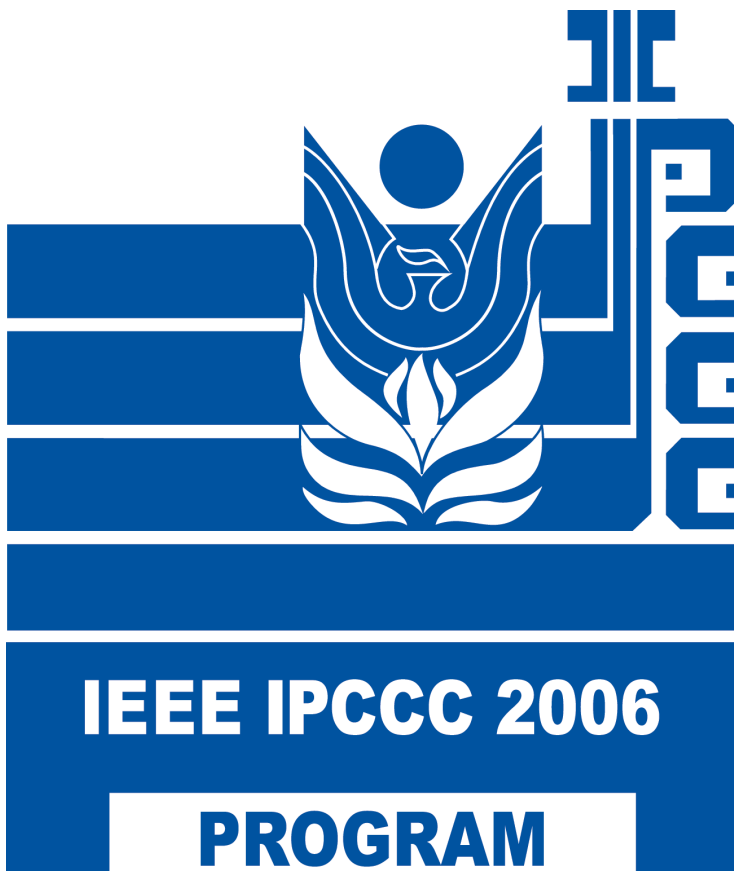


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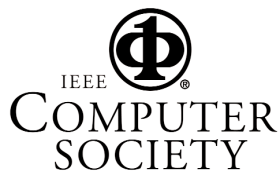
IEEE INTERNATIONAL PERFORMANCE, COMPUTING, AND COMMUNICATIONS CONFERENCE



**HILTON PHOENIX EAST,
MESA, ARIZONA, U.S.A.**

APRIL 10 - 12, 2006

THE INTERNATIONAL PERFORMANCE, COMPUTING, AND COMMUNICATIONS CONFERENCE IS THE PREMIER IEEE CONFERENCE PRESENTING RESEARCH IN THE PERFORMANCE OF COMPUTER AND COMMUNICATION SYSTEMS. FOR MORE THAN TWO DECADES, IPCCC HAS BEEN A RESEARCH FORUM FOR ACADEMIC, INDUSTRIAL, AND GOVERNMENT RESEARCHERS.



WELCOME MESSAGE FROM THE CO-GENERAL CHAIRS

Welcome to the 25th Annual International Performance, Computing, and Communications Conference (IPCCC 2006). For the 25th anniversary of IPCCC, we are happy to present to you a very interesting technical program, workshops, two panels, and two distinguished keynote speakers. Our first keynote speaker, Dr. Roy Want, is a principal engineer at Intel Research, where he has managed the Ubiquity project since 2001. His talk is entitled "The Cell Phone and the Future of Mobile Computing". The second speaker, Dr. Ahmed Kamal, is a distinguished researcher in the area of optical networks at Iowa State University. Dr. Kamal's talk is entitled "The Future of Traffic Grooming in Optical Communication Networks".

The first panel, "Providing Information Assurance in Next Generation Networks", focuses on interesting issues in security for next generation networks. Our next panel looks at a broad range of issues in WiMAX and is entitled "WiMAX Standardization, Performance, Applications & Implications". We invite you to interact with the distinguished panelists in these two sessions.

A number of people worked very hard to bring you this year's conference. We would like to thank the members of the Executive Committee for their efforts. Teresa Dahlberg and Richard Oliver, the Vice-General Chairs, not only worked hard on this year's

conference, but are planning exciting things for IPCCC 2007, which will tentatively be held in New Orleans, LA. The Program Chairs, Arunabha Sen and Junshan Zhang, coordinated reviews and sifted through many first-rate submissions to put together this year's technical program. Mohamed Younis coordinated an outstanding array of workshops. Kui Wu arranged panels, Nidal Nasser handled publicity for the conference, and Maggie Cheng coordinated our publications. As usual, Nasr Ullah and Jack Chen dealt with IPCCC finances. Matthew Diethelm, a Phoenix local, coordinated all of our on-site arrangements. Neil K. Nelson dealt with all of the IPCCC web site issues. We also thank the program committee members, authors and referees and of course you the attendees.

Finally, the Executive Committee of IPCCC is grateful to the IEEE Computer Society for its sponsorship of the conference.

We wish you the best during your stay in Phoenix and welcome your comments on the conference.

WITH BEST REGARDS,

HOSSAM HASSANEIN AND GOLDEN G. RICHARD III
CO-GENERAL CHAIRS, IPCCC 2006

WELCOME MESSAGE FROM THE TECHNICAL PROGRAM CO-CHAIRS

On behalf of the Technical Program Committee of the 25th IEEE International Performance Computing and Communication Conference, it is our pleasure to welcome you to Phoenix, Arizona. This year IPCCC is celebrating its 25th anniversary. The continued success of the conference over the last twenty-five years is a testament of its quality and the support it receives from the research community. As always, the workshop continues to be the leading forum for researchers in the area to present their most important ideas and innovations.

In keeping with the tradition of the past conferences, IPCCC received 142 submissions this year, about 30% more than in IPCCC 2005. After a thorough review by the members of the Technical Program Committee, 60 papers were selected for presentation at the conference. This year we received a large number of very high-quality papers; but due to various constraints, not all of them could be included in the conference proceedings. We believe such high-quality submissions enable us to present a program that is very strong in its technical content. The topics covered by these papers encompass a significant part of High Performance Computing

and Communication research. We believe that you will find the papers interesting and valuable.

We wish to thank all the member of the Technical Program Committee and additional reviewers for doing an excellent job of reviewing the papers. The final selection of the papers was done by the two Co-chairs of the Technical Program Committee, in consultation with the TPC members. We wish to thank Professors Hossam Hassanein and Golden Richard III, Co-general Chairs of the conference and Professor Guoliang (Larry) Xue, past General Chair of the conference, for their support. We would like to thank the EDAS system managers for providing assistance as and when we needed it. Last but not least, we would like to thank our student volunteers, particularly Mr. Sudheendra Murty, without whose help many aspects of the workshop would have been incomplete.

TARUNABHA SEN AND JUNSHAN ZHANG
TECHNICAL PROGRAM CO-CHAIRS, IEEE IPCCC 2006

CONFERENCE SITE

Hilton Phoenix East
Hilton Phoenix East/Mesa
1011 West Holmes Avenue
Mesa, AZ 85210-4923
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MONTREAL, CANADA**NADER MOHAMED**
STEVENS INSTITUTE OF TECHNOLOGY**SANDOR MOLNAR**
BUDAPEST UNIVERSITY OF
TECHNOLOGY AND ECONOMICS**SUDHEENDRA MURTY**
ARIZONA STATE UNIVERSITY**JOGESH MUPPALA**
HONG KONG UNIVERSITY OF
SCIENCE AND TECHNOLOGY**MOHAMMAD OBAIDAT**
MONMOUTH UNIVERSITY**RICHARD OLIVER**
NEW MEXICO STATE UNIVERSITY**JEHAN-FRANCOIS PARIS**
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PURDUE UNIVERSITY**ARUN K. SOMANI**
IOWA STATE UNIVERSITY**SURESH SUBRAMANIAM**
GEORGE WASHINGTON UNIVERSITY**SIRIN TEKINAY**
NATIONAL SCIENCE FOUNDATION**DAVID TIPPER**
UNIVERSITY OF PITTSBURGH**YU WANG**
UNIVERSITY OF NORTH CAROLINA
AT CHARLOTTE**HONGYI WU**
UNIVERSITY OF LOUISIANA AT LAFAYETTE**MINGBO XIAO**
XIAMEN UNIVERSITY, CHINA**JIANG (LINDA) XIE**
UNIVERSITY OF NORTH CAROLINA
AT CHARLOTTE**MOHAMED YOUNIS**
UNIVERSITY OF MARYLAND
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UNIVERSITY OF CINCINNATI**CHI ZHANG**
FLORIDA INTERNATIONAL UNIVERSITY**ZHENSHENG ZHANG**
SAN DIEGO RESEARCH CENTER**MOHAMMAD ZULKERNINE**
QUEEN'S UNIVERSITY, CANADA

WELCOME MESSAGE: 8:15 - 8:30 A.M.

KEYNOTE SPEECH I: DR. ROY WANT, INTEL RESEARCH, THE CELL PHONE AND THE FUTURE OF MOBILE COMPUTING [8:30 - 9:30]

SESSION 1: 9:50 - 11:05

Session 1.1: Ad Hoc Networks 1

Chair: **Kui Wu** (University of Victoria, CA)

An Analytical Study On Routing Overhead of Two-level Cluster-based Routing Protocols for Mobile Ad Hoc Networks

Zhihua Tao and Gongyi Wu (Nankai University, CN)

Minimum-Energy Route Configuration for Wireless Ad Hoc Networks

Le Yang, Hong-Chuan Yang, and Kui Wu (University of Victoria, CA)

Path Cost Metrics for Multi-hop Network Routing

Lijuan Cao and Teresa Dahlberg (University of North Carolina - Charlotte, US)

Session 1.2: Multicast and Scheduling

Chair: **Tao Xie** (New Mexico Institute of Mining and Technology, US)

A New Secure Group Key Management Scheme for Multicast over Wireless Networks

Hwa Young Um (Purdue University, US)

Cluster Based Approaches for End-to-End Complete Feedback Collection in Multicast

Mehmet Baysan and Kamil Sarac (University of Texas at Dallas, US)

SHARP: A New Real-Time Scheduling Algorithm to Improve Security of Parallel Applications on Heterogeneous Clusters

Tao Xie, Xiao Qin and Mais Nijim (New Mexico Institute of Mining and Technology, US)

Session 1.3: Traffic Engineering I

Chair: **Joseph Hui** (Arizona State University, US)

Source Traffic Regulation in Reserved Delivery Subnetworks

Ruibiao Qiu and Jonathan Turner (Washington University in St. Louis, US)

The Impacts of Timing Constraints on Virtual Channels Multiplexing in Interconnect Networks

Ahmad Khonsari (University of Tehran, IR), Mohamed Ould-Khaoua (University of Glasgow, UK), Abas Nayebe (IPM School of Computer Science, IR), Hamid Sarbazi-Azad (IPM & Sharif University of Technology, IR)

High Performance and Alleviated Hot-spot Problem in Processor Frontend With Enhanced Instruction Fetch Bandwidth Utilization

Prabhu Rajamani, Jatan Shah and Rama Sangireddy (University of Texas at Dallas, US), Vadhiraj Sankaranarayanan (Intel Corporation, US)

BREAK: 11:05 - 11:25

SESSION 2: 11:25 - 12:40

Session 2.1: Ad Hoc Networks II

Chair: **Dong Zheng** (Arizona State University, US)

SeMAC: Robust Broadcast MAC Protocol for Multi-hop Wireless Ad Hoc Networks

Tiantong You and Hossam Hassanein (Queens University, CA), Chi-Hsiang Yeh (Queen's ECE, CA)

A Control-Theoretic Approach to Improving Fairness in DCF Based WLANs

Xiaolin Chang and Xiaoyang Lin (Hong Kong University of Science and Technology, HK), Jogesh K. Muppala (Department of Computer Science, HKUST, HK)

The Delay Distribution of IEEE 802.11e EDCA

Paal Engelstad (University of Oslo / Telenor R&D, NO)

Session 2.2: Wireless Networks I

Chair: **Hasan Cam** (Arizona State University, US)

A Grouped and Proportional-Fair Subcarrier Allocation Scheme for Multiuser OFDM Systems

Qian Wang (Chinese Academy of Sciences, CN)

Transmit Power Reduction by Adapting Rate and/or Power in Single Carrier Wireless Systems

Mohammad Mohammadian Avval (Sharif University of Technology, IR)

Channel Distribution Fairness in Multi-Channel Wireless Ad Hoc Networks Using a Channel Distribution Index

Unghee Lee and Scott Midkiff (Virginia Tech, US)

Session 2.3: Traffic Engineering II

Chair: **Do Young Eun** (North Carolina State University, US)

Excess Bandwidth Distribution in DiffServ Networks

Sanjeeva Athuraliyala and Harsha Sirisena (University of Canterbury, NZ)

From Network Planning to Traffic Engineering for Optical VPN and Multi-Granular Random Demands

Elias Doumith and Maurice Gagnaire (Ecole Nationale Supérieure des Télécommunications, FR), Olivier Audouin (Alcatel CIT, Research & Innovation, FR), Richard Douville (Alcatel, FR)

BGP with an Adaptive Minimal Route Advertisement Interval

Nenad Laskovic and Ljiljana Trajkovic (Simon Fraser University, CA)

LUNCH: 12:40 - 2:00

SESSION 3: 2:00 - 3:15

Session 3.1: Ad Hoc Networks III

Chair: **Tao Xie** (New Mexico Institute of Mining and Technology, US)

TMS: A Trust Management System for Access Control in Mobile Ad Hoc Networks

William Adams (Virginia Polytechnic Institute and State University, US), Nathaniel Davis (Air Force Institute of Technology, US)

A Stratified Model for Security in Peer Networks: A Case for Fine Grain Granularity

Fernando Colon Osorio and Justin Whitney (Worcester Polytechnic Institute, US)

A Novel Queue Management Mechanism for Improving Performance of Multihop Flows in IEEE 802.11s Based Mesh Networks

Nagesh Nandiraju, Deepti Nandiraju, Dave Cavalcanti and Dharma Agrawal (University of Cincinnati, US)

Session 3.2: Wireless Networks II

Chair: **Dong Zheng** (Arizona State University, US)

A TCP-Aware Call Admission Control Scheme for Packet-Switched Wireless Networks

Xinbing Wang, Do Young Eun and Wenye Wang (North Carolina State University, US)

Real-time Video Transmission over TD-SCDMA Wireless System

Wen Ji (Northwestern Polytechnical University, CN)

Maintaining an Energy-efficient Bluetooth Scatternet

Muralidhar Medidi and Yuanyan Zhou (Washington State University, US)

Session 3.3: Performance Evaluation I

Chair: **Maggie Chen** (University of Missouri-Rolla, US)

Awards: An Adaptive Write Scheme for Secure Local Disk Systems

Mais Nijim, Xiao Qin, Tao Xie and Mohammed Alghamdi (New Mexico Institute of Mining and Technology, US),

dRamDisk: Efficient RAM Sharing on a Commodity Cluster

Vassil Roussev and Golden Richard III (University of New Orleans, US), Daniel Tingstrom (ATC-NY, US)

Performance Modeling of Fully Adaptive Wormhole Routing in n-Dimensional Mesh-Connected Multicomputers

Pedram Rajabzadeh and Hashem Hashemi Najaf-abadi (IPM School of Computer Science, IR),

Hamid Sarbazi-Azad (IPM & Sharif University of Technology, IR),

Mohamed Ould-Khaoua (University of Glasgow, UK)

BREAK: 3:15 - 3:35

SESSION 4: 3:35 - 5:15

Session 4.1: Ad Hoc Networks IV

Chair: **Weiyang Ge** (Arizona State University, US)

Adapting Connected D-Hop Dominating Sets to Topology Changes in Wireless Ad Hoc Networks

Jason Bolla and Dung Huynh (University of Texas at Dallas, US)

Energy-Efficient Cooperative Routing in Multi-hop Wireless Ad Hoc Networks

Fulu Li (Massachusetts Institute of Technology, US), Kui Wu (University of Victoria, CA)

A Novel Channel Assignment Algorithm Based on Topology Simplification in Multi-Radio Wireless Mesh Networks

Leiming Xu, Yong Xiang and Meilin Shi (Tsinghua University, CN)

Total Information Efficiency of Multihop Wireless Networks

André Mignaco and Paulo Cardieri (State University of Campinas, BR)

Session 4.2: Network Security

Chair: **Dijiang Huang** (Arizona State University, US)

A Traffic-classified Technique for Filtering Spam From Bulk Delivery e-mails

Smart Zhang (Chinese Academy of Sciences, CN)

Detection of Stepping Stone Attack Under Delay and Chaff Perturbations

Linfeng Zhang, Anthony Persaud and Alan Johnson (Iowa State University, US),

Yong Guan (Iowa State University, ECpE, US)

On Capturing and Containing E-mail Worms

Chin-Tser Huang, Nathan Johnson and Jeff Janies (University of South Carolina, US),

Alex Liu (The University of Texas at Austin, US)

Maille Authorization - A Distributed, Redundant Authorization Protocol

Andrew Fritz (University of Houston, US), Jehan-François Pâris

Session 4.3: Optical Networks

Chair: **Arunita Jaekel** (University of Windsor, CA)

Routing and Wavelength Assignment in Optical Mesh Networks with Wavelength Conversion

Arunita Jaekel and Tahmina Khan (School of Computer Science, University of Windsor, CA)

A Distributed Fairness Algorithm for Bus-Based Metropolitan Optical Network

Daniel Popa and Tulin Atmaca (Institut National des Télécommunications, FR)

Avoiding Store Misses to Fully Modified Cache Blocks

Shiwen Hu and Lizy John (The University of Texas at Austin, US)

RECEPTION: 6:00 PM

IPCCC SCHEDULE, TUESDAY, APRIL 11, 2006

INTRODUCTION: 8:15 – 8:30 A.M.

KEYNOTE SPEECH II: DR. AHMED E. KAMAL, IOWA STATE UNIVERSITY,
THE FUTURE OF TRAFFIC GROOMING IN OPTICAL COMMUNICATION NETWORKS [8:30 - 9:30]

PANEL: (IPCCC + WIA): 9:40 – 10:40

PROVIDING INFORMATION ASSURANCE IN NEXT GENERATION NETWORKS
MODERATOR: DAVID TIPPER, UNIVERSITY OF PITTSBURGH

BREAK: 10:40 – 11:00

SESSION 5: 11:00 – 12:20

Session 5.1: Wireless Networks III

Chair: **Murali Medidi** (Washington State University, US)

Analysis of Power Control for Indoor Wireless Infrared CDMA Communication

Amir Aminzadeh-Gohari and Mohammad Reza Pakravan (Sharif University of Technology, IR)

Space Station Wireless Local Area Network Signal Characteristics Modeling and Measurements

Shian Hwu (Barrios Technology, US)

Polar LEO Satellite Constellation Measurement by Delay Probing

Junfeng Wang (Institute of Software, Chinese Academy of Sciences, CN)

Session 5.2: Performance Evaluation II

Chair: **Fernando Colon Osorio** (Worcester Polytechnic University, US)

An Efficient Load Balancing Algorithm for Heterogeneous Grid Systems Considering Desirability of Grid Sites

Kai Lu, Riky Subrata and Albert Zomaya (University of Sydney, Australia, AU)

OS-aware Tuning: Improving Instruction Cache Energy Efficiency on System Workloads

Tao Li (University of Florida, US)

PaScal - A new Parallel and Scalable Server I/O Networking Infrastructure for Supporting Global Storage/File System in Large-size Linux Clusters

Hsing-bung Chen (Los Alamos National Lab, US)

WIA 1: 11:00 – 12:20

WORKSHOP ON INFORMATION ASSURANCE

SESSION 1: SECURITY MANAGEMENT

CHAIR: **YI QIAN**

Enabling Mobility in Enterprise Security Management

William Claycomb (New Mexico Institute of Mining and Technology, US)

Dongwan Shin (New Mexico Tech, US)

Discovery-Based Role Activations in Role-Based Access Control

Raman Adaikkalavan and Sharma Chakravarthy (University of Texas, Arlington, US)

Scalable and Accurate Insider Threat Monitoring: Role-based Pattern Analysis

Joon Park (Syracuse University, US),

Joseph Giordano (Air Force Research Laboratory (AFRL))

Reliability Enhancements for a Jini and JavaSpaces Based Network Management System

Jing Wu, J. Michel Savoie, Hanxi Zhang and Scott Campbell (Communications Research Centre Canada, CA)

LUNCH: 12:20 – 1:40

SESSION 6: 1:40 – 3:20

Session 6.1: Wireless Networks IV

Chair: **Hasan Davulcu** (Arizona State University, US)

Performance Evaluation of DS-BPSK UWB Multiple-Access Systems in Standard UWB Channels

Haiyang Ding, Yanhua Zhang and XueMei Wu (Beijing University of Technology, CN)

Hybrid Location in WCDMA Cellular Systems

David Lew (Hunan University, CN)

Evolutionary Algorithm Based Multiuser Detection for DS-CDMA Systems

Zhou Wei (Wuhan University, CN)

Topological Dynamics Characterization and Performance Evaluation of Routing Protocols for Layered Satellite Networks

Junfeng Wang (Institute of Software, Chinese Academy of Sciences, CN)

Session 6.2: Transport Layer

Chair: **Sai Narasimhamurthy** (Arizona State University, US)

An Analytical Model of TCP Performance

Debessay Kassa and Sabine Wittevrongel (Ghent University, BE)

Performance Modeling of TCP/AQM with Generalized AIMD Under Intermediate Buffer Sizes

Do Young Eun and Xinbing Wang (North Carolina State University, US)

Coding Schemes for Integrated Transport and Storage Reliability

Sai Narasimhamurthy (Arizona State University, US)

WIA 2: 1:40 – 3:20

WORKSHOP ON INFORMATION ASSURANCE

SESSION 2: NETWORK SECURITY

CHAIR: **TBD**

PKI Scalability Issues

Adam J Slagell, Rafael Bonilla and William Yurcik (National Center for Supercomputing Applications (NCSA), UIUC)

Multiple Design Patterns for Voice over IP (VoIP) Security

Zahid Anwar, Ralph Johnson, Munawar Hafiz and Roy H. Campbell (University of Illinois at Urbana-Champaign), William Yurcik (National Center for Supercomputing Applications (NCSA), UIUC)

Incorruptible System Self-Cleansing for Intrusion Tolerance

Yih Huang, David Arsenault and Arun Sood (George Mason University, US)

Monitor Placement for Stepping Stone Analysis

Yongping Tang, Yema Liverpool and Thomas Daniels (Iowa State University, US)

A Group Signature Scheme with Signature Claiming and Variable Linkability

He Ge and Stephen Tate (University of North Texas, US)

BREAK: 3:20 – 3:40

SESSION 7: 3:40 – 5:20

Session 7.1: Sensor Networks

Chair: **Arun Somani** (Iowa State University, US)

Energy Efficient Model for Data Gathering in Structured Multiclustered Wireless Sensor Networks

Jinran Chen, Shubha Kher and Arun Somani (Iowa State University, US)

Data Replication in Collaborative Sensor Network Systems

Denis Gracanin and Mohamed Eltoweissy (Virginia Tech, US)

Extending Sensor Network Lifetime via First Hop Data Aggregation

Shoudong Zou, Ioanis Nikolaidis and Janelle Harms (University of Alberta, CA)

Key Establishment with Source Coding and Reconciliation for Wireless Sensor Networks

Suat Ozdemir and Hasan Cam (Arizona State University, US)

Session 7.2: Web Applications

Chair: **Yi Chen** (Arizona State University, US)

Performance Problem Analysis Method for Web Systems Using Multiple Decision Trees

Shinji Kikuchi (Fujitsu Laboratories Ltd., JP)

The Impact of Reactivity on the Performance of Web Applications

Adriano Pereira (Federal University of Minas Gerais (UFMG), BR)

Efficient Server Cooperation Mechanism in Content Delivery Network

Zhiyong Xu (Suffolk University, US)

Unstructured Peer-to-Peer Session over IP using SIP

Khashayar Khavari, Chuen Liang, Farid Fadaie, Nadeem Abji, Ramy Farha and Ali Tizghadam (University of Toronto, CA)

WIA 3: 3:40 – 5:20

WORKSHOP ON INFORMATION ASSURANCE

SESSION 3: NETWORK SURVIVABILITY AND WIRELESS SECURITY

CHAIR: **TBD**

Context-aware, Predictive Information Assurance

Vincent Berk and George Cybenko (Dartmouth College, US)

A Framework for Distributed Key Management Schemes in Heterogeneous Wireless Sensor Networks

Kejie Lu and Yi Qian (University of Puerto Rico at Mayaguez, PR), Jiankun Hu (RMIT University, AU)

Safe Base-Station Repositioning in Wireless Sensor Networks

Mohamed Younis and Aseem Lalani (University of Maryland, Baltimore County, US), Mohamed Eltoweissy (Virginia Tech, US)

Wavelength Retuning in a WDM Mesh Network with Survivable Traffic Grooming

Weiwei Hu and Rose Qingyang Hu (Mississippi State University, US),

Yi Qian (University of Puerto Rico at Mayaguez, PR)

Risk Reduction Based Survivable WDM Network Design

K. Vajanapoom and D. Tipper (University of Pittsburgh, US)

IPCCC SCHEDULE, WEDNESDAY, APRIL 12, 2006

PANEL: (IPCCC): 8:30 – 9:30 A.M.

WIMAX STANDARDIZATION, PERFORMANCE, APPLICATIONS & IMPLICATIONS
MODERATOR: MARK GOLDSTEIN, PRESIDENT, INTERNATIONAL RESEARCH CENTER

BREAK: 9:30 – 9:45

MALWARE KEYNOTE SPEECH: 9:45 - 10:45

KEYNOTE SPEAKER: FRED WEBER,
FORMER CIO OF AMD CORPORATION,

TITLE: THE TRUSTED COMPUTING BASED EFFORTS WITHIN THE SEMICONDUCTOR INDUSTRY
- A SOLUTION TO THE MALWARE CHALLENGE OR JUST A FIRST STEP

WIA KEYNOTE SPEECH: 9:45 - 10:45

KEYNOTE SPEAKER: DR. CARL E. LANDWEHR,
SENIOR RESEARCH SCIENTIST, UNIVERSITY OF MARYLAND

TITLE: ACCOUNTABLE INFORMATION FLOW AND LARGE SCALE SYSTEM DEFENSE:
A CALL FOR NEW IDEAS

BREAK: 10:45 – 11:10

MALWARE 1: 11:10 – 12:30

WORKSHOP ON MALWARE

SESSION 1: RESEARCH TRACK

Chair: TBD

And You Thought You Were Safe After SLAMMER, Not So, Swarms Not Zombies Present the Greatest Risk To Our National Internet Infrastructure

Dr. Fernando C. Colon Osorio and Mr. Zach Klopman

Portal Monitoring Based Anti-Malware Framework: Design and Implementation

Yanjun Wu

Towards an Infrastructure for Worm Defense Evaluation

Senthil Cheetancheri, Denys Ma, Todd Heberlein, and Karl Levitt

Connectionless Port Scan Detection on the Backbone

Avinash Sridharan, Tao Ye, and Supratik Bhattacharyya

ESCo-Wi 1: 11:10 – 12:30

WORKSHOP ON eSAFETY AND CONVERGENCE OF HETEROGENEOUS WIRELESS NETWORKS (eSCo-Wi)

Session 1: Safety in Wireless Networks

Chair: Emad Aboelela

An Energy-efficient Sensing Coverage Protocol For Surveillance And Monitoring Applications Using Wireless Sensors

Xin Fei and Azzedine Boukerche

u-VideoSec: Light Weight Attack-Resistant Remote Surveillance Through Low-cost, Scalable Wireless Video Sensor Networks (WiSe)

Fei Hu

How Does Topology Affect Security in Wireless Ad Hoc Networks?

Ioannis Broustis and Michalis Faloutsos

Wireless Sensor Network Based Model for Secure Railway Operations

Emad Aboelela, William Edberg, Christos Papakonstantinou, and Vinod Vokkarane

WMSN 1: 11:10 – 12:30

WORKSHOP ON MULTIMEDIA SYSTEMS AND NETWORKING
Session 1

Chair: TBD

Truthful Application-Layer Multicast in Mesh-based Selfish Overlays

Wei Zhou, Ke Xu and Chi-Hung Chi (Tsinghua University, China),

Jiangchuan Liu (Simon Fraser University, Canada)

Caching of Interactive Multiple Choice MPEG-4 Presentations

Carsten Griwodz, Frank Johnsen, Pål Halvorsen and Simen Rekkedal (University of Oslo, NO)

Audio Conferencing Over Application-Level Multicast

Nick Blundell, Norbert Egi and Laurent Mathy (Lancaster University, UK)

LUNCH: 12:30 – 1:40

MALWARE 2: 1:40 – 3:00

WORKSHOP ON MALWARE

Session 2: Industry Track

Chair: TBD

Optimizing Malware

José Fernandez and Pierre-Marc Bureau

Automatically Deducing Propagation Sequences that Circumvent a Collaborative Worm Defense

Linda Briesemeister and Phillip Porras

Wireless Intrusion Protection System Using Distributed Collaborative Intelligence

Amit Sinha

AVARE: Aggregated Vulnerability Assessment and Response Against Zero-day Exploits

Madhusudhanan Chandrasekaran, Mukarram Baig, and Shambhu Upadhyaya

ESCo-Wi 2: 1:40 – 3:00

WORKSHOP ON eSAFETY AND CONVERGENCE OF HETEROGENEOUS WIRELESS NETWORKS

Session 2: QoS in Heterogeneous Wireless Networks

Chair: Nidal Nasser

PROFITIS: Architecture for Location-based Vertical Handovers Supporting Real-Time Applications

Stavros Tsiakkouris and Ian Wassell

Secure Data Aggregation Without Persistent Cryptographic Operations in Wireless Sensor Networks

Kui Wu, Dennis Dreer, Bo Sun, and Yang Xiao

QoS Reliability of Hierarchical Clustered Wireless Sensor Networks

Lidong Xing and Akhilesh Shrestha

Enhanced Blocking Probability in Adaptive Multimedia Wireless Networks

Nidal Nasser

WMSN 2: 1:40 – 3:00

WORKSHOP ON MULTIMEDIA SYSTEMS AND NETWORKING
Session 2

Chair: TBD

An Improved Wu-Manber Multiple Patterns Matching Algorithm

Donghong Yang, Ke Xu, Yong Cui (Department of Computer Science and Technology, Tsinghua University, Beijing, CN)

A Modularized QoS Multicasting Approach on Common Homogeneous Trees for Heterogeneous Members in DiffServ

Suogang Li, Jianping Wu, Ke Xu and Dan Li (Tsinghua University, CN)

PAODV: Peer-to-Peer File Sharing Protocol on AODV-based Ad Hoc Wireless Networks

Sangkil Jung and Sangjin Hong (State University of New York at Stony Brook, US)

BREAK: 3:00 – 3:20

PANEL (MALWARE): 3:20 – 4:20

TITLE: NEXT GENERATION MALWARE – WHAT IS IN STORE?

MODERATOR: DR. COLON OSORIO

MONDAY, APRIL 10, 8:30 A.M. - 9:30 A.M.

DR. ROY WANT, PRINCIPAL ENGINEER AT INTEL RESEARCH
THE CELL PHONE AND THE FUTURE OF MOBILE COMPUTING

ABSTRACT: In the last 10 years we have seen cell phones evolve from the most basic of communication devices to smart phones, providing processing capabilities that blur with traditional PDAs. While these devices only have the performance of an office PC in the early 1990's, they are running at much lower power and with modern operating systems, such as WinCE or Embedded Linux. As a result cell-phones can support sophisticated applications that are being created by a large, mature developer community.

The trend is clear; smart phones already have most of the processing capability to support the needs of basic office applications. In another 5 years they may rival more sophisticated capabilities currently only available on notebook computers. Furthermore, these devices are small enough to drop into a pocket, providing mobile users with 'anytime access', and represent a truly ubiquitous computing technology (cell-phone global sales in 2005 were 800M+ units). The only real limitation for this platform is the small size of the cell-phone display and keyboard, which prevent users from effectively creating and viewing office documents, such as MSWord and PowerPoint files. However, even this limitation can be mitigated by using short-range wireless technologies to connect to displays and computers in the locality e.g. walk up to a desktop computer, connect to your cell phone wirelessly, and start using the desktop as if it were your own computer. Intel's Personal Server project is a practical example of this scenario.

This presentation will show how the notebook platform is steadily being undermined by the capability of the smart phone, and how this is an opportunity for new products that use low-power Intel Architecture processors and Ultra-Wide-Band (UWB) radios.

Speaker Bio: Dr. Roy Want is a Principal Engineer at Intel Research in Santa Clara, California, and leader of the Ubiquity Strategic Research Project (SRP). His interests include proactive computing, ubiquitous computing, wireless protocols, hardware design, embedded systems, distributed systems, automatic identification and micro-electromechanical systems (MEMS). Want received his BA in computer science from Churchill College, Cambridge University, UK in 1983 and continued research at Cambridge into reliable distributed multimedia-systems. He earned a PhD in 1988. While at Olivetti Research (1988-91) he developed the Active Badge, a system for automatically locating people in a building. He joined Xerox PARC's Ubiquitous Computing program in 1991 and lead a project called PARCTab, one of the first context-aware computer systems. At PARC Want managed the Embedded Systems area and earned the title of Principal Scientist. He joined Intel Research in 2000. Want is also the author, or co-author, of more than 50 publications in the area of mobile and distributed systems; and has over 50 patents issued in these areas. Want is very involved in the research community through program committees and invited talks. He is a fellow of both the IEEE and ACM.

Readers may contact Dr. Want at Intel Corporation, 2200 Mission College Blvd, Santa Clara, CA 95052, USA, e-mail roy.want@intel.com
 Web: <http://www.speakeasy.org/~roywant/cs/>

TUESDAY, APRIL 11, 8:30 A.M. - 9:30 A.M.

DR. AHMED KAMAL, IOWA STATE UNIVERSITY
THE FUTURE OF TRAFFIC GROOMING IN OPTICAL COMMUNICATION NETWORKS

Abstract: Optical networks employing Wavelength Division Multiplexing (WDM) provide transmission rates on the order of tens of Gigabits/s rates per channel, for an aggregate of several Terabits/s per fiber. However, most application data rates fall much shorter than the transmission rates available per channel. It is therefore economical and natural to use a lightpath to concurrently support multiple communication sessions. The process of allocating subwavelength traffic demands on lightpaths such that the resources are shared is known as traffic grooming.

In this talk we formally define the traffic grooming problem, and inspect progress in this area. Recent advances in SONET technology, which resulted in second and more recently third generation SONET, and the introduction of the Automatically Switched Optical Network (ASON) and their impact on traffic grooming will then be discussed. The characteristics of traffic generated by emerging applications will also be described, and the implication of all of this will have on traffic grooming in future networks will also be highlighted. The talk will present a number of emerging research directions in this field, and will present a list of several open research issues.

Speaker Bio: Dr. Ahmed E. Kamal received a B.Sc. (distinction with honors) and an M.Sc. both from Cairo University, Egypt, and an M.A.Sc. and a Ph.D. both from the University of Toronto, Canada, all in Electrical Engineering in 1978, 1980, 1982 and 1986, respectively. He is currently a professor of Electrical and Computer Engineering at Iowa State University. Earlier he held faculty positions in the Department of Computing Science at the University of Alberta, Canada, and the Department of Computer Engineering at Kuwait University, Kuwait. He was also an adjunct professor at the Telecommunications Research Labs, Edmonton, Alberta.

Kamal's research interests include high-performance networks, optical networks, wireless and sensor networks and performance evaluation. He is a senior member of the IEEE, a member of the Association of Computing Machinery, and a registered professional engineer. He was the co-recipient of the 1993 IEEE Hartree Premium for papers published in Computers and Control in IEEE Proceedings for his paper entitled *Study of the Behaviour of Hubnet*. He served on the technical program committees of numerous conferences and workshops, was the organizer and co-chair of the first and second Workshops on Traffic Grooming in 2004 and 2005, respectively, is the co-chair of the Technical Program Committees of the Optical Symposium of Broadnets 2006, and the Communications Networks and Services (CNSR) 2006 conferences. He is an area editor of the Computer Networks journal

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