

經濟部

行政院所屬各機關因公出國人員出國報告書
(出國類別：考察)

參訪 WOCC 2003 研討會及
拜訪 Carnegie-Mellon University
心得報告

服務機關：經濟部技術處
出國人 職 稱：專任顧問
姓 名：俞 貴 馨

出國地點：美國
出國期間：自九十二年四月二十四日至三十日日
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參加WOCC2003研討會及拜訪Carnegie-Mellon University心得報告

主辦機關:

經濟部

聯絡人/電話:

/

出國人員:

俞貴馨 經濟部 技術處 顧問

出國類別: 考察 其他

出國地區: 美國

出國期間: 民國 92 年 04 月 24 日 -民國 92 年 04 月 30 日

報告日期: 民國 92 年 06 月 25 日

分類號/目: G10/電子工程 G10/電子工程

關鍵詞: 無線通訊 (wireless communication), 光纖通訊 (optical communication), 寬頻通訊 (broadband communication), 國際合作計畫 (international joint program)

內容摘要: 在經歷了近幾年的網路經濟泡沫化之後，寬頻及光纖通訊之市場已大幅萎縮，迄今仍無明顯復甦之跡象。另一方面，無線通訊之技術已臻成熟階段。本次出國有兩個主要目的：(1) 參加一年一度的WOCC 2003研討會，以蒐集國際上無線通訊及光纖通訊之最新技術趨勢。(2) 拜訪Carnegie - Mellon 大學，以了解經濟部技術處經由工研院及資策會與該校進行之國際合作計畫之進度及未來發展方向。

本文電子檔已上傳至出國報告資訊網

摘 要

關鍵詞：無線通訊 (wireless communication)、光纖通訊 (optical communication)、寬頻通訊 (broadband communication)、國際合作計畫 (international joint program)

內容摘要：

在經歷了近幾年的網路經濟泡沫化之後，寬頻及光纖通訊之市場已大幅萎縮，迄今仍無明顯復甦之跡象。另一方面，無線通訊之技術已臻成熟階段。

本次出國有兩個主要目的：(1) 參加一年一度的 WOCC 2003 研討會，以蒐集國際上無線通訊及光纖通訊之最新技術趨勢。(2) 拜訪 Carnegie - Mellon 大學，以了解經濟部技術處經由工研院及資策會與該校進行之國際合作計畫之進度及未來發展方向。

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壹、目的

本次出國有兩個主要目的：(1) 參加一年一度的 WOCC 2003 研討會，以蒐集國際上無線通訊及光纖通訊之最新技術趨勢。(2) 拜訪 Carnegie – Mellon 大學，以了解經濟部技術處經由工研院及資策會與該校進行之國際合作計畫之進度及未來發展方向。

貳、行程重點摘要

一、參加 WOCC 2003 研討會 (92 年 4 月 25、26 日)

(位於紐華克)

在 SARS 疫情逐漸擴大及伊拉克戰爭衝突尚未完全平息之際，本次研討會仍有大約 200 人參加，多為美東地區在無線通訊及光纖通訊方面之專家參與。來自台灣地區的參與者除了我之外，尚有台經院院長吳榮義、處長周霞麗，清大陳文村教授、交大賴英傑教授等。本次研討會(議程，見附件一)，對未來之無線通訊及光纖通訊技術趨勢作了許多預

測及分析，茲摘要如下：

1. 未來 Wireless Web 的 driving applications (主要應用) 如下：

- a. Location-based services
- b. Personalized services
- c. Alerting services
- d. Alarming services
- e. Reminder services

因此，wireless devices 的功能需重新界定，可能並不需要 display 及 Keyboard，而只需要有 voice interface，可以讓 device 與 user 互動即可。

2. 未來 Wireless 領域之研發重點包含：

- a. UWB (Ultra-Wide Band)：使用 3.1G~10.8GHz 頻段，傳輸速率達 100Mbps，傳輸距離達 20 英尺。
- b. SDR (Soft Defined Radio)：應用於射頻 (RF) 技術。
- c. Wireless Network Roaming。

3. 光纖通訊之未來應用推廣，將有賴 Broadband

Entertainment (寬頻娛樂系統) 的成功。因為 Broadband Entertainment 將可滿足使用者對影像 (Video) 在(1) higher resolution (更高解析度) 及(2) wider view angle (更廣視角) 之需求。

4. 為滿足未來使用者在行動 (mobile) 及寬頻 (broadband) 兩方面之需求, 下列技術將是努力之重點:

- a. Imaging Display
- b. VLSI Computing
- c. Human-machine interaction
- d. Human-to-human networking

5. Telcordia 的 Executive V.P. Dr. Adam Drobot 在 4 月 25 日以晚宴款待來自台灣的代表。

二、拜訪 Carnegie Mellon 大學 (4 月 28、29 日) (位於匹茲堡)

此次拜訪 Carnegie Mellon 大學, 是以參訪其 ECE (Electrical & Computing Engineering)

Department 為主，該系的系主任(Department head) Dr. Pradeep Khosla 及與台灣建立合作關係的主要聯絡人：陳祖翰教授，安排了一系列的參訪活動，摘要如下：

1. Carnegie Mellon 大學的電腦學院 (School of Computer Science) 在全美電腦系所中排名第一。其畢業生，即使在現今如此不景氣的情況之下，百分之七十五的人在畢業前，就已被各大電腦公司爭相預約聘用。其中一半以上是被微軟總公司吸納。由此可見 Carnegie Mellon 大學之電腦科系的實力。
2. 此次所拜訪的電機電腦工程系 (Electrical and Computer Engineering Department) 是以 IC 設計、微機電、網路、多媒體、資訊安全技術等領域為其專長。
3. 經濟部技術處目前提供兩個法人科專技術引進案分別給工研院及資策會進行與 Carnegie Mellon 大學之技術合作。其中工研院電通所與 Carnegie Mellon 大學之合作主題為“資訊安全技術合作

研究”，經費為 500 萬元新台幣。而資策會與 Carnegie Mellon 大學之合作案為“創新增值服務與研發交流平台建構”案中之分項二：“前瞻 ICT 技術國際合作”經費為 1500 萬元新台幣。其主要技術項目為 Nomadic Computing.

4.由於 Carnegie Mellon 大學在 SoC 方面有多年之經驗，據悉，工研院晶片中心目前正以自有經費與 Carnegie Mellon 大學進行 IC 設計之技術交流。

5.此行拜訪了多位教授，並討論了未來之合作技術重點，4 月 28 日之行程詳見附件二。

參、心得

在經歷了近幾年的網路經濟泡沫化之後，寬頻及光纖通訊之市場已大幅萎縮，迄今仍無明顯復甦之跡象。因此，若欲刺激寬頻及光纖通訊市場之發展，需大力推動多項新型的寬頻娛樂系統，由應用面之擴大來帶動系統面之需求。

另一方面，無線通訊之技術已臻成熟階段。由 Wireless Web 之應用可推動無線通訊系統之進一步擴大市場，為無線通訊業者帶來另一波的產業需求。

Carnegie - Mellon 大學為美國頂尖之技術重鎮，工研院及資策會與該校正進行之合作，目標明確，將可獲得不錯之成果。

肆、建議

技術處之通訊相關的各種科專（法人、業界及學界），無論是寬頻或無線通訊均可多往前瞻應用技術面推展，以有效帶動我國系統廠商之市場商機。

另外，應積極落實 Carnegie - Mellon 大學與我國正進行之國際合作計畫，以獲取該校之技術研發精髓，來有效地提昇我國相關技術之研發水準及帶動我國研究單位之前瞻研究工作。

伍、附件一



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4/25 & 26
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WOCC Program

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	4/25/2003 (Friday)	4/26/2003 (Saturday)
8:00 AM to 9:00 AM	Registration	Registration
9:00 AM to 9:10 AM	F1 Opening Remarks	S1 Opening Remarks
9:10 AM to 10:40 AM	F2 Plenary Session I	S2 Plenary Session III
10:40 AM to 10:50 AM	Break	Break
10:50 AM to 12:20 PM	F3 Plenary Session II	S3 Plenary Session IV
12:30 PM to 2:00 PM	F4 Luncheon Keynote Speaker: Adam Drobot President of Applied Research Telcordia Technologies	S4 Luncheon Keynote Speaker: Rong-I Wu President, Taiwan Institute of Economic Research
(Parallel)	F5 Panel Discussion I. (Wireless)	S5 Panel Discussion II. (Wireless)
2:00 PM to 3:40 PM		

	High Speed Packet Data for Future Wireless Systems F6 Technical Session I. (Optical)	Security in Wireless Systems and Networks S6 Panel Discussion III. (Optical)
	Broadband Access F7 Technical Session II. (Multimedia)	S7 Technical Session VI. (Multimedia)
3:40 PM to 4:10 PM (Parallel)	Emerging Multimedia Technologies Break	Sensor Networking Break
4:10 PM to 5:50 PM	F8 Technical Session III. (Wireless)	S8 Technical Session VII. (Wireless)
	Wireless Networks and Systems F9 Technical Session IV. (Optical)	MIMO Technologies and Resource Management S9 Technical Session VIII. (Optical)
	Intelligent Optical Networks F10 Technical Session V. (Multimedia)	Enabling technology S10 Technical Session IX. (Multimedia)
6:00 PM to 8:00 PM	Mobile Information Networking F11 Conference Reception	Enterprise Multimedia Infrastructure & Applications

DAY 1 (April 25, 2003, Friday)

Registration (8:00-9:00 AM)

F1 - Opening Remarks (9:00-9:10 AM)

Conference Chair: David Chang, Polytechnic University

F2 - Plenary Session I (9:10-10:40 AM)

Chair: Hongya Ge, NJIT

1. "The Success of Mobile Data - A View from the Front"
William C. Goers, Jr., Lucent Technologies
2. "A Wireless Services Future - Boom or Bust"
Lawrence Rabiner, Rutgers University
3. "China's R&D Activities on 3G and Beyond"
You Xiao-Hu, Southeast University, Nanjing, China

Break (10:40-10:50 AM)

F3 - Plenary Session II (10:50 AM-12:20 PM)

Chair: Jiong Ma, Lucent Technologies

1. "Next Generation Wireless Systems and Smart Antennas"
Jack Winters, Jack Winters Communications
2. "Maximizing Spectrum Efficiency for Profitable Mobile Data Services"
Rajiv Larola, Flarion Technologies
3. "Telecommunications Industry and Governmental R&D Funding Policies in Taiwan"
Wen-Tsuen Chen, National Tsing Hua University, Taiwan

F4 - Luncheon (12:30-2:00 PM)

Keynote Speech:

"Broadband: Past, Present and Future"
Adam Drobot, Telocity Technologies

Parallel Technical Sessions (2:00-3:40 PM)

F5 - Panel Discussion I: High Speed Packet Data for Future Wireless Systems (2:00-3:40 PM)

Session Chair: Jung-Tao Liu, Lucent Technologies

1. Sandip Mukherjee, Lucent Technologies
2. Kumar Ramaswamy, Thomson Multimedia
3. Ariela Zeira, InterDigital Communications
4. T.J. Shan, Magnolia Broadband Inc.
5. Thomas Derryberry, Nokia Communications

6. Shu-Chin-Su, Chen, BENQ Mobile Systems Inc.

F6 - Technical Session I: Broadband Access (2:00-3:40 PM)

Session Chair: Frank Effenberger, Quantum Bridge

1. "Applications of CWDM in Business Access"
N.J. Frigo K.C. Reichmann, and P.P. Iannone, AT&T Labs
2. "Agile WDM (AWDM), providing an alternative to CWDM and DWDM for metro & access applications"
Dror Nahumi, Axonlink
3. "GPON The Next Big Thing in Optical Access Networks
A Comparison Between EPON, APON and the Emerging GPON Technology"
Eyal Shraga, FlexLight-Networks
4. "Analog Video over Passive Optical Networks"
Frank Effenberger, Quantum Bridge
5. "Narrow Bandwidth Photoreceivers for K-, Ka-, and Q- Band LMDS Systems"
Donald A. Becker, Discovery Semiconductors

F7 Technical Session II: Emerging Multimedia Technologies (2:00-3:40 PM)

Session Chair: Heather Yu, Panasonic Research

1. "Mobile Multimedia Applications over WLAN"
James Zhibin Lei, Hong Kong Applied Science and Technology Research Institute (ASTRI)
2. "Robust Streaming Video: A Joint Source and Channel Coding Approach"
Chang Wen Chen, University of Missouri-Columbia
3. "Emerging Multimedia Security Technology for Digital Rights Management"
Ching-Yung Lin, IBM T.J. Watson Research Center
4. "Face Recognition: Promise and Challenge"
Wenyi Zhao, Sarnoff Corporation
5. "Space-Time Coding and Signal Processing for Wireless Communications"
Xiaodong Wang, Columbia University

Break (3:40-4:10 PM)

Parallel Technical Sessions (4:10-5:50 PM)

F8 Technical Session III: Wireless Networks and Systems (4:10-5:50 PM)

Session Chair: Daniel Wong, Telcordia Technologies

1. "802.11 as a Wide-Area Public Access Network"
Bill Wong, Hong Kong Applied Science and Technology Research Institute
2. "Flash-OFDM: A New Air Interface for Mobile Broadband Wireless Access"

- Junyi Li, Flarion Technologies
"The Road to HD Radio"
3. Kun Wang, Ibiqity Digital
"Wireless All-IP Core Network"
4. Joe Lin, Telcordia Technologies
5. "On the Performance of High Speed Downlink Packet Data Systems with Scheduling, Hybrid ARQ and VoIP"
Haitao Zheng, Lucent Technologies

F9 Technical Session IV: Intelligent Optical Networks (4:10-5:50 PM)

Session Chair: Liang Cheng, Lehigh University

1. "Extending SANS over SONET a DWDM optical Networks via GFP"
Enrique Hernandez-Valencia, Lucent Technologies
2. "Provisioning and Restoration in Automatic Switched Optical Networks"
Hang Liu, Tellium Inc.
3. "Evolution of Optical Networking in Metropolitan Areas"
Haim Kobrinski, Telcordia Technologies
4. "Multicast Traffic Grooming in WDM Optical Mesh Networks"
Bin Wang, Wright State University
5. "All-optical Functions in Optical Networks"
Peter A. Andrekson, Lehigh University

F10 Technical Session V: Mobile Information Networking (4:10-5:50 PM)

Session Chair: Wai Chen, Telcordia Technologies

1. "Video Transport over Ad Hoc Networks: Multistream Coding with Multipath Transport"
Yao Wang, Polytechnic University
2. "WiFi - What's Next?"
Paul Henry, AT&T Labs
3. "TCP Session Continuity in Wireless Heterogeneous Environment"
Yibei Ling, Telcordia Technologies
4. "Context-Aware Unified Communication"
Hui Lei, IBM T. J. Watson Research Center

F11 - Conference Reception (6:00-8:00 PM)

DAY 2 (April 26, 2003, Saturday)

S1 - Opening Remarks (9:00-9:10 AM)

Conference Chair: David Chang, Polytechnic University

S2 - Plenary Session III (9:10-10:40 AM)

Chair: Kevin W. Lu, Teicordia Technologies

1. "Deploying Broadband Mobile Internet in Taiwan"
Bao-Shuh Paul Lin, Industrial Technology Research Institute, Taiwan
2. "Optical Communication Research at NCTU"
Yinchieh Lai, National Chiao Tung University, Taiwan
3. "The Lehigh/Penn State Center for Optical Technology"
James C. M. Hwang, Lehigh University

Break (10:40 AM-10:50 AM)

S3 - Plenary Session IV (10:50 AM-12:20 PM)

Chair: Liji Wu, Brooklyn Polytechnic University

1. "Broadband Entertainment and Emerging Technologies"
Naohisa Ohta, Sony Corporation, Japan
2. "Mobile Ad Hoc Network: An Overview"
Mengchu Zhou, NJIT
3. "Shared Wireless Antenna Solutions and Technologies"
Kang Yueh, Crown Castle International

S4 - Luncheon (12:30-2:00 PM)

Keynote Speech:

"The Global Competitiveness of Taiwan's Industrial Technology"
Rong-I Wu, Taiwan Institute of Economic Research

Parallel Sessions (2:00-3:40 PM)

S5 - Panel Discussion III: Security in Wireless Systems and Networks (2:00-3:40 PM)

Session Chair: Mengchu Zhou, NJIT

1. Semyon Borisovich Mizikovsky, Lucent Technologies
2. Robert C. Qiu, Founder, Wiscom Technologies
3. Ningning Wu, University of Arkansas at Little Rock
4. Mirwan Ansari, Professor, NJIT
5. William Yeh, Founder, Computer Square

S6 - Panel Discussion IV: Optical (2:00-3:40 PM)

Session Chair: Ben Fan, AT&T

Break Through the Bandwidth Bottleneck - Metro Networking and Broadband Access

1. Martin Zirngibl, Lucent Technologies
2. Peter Busschbach, Lucent Technologies
3. Peter Peng, Lucent Technologies
4. Frank Effenberger, Quantum Bridge
5. Sando Anoff, OpNext Inc.
6. David Yang, AT&T

S7 Technical Session VI: Sensor Networking (2:00-3:40 PM)

Session Chair: Li-Shiuan Peh, Princeton University

1. "Energy Issues in Secure and Reliable Wireless Multimedia Sensor Networking"
Rajaramnam Chandramouli, Stevens Institute of Technology
2. "ZebraNet: Power-Aware Peer-to-Peer Networking for Wildlife Tracking"
Margaret Martonosi, Princeton University
3. "Scalable Self-Organizing Ad-Hoc Sensor Networks"
Dipankar Raychaudhuri, Rutgers University
4. "Computing Everywhere: Harnessing the Internet For Mobile Networked Appliances"
Simon Tsang, Telcordia Technologies

Break (3:40-4:10 PM)

Parallel Sessions (4:10-5:50 PM)

S8 Technical Session VII: MIMO Technologies and Resource Management (4:10-5:50 PM)

Session Chair: Vince Lau, Lucent Technologies

1. "Trial-based study of next generation wireless LAN (NGWLAN) technology in Singapore"
Choi-Look Law, Nanyang Technological University and Lehigh University
2. "Multiuser Detection in Random Access CDMA Networks"
T. J. Lim, University of Toronto
3. "Wireless Medium Access Control Protocols"
Yuguang Michael Fang, University of Florida
4. "Wireless QoS"
Wei Luo, Broadcom Corporation

S9 - Technical Session VIII: Enabling technology (4:10-5:50 PM)

Session Chair: Chuan Pu, Tellium Inc.

1. "High-Speed Semiconductor Quantum-Well and Quantum-Dot Lasers"

- Shun-Lien Chuang, Professor, University of Illinois
2. "Fast-Switching Tunable Laser Transmitters for Packet Routing"
Jesse Simsarain, Lucent Technologies
 3. "Polarization mode dispersion compensation at 40 G"
Lothar Moeller, Lucent Technologies
 4. "Optical Passive Components, Modules and Subsystems"
W. Michael Xin, Oplink Communications
 5. "Impact of fiber parameters on WDM transmissions"
Lufeng Leng, OFS labs

S10 - Technical Session IX: Enterprise Multimedia Infrastructure & Apps (4:10-5:50 PM)
Session Chair: Zou-Yin Shae, IBM T.J. Watson Research Center

1. "Information Marketplace - A Loosely Coupled Digital Library for Content and Knowledge"
Yuan-Chi Chang, IBM T.J. Watson Research Center
2. "MPEG-4 Systems: Content Beyond Basic Audio/Video"
Steve Wood, IBM T.J. Watson Research Center
3. "Application-to-Application Virtual Private Networks"
Andrei Ghetie, Telcordia Technologies
4. "Blue Gene and Applications: An Out-of-the-Box Thinking"
Luring-Kuo Liu, IBM T.J. Watson Research Center

附件二



VISIT WITH PROF. TSUHAN CHEN
CARNEGIE MELLON UNIVERSITY
Department of Electrical and Computer Engineering
5000 Forbes Avenue
Pittsburgh, PA 15213-3890

ITINERARY

Monday, April 28, 2003

Guayshin Samuel Yu
MoEA

Please escort Dr. Yu to his next appointment or call Carol x87286

11:00a

Prof. Chen will meet you in the lobby of the Holiday Inn and bring you to campus

Prof. Tsuhan Chen, Porter Hall, Rm. B16, 412-268-7536
Professor of Electrical and Computer Engineering
Department of Electrical and Computer Engineering

RESEARCH INTERESTS: Multimedia processing, coding and standards, collaborative environments, biometrics.

LAB: Advanced Multimedia Processing Laboratory (AMP)

<http://amp.ece.cmu.edu/>

Research and development of signal processing techniques for multimedia applications. The word "multimedia" is more than a simple combination of text, audio, images, graphics and video. The interaction among these media, and their interaction with humans, networks and storage media, are what really make multimedia research exciting. Professor Chen's group has wide interests in various signal processing techniques for multimedia applications. Currently our research has these major thrusts:

- Audio-Visual Interaction and Intelligent Collaboration Environment
- Video Coding and Multimedia Communication

EMAIL: tsuhan@cmu.edu

WEB: <http://www.ece.cmu.edu/people/faculty/tsuhan.shtml>

- 11:30-12:00p Prof. James Hoe, Hamerschlag Hall, Rm. A304, 412-268-4259
Assistant Professor of Electrical and Computer Engineering
Department of Electrical and Computer Engineering
RESEARCH INTERESTS: All aspects of computer architecture, with an emphasis on processor microarchitectures and parallel computing systems. Applying architectural description and synthesis technologies to the study and construction of computer hardware.
CURRENT RESEARCH:
- Operation-Centric Hardware Description and Synthesis Framework
 - Secure and Reliable Processor Architectures
 - A Mathematical Approach to High-Level DSP Hardware Synthesis and Optimization
 - Microarchitectural Prototyping and Simulation
- EMAIL: jhoe@ece.cmu.edu
WEB: <http://www.ece.cmu.edu/people/faculty/jhoe.shtml>
- 12:00-1:00p **LUNCH With Prof. Tsuhan Chen and Prof. James Hoe**
- 1:00-1:45p Prof. Rob A. Rutenbar, Hamerschlag Hall, Rm. 3105, 412-268-3334
Jatras Professor of Electrical and Computer Engineering and Computer Science; Director, Center for Circuits, Systems and Software
Department of Electrical and Computer Engineering and School of Computer Science
RESEARCH INTERESTS: VLSI CAD, algorithms, analog and digital circuits.
CURRENT RESEARCH:
- Custom Analog Circuit CAD
 - High-Performance Digital ICs and CAD
- RELATED CENTERS: Center for Circuit, Systems and Software (C2S2) <http://wwwaux.ece.cmu.edu>, and Center for Silicon System Implementation (CSSI) <http://www.ece.cmu.edu/~cssi/>
EMAIL: rutenbar@ece.cmu.edu
WEB: <http://www.ece.cmu.edu/people/faculty/rutenbar.shtml>
-

- 2:00-2:30p Prof. Pradeep K. Khosla, Hamerschlag Hall, Rm. 1108, 412-268-5090
 Director, C3S; Head, Electrical and Computer Engineering and Information
 Networking Institute; Philip and Marsha Dowd Professor, College of
 Engineering and School of Computer Science
 Department of Electrical and Computer Engineering and School of Computer
 Science
RESEARCH INTERESTS: Mechatronics, agent-based design and control, S/W
 engineering for real-time systems, distributed robotics, gesture-based
 programming, distributed information systems.
RELATED CENTERS: Center for Computer and Communications Security
 (C3S) <http://www.ece.cmu.edu/c3s/>; Institute for Complex Engineered Systems
 (ICES); and the Robotics Institute <http://www.ri.cmu.edu/>
RELATED LABORATORIES: The goal of research in the AML (Advanced
 Mechatronics Laboratory), affiliated with the Robotics Institute and the Institute
 of Complex Engineered Systems, is developing the enabling technologies for
 "Rapidly Deployable Systems" through composition (using hardware and
 software building blocks) and collaboration (amongst autonomous robots and
 software agents).
EMAIL: pkk@ece.cmu.edu
WEB: <http://www.ece.cmu.edu/people/faculty/pkk.shtml>
- 2:30-3:00p OPEN
- 3:00-3:30p Prof. Gary Fedder, Roberts Engineering Hall, Rm. 333, 412-268-8443
 Associate Professor of Electrical and Computer Engineering and Robotics
 Department of Electrical and Computer Engineering and Robotics Institute
RESEARCH INTERESTS: Multidisciplinary area of microelectromechanical
 systems (MEMS), and focus primarily on design, fabrication, and control
 aspects of sensor- and actuator-based systems. In MEMS, micron- to
 millimeter-size systems with sophisticated abilities to interact with their
 environment are manufactured through the use of VLSI-based
 photolithographic batch fabrication methods.
CURRENT RESEARCH: Micro-sensor and microactuator design;
 microrobotic control and manipulation; embedded microinstruments;
 nanometer-scale, probe-based data storage; and structured design
 methodologies for MEMS.
CURRENT PROJECT: Professor Fedder's group is designing a variety of
 MEMS, including microaccelerometers, gyroscopes, resonant sensors, and x-y-
 z microsensors, using a unique process that combines foundry CMOS with thin
 film microstructures. Research in MEMS computer-aided design aims to
 develop structured design tools and a top-down synthesis flow. Continuing
 research will study control of large systems of microsensors and actuators, and
 broaden the manufacturing capabilities of integrated MEMS.
LABORATORY: Microelectromechanical Systems Laboratory (MEMS)
<http://www.ece.cmu.edu/~mems/>
EMAIL: fedder@ece.cmu.edu
WEB: <http://www.ece.cmu.edu/people/faculty/fedder.shtml>

3:30-4:00p

Prof. Peter Steenkiste, Wean Hall, Rm. 8202, 412-268-3261
Associate Professor of Electrical and Computer Engineering and
Computer Science
Department of Electrical and Computer Engineering and School of Computer
Science

RESEARCH INTERESTS: Computer networking and distributed systems.
Specifically interested in developing techniques that make networks
significantly more useful to applications. While some improvements in
network technology do not depend on how the network is used (e.g.,
incremental bandwidth increases), many optimizations depend on the
application's communication behavior. Examples include network quality of
service, application-level congestion avoidance and network monitoring in
support of network-aware applications. As a result, research often involves
collaboration with network users.

CURRENT PROJECT: The Darwin project. The goal of Darwin is to define,
implement and evaluate "application-aware" resource management
mechanisms for networks. The idea is that, given the wide diversity in network
applications, networks will have to be able to support quality of service models
that can be customized by applications. This is achieved by letting the
application participate in resource management, so that network resources are
applied in a way that is most effective for the application.

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4:00p

Prof. Tsuhan Chen