

CURRICULUM VITAE

Marwan M. Krunz

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Biographical Sketches

Marwan Krunz is a professor of electrical and computer engineering at the University of Arizona. He directs the wireless and networking group in the ECE Department. He is also the UA site director of *Connection One*, a joint NSF/state/industry I/UCRC cooperative research center that focuses on RF and wireless communication systems and networks. At present, the center consists of five participating universities and 17+ industrial partners. Dr. Krunz received his Ph.D. degree in electrical engineering from Michigan State University in 1995. He joined the University of Arizona in January 1997, after a brief postdoctoral stint at the University of Maryland, College Park. He previously held visiting research positions at INRIA (Sophia Antipolis, France), HP Labs (Palo Alto, California), University of Paris VI (Paris, France), and US West (now Qwest) Advanced Technologies (Boulder, Colorado).

Dr. Krunz's research is in communications technology and computer networking (wireless and wireline), with emphasis on resource allocation, adaptive control, and distributed protocol design. Recently, he has been involved in projects related to cognitive radios and SDRs; distributed resource management in wireless networks; protocol design for MANETs; MIMO and smart-antenna-based systems; UWB-based wireless personal area networks; energy management and clustering in sensor networks; video streaming over wireless networks; routing, fault monitoring, and detection in all-optical networks; path selection for MDC (multiple description coding) based media streaming; quality-of-service routing; WWW caching and prefetching; and adaptive packet encapsulation. He previously worked on traffic analysis and performance evaluation, packet video modeling, and QoS provisioning in high-speed networks. He has published more than 150 journal articles and peer-reviewed conference papers, and has three US patents. His research has been funded by federal, state, and industrial grants.

M. Krunz is a recipient of the National Science Foundation CAREER award (1998-2002). He served on the editorial board for the IEEE/ACM Transactions on Networking (2001-2008), and currently serves on the editorial board for the IEEE Transactions on Mobile Computing (TMC) and the Computer Communications Journal. He was a guest co-editor for special issues in IEEE Micro and IEEE Communications Magazines. He served as a technical program committee (TPC) chair for various international conferences, including the IEEE WoWMoM 2006 Conferences, the IEEE International Conference on Sensor and Ad hoc Communications and Networks (SECON 2005), the IEEE INFOCOM 2004 Conference, and the 9th Hot Interconnects Symposium (2001). He has served and continues to serve on the executive and technical program committees of many international conferences and on the panels of several NSF directorates. He was a keynote speaker at the Fourth IEEE Workshop on Wireless Mesh Networks (WiMesh 2009), Rome, June 2009. He was an invited panelist at various international conferences, including INFOCOM 2009 and SECON 2009. He gave tutorials at premier wireless networking conferences (e.g., MobiCom '04, MobiHoc '04). He frequently consults for companies in the telecommunications sector. M. Krunz is a senior member of the IEEE and a member of the ACM.

Education

- **Ph.D. in Electrical Engineering (09/92 – 07/95)**
Michigan State University, East Lansing, Michigan
Dissertation title: Design and Analysis of a Buffer Management Scheme for Multimedia Traffic in Asynchronous Transfer Mode (ATM) Networks
- **M.S. in Electrical Engineering (01/91 – 07/92)**
Michigan State University, East Lansing, Michigan
Thesis title: Numerical Stability and Convergence Issues in Set Membership Weighted Recursive Least Square (SM-WRLS) Algorithm
- **B.S. in Electrical Engineering (09/85 – 06/90)**
Jordan University, Amman, Jordan
Project title: Design of a High-Speed Multiply/Divide Unit

Employment History

I. Permanent Positions

- **Professor** (Aug. 2006 – present)
Co-director of Connection One Center (Feb. 2008 – present)
Department of Electrical & Computer Engineering
University of Arizona, Tucson, Arizona
- **Associate Professor** (Jan. 2002 – June 2006)
Department of Electrical & Computer Engineering
University of Arizona, Tucson, Arizona
- **Assistant Professor** (Jan. 1997 – Jan. 2002)
Department of Electrical & Computer Engineering
University of Arizona, Tucson, Arizona
- **Postdoctoral Research Associate** (Sep. 1995 – Dec. 1996)
Department of Computer Science and Institute for Advanced Computer Studies (UMIACS)
University of Maryland, College Park, Maryland
- **Graduate Research Assistant** (Jan. 1993 – Aug. 1995)
High Speed Networking and Performance Laboratory, Computer Science Department
Michigan State University, East Lansing, Michigan
- **Graduate Research Assistant** (Mar. 1991 – Dec. 1992)
Digital Signal Processing Laboratory, Electrical Engineering Department
Michigan State University, East Lansing, Michigan

II. Visiting Positions

- **Invited Research Professor** (July 2008)
MAESTRO Project, The French National Institute for Research in Computer Science and Control (INRIA), Sophia Antipolis, France.

- **Invited Professor** (May/June 2006)
Laboratoire d'Informatique de Paris 6 (LIP6)
University Pierre et Marie Curie (Paris VI), Paris, France.
- **Invited Visiting Researcher** (Nov. 2003)
Mobile & Multimedia Streaming Group, HP Labs, Palo Alto, California.
- **Invited Research Professor** (April 2003 – Aug. 2003)
MISTRAL Project, The French National Institute for Research in Computer Science and Control (INRIA), Sophia Antipolis, France.
- **Visiting Scientist** (July 98 – Aug. 98)
Advanced Technologies, US West, Boulder, Colorado.

Research Grants and Contracts

- “NeTS: Medium: Collaborative Research: Exploiting Battery-Supply Nonlinearities in Optimal Resource Management and Protocol Design for Wireless Sensor Networks,” National Science Foundation, Sep. 2009 – Aug. 2012 (PI, in collaboration with Sarma Vrudhula, ASU).
- “Design of a Transport Layer for Reliable Delivery in Multi-hop RAFAR Networks,” Raytheon Corporation, Sep. 2009 – Aug. 2010 (single PI).
“Radio Frequency Characterization of Composites and Meta-materials for Novel 3D Circuit Applications” National Science Foundation – Connection One Supplement Grant, (PI, in collaboration with Kathie Melde from the UA and John Volakis from Ohio State Univ.).
- “Connection One: Telecommunication Circuits and Systems (I/CURC),” National Science Foundation, July 2008–June 2013 (an NSF I/UCRC center that consists of five universities and 17+ industrial partners).
- “NeTS-WN: Cross-layer Optimizations and Adaptive Protocols For Opportunistic and Collaborative Cognitive Radio Networks,” National Science Foundation, Sep. 2007–Aug. 2010 (PI, with Shuguang Cui from Texas A&M Univ.).
- “Interference-aware Routing and Flow-based Reservation Mechanisms for Multi-hop Cognitive Radio Networks,” Connection One Consortium, Sep. 2007–Aug. 2009 (single PI).
- “Securing Opportunistic Spectrum Access in Cognitive Radio Networks,” BAE Systems, Sep. 2008–Aug. 2009 (PI, with Loukas Lazos).
- “Cross-layer Routing and Channel Access Mechanisms for Multi-hop Wireless Rafar Networks in Mobile Scenarios,” Raytheon Corporation, Sep. 2007–July 2008 (single PI).
- “Forward Error Correction Codes and Protocols for Next Generation Optical Networks,” National Science Foundation - ITR/Group, Sep. 2003–Aug. 2008 (co-PI, with B. Vasic, R. Kostuk, S. Ramasubramanian, and D. Geraghty).
- “NeTS-ProWin: Resource Management and Distributed Protocols for Heterogeneous Cognitive Radio Networks,” National Science Foundation, Sep. 2006–Oct. 2007 (PI, with Shuguang Cui).
- “Dynamic Spectrum Adaptation in Wireless Packet Networks,” Connection One Consortium, Aug. 2006–Sep. 2007 (PI, with Shuguang Cui).

- “Design and Evaluation of Transmission Power Control for Raytheon Advance Frequency Agile Radio (RAFAR) Networks,” Raytheon Corporation, Sep. 2006–Aug. 2007 (single PI).
- “Stateless Quality of Service Routing in IP Networks,” National Science Foundation - ITR, Sep. 2003–Aug. 2007 (single PI).
- “U.S.-Jordan Cooperative Research: Integrated Design of Channel Codes and Bandwidth Management Schemes for Optical Networks,” National Science Foundation, August 2004–July 2007 (single PI).
- “A Control Theoretic Approach to The Design of Internet Traffic Managers,” National Science Foundation - Special Projects in Networking Research, Sep. 2001–Aug. 2005 (single PI).
- “Integrated Design of Next Generation Broadband Mobile Networks: Antennas, Codes, and Protocols,” National Science Foundation – Wireless Communications Initiative, Oct. 1999–Sep. 2003 (co-PI, with B. Ryan, M. Marcellin, and K. Virga).
- “Query Time Estimation and Adaptive Throughput Performance Improvement,” Raytheon Corporation, 2004/2005 (single PI).
- “CAREER: Traffic Characterization and Resource Allocation for Transporting Video Streams Over Broadband Networks,” National Science Foundation, March 1998–Aug. 2002 (single PI).
- “Adaptive Encapsulation of IP Traffic Within Ethernet Frames Subject to Delay Guarantees,” Raytheon Corporation, 2002 (single PI).
- “Adaptive Ethernet Improved Bandwidth and QoS Technology Demonstrator,” Raytheon Corporation, 2003 (single PI).
- UA/ASU Center for Low Power Electronics, 2001–2005 (member).
- “UA/ASU Collaboration on Video Transmission Over Wireless Networks,” University of Arizona, Proposition 301 Grant, 2002 (PI, with Martin Reisslein from ASU).
- “A framework for Statistical Performance Guarantees in Heterogeneous Networks,” Faculty Grant Award, Office of the VP for Research, University of Arizona, 1997/1998 (single PI).
- National Science Foundation Foreign Travel Award, 1997.

Honors and Awards

- NSF CAREER award, 1998.
- Best student paper award of the *2nd International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CrownCom 2007)*, for the paper “Price-based spectrum management in cognitive radio networks,” (co-authored with Fan Wang and Shuguang Cui), Aug. 2007.
- Nominated for best paper award of the IEEE 2005 Technical Committee on Multimedia Communication for the paper “A playback-adaptive approach for video streaming over wireless networks” (co-authored with Mohamed Hassan), *Proc. of the IEEE GLOBECOM 2005 Conference - Wireless Communication Symposium*.
- International Thoman Fellowship Award for Outstanding Doctoral Candidates, 1994.

- ASAI Scholarship, ASAI Association (1992–1995).
- Michigan State University Summer Graduate Fellowship, 1995.

Publications

I. Book Chapters

1. Alaa Muqattash, Marwan Krunz, and Sung-Ju Lee, “A Perspective on the design of power control for mobile ad hoc networks,” in *Mobile Wireless and Sensor Networks: Technology, Applications and Future Directions*, pp. 73–104, Editors R. Shorey, C. M. Choon, O. W. Tsang, and A. Ananda, John Wiley & Sons, Inc., 2006.
2. P. Van Mieghem, F. A. Kuipers, T. Korkmaz, M. Krunz, M. Curado, E. Monteiro, X. Masip-Bruin, J. Sole-Pareta, and S. Sanchez-Lopez, “Quality of service routing,” COST 263 Book, Chapter 2, pp. 80 – 117, editors M. Smirnov et al. (published by Springer Verlag).
3. Marwan Krunz, “Statistical multiplexing,” *Encyclopedia of Electrical and Electronics Engineering*, Vol. 20, pp. 479 – 492, Ed. John Webster, John Wiley & Sons, Inc., April 1999.

II. Articles (Accepted or Published)

1. Tao Shu, Marwan Krunz, and Sisi Liu, “Secure data collection in wireless sensor networks using randomized dispersive routes,” accepted for the *IEEE Transactions on Mobile Computing (TMC)*, 2009.
2. Tao Shu and Marwan Krunz, “Coverage-time optimization for clustered wireless sensor networks: A power-balancing approach,” accepted for the *IEEE/ACM Transactions on Networking*, May 2009.
3. Haythem Bany Salameh and Marwan Krunz, “Channel access protocols for multi-hop opportunistic networks: Challenges and recent developments,” *IEEE Network – Special Issue on Networking over Multi-Hop Cognitive Networks*, July 2009.
4. Tao Shu and Marwan Krunz, “Energy-efficient power/rate control and scheduling in hybrid TDMA/CDMA wireless sensor networks,” accepted for the *Computer Networks Journal (COMNET)*, Jan. 2009.
5. Haythem Bany Salameh, Marwan Krunz, and Ossama Younis, “MAC protocol for opportunistic cognitive radio networks with soft guarantees,” accepted for the *IEEE Transactions on Mobile Computing (TMC)*, Dec. 2008.
6. Jesus Arango, Steve Pink, Alon Efrat, Sridhar Ramasubramanian, and Marwan Krunz, “Retransmission and backoff strategies for wireless broadcasting,” accepted for the *Ad Hoc Networks Journal*, Feb. 2009.
7. Satya Ahuja, Sridhar Ramasubramanian, and Marwan Krunz, “Single-link failure detection in all-optical networks using monitoring cycles and paths,” *IEEE/ACM Transactions on Networking*, Vol. 17, No. 4, pp. 1080–1093, Aug. 2009.
8. Fan Wang, Ossama Younis, and Marwan Krunz, “Throughput-oriented MAC for mobile ad hoc networks: A game-theoretic approach,” *Ad Hoc Networks Journal*, Vol. 7, Issue 1, pp. 98–117, January 2009.

9. Mohammad Siam and Marwan Krunz, "Channel access scheme for MIMO-enabled ad hoc networks with adaptive diversity/multiplexing gains," accepted for the *Mobile Networks and Applications Journal (MONE)*, Oct. 2008.
10. Satya Ahuja and Marwan Krunz, "Algorithms for server placement in multiple-description-based media streaming," *IEEE Transactions on Multimedia*, Vol. 10, No. 7, pp. 1382–1392, Nov. 2008.
11. Satya Ahuja and Marwan Krunz, "Cross-virtual concatenation for Ethernet-over-SONET/SDH networks," *Photonic Network Communications Journal*, Vol. 16, No. 2, pp. 169–181, Oct. 2008.
12. Mohammad Siam, Marwan Krunz, Shuguang Cui, and Alaa Muqattash, "Energy-efficient protocols for wireless networks with adaptive MIMO capabilities," accepted for the *ACM Wireless Networks Journal*, June 2008.
13. Ossama Younis, Marwan Krunz, and Srinu Ramasubramanian, "Location-unaware coverage in wireless sensor networks," *Ad Hoc Networks Journal*, Vol. 6, Issue 7, pp. 1078–1097, September 2008.
14. Ossama Younis, Srinu Ramasubramanian, and Marwan Krunz, "Operational range assignment in location-unaware sensor and actor networks," *Ad Hoc & Sensors Wireless Networks Journal*, Vol. 5, No. 1-2, pp. 69–100, 2008.
15. Fan Wang, Marwan Krunz, and Shuguang Cui, "Price-based spectrum management in cognitive radio networks," *IEEE Journal of Selected Topics in Signal Processing*, Vol. 2, No. 1, pp. 74–87, Feb. 2008.
16. Mohammad Z. Siam and Marwan Krunz, "An overview of MIMO-oriented channel access in wireless networks," *IEEE Wireless Communications Magazine – Special Issue on Medium Access Control Protocols for Wireless LANs*, Vol. 15, No. 1, pp. 63–69, Feb. 2008.
17. Abdullah Balamash, Marwan Krunz, and Philippe Nain, "Performance analysis of a client-side caching/prefetching system for Web traffic," *Computer Networks Journal*, Vol. 51, Issue 13, pp. 3673–3692, September 2007.
18. Mohamed Hassan and Marwan Krunz, "Video streaming over wireless packet networks: An occupancy-based rate adaptation perspective," *IEEE Transactions on Circuits and Systems for Video Technology*, Vol. 17, Issue 8, pp. 1017–1027, Aug. 2007.
19. Haythem Bany Salameh, Tao Shu, and Marwan Krunz, "Adaptive cross-layer MAC design for improved energy efficiency in multi-channel wireless sensor networks," *Ad Hoc Networks Journal – Special Issue On Recent Advances in Wireless Sensor Networks*, Vol. 5, Issue 6, pp. 844–854, Aug. 2007.
20. Srinivasan Ramasubramanian, Mithun Harkara, and Marwan Krunz, "Linear time distributed construction of colored trees for disjoint multipath routing," *Computer Networks Journal*, Vol. 51, Issue 10, pp. 2854–2866, July 2007.
21. Srinivasan Ramasubramanian, Harish Krishnamoorthy, and Marwan Krunz, "Disjoint multipath routing using colored trees," *Computer Networks Journal*, Vol. 51, Issue 8, pp. 2163–2180, June 2007.
22. Aman Arora and Marwan Krunz, "Power-controlled medium access for ad hoc networks with directional antennas," *Ad Hoc Networks Journal*, Vol. 5, Issue 2, pp. 145–161, March 2007.

23. Luigi Atzori, Marwan Krunz, and Mohamed Hassan, "Cycle-based rate control for one-way and interactive video communications over wireless channels," *IEEE Transactions on Multimedia*, Vol. 9, No. 1, pp. 176–184, Jan. 2007.
24. Tao Shu, Marwan Krunz, and Sarma Vrudhula, "Joint optimization of transmit power-time and bit energy efficiency in CDMA wireless sensor networks," *IEEE Transactions on Wireless Communications*, Vol. 5, No. 11, pp. 3109–3118, Nov. 2006.
25. Satyajeet Ahuja, Marwan Krunz, and Turgay Korkmaz, "Optimal path selection for minimizing the differential delay in Ethernet-over-SONET," *Computer Networks Journal*, Vol. 50, Issue 13, pp. 2349–2363, Sep. 2006.
26. Ossama Younis, Marwan Krunz, and Srinivasan Ramasubramanian, "Node clustering in wireless sensor networks: Recent developments and deployment challenges," *IEEE Network – Special Issue on Wireless Sensor Networking*, Vol. 20, Issue 3, pp. 20–25, May 2006 (acceptance rate 10.3%).
27. Alaa Muqattash, Marwan Krunz, and Tao Shu, "Performance enhancement of adaptive orthogonal modulation in wireless CDMA systems," *IEEE Journal on Selected Areas in Communications (JSAC) – Special Issue on 4G Wireless Systems*, Vol. 24, No. 3, pp. 565–578, March 2006.
28. Alaa Muqattash and Marwan Krunz, "POWMAC: A single-channel power-control protocol for throughput enhancement in wireless ad hoc networks," *IEEE Journal on Selected Areas in Communications (JSAC) – Special Issue on Advances in Military Wireless Communications*, Vol. 23, No. 5, pp. 1067–1084, May 2005.
29. Turgay Korkmaz, Marwan Krunz, and Jyothi Guntaka, "OSPF-based hybrid approach for scalable dissemination of QoS parameters," *Computer Networks Journal*, Vol. 46, Issue 2, pp. 273 – 293, Oct. 2004.
30. Tetsuji Hirayama, Sung Jo Hong, and Marwan M. Krunz, "A new approach to analysis of polling systems," *Queueing Systems*, Vol. 48 No. 1–2, pp. 135–158, Sep./Oct. 2004.
31. Marwan Krunz, Alaa Muqattash, and S.J. Lee, "Transmission power control in wireless ad hoc networks: Challenges, solutions, and open issues," *IEEE Network*, Vol. 18, No. 5, pp. 8–14, Sep. 2004.
32. Fernando Kuipers, Turgay Korkmaz, Marwan Krunz, and Piet Van Mieghem, "Performance evaluation of constraint-based path selection algorithms," *IEEE Network*, Vol. 18, No. 5, pp. 16–23, 2004.
33. Abdullah Balamash and Marwan Krunz, "An overview of web caching replacement algorithms," *IEEE Communications Surveys and Tutorials*, Vol. 6, No. 2, 2nd Quarter, 2004.
34. Alaa Muqattash and Marwan Krunz, "A distributed transmission power control protocol for mobile ad hoc networks," *IEEE Transactions on Mobile Computing*, Vol. 3, No. 2, pp. 113–128, April/June 2004.
35. Mohamed Hassan, Marwan Krunz, and Ibrahim Matta, "Markov-based channel characterization for tractable performance analysis in wireless packet networks," *IEEE Transactions on Wireless Communications*, Vol. 3, No. 3, pp. 821–831, May 2004.
36. Alaa Muqattash, Marwan Krunz and William E. Ryan, "Solving the near-far problem in CDMA-based ad hoc networks," *Ad Hoc Networks Journal*, Vol. 1, Issue 4, pp. 435 – 453, Nov. 2003.

37. Abdullah Balamash and Marwan Krunz, "WWW traffic modeling: A multifractal approach," *Computer Networks Journal*, Vol. 43, Issue 2, pp. 211 – 226 Oct. 2003.
38. Turgay Korkmaz and Marwan Krunz, "Routing multimedia traffic with QoS guarantees," *IEEE Transactions on Multimedia*, Vol. 5, No. 3, pp. 429 – 443, Sep. 2003.
39. Baoxian Zhang and Marwan Krunz, "Algorithms and protocols for stateless constrained-based routing," *Computer Communications Journal*, Vol. 26, Issue 14, pp. 1570 – 1580, Sep. 2003.
40. Turgay Korkmaz and Marwan Krunz, "Bandwidth-delay constrained path selection under inaccurate state information," *IEEE/ACM Transactions on Networking*, Vol. 11, Issue 3, pp. 384 – 398, June 2003.
41. Fernando Kuipers, Turgay Korkmaz, Marwan Krunz, and Piet Van Mieghem, "An overview of constraint-based path selection algorithms for QoS routing," *IEEE Communications – Feature Topic on IP-Oriented Quality of Service (QoS)*, pp. 50 – 55, Dec. 2002.
42. Marwan Krunz and Ibrahim Matta, "Analytical investigation of the bias effect in variance-type estimators for inference of long-range dependence," *Computer Networks Journal – Special Issue on Advances in Modeling and Engineering of Long-Range Dependent Traffic*, Vol. 40, No. 3, pp. 445 – 458, Oct. 2002.
43. Marwan Krunz and Ahmad Alkhatib, "On the chaotic behavior of variable-bit-rate video and its application in traffic modeling," *International Journal of Chaos Theory and Applications (Special Issue on Network Traffic and Chaos)*, Vol. 6, No. 4, 2001.
44. Turgay Korkmaz, Marwan Krunz, and Spyros Tragoudas, "An efficient algorithm for finding a path subject to two additive constraints," *Computer Communications Journal*, Vol. 25, No. 3, pp. 225 – 238, Feb. 2002.
45. Turgay Korkmaz and Marwan Krunz, "A randomized algorithm for finding a path subject to multiple QoS requirements," *Computer Networks Journal*, Vol. 36, No. 2/3, pp. 251 – 268, 2001.
46. Marwan Krunz and Jeong Geun Kim, "Fluid analysis of delay and packet discard performance for QoS support in wireless networks," *IEEE Journal on Selected Areas in Communications (JSAC)*, Vol. 19, No. 2, pp. 384 – 395, Feb. 2001.
47. Turgay Korkmaz and Marwan Krunz, "Source-oriented topology aggregation with multiple QoS parameters in hierarchical networks," *ACM Transactions on Modeling and Computer Simulation*, Vol. 10, No. 4, pp. 295 – 325, Nov. 2000.
48. Jeong Geun Kim and Marwan Krunz, "Delay analysis of the selective repeat ARQ for a Markovian source over a wireless channel," *IEEE Transactions on Vehicular Technology*, Vol. 49, No. 5, pp. 1968 – 1981, Sep. 2000.
49. Jeong Geun Kim and Marwan Krunz, "Bandwidth allocation in wireless networks with guaranteed packet loss performance," *IEEE/ACM Transactions on Networking*, Vol. 8, No. 3, pp. 337 – 349, June 2000.
50. Marwan Krunz and Arivu Mani Ramasamy, "The correlation structure for a class of scene-based video models and its impact on the dimensioning of video buffers," *IEEE Trans. on Multimedia*, Vol. 2, No. 1, pp. 27 – 36, March 2000.

51. Marwan Krunz and George Apostolopoulos, "Efficient support for interactive scanning operations in MPEG-based video-on-demand systems," *ACM Multimedia Systems Journal*, Vol. 8, No. 1, pp. 20 – 36, Jan. 2000.
52. Marwan Krunz, George Apostolopoulos, and Satish K. Tripathi, "Bandwidth allocation and admission control schemes for the distribution of MPEG streams in VOD systems," *International Journal of Parallel and Distributed Systems and Networks - Special Issue On Network Architectures for End-to-end Quality-of-Service Support*, Vol. 3, No. 2, pp. 108 – 121, April 2000.
53. Ibrahim Matta, Azer Bestavros, and Marwan Krunz, "Load profiling-based routing for guaranteed bandwidth flows," *European Transactions on Telecommunications (ETT)*, Vol. 10, No. 2, March/April 1999.
54. Marwan Krunz, "Bandwidth allocation strategies for transporting variable bit rate video traffic," *IEEE Communications*, pp. 40–46, Vol. 37, No. 1, Jan. 1999.
55. Marwan Krunz, Wei Zhao, and Ibrahim Matta, "Scheduling and bandwidth allocation for the distribution of archived video in VOD systems," *Telecommunications Systems Journal*, Vol. 9, No. 3/4, pp. 335–355, Sep. 1998.
56. Marwan Krunz and Armand Makowski, "Modeling video traffic using $M/G/\infty$ input processes: A compromise between Markovian and LRD models," *IEEE Journal on Selected Areas in Communications (JSAC)*, pp. 733–748, Vol. 16, No. 5, June 1998.
57. Marwan Krunz and Satish Tripathi, "Impact of video scheduling on bandwidth allocation for multiplexed MPEG streams," *ACM Multimedia Systems Journal*, Vol. 5, pp. 347–357, Dec. 1997.
58. Marwan Krunz, Ron Sass, and Herman Hughes, "A study of VBR MPEG-coded video traffic and associated multiplexing performance," *Computer Systems Science and Engineering Journal*, Vol. 11, No. 3, pp. 129–137, CRL Publishing, May 1996.
59. Marwan Krunz and Herman Hughes, "Analysis of a Markov-modulated fluid model for multimedia traffic with loss and delay priorities," *Journal of High Speed Networks*, Vol. 3, No. 3, pp. 309–329, IOS Press, 1994.

III. Refereed Conference Papers

1. Raed Al-Zubi, Mohammad Z. Siam, and Marwan Krunz, "Coexistence problem in IEEE 802.22 wireless regional area networks," accepted for the *IEEE GLOBECOM 2009 Conference – Wireless Networking Symposium*, Hawaii, Nov. 2009.
2. Tao Shu and Marwan Krunz, "Throughput-efficient sequential channel sensing and probing in cognitive radio networks under sensing errors," accepted for the *ACM MobiCom 2009 Conference*, Beijing, China, Sep. 2009 (acceptance rate 10.6%).
3. Loukas Lazos, Sisi Liu, and Marwan Krunz, "Spectrum opportunity-based control channel assignment in cognitive radio networks," accepted for the *IEEE SECON 2009 Conference*, Rome, Italy, June 2009 (acceptance rate 18.8%).
4. Fan Wang and Marwan Krunz, "Multi-channel spectrum-agile MAC protocol with adaptive load control," *Proc. of the IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2009)*, Greece, June 2009.

5. Haythem Bany Salameh, Marwan Krunz, and Ossama Younis, "Dynamic spectrum access protocol without power mask constraints," *Proc. of the IEEE INFOCOM 2009 Conference*, Rio de Janeiro, Brazil, April 2009 (acceptance rate 20%).
6. Mohammad Siam, Marwan Krunz, and Ossama Younis, "Energy-efficient clustering/routing for cooperative MIMO operation in sensor networks," *Proc. of the IEEE INFOCOM 2009 Conference*, Rio de Janeiro, Brazil, April 2009 (acceptance rate 20%).
7. Tao Shu and Marwan Krunz, "Coordinated channel access in cognitive radio networks: A multi-level spectrum opportunity perspective," *Proc. of the IEEE INFOCOM 2009 Mini-Conference*, Rio de Janeiro, Brazil, April 2009.
8. Tao Shu, Sisi Liu, and Marwan Krunz, "Secure data collection in wireless sensor networks using randomized dispersive routes," *Proc. of the IEEE INFOCOM 2009 Mini-Conference*, Rio de Janeiro, Brazil, April 2009.
9. Loukas Lazos, Sisi Liu, and Marwan Krunz, "Mitigating control-channel jamming attacks in multi-channel ad hoc networks," *Proc. of the ACM WiSec 2009 Conference* (full paper), March 2009 (acceptance rate 13%).
10. Raed Alzubi, Marwan Krunz, and Alaa Muqattash, "Interference management distributed reservation protocol for OFDM-based UWB communications," *Proc. of the IEEE GLOBECOM 2008 Conference (Wireless Networking Symposium)*, New Orleans, Nov. 2008.
11. Hicham Khalife, Satyaajeet Ahuja, Naceur Malouch, and Marwan Krunz, "Probabilistic path selection in opportunistic cognitive radio networks," *Proc. of the IEEE GLOBECOM 2008 Conference (Wireless Networking Symposium)*, New Orleans, Nov. 2008.
12. Haythem Bany Salameh, Marwan Krunz, and Ossama Younis, "Distance- and traffic-aware channel assignment in cognitive radio networks," *Proc. of the IEEE SECON 2008 Conference*, San Francisco, June 2008 (acceptance rate: 21%).
13. Satyaajeet Ahuja, Srinivasan Ramasubramanian, and Marwan Krunz, "SRLG failure localization in all-optical networks using monitoring cycles and paths," *Proc. of the IEEE INFOCOM 2008 Conference*, Phoenix, April 2008 (acceptance rate: 21%).
14. Fan Wang, Marwan Krunz, and Shuguang Cui, "Spectrum sharing in cognitive radio networks," *Proc. of the IEEE INFOCOM 2008 Mini-Conference*, Phoenix, April 2008.
15. Satyaajeet Ahuja and Marwan Krunz, "Server placement in multiple-description-based media streaming," *Proc. of the Data Compression Conference (DCC)*, pp. 372–381, Salt Lake, Utah, March 25–27, 2008.
16. Ossama Younis, Marwan Krunz, and Srinivasan Ramasubramanian, "Coverage without location information," *Proc. of the IEEE International Conference on Network Protocols (ICNP 2007)*, pp. 51–60, Beijing, China, Oct. 2007 (acceptance rate: 15%).
17. Mohammad Siam and Marwan Krunz, "A combined power-controlled protocol with adaptive MIMO gains for wireless networks," *Proc. of the IEEE BROADNETS 2007 Conference (Wireless Communications, Networks and Systems Symposium)*, Raleigh, North Carolina, Sep. 2007.

18. Fan Wang, Marwan Krunz, and Shuguang Cui, "Price-based spectrum management in cognitive radio networks," *Proceedings of the 2nd International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CrownCom 2007)*, Orlando, FL, Aug. 1–3, 2007 (**received best student-paper award**).
19. Ossama Younis, Marwan Krunz, and Srinivasan Ramasubramanian, "A framework for resilient online coverage in sensor networks," *Proceedings of the IEEE SECON 2007 Conference*, San Diego, June 18–21, 2007 (acceptance rate $\approx 20\%$).
20. Ossama Younis, Srinivasan Ramasubramanian, and Marwan Krunz "Location-unaware sensing range assignment in sensor networks," *Proceedings of the IFIP Networking 2007 Conference*, Atlanta, May 14–18, 2007.
21. Mohammad Siam and Marwan Krunz, "Throughput-oriented power control in MIMO-based ad hoc networks," *Proceedings of the IEEE ICC 2007 Conference – Wireless Ad Hoc and Sensor Networks Symposium*, Glasgow, Scotland, June 2007.
22. Preetha Thulasiraman, Srinivasan Ramasubramanian, and Marwan Krunz, "Disjoint multipath routing to two distinct drains in a multi-drain sensor network," *Proceedings of the IEEE INFOCOM 2007 Conference*, Anchorage, Alaska, May 6–12, 2007.
23. Alaa Muqattash and Marwan Krunz, "Performance of wireless CDMA networks under optimal link-layer adaptation," *Proceedings of the IEEE INFOCOM 2007 Conference*, Anchorage, Alaska, May 6–12, 2007.
24. Tao Shu, Shuguang Cui, and Marwan Krunz, "Medium access control for multi-channel parallel transmission in cognitive radio networks," *Proceedings of the IEEE GLOBECOM 2006 Conference*, San Francisco, Dec. 2006.
25. Tao Shu, Haythem Bany-Salameh, and Marwan Krunz, "Cross-layer optimization of a CSMA protocol with adaptive modulation for improved energy efficiency in wireless sensor networks," *Proceedings of the IEEE GLOBECOM 2006 Conference*, San Francisco, Dec. 2006.
26. Tao Shu and Marwan Krunz, "A study of tradeoff between energy efficiency and control complexity for CDMA wireless sensor networks," *Proceedings of the IEEE GLOBECOM 2006 Conference*, San Francisco, Dec. 2006.
27. Preetha Thulasiraman, Srinivasan Ramasubramanian, and Marwan Krunz, "Linear time distributed construction of multi-trees for disjoint routing to dual base stations," *Proceedings of the IEEE GLOBECOM 2006 Conference*, San Francisco, Dec. 2006.
28. Jesus Arango and Marwan Krunz, "Improving throughput in 802.11 networks using adaptive IP encapsulation," *Proceedings of the IEEE GLOBECOM 2006 Conference*, San Francisco, Dec. 2006.
29. Satya Ahuja and Marwan Krunz, "Algorithms for server placement in multiple-description-based media streaming," *Proceedings of the IEEE GLOBECOM 2006 Conference*, San Francisco, Dec. 2006.
30. Jesus Arango, Alon Efrat, Srinivasan Ramasubramanian, and Marwan Krunz, "Onroad vehicular broadcasts," *Proceedings of the International Conference on Computer Communications and Networks (ICCCN 2006)*, Arlington, Virginia, October 9-11, 2006.

31. Jesus Arango, Alon Efrat, Srinivasan Ramasubramanian, Marwan Krunz, and Stephen Pink, "Retransmission and back-off strategies for broadcasting in multi-hop wireless networks," *Proceedings of the IEEE BROADNETS 2006 – Wireless Symposium*, San Jose, California, Oct. 1-5, 2006.
32. Satyajeet Ahuja, Srinivasan Ramasubramanian, and Marwan Krunz, "Wavelength assignment for optical networks with partial wavelength conversion," *Proceedings of the IEEE BROADNETS 2006 – Optical Symposium*, San Jose, California, Oct. 1-5, 2006.
33. Fan Wang, Ossama Younis, and Marwan Krunz, "Throughput-oriented MAC for mobile ad hoc networks with variable packet sizes," *Proceedings of the IEEE SECON 2006 Conference*, Reston, Virginia, Sep. 25–28, 2006.
34. Mohammad Siam, Marwan Krunz, Alaa Muqattash, and Shuguang Cui, "Adaptive multi-antenna power control in wireless networks," *Proceedings of the International Wireless Communications and Mobile Computing Conference (IWCMC 2006)*, Vancouver, Canada, July 3–6, 2006.
35. Srinivasan Ramasubramanian, Mithun Harkara, and Marwan Krunz, "Distributed linear time construction of colored trees for disjoint multipath routing," *Proceedings of the IFIP Networking 2006 Conference*, Coimbra, Portugal, May 15–19, 2006.
36. Satyajeet Ahuja and Marwan Krunz, "Cross-virtual concatenation for Ethernet-over-SONET/SDH networks," *Proceedings of the IFIP Networking 2006 Conference*, Coimbra, Portugal, May 15–19, 2006.
37. Alaa Muqattash, Marwan Krunz, and Tao Shu, "On the performance of joint rate/power control with adaptive modulation in wireless CDMA networks," *Proceedings of the IEEE INFOCOM 2006 Conference*, Barcelona, Spain, April 2006.
38. Fan Wang, Ossama Younis, and Marwan Krunz, "GMAC: A game-theoretic MAC protocol for mobile ad hoc networks," *Proceedings of WiOpt'06 (4th Intl. Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks)*, Boston, April 3–7, 2006.
39. Mohamed Hassan, Satyajeet Ahuja, and Marwan Krunz, "Efficient video broadcast over wireless channels using adaptive playback," *Proceedings of the Data Compression Conference (DCC)*, Salt Lake, Utah, March 28 – 30, 2006 (poster presentation).
40. Mohamed Hassan and Marwan Krunz, "A playback-adaptive approach for video streaming over wireless networks," *Proceedings of the IEEE GLOBECOM 2005 Conference – Wireless Communications*, St. Louis, Missouri, Nov. 28 – Dec. 2, 2005.
41. Satyajeet S. Ahuja, Marwan Krunz, and Turgay Korkmaz, "Optimal path selection for Ethernet over SONET under inaccurate link-state information," *Proceedings of the IEEE BROADNETS 2005 – Broadband Optical Networking Symposium*, Boston, October 3-7, 2005.
42. Tao Shu and Marwan Krunz, "Joint power/rate optimization for CDMA-based wireless sensor networks," *Proceedings of SenMetrics 2005 – Third International Workshop on Measurement, Modelling, and Performance Analysis of Wireless Sensor Networks*, San Diego, July 2005.
43. Aman Arora and Marwan Krunz, "Interference-limited MAC protocol for MANETs with directional antennas," *Proceedings of the IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2005)*, June 2005, Taormina, Italy (acceptance rate: 10%).

44. Tao Shu, Marwan Krunz, and Sarma Vrudhula, "Power balanced coverage time optimization for clustered wireless sensor networks," in *Proceedings of the ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2005)*, May 2005, Urbana-Champaign, IL (acceptance rate: 14%).
45. Mohamed Hassan, Marwan Krunz, and Luigi Atzori, "Occupancy-based rate control scheme for video streaming over wireless," in *Proceedings of Packet Video Workshop 2004*, Dec. 2004, Irvine.
46. Abdullah Balamash and Marwan Krunz, "A client side WWW prefetching model," in *Proceedings of the IEEE GLOBECOM Conference*, Dallas, Nov.-Dec. 2004.
47. Mohamed Hassan and Marwan Krunz, "A rate control scheme for video streaming over wireless channels," in *Proceedings of the IEEE GLOBECOM Conference*, Dallas, Nov.-Dec. 2004.
48. Aman Arora, Marwan Krunz, and Alaa Muqattash, "Directional medium access protocol (DMAP) with power control for wireless ad hoc networks," in *Proceedings of the IEEE GLOBECOM 2004 Conference*, Dallas, Nov.-Dec. 2004.
49. Marwan Krunz and Phillip Rosengard, "Adaptive IP encapsulation for real-time traffic over Ethernet," in *Proceedings of the International Conference on Computer Communications and Networks (ICCCN'04)*, Chicago, Oct. 2004.
50. Satyajeeet S. Ahuja, Turgay Korkmaz, and Marwan Krunz, "Minimizing the differential delay for virtually concatenated Ethernet over SONET systems," in *Proceedings of the International Conference on Computer Communications and Networks (ICCCN'04)*, Chicago, Oct. 2004.
51. Mohamed Hassan, Luigi Atzori, and Marwan Krunz, "Video transport over wireless channels: A cycle-based approach for rate control," in *Proceedings of the ACM Multimedia 2004 Conference*, pp. 916-923, New York, Oct. 2004.
52. Alaa Muqattash and Marwan Krunz, "A single-channel solution for transmission power control in wireless ad hoc networks," in *Proceedings of the ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2004)*, May 2004, Tokyo, Japan.
53. Vignesh Bhuvaneshwar, Marwan Krunz, and Alaa Muqattash, "CONSET: A cross-layer power aware protocol for mobile ad hoc networks," in *Proceedings of the IEEE ICC 2004 Conference*, June 2004, Paris, France.
54. Abdullah Balamash and Marwan Krunz, "Accurate characterization of WWW traffic," in *Proceedings of the IEEE ICC 2004 Conference*, June 2004, Paris, France.
55. Mohammad Manshaei, Thierry Turletti, and Marwan Krunz, "A media-oriented transmission mode selection in 802.11 wireless LANs," in *Proceedings of the IEEE Wireless Communications and Networking Conference*, March 2004, Atlanta.
56. Marwan Krunz and Mohamed Hassan, "Adaptive rate control scheme for video streaming over wireless channels," in *Proceedings of the Data Compression Conference (DCC)*, pp. 242-251, March 2004, Utah.
57. Aytac Azgin and Marwan Krunz, "Scheduling in wireless cellular networks under probabilistic channel information," in *Proceedings of the International Conference on Computer Communications and Networks (IC3N)*, Oct. 2003, Dallas, Texas.

58. Aytac Azgin and Marwan Krunz, "Impact of channel modeling on the performance of wireless scheduling schemes," in *Proceedings of the Vehicular Technology Conference (VTC)*, Orlando, Florida, Oct. 2003.
59. Alaa Muqattash and Marwan Krunz, "CDMA-based MAC protocol for wireless ad hoc networks," in *Proceedings of the ACM MobiHoc 2003 Conference*, June 2003, Annapolis, Maryland.
60. Alaa Muqattash and Marwan Krunz, "Power controlled dual channel (PCDC) medium access protocol for wireless ad hoc networks," in *Proceedings of the IEEE INFOCOM 2003 Conference*, April 2003, San Francisco.
61. Turgay Korkmaz and Marwan Krunz, "Hybrid flooding and tree-based broadcasting for reliable and efficient link-state dissemination," in *Proceedings of the IEEE GLOBECOM 2002 Conference – High-Speed Networks Symposium*, Nov. 2002, Taiwan.
62. Marwan Krunz and Alaa Muqattash, "A power control scheme for MANETs with improved throughput and energy consumption," in *Proceedings of the International Symposium on Wireless Personal Multimedia Communications (WPMC)*, pp. 771 – 775, Honolulu, Hawaii, Oct. 2002.
63. Mohamed Hassan, Marwan Krunz, and William Ryan, "A new approach for partitioning the received SNR space for tractable performance analysis in wireless packet networks," in *Proceedings of the Workshop on Multiaccess, Mobility, and Teletraffic for Wireless Communications (MMT '02)* (Ed. X. Lagrange and B. Jabbari), pp. 3–24, Rennes, France, June 2002.
64. Abdullah Balamash and Marwan Krunz, "A parsimonious multifractal model for WWW traffic," in *Proceedings of the Web Engineering Workshop*, pp. 1 – 14, Pisa, Italy, May 2002.
65. Abdullah Balamash and Marwan Krunz, "Application of multifractals in the characterization of WWW traffic," in *Proceedings of the IEEE ICC 2002 Conference – Symposium on High-Speed Networks*, April 2002.
66. Alaa Muqattash and Marwan Krunz, "Power-aware MAC protocol for ad hoc wireless networks," in *Proceedings of the Wireless World Research Forum (WWRF 5)*, Tempe, Arizona, March 2002.
67. Baoxian Zhang, Marwan Krunz, Hussein Mouftah, and Changjia Chen, "Stateless QoS routing in IP networks," in *Proceedings of the IEEE GLOBECOM 2001 Conference – Global Internet Symposium*, San Antonio, Texas, Nov. 2001.
68. Baoxian Zhang, Marwan Krunz, and Changjia Chen, "A fast delay-constrained multicast routing algorithm," in *Proceedings of the IEEE ICC 2001 Conference*, Helsinki, Finland, June 2001.
69. Turgay Korkmaz and Marwan Krunz, "Multi-constrained optimal path selection," in *Proceedings of the IEEE INFOCOM 2001 Conference*, pp. 834 – 843, Anchorage, Alaska, April 2001.
70. Marwan Krunz, "On the limitations of the variance-time test for inference of long-range dependence," in *Proceedings of the IEEE INFOCOM 2001 Conference*, pp. 1254 – 1260, Anchorage, Alaska, April 2001.
71. Turgay Korkmaz, Marwan Krunz, and Spyros Tragoudas, "An efficient algorithm for finding a path subject to two additive constraints," in *Proceedings of the ACM SIGMETRICS 2000 Conference*, Santa Clara, California, pp. 318 – 327, June 18 – 21, 2000.

72. Ahmad Alkhatib and Marwan Krunz, "Application of chaos theory to the modeling of compressed video," in *Proceedings of the IEEE ICC 2000 Conference*, Vol. 2, pp. 836 – 840, New Orleans, June 2000.
73. Turgay Korkmaz and Marwan Krunz, "A randomized algorithm for finding a path subject to multiple QoS constraints," in *Proceedings of the IEEE GLOBECOM '99 Conference – Symposium on Global Internet: Application and Technology*, pp. 1694 – 1698, Dec. 1999.
74. Jeong Geun Kim and Marwan Krunz, "Delay analysis for QoS support in wireless networks," in *Proceedings of the 7th International Conference on Network Protocols (ICNP '99)*, pp. 254 – 261, Nov. 1999.
75. Jeong Geun Kim and Marwan Krunz, "Delay analysis of selective repeat ARQ for a Markovian source over a wireless channel," in *Proceedings of the Second ACM International Workshop on Wireless Mobile Multimedia (WoWMMoM '99)*, pp. 59 – 66, Seattle, Aug. 1999.
76. Turgay Korkmaz and Marwan Krunz, "Source-oriented topology aggregation with multiple QoS parameters in hierarchical ATM networks," in *Proceedings of the IEEE/IFIP International Workshop on QoS (IWQoS '99)*, pp. 137 – 146, May 1999.
77. Marwan Krunz, "The correlation structure for a class of scene-based video models," in *Proceedings of the International Packet Video Workshop (PV' 99)*, April 1999 (New York).
78. Jeong Geun Kim and Marwan Krunz, "Quality of service over wireless ATM links," in the *Proceedings of the IEEE INFOCOM '99 Conference*, pp. 1003–1010, Vol. 3, March 21–25, New York, 1999.
79. Marios G. Scottis, Marwan Krunz, and Max M.-K Liu, "Enhancing the PCI bus to support real-time streams," in *Proceedings of the 18th IEEE International Performance, Computing, and Communications Conference (IPCCC '99)*, pp. 303 – 309, Feb. 1999, Phoenix.
80. Jeong Geun Kim and Marwan Krunz, "Effective bandwidth in wireless ATM networks," in *Proceedings of the IEEE/ACM MobiCom'98 Conference*, pp. 233-241, Oct. 1998.
81. Marwan Krunz and Armand Makowski, "A source model for VBR video traffic Based on $M/G/\infty$ input processes," in *Proceedings of the IEEE INFOCOM '98 Conference*, pp. 1441-1449, April 1998, San Francisco.
82. George Apostolopoulos, Marwan Krunz, and Satish K. Tripathi, "Supporting interactive scanning operations in VOD systems," in *Proceedings of the ACM/SPIE Multimedia Computing and Networking Conference*, pp. 84-95, Jan. 1998.
83. Marwan Krunz and Satish K. Tripathi, "On the characterization of VBR MPEG streams", in *Proceedings of ACM SIGMETRICS '97 Conference*, pp. 192-202, June 1997.
84. Marwan Krunz and Satish K. Tripathi, "Exploiting the temporal structure of MPEG video for the reduction of bandwidth requirements," *Proceedings of the IEEE INFOCOM '97 Conference*, pp. 67–74, April 1997, Kobe, Japan.
85. Ibrahim Matta and Marwan Krunz, "Packing and least-loaded based routing in multi-rate loss networks," *Proceedings of the IEEE ICC '97 Conference*, June 1997, Montreal, Canada.
86. Wei Zhao, Marwan Krunz and Satish K. Tripathi, "Efficient transport of stored video using stream scheduling and window-based traffic envelopes," *Proceedings of the IEEE ICC '97 Conference*, June 1997, Montreal, Canada.

87. Marwan Krunz and Satish K. Tripathi, "Bandwidth allocation for multiplexed VBR video streams with deterministic guarantees," *Proceedings of the 2nd IEEE ATM Workshop '96*, San Francisco, Aug. 1996.
88. Marwan Krunz, Satish K. Tripathi, and Herman Hughes, "A source model for MPEG-coded video movies (extended abstract)," *Proceedings of the 1st IEEE Workshop on ATM Networks*, Washington D.C., October 1995.
89. Marwan Krunz and Herman Hughes, "A traffic model for MPEG-coded VBR streams," *Proceedings of the ACM SIGMETRICS '95 Conference*, pp. 47–55, 1995.
90. Marwan Krunz, Ron Sass, and Herman Hughes, "Statistical characteristics and multiplexing of MPEG streams," *Proceedings of the IEEE INFOCOM '95 Conference*, pp. 455–462, April 1995.
91. Marwan Krunz and Herman Hughes, "A performance study of loss priorities for MPEG video traffic," *Proceedings of the IEEE Int. Conference on Communications (ICC '95)*, pp. 1756–1760, June 1995.
92. Marwan Krunz, Herman Hughes, and Parviz Yegani, "Design and analysis of a buffer management scheme for multimedia traffic with loss and delay priorities," *Proceedings of the IEEE GLOBECOM '94 Conference*, pp. 1560–1564, San Francisco, November 1994.
93. Parviz Yegani, Marwan Krunz, and Herman Hughes, "Congestion control schemes in prioritized ATM networks," *Proceedings of the IEEE Int. Conf. on Communications (ICC '94)*, pp. 1169–1173, New Orleans, May 1994.
94. Marwan Krunz, Herman Hughes, and Parviz Yegani, "Traffic control in ATM switching using multiple buffers and Nested Threshold Cell Discarding," *Proceedings of the Second Int. Conference on Computer Communications and Networks (IC3N)*, pp. 69–73, June 1993.
95. Marwan Krunz, Herman Hughes, and Parviz Yegani, "Congestion control in ATM networks using multiple buffers and priority mechanisms," *Proceedings of the Summer Computer Simulation Conference (SCS)*, pp. 566–571, Boston, July 1993
96. Majid Nayeri, John Deller, and Marwan Krunz, "Convergence and colored noise issues in bounding ellipsoid identification," *Proceedings of the IEEE Int. Conference on Acoustics, Speech and Signal Processing (ICASSP '92)*, vol. 5, pp. 337–340, March 1992.

IV. Submitted Papers

Several papers have been submitted for journal publication and conference presentation, and are currently under review. Some have been accepted conditionally.

Selected Invited Talks/Seminars/Tutorials

I. Keynotes, Panels, and Invited Talks at Conferences/Workshops

- Keynote Speaker, *Fourth IEEE Workshop on Wireless Mesh Networks (WiMesh 2009)*, Rome, June 2009.
- Panelist, *IEEE SECON 2009 Conference*, Rome, Italy, June 2009.
- Panel moderator and panelist, *IEEE INFOCOM 2009 Conference*, Rio de Janeiro, Brazil, April 2009.

- Invited speaker, *SenMetrics 2005 – Third International Workshop on Measurement, Modeling, and Performance Analysis of Wireless Sensor Networks*, San Diego, July 2005. Presentation title: “Joint power/rate optimization for CDMA-based wireless sensor networks.”
- Invited speaker, *IEEE Workshop on High Performance Switching and Routing (HPSR 2004)*, April 2004. Title: “Power control protocol for mobile ad hoc networks.”
- Invited speaker, *Workshop on MOBILE, WIRELESS and SENSOR NETWORKS: Technology and Future Directions (MOBWISER)*, March 5–6, 2004, Singapore. Presentation title: “Power controlled MAC protocols for mobile ad hoc networks.”
- Invited speaker, *16th IEEE Computer Communications Workshop*, Charlottesville, Virginia, Oct. 14–17, 2001. Presentation title: “Computation of QoS routes in the presence of state inaccuracies.”

II. Invited Seminars

- Electronics and Telecommunications Research Institute (ETRI), Daejeon, South Korea (Feb. 2009, Invited Speaker).
- Montana State University, Bozeman (Oct. 2008, Distinguished Speaker).
- INRIA, Sophia Antipolis (July 2008).
- Arizona State University, Computer Science and Engineering Department (Feb. 2005, Distinguished Speaker).
- University of Pennsylvania, Electrical and Systems Engineering Department (Sep. 2004, Distinguished Speaker).
- National University of Singapore, Singapore (March 2004, Distinguished Speaker).
- Intel Corporation, Communication Technology Lab, Hillsboro, OR (Jan. 2004, Distinguished Speaker).
- HP Labs, Palo Alto (April 2003, Distinguished Speaker).
- Arizona State University, EE Department (March 2003).
- Ohio State University, Department of Electrical Engineering (Jan. 2001).
- Michigan State University, Department of Electrical & Computer Engineering (March 2001).
- Cisco Systems Inc., San Jose, California.
- University of California, Riverside, Department of Computer Science.
- Philips Research, New York.
- University of Maryland, College Park, Department of Electrical & Computer Engineering.
- U.S. Army Signal Command, Fort Huachuca, Arizona.
- US West Advanced Technologies, Boulder, Colorado.
- University of Minnesota, Department of Computer Science.
- Michigan State University, Department of Computer Science.
- Case Western Reserve University, Department of Computer Science.

III. Tutorials

- “Power efficient protocols for mobile ad hoc networks,” given at the *ACM MobiHoc 2004 Conference*, May 2004 (half-day).
- “Power efficient protocols for wireless ad hoc networks,” given at the *ACM MobiCom 2004 Conference*, Sep. 2004 (full-day).

Patents

1. Phillip Rosengard and Marwan Krunz, “Method and system for encapsulating variable-size packets,” US Patent No. 7376141 (granted May 20, 2008).
2. Phillip Rosengard and Marwan Krunz, “Encapsulating packets into a frame for a network,” US Patent No. 7324522 (granted Jan. 29, 2008).
3. Phillip Rosengard and Marwan Krunz, “Method and system for encapsulating cells,” US patent No. 7013318 (granted March 14, 2006).

Professional Service (Past and Present)

- Editorial Board:
 - Associate Editor, *IEEE/ACM Transactions on Networking*, 2001–2008.
 - Associate Editor, *IEEE Transactions on Mobile Computing (TMC)*, Jan. 2006 – present.
 - Member of the Editorial Board, *Computer Communications Journal*, Feb. 2001 – present.
 - Technical Editor, *IEEE Communications Interactive Magazine* (1998 – 2003).
 - Guest Editor (with I. Matta), *IEEE Communications Magazine, Feature Topic on Quality of Service Routing*, June 2002.
 - Guest Editor (with John Lockwood), *IEEE Micro, Special Issue on Hot Interconnects*, Jan./Feb. 2002.
- TPC Chair
 - IEEE INFOCOM 2010, Area TPC Chair, San Diego, March 15-19, 2010.
 - IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2006), Buffalo, New York, June 2006.
 - IEEE International Conference on Sensor and Ad hoc Communications and Networks (SECON 2005), Santa Clara, Sep. 26-29, 2005.
 - IEEE INFOCOM 2004, Hong Kong, April 2004.
 - Hot Interconnects Symposium, Stanford University, Aug. 2001.
- Executive Committee:
 - Publicity Co-chair, IEEE INFOCOM 2003, San Francisco, March 2003.
 - Publicity Co-chair, ACM MobiCom 2002, Atlanta, Georgia, Sep. 2002.
 - Tutorials Co-chair, IEEE INFOCOM 2001 Conference, Anchorage, Alaska, April 2001.

- Panel Chair, IEEE IPCCC 2000 Conference, Phoenix, Arizona, Feb. 2000.
- Panel Co-chair, IEEE INFOCOM '99 Conference, New York, March 1999.
- Panel moderator and panelist, IEEE INFOCOM 2009 Conference, panel on “Current trends in wireless networks,” Rio de Janeiro, Brazil, April 2009.
- Technical Program Committee:
 - European Wireless 2010 (EW '2010), to be held in Lucca, Italy, 2010.
 - IEEE ICNP 2009, Princeton, NJ, October 14–17, 2009.
 - IEEE INFOCOM 2009, Rio de Janeiro, Brazil, April 2009.
 - IEEE MASS 2009, Macau SAR, China, October 5–9, 2009.
 - 4th International Conference on Innovations in Information Technology (IIT2007) – Information Communication Technologies track, Dubai, UAE, November 18–20, 2007.
 - IEEE INFOCOM 2007 Conference, Anchorage, Alaska, May 6–12, 2007.
 - ACM MobiHoc 2007 Conference, Montreal, Canada, Sep. 9–14, 2007.
 - CrownCom 2007 (Second International Conference on Cognitive Radio Oriented Wireless Networks and Communications), Orlando, Florida, Aug. 1–3, 2007.
 - International Workshop on Theoretical and Algorithmic Aspects of Sensor and Ad-hoc Networks (WTASA '07), Miami, Florida, June 28–29, 2007.
 - IASTED International Conference on Modern Nonlinear Theory – Bifurcation and Chaos (MNT 2007), Montreal, Canada, May 30 – June 1, 2007.
 - Global Information Infrastructure Symposium (GIIS '07), Marrakech, Morocco, July 2–5, 2007.
 - ACM MobiHoc 2006, Florence, Italy, May 22–25, 2006.
 - WiOpt '06 (4th International Symposium on Modeling and Optimization in Mobile Ad-hoc and Wireless Networks), April 2006, Boston, Massachusetts.
 - IPCCC 2006 (IEEE International Performance Computing and Communications Conference), to be held in Phoenix, April 2006.
 - IEEE INFOCOM 2006 Conference, Barcelona, Spain, April 24–27, 2006.
 - Jordanian International Electrical and Electronic Engineering Conference (JIEEEEC 2005), November 15–17, 2005.
 - Third International Workshop on Measurement, Modeling, and Performance Analysis of Wireless Sensor Networks (SenMetrics 2005), San Diego, CA, July 21, 2005.
 - ACM MobiHoc 2005, Urbana-Champaign, May 25–28, 2005.
 - IEEE INFOCOM 2005 Conference, Miami, March 2005.
 - Multimedia Service Access Networks (MSAN) Conference, Orlando, Florida, June 2005.
 - First IEEE International Conference on Sensors and Ad Hoc Communications and Networks (SECON 2004), Santa Clara, Oct. 2004.
 - 1st IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS 2004), July 2004.
 - Annual Mediterranean Ad Hoc Networking Workshop (Med-Hoc-Net 2004), Bodrum, Turkey, June 2004.

- 4th Workshop on Applications and Services in Wireless Networks (ASWN 2004), Boston, Massachusetts, August 2004.
 - IEEE INFOCOM 2004 Conference, Hong Kong, March 2004.
 - ACM SIGMETRICS 2003 Conference, San Diego, June 2003.
 - IEEE ICC 2003 Conference, Anchorage Alaska, May 2003.
 - IEEE INFOCOM 2003 Conference, San Francisco, April 2003.
 - IEEE International Performance, Computing, and Communications Conference (IPCCC 2003), Phoenix, April 2003.
 - IEEE Workshop on Aspect Oriented Programming for Distributed Computing Systems (part of ICDCS 2002), July 2002.
 - IEEE INFOCOM 2002 Conference, New York, June 2002.
 - The 1st International Workshop on Wired/Wireless Internet Communications (WWIC 2002), Las Vegas, June 2002.
 - 35th Annual Simulation Symposium (ANSS 2002), San Diego, April 2002.
 - IEEE International Conference on Computer Communications and Networks (ICCCN 2001), Scottsdale, Arizona, Oct. 2001.
 - International Teletraffic Congress (ITC 2001), Salvador, Brazil, Sep. 2001.
 - IEEE International Conference on Multimedia and Expo (ICME 2001), Tokyo, Japan, August 2001.
 - Quality of Service over Next Generation Data Networks Conference (part of the SPIE ITCom Symposium), Denver, Colorado, August 2001.
 - International Workshop on Distributed Dynamic Multiservice Architectures (sponsored by IEEE Computer Society), Phoenix, Arizona, April 2001.
 - 34th Annual Simulation Symposium (ANSS 2001), Seattle, Washington, 2001.
 - IEEE GLOBECOM 2000, San Francisco, Dec. 2000.
 - IEEE GLOBECOM 2000 – Symposium on High Speed Networks, San Francisco, Dec. 2000.
 - IEEE ICDCS '2000 Conference, April 2000.
 - IEEE International Conference on Multimedia and Expo (ICME), New York City, July 2000.
 - IEEE Multimedia Systems '99 Conference, Florence, Italy, June 1999.
 - IEEE GLOBECOM '99 – Symposium on High Speed Networks, Rio De Janeiro, Brazil.
 - Internet Workshop '99, Japan.
 - IEEE INFOCOM '98 Conference, San Francisco, March 1998.
 - SPIE Performance and Control of Network Systems Conference, Nov. 1997.
- Session Chair:
- IEEE INFOCOM 2006, Barcelona, Spain, April 2006 (session 9: Smart Antennas and MAC).
 - IEEE INFOCOM 2006, Barcelona, Spain, April 2006 (session 53: Wireless Power).
 - ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2005), Urbana-Champaign, IL, May 2005.

- IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2005), Sicily, Italy, June 2005.
 - IEEE Computer Communications Workshop (CCW) 2001, Oct. 2001.
 - ACM SIGMETRICS 2000, Santa Clara, June 2000.
 - IEEE GLOBECOM 2000, San Francisco, Dec. 2000.
 - IEEE GLOBECOM '99 – Symposium on High Speed Networks.
 - IEEE INFOCOM '99 Conference, New York, March 1999.
 - IEEE ATM workshop, Aug 1996.
 - SPIE Performance and Control of Network Systems Conference, Nov. 1997.
- Session Organizer:
 - International Conference on Computer Communications and Networks (ICCCN'04), Chicago, Oct. 2004.
 - IEEE Computer Communications Workshop (CCW) 2001, Oct. 2001.
 - IEEE GLOBECOM 2000, San Francisco, Dec. 2000.
 - SPIE Performance and Control of Network Systems Conference, Nov. 1997.
 - Representative of the IEEE Technical Committee on Computer Communications (TCCC) for GLOBECOM 2000 Conference.
 - Session Organizer and Chair, 2nd NSF PI meeting, Irvine, Nov. 2000.
 - Served on numerous NSF panels for evaluating research proposals submitted in the areas of networking, embedded systems, wireless communications, infrastructure grants, etc.
 - Reviewer for several journals and conferences.

University Service

- Chair, Computer Engineering Group, ECE Department (group consists of 14 tenure-track/tenured faculty members), 2006–present.
- Chair, Departmental Faculty Search Committee (2006/2007).
- Graduate Studies Committee (1998–2000 and 2004–2006).
- Ad Hoc Committee for Revising the ECE Workload Guidelines (2004/2005).
- University Graduate Council (2003–2007).
- Prop. 301 ECE Ad Hoc Committee (Spring and Fall 2002).
- Undergraduate Studies Committee (2001/2002).
- Search Committee for a Faculty Position in Optical Networking (2001/2002).
- Ad hoc Committee for Evaluating the Teaching Load (2000/2001).
- Computer Engineering Curriculum Committee (1999/2000 and 2000/2001).

- Search Committee for a Faculty Position in Computer Networks/Distributed Systems (1999/2000).
- Computer Policy Committee (1998/1999 and 1999/2000).
- Undergraduate Student Recruitment Committee (1997).

Advisees and Recent Collaborators

I. Supervised Postdoctoral Researchers

- Ossama Younis (July 2005–July 2007), Ph.D. in CS from Purdue University, May 2005. Postdoctoral research is focused on energy-efficient clustering and topology control for sensor networks.
- Tao Shu (May 2004–Aug. 2006), Ph.D. in EE from Tsinghua University (China), July 2003. Postdoctoral research is focused on optimum power/rate control for ad hoc and sensor networks.

II. Supervised Ph.D. Dissertations and M.S. Theses

- Fan Wang, Ph.D. in August 2009 (currently with Qualcomm, San Jose).
Dissertation title: Utility-based resource allocation strategies and protocol design for spectrum-adaptive wireless networks.
- Mohammad Siam, Ph.D. in April 2009 (currently an Assistant Professor at Al-Isra University, Amman, Jordan).
Dissertation title: Power-controlled channel access and routing protocols for MIMO-capable wireless networks.
- Haythem Bany Salameh, Ph.D. in April 2009 (currently an Assistant Professor at Yarmouk University, Jordan).
Dissertation title: Channel access mechanisms and protocols for opportunistic cognitive radio networks.
- Satyajee (Satya) Ahuja, Ph.D. in Aug. 2008 (currently with Infinera Corporation).
Dissertation title: Algorithms and protocols for constrained path selection and fault monitoring in packet networks.
- Mohamed Hassan, Ph.D. in November 2005 (currently an Assistant Professor of Electrical Engineering at the American University of Sharjah, United Arab Emirates).
Dissertation title: Adaptive techniques and optimizations for media streaming over wireless channels.
- Alaa Muqattash, Ph.D. in November 2005 (currently a Member of Technical Staff at Olympus Communication Technology of America, San Diego, California).
Dissertation title: Medium access control and adaptive transmission techniques in wireless networks.
- Abdullah Balamash, Ph.D. in Aug. 2004 (currently an Assistant Professor in ECE at King Abdul-Aziz University, Saudi Arabia).
Dissertation title: Web traffic modeling and its application in the design of caching and prefetching systems.
- Turgay Korkmaz, Ph.D. in Oct. 2001 (currently a tenured Associate Professor at the University of Texas – San Antonio).
Dissertation title: QoS routing in packet networks.

- Jeong Geun Kim, Ph.D. degree in March 2000 (currently an Associate Professor in Radio Communication Engineering at Kyunghee University, South Korea).
Dissertation title: Providing quality-of-service guarantees in multi-service wireless networks.
- Amit Kumar, M.S. degree in Dec. 2008 (currently a Ph.D. candidate at the University of Arizona).
Thesis title: Modeling the short-term characteristics of Internet traffic at boundary routers.
- Aman Arora, M.S. degree in May 2004 (currently at Texas Instruments).
Thesis title: Interference-limited concurrent transmissions for wireless ad hoc networks with directional antennas.
- Vignesh Bhvaneshwar, M.S. in Dec. 2003 (currently at Qualcomm Inc., San Diego).
Thesis title: A cross-layer power aware protocol for wireless ad hoc networks.
- Aytac Azgin, M.S. in Dec. 2003 (currently a Ph.D. candidate in ECE at Georgia Institute of Technology).
Thesis title: Scheduling in wireless cellular networks under probabilistic channel information.
- Michelle D'Souza, M.S. in April 2003 (currently at Mouser Electronics, Texas).
Thesis title: Evaluating the performance of TCP over wireless links.
- Alaa Muqattash, M.S. degree in Dec. 2002 ((currently a Member of Technical Staff at Olympus Communication Technology of America, San Diego, California).
Thesis title: Transmission power control for wireless ad hoc networks.
- Lifeng Zhang, M.S. in August 1999 (currently at ILS International Library Systems).
Thesis title: Using $M/G/\infty$ processes for modeling MPEG-compressed video traffic.
- Arivu Ramasamy, M.S. in June 1999 (currently at Cisco Systems, Inc.).
Thesis title: WWW traffic characterization and its application in dimensioning network resources.

III. Supervised Undergraduate Senior Projects

- Charalambos Charalambous, B.S. in May 2006.
- Rebecca Peterson, B.S. in May 2006.
- Margrete Saevereid, B.S. in May 2006.
- Anugar Kumar, B.S. in May 2006.
- Hussain Ali, B.S. in Dec. 2001.
- Vivek Wadhera, B.S. in Dec. 2001.
- Omar Al-Zubi, B.S. in Dec. 2001.
- Winston Hudson, B.S. in May 1999.
- Anand Injeti, B.S. in May 1999.
- Robert Scott, B.S. in Dec. 1998.

IV. Current Graduate Students

- Raed Al-Zubi, Ph.D. candidate.
Dissertation topic: Interference mitigation mechanisms for peer-to-peer UWB networks.
- Tao Shu, Ph.D. candidate.
Dissertation topic: Optimizations and protocol designs for spectrum-agile radio networks.
- Sisi Liu, Ph.D. candidate.
Dissertation topic: Secure spectrum access in cognitive radio networks.

V. Recent Collaborators

- Dr. Jesus Arango, Cisco.
- Professor Srinu Ramasubramanian, University of Arizona.
- Professor Alon Efrat, University of Arizona.
- Professor Ibrahim Matta, Boston University.
- Professor Luigi Atzori, University of Cagliari, Italy.
- Dr. Philippe Nain, INRIA, Sophia Antipolis, France.
- Dr. Sung-Ju Lee, HP Labs.
- Professor Piet Van Mieghem, Delft University, Netherlands.
- Professor Fernando A. Kuipers, Delft University, Netherlands.
- Professor Sung Jo Hong, Dongguk University, Korea.
- Mr. Phillip Rosengard, Raytheon Corporation.
- Dr. Thierry Turetletti, Sophia Antipolis, France.