pioneer in the area of network and communications, builds Asia first MIMO OTA test system for 4G/LTE and plan to develop testing technologies such as RealFlow, automation framework, channel emulator, and benchmark criteria on top of it.



Prof. Ta-Sung Lee

3GPP SCM Channel Emulator

By deploying spatially separated multiple antenna elements at both sites of the communication link, multiple-input-multiple-output (MIMO) technologies can improve the link reliability and/or significantly increase the link capacity. Accurate modeling of the MIMO propagation channel is a crucial part in the initial design phase for future wireless networks. Therefore, a ray-based model has been elaborated for the 3GPP standard group under the acronym of SCM and is chosen as the target for the developed emulator platform.

Compared with conventional software solutions, the developed SCM emulator adopts the hardware and MATLAB-based co-design approach to provide an easy-to-use, GUI supported solution for users who wish to have a practical tool to evaluate MIMO system performance and obtain useful statistical data for new algorithm development in LTE-Advanced systems. Features of the emulator include some popular environments (e.g. suburban macrocell, urban macrocell and urban microcell, etc.), flexible antenna configurations, and programmable moving trajectory planning.

The MIMO channel emulator can provide an accurate and cost effective

	solution suitable for both industry and academia interested in developing future generation mobile communications technologies.
 <i>Prof. Li-Chun Wang</i>	Mashing-Up Social and Mobile Clouds for Immediate Meet-Up Service In this research, we develop a secure cloud service development framework which mashes up mobile networks and social networks. This secure cloud service frame consists of three key mechanisms: 1) international mobile subscriber identity (IMSI)-based security protection, 2) queuing theoretical resource prediction, and 3) a no-touch command mechanism for smart phones by proximity sensors. This service platform can provide immediate and personalized information for mobile phone users, and allows a group of users to securely exchange their location data, and other information without worrying anyone including cloud service providers to know their planned activities and locations. This cloud service platform can also dynamically adjust their required virtual machines for different numbers of service requests through a queuing theoretical approach. Therefore, the quality of service can be ensured with satisfying response time at a very economical cost of hardware investment for various traffic loads. This research work places emphasis on security protection and QoS guarantees mechanisms, and these advantages can facilitate Taiwan software industry to enter the business domain of Software as a Service (SaaS) with many niche opportunities in cloud computing.
 <i>Prof. Hsueh-Ming Hang</i>	Technologies, Standards, and Implementation of Virtual-view 3D Systems 3D video products are aggressively growing recently. One step further, the virtual-viewpoint (or free-viewpoint) video becomes the research focus. It is also an on-going standardization item of the international MPEG Committee. In addition to the movie special effect people have seen, one application of a virtual-view system is the multi-view auto-stereoscopic (glasses free 3D) display. Practically, a densely arranged camera array is used to acquire input images and a virtual view is synthesized using the depth-image based rendering (DIBR) technique. Three essential components are needed for building a virtual-view system: depth estimation, data compression, and view synthesis. The MPEG standard committee is now in the process of defining the data compression (delivery format) of the virtual-view system. The committee also provides non-normative depth estimation and view synthesis tools. The entire set of standard specifications is to be done in two years. The computational complexity of such a virtual 3D system is extremely high. We have studied fast and parallel algorithms for some elements in this system. Thus in this talk, we will summarize the recent progress and some of findings on this subject.



Prof. Shiao-Li Tsao

Two-Tier Peer-to-Peer Traffic Information System

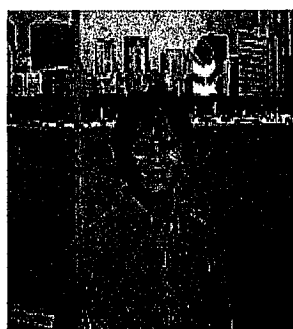
Decentralized traffic information systems realize real-time traffic information services without the need for a server infrastructure. However, existing systems rely on either the vehicular ad hoc network or application-layer peer-to-peer protocols over a broadband wireless network suffering from low lookup success rate, high lookup latency, and maintenance overhead of the P2P network. This article proposes a two-tier VANET/P2P architecture that exploits both VANET and P2P technology. In the low tier, vehicles form a VANET via intervehicle communication to exchange traffic information. On top of the VANET, a portion of the vehicles further establish a P2P overlay through a broadband wireless infrastructure to mitigate the disconnectivity problems of the VANET. Simulation results demonstrate that the two-tier architecture can significantly improve the lookup success rate compared to the single-tier VANET systems while reducing lookup latency and maintenance overhead compared to the single-tier P2P systems.



Prof. Wen-Chih Peng

Trajectory Pattern Mining from Social Media

The prevalence of smart phones leads to the advance of mobile Web and mobile social applications. With location-acquisition technologies, a myriad of trajectories are produced in different ways, such as check-in or photo sequences. In this talk, I will present key techniques of mining trajectory patterns and routes from social media. Explicitly, I will present a pattern-aware trajectory search framework for trip planning. Then, a new trajectory mining framework, namely, Clustering and Aggregating Clues of Trajectories (CACT), for discovering trajectory routes is introduced. Finally, I will present how to construct popular routes from check-in data. In addition, building a trajectory profile of users for discovering community structures is presented.



Prof. Chih-Wei Yi

Mobile Traffic and Road Sensing

Mobile sensing stimulated by the explosive growth of smartphones is one of the hottest research areas in the past few years. The numerous smartphones give the possibility to pervasively sense user behaviors and environmental data by embedded sensors and collect sensing data via mobile networks. That creates a hotbed for innovative applications. The concept of Smartphone Probe Cars (SPC) is proposed to detect and collect road and traffic events by utilizing mobile sensing technologies.

In this talk, two ongoing researches will be introduced to reveal the potential of mobile sensing technologies. One is for the detection of urban traffic flow. Without the help of road-fixed infrastructures, we can pervasively learn real-time traffic flow information and also the traffic light phase timing information. The other is for the detection of road abnormality. This work gives the possibility to evaluate road quality by scientific data and help governments pervasively and continuously monitor public

