# 24TH IEEE INTERNATIONAL PERFORMANCE, COMPUTING, AND COMMUNICATIONS CONFERENCE

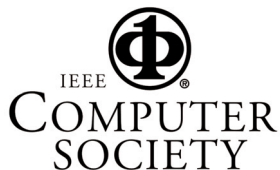**IEEE IPCCC 2005**

## 2005 PROGRAM

### EMBASSY SUITES PHOENIX NORTH
**PHOENIX, ARIZONA, U.S.A.**
APRIL 7 - 9, 2005

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.

IEEE COMPUTER SOCIETY

IEEE

CONSORTIUM FOR EMBEDDED SYSTEMS

## IPCCC 2005
### GREETINGS FROM THE GENERAL CHAIR

On behalf of the IEEE Computer Society and members of the organizing committee, it gives me a great pleasure to welcome you to the 2005 IEEE International Performance, Computing, and Communications Conference-IPCCC2005. IPCCC is now into its 24th year of providing a forum for academia and industry to share ideas in the areas of performance evaluation of high performance computing and coputer communications. IPCCC is especially grateful for the continued sponsorship of the IEEE Computer Society. We are very pleased to be able to continue the IPCCC tradition of excellence with a high quality technical program consisting of the main conference and workshops, as well as a student poster session. Our keynote talks continue our tradition of being at the technical leading edge. We are pleased to have Dr. Mike Coyle from the Army Research Office talking about *Future Combat Systems and Army Research Challenges* and Dr. Mohsen Guizani from Western Michigan University talking about *Status of Next Generation Cellular and Wireless Local Area Network Services and Current Research Activities*. We also have an excellent panel on *Advanced Wireless* by leading researchers from academia and industry.

In addition to the technical program, we urge you to enjoy the beautiful Phoenix climate and scenery. As the 5th largest city in the USA, Phoenix is a major tourist destination. The Phoenix Sky Harbor International Airport is conveniently located minutes from the city center. In addition to the Grand Canyon, which is a day's trip, places like Sedona and

Flagstaff are also of considerable tourist interest. Metro Phoenix is home of many high tech companies, such as Intel, Motorola, Honeywell, General Dynamics, Lockheed Martin, Boeing Company (Apache Helicopters) and Orbital Sciences. Also in town is Arizona State University, home of the 2004 Nobel Prize in Economic Sciences and several NAE members. As a faculty member of Computer Science and Engineering at ASU, I urge you to visit our department which is located in a brand new building (the Brickyard) in downtown Tempe.

The conference wouldn't exist without the countless hours of volunteer work by the program and executive committees. Our heartfelt thanks go to the TPC chairs Teresa Dahlberg and Richard Oliver for an excellent conference program and to all of the committee members and the paper referees whose diligent and quality work make this conference a success. It is truly a privilege to work with such a marvelous group of dedicated professionals. We gratefully acknowledge the support from the Consortium of Embedded Systems and Internetworking Technologies (CEINT). Also, we are deeply indebted to all of the authors who have supported and contributed to IPCCC with their submissions.

GUOLIANG (LARRY) XUE
GENERAL CHAIR, IEEE IPCCC 2005

## IPCCC 2005
### WELCOME FROM THE PROGRAM CO-CHAIRS

Welcome to the 2005 IEEE International Performance, Computing and Communications Conference (IPCCC2005). The Technical Program Committee for IPCCC2005 is delighted with the high quality of the papers accepted for the Conference and with the Ph. D. student posters. The TPC is also very pleased with the four workshops that will be held in conjunction with the conference.

This year the TPC reviewed 103 submitted papers. Our review process included both the TPC members and many of the submitting authors. The submitting authors were encouraged to volunteer to review papers in their area, in order to provide the best quality of editorial responses in all cases. This extensive review process was managed with the WIMPE conference support software which facilitated individuals participating both as authors and reviewers. 36 of the 103 submitted papers were accepted as full papers and 11 were accepted as short papers. A significant number of poster submissions by Ph. D. students were also reviewed. From these, 6 were selected for presentation at the Thursday evening reception. Funding to attend the conference appears to be an ongoing issue for Ph. D. students

presenting posters. For that reason, only 4 of the selected poster sessions will be presented.

We wish to thank all the contributors to the quality and success of IPCCC2005. The preparation of the technical program for this conference is the result of many long hours of volunteer work by both the TPC and the Executive Committee. We also acknowledge and thank the authors who volunteered to provide insightful reviews of papers submitted. We would like to thank the General Chair, Guoliang Xue, for the guidance and support in this process! We would also like to thank the various committees that put in many tedious hours to make this conference possible!

We once again welcome you all to IPCCC2005, and hope you enjoy the program, workshops, and posters!

TERESA DAHLBERG AND RICHARD L. OLIVER
PROGRAM CO-CHAIRS, IEEE IPCCC 2005

## IPCCC 2005
### CONFERENCE SITE

**Embassy Suites Phoenix North**
2577 West Greenway Rd
Phoenix, AZ 85023-4222
Telephone for reservations: (800) 527-7715
Other phone: (602) 375-1777

Free cooked breakfast is included for each occupant. More details about the hotel can be found at:
www.embassy-suites.com/en/es/hotels/index.jhtml?ctyhocn=PHXNOES
Embassy Suites Rates are:
• Single/Double occupancy (King bed or two double beds)
        - $129+12.07% tax per night
• Triple/Quad occupancy
        - $139+12.07% tax per night

## IPCCC 2005
### EVENT LOCATION INFORMATION

• REGISTRATION: THE SALON FOYER
• KEYNOTES: SALONS A, B, AND C
• PANEL SESSIONS: SALONS A, B, AND C
• LUNCHES: SALON D
• TRACK A TECHNICAL PROGRAM: SALON A AND B
• TRACK B TECHNICAL PROGRAM: SALON C
• RECEPTION AND POSTER SESSION: SALON D AND E

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MOHAMED YOUNIS
UNIVERSITY OF MARYLAND
BALTIMORE COUNTY

HASAN CAM
ARIZONA STATE UNIVERSITY

**WELCOME MESSAGE:** 8:10 - 8:15 A.M.
**KEYNOTE SPEAKER:** 8:15 - 9:15 A.M. – MOHSEN GUIZANI, WESTERN MICHIGAN UNIVERSITY
*STATUS OF NEXT GENERATION CELLULAR AND WIRELESS LOCAL AREA NETWORK SERVICES AND CURRENT RESEARCH ACTIVITIES*

**SESSION 1**
9:30 - 10:45

### SESSION 1A: INFORMATION ASSURANCE I
SESSION CHAIR: MAGGIE CHENG, UNIVERSITY OF MISSOURI AT ROLLA

**1A.1 PROVING SECURE PROPERTIES OF CRYPTOGRAPHIC PROTOCOLS WITH KNOWLEDGE BASED APPROACH**
Cheng Xiaochun, Ma Xiaoqi, University of Reading, UK
Maggie Cheng, University of Missouri
Scott C.-H.Huang, University of Minnesota

**1A.2 AN EFFICIENT NETWORK INTRUSION DETECTION METHOD BASED ON INFORMATION THEORY AND GENETIC ALGORITHM**
Tao Xia, Guangzhi Qu, Salim Hariri,
Internet Technology Laboratory; University of Arizona
Mazin Yousif, Intel Corperation, USA

**1A.3 A KEY DISTRIBUTION SCHEME FOR DOUBLE AUTHENTICATION IN LINK STATE ROUTING PROTOCOL**
Dijiang Huang, Amit Sinha, Deep Medhi, University of Missouri-Kansas City

### SESSION 1B: PARALLEL APPLICATIONS, CLUSTERS
SESSION CHAIR: XIAO QIN, NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

**1B.1 IMPROVING EFFECTIVE BANDWIDTH OF NETWORKS ON CLUSTERS USING LOAD BALANCING FOR COMMUNICATION-INTENSIVE APPLICATIONS**
Xiao Qin, New Mexico Institute of Mining and Technology
Hong Jiang, University of Nebraska-Lincoln

**1B.2 IMPROVING NETWORK PERFORMANCE THROUGH TASK DUPLICATION FOR PARALLEL APPLICATIONS ON CLUSTERS**
Xiao Qin, New Mexico Institute of Mining and Technology

**1B.3 PARALLELIZED SCHEDULING ALGORITHM FOR INPUT QUEUED SWITCHES USING LOCAL SEARCH TECHNIQUE**
Yanfeng Zheng, Simin He,
Institute of Computing Technology, Chinese Academy of Sciences
Shutao Sun, Wen Gao, Graduate School of Chinese Academy of Sciences

**BREAK: 10:45 - 11:00**

**SESSION 2**
11:00 - 12:20

### SESSION 2A: SENSOR NETWORKS
SESSION CHAIR: KUI WU, UNIVERSITY OF VICTORIA

**2A.1 DESIGNING EFFICIENT ROUTING PROTOCOL FOR HETEROGENEOUS SENSOR NETWORKS**
Xiaojiang Du, Fengjing Lin, North Dakota State University

**2A.2 PERFORMANCE EVALUATION OF RANGE-FREE LOCALIZATION METHODS FOR WIRELESS SENSOR NETWORKS**
Chong Liu, Kui Wu, University of Victoria

**2A.3 IMPROVING SENSOR NETWORK PERFORMANCE BY DEPLOYING MOBILE SENSORS***
Xiaojiang Du, Fengjing Lin, North Dakota State University

**2A.4 CONNECTIONLESS PROBABILISTIC (CoP) ROUTING: AN EFFICIENT PROTOCOL FOR MOBILE WIRELESS AD-HOC SENSOR NETWORKS***
Aris A. Papadopoulos, Julie A. McCann, Imperial College London;
Alfredo Navarra, University of L'Aquila

### SESSION 2B: TECHNIQUES AND CHARACTERIZATION I
SESSION CHAIR: RICHARD OLIVER, NEW MEXICO STATE UNIVERSITY

**2B.1 ON SAMPLING UNIT SIZE IN SAMPLED MICROPROCESSOR SIMULATION**
Yue Luo and Lizy K. John, The University of Texas at Austin

**2B.2 CLUSTER-BASED INPUT/OUTPUT TRACE SYNTHESIS**
Bo Hong, Tara M. Madhyastha, Bing Zhang, University of California Santa Cruz

**2B.3 PERFORMANCE CHARACTERIZATION OF iSCSI PROCESSING IN A SERVER PLATFORM**
Hormuzd M. Khosravi, Abhijeet Joglekar, Ravi Iyer, Intel Corporation

**LUNCH: 12:20 - 1:30**

**SESSION 3**
1:30 - 3:05

### SESSION 3A: WIRELESS NETWORKS
SESSION CHAIR: TERESA DAHLBERG, UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

**3A.1 PERFORMANCE EVALUATION FOR HYBRID IEEE 802.11B AND 802.11G WIRELESS NETWORKS**
Shao-Cheng Wang, Ahmed Helmy, University of Southern California
Yi-Ming Chen, Winbond Electronics Corporation
Tsern-Huei Lee, National Chiao Tung University,Taiwan

**3A.2 FURTHER REDUCED SEARCH FOR OPTIMAL DIAGONAL SPACE-TIME CONSTELLATIONS FROM GROUPS**
Jun Li, Gang Wei, South China University of Technology

**3A.3 A POWER MANAGEMENT SCHEME FOR THE IEEE 802.11 BASED WLANs***
Hongyan Lei, Arne A. Nilsson, North Carolina State University

**3A.4 DualRTT: DETECTING SPURIOUS TIMEOUTS IN WIRELESS MOBILE ENVIRONMENTS***
Shaojian Fu, Mohammed Atiquzzaman, University of Oklahoma

**3A.5 ON THE CONSTRUCTION OF ENERGY-EFFICIENT BROADCAST TREE WITH HITCH-HIKING IN WIRELESS NETWORKS***
My Thai, Yingshu Li, Ding-Zhu Du, University of Minneapolis
Chunyu Ai, HeiLongJiang University, China

### SESSION 3B: DISTRIBUTED PERFORMANCE
SESSION CHAIR: NIDAL NASSAR, UNIVERSITY OF GUELPH

**3B.1 TARGETED SEARCH: REDUCING TIME AND COST FOR SEARCHING FOR OBJECTS IN MULTIPLE-SERVER NETWORKS**
Graciela Perara, Ken Christensen, University of South Florida
Allen Roginsky, National Institute of Standards and Technology

**3B.2 EFFICIENT FILE SHARING STRATEGY IN DHT BASED P2P SYSTEMS**
Zhiyong Xu, Suffolk University
Xubin He, Tennessee Tech University
Laxmi Bhuyan, University of California, Riverside

**3B.3 ON TRANSPORT DAEMONS FOR SMALL COLLABORATIVE APPLICATIONS OVER WIDE-AREA NETWORKS**
Qishi Wu, Nageswara S. V. Rao, Oak Ridge National Labs
S. Sitharama Iyengar, Louisiana State University

**3B.4 A SIMPLE BUT EFFICIENT BROADCASTING PROTOCOL FOR VIDEO-ON-DEMAND**
Jehan-Francois Paris, University of Houston

**BREAK: 3:05 - 3:30**

**SESSION 4**
3:30 - 5:00

### SESSION 4A: INFORMATION ASSURANCE II
SESSION CHAIR: MOHAMED YOUNIS, UNIVERSITY OF MARYLAND BALTIMORE COUNTY

**4A.1 SOURCE ROUTING BASED PAIRWISE KEY ESTABLISHMENT PROTOCOL FOR SENSOR NETWORKS**
Dijiang Huang, Manish Mehta, Deep Medhi, University of Missouri-Kansas City

**4A.2 TOTALLY DISTRIBUTED KEY MANAGEMENT FOR DYNAMIC GROUPS IN MANETs**
Anindo Mukherjee, Anurag Gupta and Dharma P. Agrawal,
University of Cincinnati

**4A.3 RINK-RKP: A SCHEME FOR KEY PREDISTRIBUTION AND SHARED-KEY DISCOVERY IN SENSOR NETWORKS***
Manish Mehta, Dijiang Huang, Lein Harn, University of Missouri-Kansas City

**4A.4 KEY MANAGEMENT IN WIRELESS AD HOC NETWORKS: COLLUSION ANALYSIS AND PREVENTION***
Mohamed Younis, Kajaldeep Ghumman,
University of Maryland Baltimore County
Mohamed Eltoweissy, Virginia Tech

### SESSION 4B: NETWORK PERFORMANCE
SESSION CHAIR: NASR ULLAH, FREESCALE SEMICONDUCTOR

**4B.1 UTILIZING CHARACTERISTICS OF LAST LINK TO IMPROVE TCP PERFORMANCE**
Wu Xiuchao, Indradeep Biswas, Chan Mun Choon, A.L. Ananda,
National University of Singapore

**4B.2 MULTIMEDIA STREAMING USING MULTIPLE TCP CONNECTIONS**
Thinh Nguyen, Oregon State University
Sen-ching S. Cheung, University of Kentucky

**4B.3 ON LARGE SCALE DEPLOYMENT OF PARALLELIZED FILE TRANSFER PROTOCOL**
Shaleeza Sohail, Chun Tung Chou, Salil S. Kanhere, Sanjay Jha,
University of New South Wales

**4B.4. VIRTUAL MACHINE EFFECTS ON NETWORK TRAFFIC DYNAMICS***
J. Martin, V. Rajasekaran, J. Westall, Clemson University

**RECEPTION AND POSTER SESSION:** 5:30 - 7:00
POSTER LIST AND AUTHORS: PAGE 7

KEYNOTE SPEAKER: 8:15 - 9:15 A.M. – MIKE COYLE, ARMY RESEARCH OFFICE
*FUTURE COMBAT SYSTEMS AND ARMY RESEARCH CHALLENGES*

**SESSION 5**
**9:30 - 11:45**

**SESSION 5: MULTICAST**
SESSION CHAIR: JEHAN-FRANCOIS PARIS, UNIVERSITY OF HOUSTON

**5A.1 DINLOOP BASED INTER-DOMAIN MULTICAST WITH MPLS**
Huaqun Guo, National University of Singapore
L.H. Ngoh, W.C. Wong, Institute for Infocomm Research

**5A.2 OMFVS: OVERLAY MULTICAST FOR FILE DISTRIBUTION USING VIRTUAL SOURCES**
Soojeon Lee, Dongman Lee, Information and Communications University
Kyungran Kang, Ajou University

**5A.3 PERFORMANCE ANALYSIS OF RELIABLE MULTICAST PROTOCOL USING TRANSPARENT PROXY SERVERS OVER HYBRID NETWORKS**
Sung-Kwan, Meejoung Kim, Chul-Hee Kang, Korea University

**5A.4 DIG: AN OVERLAY NETWORK FOR INTERNET MULTICASTING**
Aimin Pan, Xiaodong Li, Jian Yang, Weihua Duan, Peking University

**5A.5 A TREE-BASED RELIABLE MULTICAST SCHEME EXPLOITING TEMPORAL LOCALITY OF TRANSMISSION ERRORS**
Jinsuk Baek, Jehan-Francois Paris , University of Houston

LUNCH: 11:45 - 1:00

**SESSION 6**
**1:00 - 2:05**

**SESSION 6A: INFORMATION ASSURANCE III**
SESSION CHAIR: ARUNABHA SEN, ARIZONA STATE UNIVERSITY

**6A.1 PROVIDING EFFICIENT CERTIFICATION SERVICES AGAINST ACTIVE ATTACKS IN AD HOC NETWORKS**
Bo Zhu, Zhiguo Wan, Mohan S. Kankanhalli, National University of Singapore
Guilin Wang, Feng Bao, Institute for Infocomm Research
Robert H. Deng, Singapore Management University

**6A.2 MEASURING ENERGY-SECURITY TRADEOFFS IN WIRELESS NETWORKS***
Fernando C.Colon Osorio, Emmanuel Agu, Kerry McKay,
Worcester Polytechnic Institute

**6A.3 CALCULATING A NODE'S REPUTATION IN A MOBILE AD HOC NETWORK***
William J. Adams, George C. Hadjichristofi, Nathaniel J. Davis IV,
Virginia Polytechnic Institute and State University

**SESSION 6B: TECHNIQUES AND CHARACTERIZATION II**
SESSION CHAIR: GRACIELA PERERA, UNIVERSITY OF SOUTH FLORIDA

**6B.1 ADAPTIVE OBJECT CACHE PRE-FETCHING SCHEME BASED ON OBJECT FLOW**
Hussein Fareed, Sun Microsystems Inc.
Mostafa Bassiouni, University of Central Florida

**6B.2 THE EFFECTS OF AQM ON THE PERFORMANCE OF ASSURED FORWARDING SERVICES**
X. Chang, Jogesh K. Muppala, Hong Kong University of Science and Technology

**6B.3 THE DESIGN AND IMPLEMENTATION OF RAPID-CACHE FOR LINUX***
Zhiyong Xu, Suffolk University
Yiming Hu, University of Cincinnati

BREAK: 2:05 - 2:10

**SESSION 7**
**2:10 - 3:30**

**SESSION 7A: AD HOC NETWORKS**
SESSION CHAIR: TBD

**7A.1 AN EFFICIENT BROADCAST QUERY FORWARDING TECHNIQUE FOR WIRELESS MULTIPATH ROUTING**
Pat McCarthy, Dan Grigoras, University College Cork, Ireland

**7A.2 LEVERAGING 1-HOP NEIGHBORHOOD KNOWLEDGE FOR EFFICIENT FLOODING IN WIRELESS AD HOC NETWORKS**
Ying Cai, Iowa State Univesity
Kien A. Hua, Aaron Phillips, University of Central Florida

**7A.3 ON THE CONSTRUCTION OF STABLE VIRTUAL BACKBONES IN MOBILE AD-HOC NETWORKS**
Feng Wang, Yingshu Li, Dingzhu Du, University of Minnesota
Manki Min, University of Florida

**SESSION 7B: IWSEEASN I**
SESSION CHAIR: QING-AN ZENG, UNIVERSITY OF CINCINNATI

**7B.1 ISPRP: A MESSAGE-EFFICIENT PROTOCOL FOR INITIALIZING STRUCTURED P2P NETWORKS**
Curt Cramer, Thomas Fuhrmann, Universität Karlsruhe

**7B.2 WIRELESS SENSOR NETWORK SECURITY: A SECURE SINK NODE ARCHITECTURE**
Shahabuddin Muhammad, Zeeshan Furqan, Ratan Guha,
University of Central Florida

**7B.3 SECURE DATA AGGREGATION AND SOURCE-CHANNEL CODING WITH MIT CODE FOR WIRELESS SENSOR NETWORKS**
Hasan Cam, Arizona State University

**7B.4 PIEZOELECTRIC MATERIALS FOR POWERING REMOTE SENSORS**
Moncef B. Tayahi, Bruce Johnson, Melindra Holtzman, University of Nevada
Gardy Cadet, Access Optical Networks

BREAK: 3:30 - 3:45

**PANEL**
**3:45 - 5:00**

**Panel:  Advanced Wireless**
Panel Chair: Mark Goldstein, President, International Research Center

The panel will include brief presentations and discussion by industry leaders in areas of current research interest including advances in wireless component miniaturization, advances in 3G and 4G cell systems and integration with WiFi and WIMAX, software designed radio and its impact, and scalable mesh WiFi networks.

**Panelists:**
Sayfe Kiaei, ASU Connection One consortium.
Bruce Fette, Chief Scientist of General Dynamics C4 Systems.
Alan Meiusi, WI-VOD

*"\*" INDICATES SHORT PAPER*

## Session 8
### 8:15 - 9:35

### Session 8A: IWSEEASN II
Session Chair: Kui Wu, University of Victoria

**8A.1 Energy-Efficient Rate Adaptation MAC Protocol for Ad Hoc Wireless Networks**
Maciej Zawodniok, Sarangapani Jagannathan, University of Missouri-Rolla

**8A.2 A Novel Joint Routing and Power Management Algorithm for Energy-Constraint Ad-Hoc Sensor Networks**
Yashar Ghiassi Farrokhfal, Vahid Shahmansouri, M. R. Pakravan, Sharif University of Technology

**8A.3 MMAC: A Mobility-Adaptive, Collision-Free MAC Protocol for Wireless Sensor Networks**
Muneeb Ali, Tashfeen Suleman, Zartash Afzal Uzmi, Computer Science Department, LUMS

**8A.4 Energy-Efficient Task Scheduling for Wireless Sensor Nodes with Multiple Sensing Units**
Hasan Cam, Rajesh Poornachandran, Hani Ahmad, Arizona State University

### Session 8B: RRM-WCN I
Session Chair: Abraham O. Fapojuwo, University of Calgary

**8B.1 Performance Analysis of a Channel Allocation Scheme with Preemptive Priority for Integrated Voice/Data Mobile Networks**
Shensheng Tang and Wei Li, University of Toledo

**8B.2 CAC and Blocking Capacity of Multi-Service Smart Antenna CDMA Systems with and without Code Re-use**
Christian Hartmann, Technische Universitat Munchen, Germany

**8B.3 Real Time Agreement Protocol and Resource Pre-reservation for Wireless System**
Zièd Choukair,
Ecole Nationale Superieure des Telecommunications de Bretagne, France
Sonia Ben Rejeb, Sami Tabbane.
Ecole Superieure des Communications de Tunis, Tunisia

**8B.4 A Performance Comparison of Class-based Scheduling Algorithms in Future UMTS Access**
Nidal Nasser, University of Guelph
Bader Al-Manthari, Hossam Hassanein, Queen's University

> Break: 9:35 - 9:50

## Session 9
### 9:50 - 12:20

### Session 9A: WSNIA
Session Chair: Mohamed Younis, University of Maryland Baltimore County

**9A.1 Towards an Automated Development Methodology for Dependable Systems with Application to Sensor Networks**
Michael G. Hinchey, James L. Rash, NASA Goddard Space Flight Center
Christopher A. Rouff, Advanced Concepts Business Unit

**9A.2 SECK: Survivable and Efficient Clustered Keying for Wireless Sensor Networks**
Michael Chorzempa, Jung-Min Park, Mohamed Eltoweissy, Virginia Tech

**9A.3 Reliable Multicast in Wireless Ad Hoc and Sensor Networks**
Hossam Hassanein, Lan Huang, Queen's University

**9A.4 Accurate Anchor-Free Node Localization in Wireless Sensor Networks**
Adel Youssef and Ashok Agrawala, University of Maryland College Park
Mohamed Younis, University of Maryland Baltimore County

**9A.5 Performance of IEEE 802.11 based Wireless Sensor Networks in Noisy Environments**
Tamer Nadeem and Ashok Agrawala, University of Maryland College Park

**9A.6 Secure Cell Relay Routing Protocol for Sensor Networks**
Xiaojiang Du, Fengjing Lin, North Dakota State University

### Session 9B: WMSN
Session Chair: Jiangchuan Liu, Simon Fraser University

**9B.1 Multi-rate Congestion Control using Packet-pair Bandwidth Detection with Session and Layer Changing Manager**
Yuliang Li, Alistair Munro, Dritan Kaleshi, University of Bristol

**9B.2 Examining the Benefits of a Hybrid Distributed Architecture for Bandwidth Brokers**
Ch. Bouras, K. Stamos,
Research Academic Computer Technology Institute and University of Patras

**9B.3 Multihoming Media Streaming**
Ahsan Habib, John Chuang, University of California, Berkeley

**9B.4 Performance Comparison of Multiplexing Techniques for MPEG-4 Object-based Content**
Seán Murphy, Stefan Goor, Liam Murphy, University College Dublin

**9B.5 Source Descriptor Selection Schemes for Multiple Description Coded Services in 4G Wireless Communication Systems**
F.H.P. Fitzek, H. Yomo, P. Popovski, R. Prasad, Aalborg University, Denmark
M. Katz, Samsung Electronics Co Ltd

**9B.6 Adapting Spatial Constraints of Composite Multimedia Objects to Achieve Universal Access**
Ahmed Gomaa, Nabil Adam, Vijayalakshmi Atluri, Rutgers University

> Lunch: 12:00 - 1:15

## Session 10
### 1:15 - 2:35

### Session 10A: IWSEEASN III
Session Chair: Hasan Cam, Arizona State University

**10A.1 A Novel Addressing Architecture for Wireless Sensor Networks**
Trong Thua Huynh, Choong Seon Hong, Kyung Hee University

**10A.2 EECS: An Energy Efficient Clustering Scheme in Wireless Sensor Networks**
Mao Ye, Chengfa Li, Guihai Chen, Nanjing University, China
Jie Wu, Florida Atlantic University

**10A.3 Power Control Based Topology Construction for the Distributed Wireless Sensor Networks**
Prasan Kumar Sahoo, Vanung University
Jang-Ping Sheu, Chi-Hao Huang, National Central University

**10A.4 Energy Efficiency of Two Virtual Infrastructure for MANETs**
Zhijun Wang, Jingyuan Zhang, University of Alabama

### Session 10B: RRM-WCN II
Session Chair: Tarek Bejaoui, Mediatron

**10B.1 Multi-Class Adaptive Radio Resource Management Policy for Multimedia Cellular Networks**
Tarek Bejaoui, Sami Tabbane, Mediatron
Véronique Vèque, Institut d'Electronique Fondamentale

**10B.2 Optimal Resource Allocation and Leaky Bucket Based Power Control for CBR MIMO Systems**
Wenjun Luo; Arulsaravana Jeyaraj, Magda El Zarki, University of California, Irvine

**10B.3. Modeling and Performance Analysis of Public Safety Wireless Networks**
Jiaqing Song, Ljiljana Trajkovic, Simon Fraser University

**10B.4. Simplifying the Power Allocation for OFDM-MIMO: A Partial Curve Fitting Approach**
Wentao Zhao, Texas A&M University

> Break: 2:35 - 2:45

## Session 11
### 2:45 - 4:05

### Session 11A: IWSEEASN IV
Session Chair: Prasan Kumar Sahoo, Vanung University

**11A.1 Energy Efficient Sensor, Relay and Base Station Placements for Coverage, Connectivity and Routing**
Maulin Patel, R. Chandrasekaran, S. Venkatesan, University of Texas at Dallas

**11A.2 Dynamic Localization Control for Mobile Sensor Networks**
Sameer Tilak, Vinay Kolar, Nael B. Abu-Ghazaleh, Kyoung-Don Kang, Binghamton University

**11A.3 Optimal Common Transmit Power in Ad Hoc Wireless Networks**
Sooksan Panichpapiboon, Ozan K. Tonguz, Gianluigi Ferrari, Carnegie Mellon University

**11A.4 Minimum Cost Guaranteed Lifetime Design for Heterogeneous Wireless Sensor Networks (WSNs)**
Quanhong Wang, Kenan Xu, Hossam Hassanein, Glen Takahara, Queen's University

### Session 11B: RRM-WCN III
Session Chair: Christian Hartmann, Technische Universitat Munchen, Germany

**11B.1 A Feasible Approach for QoS Management in Coordinated Heterogeneous Radio Access Networks**
R Ramon Ferrús, A. Gelonch, O. Sallent, J. Pérez-Romero, UPC, Barcelona;
N. Nafisi, M. Dohler, King's College London

**11B.2 Resource Management for Handoff Traffic in Hierarchical Cellular Networks**
Xiao Liu and Abraham O. Fapojuwo, The University of Calgary

**11B.3 A Novel Joint Radio Resource Management Approach with Reinforcement Learning Mechanisms**
L. Giupponi, R. Agusti, J. Pérez-Romero, O.Sallent, UPC, Barcelona

*THURSDAY, APRIL 7, 8:15 A.M. - 9:15 A.M.*

## MOHSEN GUIZANI, DEPARTMENT OF COMPUTER SCIENCE, WESTERN MICHIGAN UNIVERSITY
*STATUS OF NEXT GENERATION CELLULAR AND WIRELESS LOCAL AREA NETWORK SERVICES AND CURRENT RESEARCH ACTIVITIES*

ABSTRACT: With the rapidly growing demands for cellular/wireless communication systems, new types of user's applications are emerging. These applications of mixed traffic of voice, data, and real time audio/video have challenged the current Third Generation service providers to respond with new generation of system specifications capable of providing increased data throughput. The next generation cellular/wireless communication systems need not only to provide a higher data throughput but also to support integrated applications with various Quality of Service (QoS) requirements. Providing QoS control for the emerging Multimedia Wireless Generation (MWG) is a challenging task, due to the time varying and nonstationary wireless links. Being different from wired communication networks, providing QoS in the form of absolute guarantee may not be possible with current technologies.

In this talk, we will review the current status of cellular/wireless systems in the US and point out its deficiencies. We then will suggest some solutions based on our current research activities at Western Michigan University.

Mohsen Guizani is currently a Professor and the Chair of the Computer Science Department at Western Michigan University. He received his B.S. (with distinction) and M.S. degrees in Electrical Engineering; M.S. and Ph.D. degrees in Computer Engineering in 1984, 1986, 1987, and 1990, respectively, from Syracuse University, Syracuse, New York.

His research interests include Computer Networks, Wireless Communications and Computing, and Optical Networking. He currently serves on the editorial boards of six technical Journals and the Founder and EIC of "Wireless Communications and Mobile Computing" Journal published by John Wiley (http://www.interscience.wiley.com/jpages/1530-8669/). He is the author of four books and in the process of writing the fifth. He guest edited a number of special issues in Journals and Magazines including the Journal of Selected Areas in Communications and Communication Society Magazine. He also served as member, Chair, and General Chair of a number of conferences, including the General Chair of IEEE VTC. He has more than 140 publications in refereed journals and conferences.
Dr. Guizani received both the Best Teaching Award and the Excellence in Research Award from the University of Missouri-Columbia in 1999. He won the best Research Award from KFUPM in 1995 (a university wide competition). He was selected as the Best Teaching Assistant for two consecutive years at Syracuse University, 1988 and 1989. He is currently serving as the "Distinguished Speaker" for the IEEE Computer Society.

Dr. Guizani is an active senior member of IEEE, member of IEEE Communication Society, IEEE Computer Society, ASEE, ACM, OSA, SCS, and Tau Beta Pi.

*FRIDAY, APRIL 8, 8:15 A.M. - 9:15 A.M.*

## MIKE COYLE, ARMY RESEARCH OFFICE
*FUTURE COMBAT SYSTEMS AND ARMY RESEARCH CHALLENGES*

Abstract: The Future Combat Systems (FCS) is envisioned as a joint (across all the military services) networked system of systems that will enable levels of joint connectivity, situational awareness and understanding, and synchronized operations heretofore unachievable. FCS will operate as a System of Systems that will network existing systems, systems already under development, and systems to be developed to meet the requirements of the Army's Future Force Unit of Action. There are many scientific and technological challenges in developing and deploying such systems. Some of these challenges will be presented and discussed as well as the U.S. Army Research Office's role in addressing these challenges.

The U.S. Army Research Office (ARO) mission is to seed scientific and far reaching technological discoveries that enhance Army capabilities. Basic research proposals from educational institutions, nonprofit organizations, and private industry are competitively selected and funded. ARO's research mission represents the most long-range Army view for changes in its technology and is the only Army organization that transcends all of its mission areas.

Dr. Coyle is the U.S. Army Research Office (ARO) program manager for Discrete Mathematics and Computer Science. This program funds university research of importance and with direct applications to the Army in areas such as graph theory, computational geometry, computer graphics, immersive technologies, and theoretical computer science. Prior to ARO, he spent fifteen years at the Army's Benet Laboratories in Watervliet, NY working on various projects in the Applied Math. and Mechanics branch and the Modeling and Simulation branch. He received his Ph.D. in Mathematics (Numerical Analysis) from Rensselaer Polytechnic Institute.

## RECEPTION AND POSTER SESSION: THURSDAY, APRIL 7, 5:30 - 7:00 P.M.

**1. Enhancement of IEEE 802.15.3 High Rate WPAN via MAC Header Compression**
Eui-Hyeok Kwon, Jae-Sung Lim, Ajou University; Kang-Yong Lee, Broadband Convergence Network

**2. A Centralized server based signaling and resource reservation protocol design for fast protection and restoration in optical ring networks**
Dipnarayan Guha, Doan Huy Cuong, Yang Ok Sik, Seng Kyoun Jo,
Information and Communications University

**3. A High-Performance WDM Photonic Switch Architecture for Future Supernetworks Infrastructure**
Haitham S. Hamza, Jitender S. Deogun, University of Nebraska-Lincoln

**4. Energy Aware Adaptive Scheduler for a Sensor Node**
R. Poornachandran, M. Loiacono, Arizona State University

**5. Using ß-Skeletons for Localized Topology Control in Wireless Ad Hoc Networks**
Manvendu Bhardwaj, Satyajayant Misra, Guoliang Xue, Arizona State University

**6. Design and Stochastic Modeling of Distributed, Dynamic, Randomized Clustering Protocols in Wireless Sensor Networks**
Quahong Wang, Kenan Xu, Hossam Hassanein, Glen Takahara, Queen's University

**7. Energy Savings for Data Caches: ELRU-SEQ Replacement Policy**
Saibushan Musalappa, Shivakumar Sundaram, Yul Chu, Mississippi State University

# PRELIMINARY CALL FOR PAPERS AND PARTICIPATION

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- Power-Aware Design
- Network Security
- Internet Computing
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### Submissions Procedures

Submitted manuscripts must have at least 11-point font size, and should not exceed 20 double-spaced pages in length, including the abstract, figures, and references. Authors should obtain company and government clearances prior to submission of papers.

Submissions must include the name, mailing address, phone number, fax number, and email address of the primary contact author for the paper.

All papers will be reviewed by the Program Committee. They will be judged with respect to their quality, originality, and relevance. Accepted papers will be published in the conference proceedings, conditional upon the author's advance registration. Awards will be given for the best paper.

In addition, proposals for panel sessions and workshops are welcome. Please contact the General Chair, listed above, for details.

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