

Curriculum Vitae

BIJAN JABBARI

Professor, Electrical and Computer Engineering Department

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1. Field of Specialization, Research Interest and Skills

Field of Specialization & Research Interests

Communications, computing and networking theory, with applications to wireless communications systems such as 2G/3G/4G/LTE wireless, cognitive networks and spectrum sharing, multi-user access, computer network performance, Internet routing and path computation algorithms, as well as optimization of queuing systems.

Experience & Skills

Communication Systems:

- 5G, LTE, LTE-Advanced, 3G, GSM/GPRS, UMTS, CDMA2000/EV-DO, AMPS, TDMA, CDMA, FDMA, OFDM, AMPS, WiFi, 802.11a/b/c/n/x, WiMAX, Bluetooth, Zigbee

Network Routing and Path Computation

- Policy routing, ECMP, Path Computation Element (PCE), Stateful PCE

Network Protocols

- TCP/IP, OSPF, BGP, MPLS, GMPLS, RSVP, LDP, RTP, SNMP, SIP, SS7, ATM, IMS, Frame Relay, Ethernet, Mobile IP, IPSec, Network Security, Mobility Management, OMA, VPN, QoS, VOIP, IP Router, OSS/BSS, NMS, SDN, NFV

Transmission and Networking Systems

- Optical Systems, SONET, DWDM, PON
- Satellite Communications, Microwave, GPS

2. Education

Ph.D.	1981	Electrical Engineering, Stanford University, Stanford, CA
M.S.	1979	Engineering-Economic Systems (Department of Management Science and Engineering), Stanford University, Stanford, CA
M.S.	1977	Electrical Engineering, Stanford University, Stanford, CA
B.S.	1974	Electrical Engineering, Arya-Mehr University, Tehran, Iran

3a. Academic and Industrial Experience

1988–Present	George Mason University, Tenured Professor, Electrical and Computer Engineering, full time, (previously Associate Professor 1988-2001)
1996–Present	Telecom Paris-Tech (also known as ENST - Ecole Nationale Supérieure des Télécommunications), Paris, France, Professeur Associé (concurrent position)

8/1985–8/1988	M/A-COM Telecommunications Inc., Germantown, MD, Director, Network Systems Engineering. Supervised and was involved in all system engineering aspects of Advanced Data Communications Networks. (Academic year 1987-88: Visiting Associate Professor, George Washington University, Washington, DC, Dept. of Electrical Engineering and Computer Science).
5/1983–8/1985	Satellite Business Systems, McLean, VA, Program Manager. Managed programs on definition of the SBS next generation earth station.
9/1981–5/1983	Southern Illinois University, Carbondale, IL, Assistant Professor, Dept. of Electrical Engineering. (Summer 1982: Visiting Professor, Stanford University, Dept. of Electrical Engineering, developed and taught a new course in communications).
1980–1981	Technical Consultant, Hewlett-Packard, Palo Alto, CA. Provided consulting in development of a Digital Modulator (while a PhD Student).
1974–1976	Assistant Manager, Outdoor Broadcasting, NIRT.

4. Honors, Awards, Patents and Professional Recognitions

a. Induction as Fellow to Scientific Societies and Research Awards

- Best Paper Award, IEEE Journal of Communications and Networks (2013)
- GMU 2013 VSE Outstanding Faculty Research Award (2013)
- Fellow, Institute of Electrical and Electronics Engineers (IEEE), *for contributions to resource management and mobility in wireless networks* (elected 2008)
- Washington Metropolitan Area Engineer of the Year Award (elected 2003)
- The IEEE Third Millennium Medal, *for contributions to multiaccess and teletraffic in wireless communications* (2000)
- Fellow, Institution of Engineering and Technology – IET (1999)

b. Recognition as Keynote Speech Presenter in Professional Events

- "IOT Network Challenges: from Requirements to the Implementation" Invited speech at Huawei Strategy and Technology Workshop (STW2015) Shenzhen, China, May 20, 2015.
- "Ad Hoc Networks: The Enabler for the IoT," the Keynote speech at the IEEE/CIC ICC 2014 Workshop on IoT (Internet of Things), Shanghai, China, Oct 12, 2014.

- "From Connecting people to Connecting Machines," the Opening Keynote speech at the *IEEE International Communications Conference (ICC 2014)*, Sydney, June 11, 2014.
- "Evolution of Wireless Networks" Keynote speech at Huawei Strategy and Technology Workshop (STW2014) Shenzhen, China, May 13, 2014.
- "Economic Trends and Limits in Communications and Computing," Presenter of the Keynote speech at the joint plenary session of the 18th *Asia-Pacific Conference on Communications (APCC)* and *International Conference on Information and Communications Technology Convergence (ICTC 2012)*, Jeju Island, Korea, October 16, 2012. (This is Organized by KICS (Korea) and technically co-sponsored by IEICE (China) and IEEE COMSOC.)
- "Direction of Future Networks and Internet," Keynote speech at the 3rd International Conference on Ubiquitous and Future Networks (ICUFN 2011), June 15-17, 2011, Dalian, China.
- "On Secure and Resilient Architectures for Future Internet," Invited Talk at 5th International Conference on Future Internet Technologies (CFI 2010), June 16-18, 2010, Seoul, Korea.

c. Recognition as Chief/Division Editor or Editorial Board

- International Division Editor, Division 2: Wireless Communications, *Journal of Communications and Networks (Mult)*, (2003 - 2007)
- Editor for Wireless Multiple Access, *IEEE Transactions on Communications* (1997 - 2007)
- Editorial Board, *Proceedings of the IEEE* (1995- 2004)
- Associate Editor, *IEEE Communications Letters* (1997-2000)
- Advisory Board, *Journal of Wireless Information Networks* (1994 - Present)
- Associate Editor, *International Journal Networks* (1991-1996)

d. Other Professional Recognition

- IEEE Globecom 2016, General Chair
- Chairman, IEEE Communications Society Switching and Routing Committee, 1994-1996.

- Chairman, IEEE Information Theory Group Washington and Northern Virginia Chapters 1986-1987
- Engineering Foundation, Engineering Research Initiation (Young Faculty) Award for Research on Protocols in Satellite Packet Networks, 1983
- Member, IEEE COMSOC Technical Committee on Communications Theory since 1979
- Member, IEEE COMSOC Technical Committee on Computer Communications since 1982
- Graduate Research Fellowship, Stanford University, 1978-1980, and Fellowship for graduate studies 1976-1978
- Eta Kappa Nu Honor Society

e. Patents Filed and Patents Issued

- B. Jabbari et al, United States Patent 7,061,896 "Wireless label switched packet transfer network," issued June 13, 2006
- B. Jabbari et al, United States Patent 7,616,599 "Wireless Label Switched Packet Transfer Base Station," Issued November 10, 2009
- B. Jabbari et al, United States Patent 8,213,424 "Wireless Label Switched Packet Transfer Device," Issued July 3, 2012
- B. Jabbari et al, United States Patent 8,971,327 B2 "Wireless Label Switched Packet Transfer Device," Issued March 3, 2015
- B. Jabbari et al, United States Office Patent Application (Provisional Filing Number) 13/167,295 "Continuity Patent Pending Claims the Benefit of 12/609,556 (II)," filed 06/23/2011, Assignee: George Mason University
- B. Nikhil and B. Jabbari, "A high Precision Locating Method for Receiver Position," Application 61/347,050 dated 05/21/2010

5. University Service Experience

At GMU, carried out various Departmental, School and University duties. Only selected services in the past few years are listed here:

- Faculty Representative to the GMU Board of Visitors - BOC (2016-Present)
- Faculty Senate member (2015-Present)
- Academic Program Review (APR) during 2011-2014
- Volgenau School of Engineering Representative to Academic Program Review (APR) during 2011-2014

- Lead the Department Strategic Planning Committee, 2012-2013
- Lead Preparation of Report for Academic Program Review for the Electrical Engineering Program, 2012-2014
- Chaired Evaluation of the Chemistry and Biochemistry BS, BA, MS and PhD programs
- Chair Selection/Reappointment Committee
- Negotiation with the university top senior administration to obtain space, plan and oversee building of the Network Laboratory in Johnson Center
- ECE PhD Program Initiation and Development
- Initiated and wrote the early blue-print for the MS Telecommunications Program - Negotiated its inception with MA in Telecommunication, an existing Program within different School
- Chair Selection/Reappointment Committee
- Department Graduate Recruitment Committee Chair
- Helped the department with plans to attract motivated graduate students and identify funding sources for their recruitment.
- Department Graduate Studies Committee Member
- School Resource Allocation Task Force Member - The Task Force tasked to examine the present FTE-based resource allocation process and to suggest changes that should be made to departments within the School.
- ECE Department Seminars - Invited speakers and arranged seminars for ECE Department
- Department ABET Preparation Member
- IEEE Faculty Advisor
- Eta Kappa Nu Honor Society Faculty Advisor

6. Theses and Dissertations Supervised

a. List of PhD Students Graduated

H.S. Hussein "Adaptive Resource Allocation and Traffic Engineering in Data Networks," 2016 (Dr. Hussein is a Lead Technical at CenturyLink, Arlington, VA)

P. Ahmadi, "Optimum Outage Routing in Cooperative Multi-hop Networks," 2015 (Dr. Ahmadi is now a faculty in Volgenau School of Engineering at GMU, Fairfax, VA)

A. Baharlouei, "Joint Spectrum Sensing and Allocation in OFDM based Cognitive Radio Networks using Game Theory," 2013 (Dr. Baharlouei is now a Product Developer at Qualcomm, Santa Clara, CA)

K. Liu, "Multipath Resiliency Algorithms with Entropy Labels using Game Theory," 2013 (Dr. Liu is now a Software Architect at Facebook, Menlo Park, CA)

A. Babaei, "Statistical Interference Modeling and Coexistence Strategies in Cognitive Wireless Networks," 2009 (Dr. Babaei is now a lead architect for LTE and IEEE 802.11 at Cable Labs)

S. Gong, "Solutions to Constrained Path Computation in Multi-Layer Networks," 2007 (Dr. Shujia Gong is now Director of the Network Engineering for Saint Luke Cornwall Hospital in New York State)

C.A. St Jean, "Game-theoretic Analysis of CDMA Wireless Networks," 2006 (Dr. Christopher St Jean is now at Northrop Grumman Corporation)

D.O. Awduche, "Integrated Traffic Engineering in Large Scale IP Network," 2003 (Dr. Daniel Awduche is now a Verizon Fellow and a Senior Director at Verizon)

A. N. Zadeh, "Performance Modeling, Analysis, and Optimization of Self-Organized Packet Radio Adhoc Networks with Cellular Overlay," 2002 (Dr. Ali Zadeh passed away young in April 2011 due to Cancer)

E. H. Dinan, "Quality of Service Based Access Control Schemes for Wireless Packet CDMA," 2001 (Dr. Dinan is now heading an IP Consulting Company)

S. Tekinay, "Modeling and Analysis of Cellular Networks with Highly Mobile Heterogeneous Traffic Sources," 1994 (Dr. Sirin Tekinay is now the Dean of Faculty of Engineering and Natural Sciences at Kadir Has University in Istanbul, Turkey)

S. Zafar, "Motion Estimation and Encoding Algorithms for Hierarchical Representation of Digital Video," 1994 (Dr. Sohail Zafar is now a manager at the World Bank)

M. Safavi, "Design and Analysis of Error Recovery Schemes in High Speed Networks," 1994 (Dr. Safavi is a faculty at Teheran Polytechnic)

F. Yegenoglu, "Traffic and Performance Modeling in Broadband Integrated Packet Networks," 1992 (Dr. Ferit Yegenoglu is now a Manager at Lockheed Martin)

b. MS Theses Graduated

Over 20 students completed their MS degree with thesis.

7. Research Funding

Over \$20 Million of Research funding brought in to GMU as a PI or a co-PI.

This section provides the research funding brought in with a clear indication of PIs and co-PIs and the PI's percentage and amount of funding on each grant and designation of funds to GMU.

- "Secure MAC Layer Wireless Network Protocols," the Naval Research Lab (NRL), May 5, 2016 - May 31, 2018. Principal Investigator. Total amount of grant award \$277,280. 100% to GMU, 100% to PI.
- "Secure Cross-Layer Resilient and Adaptive Networking," the Naval Research Lab (NRL), June 1, 2012 - May 31, 2016. Principal Investigator. Total amount of grant award \$270,000. 100% to GMU, 100% to PI.
- "Secure Protocols and Services for Resilient Internetworking," the Office of Naval Research (ONR), April 28, 2010 - April 27, 2011. Principal Investigator. Total awarded amount \$250,000. 100% to GMU, 100% to PI.
- "Network Virtualization," KDDI Corporation, January 1, 2010 - August 24, 2010. Principal Investigator. Total awarded amount \$20,000. 100% to GMU, 100% to PI.
- "Wireless Multimedia Traffic Modeling and Analysis," Naval Research Laboratory (NRL), Jan. 10, 2008 - Oct. 4, 2009. Principal Investigator. Total awarded amount \$130,561. 100% to GMU, 100% to PI.
- "Localization of Wireless Transmitters," Naval Research Laboratory (NRL), Mar. 1, 2007 - Apr. 3, 2008. Principal Investigator. Total awarded amount \$61,200. 100% to GMU, 100% to PI.
- "Dynamic Resource Allocation in GMPLS Optical Networks (DRAGON)," National Science Foundation (NSF) Award EIN-0335230, Sept. 1, 2003 - Aug. 31, 2008. Principal Investigator. Total awarded amount \$863,714. 100% to GMU, 100% to PI.
- "Advanced Internet Research Laboratory," 4/2000-7/2002, Principal Investigator. Total grant amount \$1,500,000 from Internet industry sponsors with major funding from UUNET/Verizon). Also Research Sponsors provided equipment worth \$5,500,000. Lab space was obtained at the Johnson Center for building then most modern Lab. Upon completion of research, the facility was transformed into teaching Lab and is currently being used for hands-on courses in networking. 100% to GMU, 100% to PI.
- "Research and Development in Advanced Internet Technology," 7/00-6/01, Principal Investigator. Total grant amount \$75,000 from Virginia's Center for Innovative Technology. 100% to GMU, 100% to PI.
- "Wireless Packet Radio Network Architecture," National Science Foundation Award CCR-9979343, Sept. 1999-Aug. 2002. Principal Investigator, Total grant \$441,000 to GMU and GWU. Total grant amount of \$147,000. 100% to GMU, 100% to PI.
- "Advanced Internet Research Laboratory," 8/98-5/2000, Principal Investigator. Total grant amount \$500,000 from UUNET Technologies Inc. Also provided construction cost of nearly \$2 million for the lab. 100% to GMU, 100% to PI.
- "Center for Advanced Internet Technology," 7/99-6/2000, Principal Investigator. Total grant amount \$25,000 from Center for Innovative Technology of VA. 100% to GMU, 100% to PI.
- "ATM MPOA Protocol Interfacing," 2/98-12/98, Principal Investigator. Total grant amount \$26,071 from Newbridge Networks Inc. 100% to GMU, 100% to PI.

- “Wireless ATM Performance Modeling,” 8/97-1/98, Principal Investigator. Total grant amount \$10,000 from E-Systems, Falls Church, VA. 100% to GMU, 100% to PI
- “Network Performance Modeling,” 7/95-9/95, Principal Investigator. Total grant amount \$6,092 from SWIFT, Culpeper, VA. 100% to GMU, 100% to PI
- “Electronic Management System,” 1/94-7/95, Co-Principal Investigator. Total amount awarded \$53,072 from TSMI. 100% to GMU, Course buy-out for Co-PI.
- “Telecommunications Technology Assessment,” 11/94-11/95, Co-Principal Investigator. Total grant amount \$67,467 from TSMI. 100% to GMU, Course buy-out for Co-PI.
- “Abstract Syntax Notation 1,” 1/92-9/93, Principal Investigator. Total grant amount \$63,698.00 from National Communications Systems. 100% to GMU, 100% to PI.
- “Mobile Cellular Communications,” 2/92-7/92, Principal Investigator. Total grant amount \$10,000 from General Electric Company. 100% to GMU, 100% to PI.
- “Analysis of Impact of Potential Message Handling Subsystems (MHS) on DMS Networks,” 6/91-5/92, Principal Investigator. Total grant amount \$100,694.00 from DCA. 100% to GMU, 100% to PI.
- “Interoperability Support,” 2/92-8/92, Principal Investigator. Total grant amount \$23,727.00 from Illinois Institute of Technology Research Institute and DTIC. 100% to GMU, 100% to PI.
- “Performance Modeling for Wireless Intelligent Networks,” 1/91-12/91, Principal Investigator. Total grant amount \$51,451 (\$38,228 from Contel Technology Center, \$8,873 from CIT through C3I, and \$4,350 GMU cost sharing). 100% to GMU, 100% to PI.
- “Evaluation of High Speed Data Communications Protocol Using Optical Networks,” 1/90-12/90, Principal Investigator. Total grant amount \$39,508.00 (originally \$31,123 with an extension of \$8,385) from MCI Telecommunications Inc. 100% to GMU, 100% to PI.
- “Evaluation of Broadband Switch Technologies,” 7/90-12/90, Principal Investigator. Total grant amount \$36,121 (\$30,555 from Netrix Corp., \$3,844 from CIT, and \$1,722 GMU cost sharing). 100% to GMU, 100% to PI.
- “Transaction Processing and the OSI Reference Model,” 5/90-12/90, Principal Investigator. Total grant amount \$36,128 (\$26,172 from Contel Technology Center, \$6,644 from CIT, and \$3,312 GMU cost sharing). 100% to GMU, 100% to PI.
- “Very Small Aperture Earth Station Networks,” 8/89-12/90, Principal Investigator. Total grant amount \$18,000 (originally \$12,000 with an extension of \$6,000) from MATRA Espace, France. 100% to GMU, 100% to PI.
- “A Comparative Study of Signalling System 7 and X.25 Protocol in Telecommunication Networks,” Grant # 089086 and # 089318, 3/89-12/89, Principal Investigator. Total grant amount \$34,724 (originally \$25,000 with an

extension of \$9,724) from MCI Telecommunications Inc. 100% to GMU, 100% to PI.

- Participation on Other Research Grants Awarded “DCA Video Multicasting Project,” Partial support through Summer and Fall 1993 and partial funding for acquisition of a workstation in Telecommunications Laboratory. Total grant amount \$5,500.00 from DISA,” Global Mobile Communications Database System, 8/91-1/92. Total grant amount \$30,000 (\$15,000 from HDS, \$15,000 from CIT).

Laboratory/Equipment Grants

- Software from CACI, a total of \$136,000 commercial value including Departmental License for NETWORK II.5, COMNET II.5, LANNET II.5, MODSIM II.5, and upgrade of Departmental License for SIMSCRIPT II.5 (on Unix), 1990.

Pre-GMU Research Awards

- “Protocols in Satellite Packet Networks,” Engineering Foundation, Engineering Research Initiation Grant, (given to young faculty, pre-NSF’s Young Investigator’s Award) amount \$17,000, 9/1983-12/1984.

8. New Course Development and Teaching

a. New Course Development

- ECE 540: Modern Telecommunications (now TCOM 500)
- ECE 643: Switching and Routing in Communication Networks
- ECE 741: Wireless Networks
- ECE 742: High Speed Networks
- ECE 743: Multimedia Networking and Communications Software
- IT 834: Telecommunications Networks
- IT 848: Digital Video Communications

b. Courses Taught at GMU

- ECE 462 Data and Computer Communications
- ECE 463 Digital Communications Systems
- ECE 542 Computer Networks Architectures and Protocols
- ECE 630 Statistical Communication Theory
- ECE 639 Satellite Communications
- ECE 642 Design and Analysis of Computer Communications Networks
- ECE 643 Switching and Routing in Communication Networks
- ECE 741 Wireless Networks

- ECE 742 High Speed Networks
- ECE 590 Selected Topics in Engineering
- ECE 798 Research Project
- IT 834 Telecommunications Networks
- IT 848 Digital Video Communications
- IT 990 Dissertation Proposals
- ECE/IT 796 Directed Reading and Research
- ECE/IT 797 Directed Reading and Research

9. Other Scholarly and Professional Activities

a. Other Scholarly Activities

- Development of Advanced Internet Research Laboratory (1999-2002).
- Development of Communications and Networking Laboratory (1988-present)
- Initiated seminar series (on topics in communications), highly attended by the students, faculty and outside industry engineers.

b. Tutorials Given at the Conferences

- "Peer-to-Peer Networking: Architectures, Protocols and Applications," invited tutorial at ICIN 2006, Bordeaux, France, May 2006
- "Ad hoc/Multi-hop Networks," invited tutorial at European Wireless Conference (EW 2002), Florence, Italy, February 2002
- Handoffs: from Theory to Practice" invited tutorial given at IEEE ICUPC '97 in San Diego, CA, October 1997 -(also given at ICT 98 in Chalkidiki, Greece, June 1998).
- "Intelligent Network and Mobile Control System," tutorial presented at IEEE Globecom '96 London, UK, November 1996
- "Personal Communications Systems and UPT," tutorial presented in IEEE Globecom '94 San Francisco, CA, December 1994 (also at the IEEE Workshop IN'94 in Heidelberg Germany, ICIN '94 Bordeaux, France, and Wireless '94 Calgary, Canada)
- "Intelligent Networks," tutorial presented in the IEEE International Communications Conference ICC 93, Geneva, Switzerland, May 1993
- "Signalling System No. 7 for Fixed and Mobile Networks," tutorial presented in the IEEE International Communications Conference ICC/Supercom 92, Chicago, IL, June 1992

c. Other Professional Activities

- National Science Foundation Panel Review Member
- Program Co-Chair, IEEE Workshop on High Performance Switching and Routing (HPSR-2002), May 2002, Kobe, Japan.

- Chair/Cochair of International Conference on Multi Protocol Label Switching (MPLS), Northern Virginia (1998, 1999, and 2000).
- Co-chair of the Workshop on Multiaccess, Mobility and Teletraffic for Wireless Communications held at George Washington University, Washington, DC, October 1998.
- Technical Co-chair of the Workshop on Multiaccess, Mobility and Teletraffic for Personal Communications Paris, France, May 1996.
- Cochair of the First IEEE ATM Workshop, Washington, DC, October 1995.
- Technical Chair of the First Workshop on Mobility and Teletraffic for Personal Communications held in George Mason University, September 1994.
- Principal Organizer of the Symposium on Worldwide Advances in Communications Networks, at GMU, supported by the IEEE Communications Society, May 1992.
- Principal Organizer of a Workshop on Networks at GMU, supported by the IEEE, April 1989. More than 250 attendees came to GMU to participate in this workshop comprised of distinguished speakers.

10. Non-Technical Voluntary Activities (Civic and Humanitarian)

- The American Heart Association, Board of Fund Raising for Local Regional Events, 1998 and 2002.
- DC Stoddert Soccer League, commissioner for HS/JHS teams and coach of the Tornadoes soccer team, 2003-2009.

11. Personal Information

Knowledge of English, Persian, French, Azarbaijani, Korean (limited), German (limited), Italian (limited)
U.S. Citizen

12. Selected Publications

This section includes selected publications separated by journal, peer-reviewed conference proceedings, books authored, books edited).

a. Refereed Journal Articles

A. Busson, B. Jabbari, A. Babaei, and V. Veque, "Interference and Throughput in Spectrum Sensing Cognitive Radio Networks using Point Processes" *Journal of Communications and Networks (JCN)*, vol. 6, no. 1, February 2014, pp. 67-80.

E. Monroy, S. Choi, B. Jabbari, "Linear Precoding with Resource Allocation for MIMO Relay Channels," *IEEE Transactions on Wireless Communications*, vol 12, no 11, November 2013, pp. 1536-1276.

A. Baharlouei and B. Jabbari, "Efficient and Fair Power and Subchannel Allocation in Multiuser OFDM Networks," *IEEE Communication Letters*, vol. 17, no 10, October 2013 pp. 1905 – 1907.

S. Secci, K. Liu and B. Jabbari, "Efficient Inter-Domain Traffic Engineering with Transit-Edge Hierarchical Routing," *Journal of Computer Networks*, vol 57, no, 4, 13 March 2013 pp. 976-989.

A. Babaei, P. Agrawal and B. Jabbari, "Capacity Bounds in Random Wireless Networks," *Journal of Communications and Networks (JCN)*, vol. 14, no. 1, February 2012, pp. 1-9.

A. Babaei and B. Jabbari, "Distance Distribution of Bivariate Poisson Network Nodes," *IEEE Communications Letters*, vol. 14, no. 9, September 2010, pp. 848-850.

C. A. St. Jean and B. Jabbari, "On Game-Theoretic Power Control Under Successive Interference Cancellation," *IEEE Transactions on Wireless Communications*, vol. 8, no. 4, April 2009, pp. 1655-1657.

B. Jabbari, S. Gong, E. Oki, "On Constraints for Path Computation in Multi-layer Switched Networks," *IEICE Transactions on Communications*, Vol. E90-B, August 2007, pp. 1922-1927.

D. Awduche, B. Jabbari, "Demand Assigned Capacity Management (DACM) in IP over Optical (IPO) Networks," *IEEE/ACM Transactions on Networking*, vol. 14, no. 4, August 2006, pp. 900-913.

A.N. Zadeh, B. Jabbari, "Analysis and Modeling of Upstream Throughput in Multihop Packet CDMA Cellular Networks," *IEEE Transactions on Communications*, vol. 54, no. 4, April 2006, pp.680-692.

C.A. St. Jean and B. Jabbari, "Game-Theoretic Power Control in DS-CDMA Wireless Networks with Successive Interference Cancellation," *Electronics Letters*, vol. 42, no. 3, February 2006, pp. 162-163.

C.A. St Jean, B. Jabbari, Bayesian game-theoretic modelling of uplink power determination in uniform, self-organising network, *Electronics Letters*, Volume 40, Issue 8, 15 April 2004, pp. 483-485.

A.N. Zadeh, B. Jabbari, "A High Capacity Multihop Packet CDMA Wireless Network," in *Journal of ACM Wireless Networks*, Vol.9, No. 4, July 2003, pp. 365-372.

A.N. Zadeh, C.A. St.Jean, B. Jabbari, "Optimum Transmission Strategy for Power Saving in Fading Channels," in *Electronics Letters*, Vol.39, No. 4, February 2003, pp. 400-402.

D. Awduche, B. Jabbari, "Internet Traffic Engineering using Multi-Protocol Label Switching (MPLS)," Invited Paper, *Journal of Computer Networks*, Vol. 40, No. 1, September 2002, pp. 111-129.

B. Jabbari, Y. Zhou, F. Hillier, "A Decomposable Random Walk Model for Mobility in Wireless Communications," *Telecommunication Systems Journal*, Vol. 16, No. 3-4, March - April 2001, pp. 523-537.

N. Cotanis and B. Jabbari, "Wireless Local Loop Radio System," Invited Paper, *Journal of Computer Networks*, Vol. 31, No. 4, February 1999, pp. 343-352.

X. Lagrange, B. Jabbari, "Fairness in Wireless Microcellular Networks," *IEEE Transactions on Vehicular Technology*, Vol. 47, No. 2, May 1998, pp. 472-479.

B. Jabbari, W. Fuhrmann, "Teletraffic Modeling and Analysis of Flexible Hierarchical Cellular Networks with Speed-Sensitive Handoff Strategy," *IEEE Journal on Selected Areas in Communications*, October 1997, pp. 1539-1548.

F. Yegenoglu and B. Jabbari, "Characterization and Modeling of Aggregate Traffic for Finite Buffer Statistical Multiplexers," *Journal of Computer Networks and ISDN Systems*, June 1994, pp. 1169-1185.

B. Jabbari, F. Yegenoglu, Y. Kuo, S. Zafar, Y. Zhang, "Statistical Characterization and Block-Based Modeling of Motion Adaptive Coded Video," *IEEE Transactions on Circuits and Systems for Video Technology*, June 1993, pp. 199-207.

F. Yegenoglu, B. Jabbari, and Y. Q. Zhang, "Motion Classified Autoregressive Modeling for Variable Bit Rate Video," *IEEE Transactions on Circuits and Systems for Video Technology*, February 1993, pp. 42-53.

S. Zafar, Y. Q. Zhang, B. Jabbari, "Multiscale Video Representation Using Multi-Resolution Motion Compensated and Wavelet Decomposition," *IEEE Journal on Selected Areas in Communications*, January 1993, pp. 24- 35.

S. Tekinay, B. Jabbari, "A Measurement Based Prioritization Scheme for Handovers in Mobile Cellular Networks," *IEEE Journal on Selected Areas in Communications*, October 1992, pp. 1343-1350.

B. Jabbari, G. Maral, "Response Time Evaluation of Transaction-Oriented Applications in VSAT Networks," *IEEE Journal on Selected Areas in Communications*, August 1992, pp. 1048-1053.

B. Jabbari, "Routing and Congestion Control in Common Channel Signalling System No. 7," *Proceedings of the IEEE*, April 1992, pp.607-617.

B. Jabbari, F. Yegenoglu, "An Efficient Method for Computing Cell Loss Probability of Heterogeneous Bursty Traffic in ATM Networks," *International Journal of Digital and Analog Communication Systems*, Vol. 5", No. 1, January-March 1992, pp. 39-48.

B. Jabbari, D. McDysan, "Performance of Demand Assignment TDMA and Multicarrier TDMA Satellite Networks," *IEEE Journal on Selected Areas in Communications*, February 1992, pp. 478-486.

M. Kawarasaki, B. Jabbari, "BISDN Architecture and Protocol," *IEEE Journal on Selected Areas in Communications*, Vol. 9, No. 9, December 1991, pp. 1405-1415.

T. Zein, G. Maral, B. Jabbari, "Guidelines for Preliminary Dimensioning of a Transaction-Oriented VSAT Network," *International Journal of Satellite Communications*, Vol. 9, December 1991, pp. 391-397.

R. Bhardwaj, B. Jabbari, "ISDN Frame Relay and its Congestion Control," *International Journal of Satellite Communications*, Vol. 9, October 1991, pp. 363-380.

B. Jabbari, "Common Channel Signalling System Number 7 for ISDN and Intelligent Networks," *Proceedings of the IEEE*, February 1991, pp.155-169.

B. Jabbari, "A Connection Control Strategy for Bursty Sources in Broadband Packet Networks," *International Journal of Digital and Analog Communications Systems*, Vol. 3, No. 4, October 1990, pp. 351-356.

F.S. Hillier, B. Jabbari, "Analysis of the Fixed-Assigned TDMA Techniques with Finite Buffer Capacity," *IEEE Transactions on Communications*, July 1987, pp. 724-729.

B. Jabbari, "Cost-Effective Networking via Digital Satellite Communications," *Proceedings of the IEEE*, November 1984, pp.1556-1563.

b. Refereed Articles in Magazines

B. Jabbari, R. Pickholtz, M. Norton, "Dynamic spectrum access and management," *IEEE Wireless Communications Magazine*, Invited Article, August 2010, pp. 6-15.

Thomas Lehman, Jerry Sobieski, Bijan Jabbari, "DRAGON: A Framework for Service Provisioning in Heterogeneous Grid Networks," *IEEE Communications Magazine*, March 2006, pp. 84-90.

A. Zadeh, B. Jabbari, R. Pickholtz, B. Vojcic, "Self-Organizing Packet Radio Ad Hoc Networks with Overlay (SOPRANO)," *IEEE Communications Magazine*, June 2002.

E. Dinan, B. Jabbari, "Spreading Codes for CDMA and W-CDMA Wireless Networks," *IEEE Communications Magazine*, September 1998, pp. 48-54.

B. Jabbari, "Teletraffic Aspects of Evolving and Next Generation Wireless Communication Networks," *IEEE Personal Communications*, pp. 4-9, Dec. 1996, pp. 4-9.

B. Jabbari, G. Colombo, A. Nakajima, J. Kulkarni, "Network Issues for Wireless Personal Communications," *IEEE Communications Magazine*, January 1995, pp. 88-98.

B. Jabbari, "Intelligent Network Concepts in Mobile Communications," *IEEE Communications Magazine*, February 1992, pp. 64-69.

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c. Papers in Peer-reviewed Conference Proceedings

S. Aram and B. Jabbari, "On throughput analysis of multi-tier cellular networks," submitted to International Conference on Information and Communication Technology Convergence (ICTC), PP 7-11, Oct. 2016, pp 7-11.

N. Rastegardoost and B. Jabbari, "Blind Channel Selection Strategies for Distributed Cognitive MAC," in the *Proceedings of IEEE PIMRC 2016*, Valencia, Spain, September 2016.

N. Rastegardoost and B. Jabbari, "On Channel Selection Schemes for Spectrum Sensing in Cognitive Radio Networks," in the *Proceedings of IEEE WCNC 2015*, New Orleans, Louisiana, April 2015.

A. Busson, L. Zaitoun, V. Veque and B. Jabbari, "Outage Analysis of Integrated Mesh LTE Femtocell Networks," in the *Proceedings of IEEE GLOBECOM 2014*, Dec 2014, Austin, Texas.

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E. Monroy, S. Choi, B. Jabbari, "Linear Transmit-Receive Beamforming Design for MIMO relay Broadcast Channels," in *Proceedings of International Conference on Information and Communications Technology Convergence (ICTC 2013)*, Jeju Island, Republic of Korea, October 14, 2013, pp 145-150.

A. Baharlouei and B. Jabbari, "A Dynamic Resource Allocation scheme using Nash Bargaining Game for the Uplink of Multiuser OFDM Systems," in *IEEE VTC-2013 Fall*, September 2013, Las Vegas, USA.

A. Baharlouei and B. Jabbari, "Dynamic Subchannel and Power Allocation using Nash Bargaining Game for Cognitive Radio Networks with Imperfect PU Activity Sensing," accepted in *International Conference on Cognitive Radio Oriented Wireless Networks (Crowncom)*, July 2013, Washington DC.

E. Monroy, S. Choi, B. Jabbari, "A Practical Transmission Scheme for Half-Duplex Decode-and-Forward MIMO Relay Channels, IEEE Globecom Workshops, Dec 2012, pp. 100-104.

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A. Babaei and B. Jabbari, "Stochastic Spatial Models in Large Wireless Networks," in *Proceedings of International Conference on Information and Communications Technology Convergence (ICTC 2012)*, Jeju Island, Republic of Korea, October 16, 2012.

A. Babaei and B. Jabbari, "Achievable Throughput in Power-Constrained Cognitive Wireless Networks," in *Proceedings of IEEE ICC'12*, June 10-15, 2012, Ottawa, Canada.

A. Busson, B. Jabbari, A. Babaei and V. Veque, "Throughput Limits in Spectrum Sensing Cognitive Radio Networks using Point Processes," in *Proceedings of IFIP International Conference on New Technologies, Mobility and Security-NTMS'12*, May 2012, Istanbul, Turkey.

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A. Babaei, P. Agrawal and B. Jabbari, "Statistics of Aggregate Interference in Cognitive Wireless Ad Hoc Networks," in *Proceedings of IEEE ICNC 2012*, Feb 2012.

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- B. Jabbari, "Mobility and Teletraffic Issues in Wireless Personal Communications, *International Conference on Universal Personal Communications*, Tokyo, Japan, November 1995.
- B. Jabbari, G. Colombo, A. Nakajima, J. Kulkarni "Network Architecture and Traffic Issues for Wireless Personal Communications," *International Switching Symposium*, Berlin, Germany, May 1995.
- F. Yegenoglu, B. Jabbari, "Maximum Likelihood Estimation of ATM Traffic Model Parameters," *IEEE GLOBECOM '94, Communications Theory Miniconference*, San Francisco, December 1994.
- B. Chatras, B. Jabbari, "Modeling and Alignment of ITU-T TCAP to the OSI Reference Model," *IEEE GLOBECOM '94*, San Francisco, December 1994.
- B. Jabbari, Ray Piplani, F. Yegenoglu, A. Merchant, "Comparison of CCITT Application Layer Protocols: TCAP (Q.771-Q.775) and ROSE (X.219/X.229)," *GLOBECOM '93*, Houston, TX, December 1993.
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- F. Yegenoglu, B. Jabbari, "Characterization and Modeling of Aggregate Traffic for Finite Buffer Statistical Multiplexers," *ICC '93*.
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- S. Tekinay, B. Jabbari, "Performance of Measurement-Based Prioritization Scheme for Handovers," *Proceedings of GLOBECOM '92*, Orlando, FL, December 1992.
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- F. Yegenoglu, B. Jabbari, Y. Q. Zhang, "Modeling of Motion Classified VBR Video Codecs," *Proceedings of INFOCOM '92*, Florence, Italy, May 1992.
- F. Yegenoglu, L. Patterson, B. Jabbari, "Performance Modeling of Signalling System No. 7 Networks," *Proceedings of the MILCOM*, McLean, VA, November 1991.
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- B. Jabbari, Y. Zhang, "Performance Degradation in Heterogeneous Local Computer Network Interconnections," *Proceedings of GLOBECOM '89*, Houston, TX, November 1989.
- B. Jabbari, M. Kloper, R. Pickholtz, "Token Associated Data Protocol for Local Computer Networks," *Proceedings of the International Conference on Communications*, Boston, MA, June 1989.
- B. Jabbari, B. Pourmand, "Document Delivery via Small On-Premises Earth Stations," *Proceedings of GLOBECOM '87*, Tokyo, Japan, November 1987.
- B. Jabbari, D. McDysan, "Capacity and Performance of Demand-Assigned MC-TDMA Systems," *Seventh International Conference on Digital Satellite Communications*, Munich, Germany, May 1986.
- B. Jabbari, D. McDysan, "A Performance Model for Satellite Demand Assignment," *International Conference on Communications*, Chicago, IL, June 1985.
- B. Jabbari, F.S. Hillier, "Blocking and Delay in Fixed TDMA with Finite Buffer Capacity," *Proceedings of INFOCOM '84*, San Francisco, CA, April 1984.
- B. Jabbari, C. Cheung, F. Stein, "SBS Satellite-Based ISDN: Current Implementation and Future Directions," *Proceedings of GLOBECOM '83*, San Diego, CA, November 1983.
- B. Jabbari, K. Purswani, "A Distributed Architecture Voice/Data Switch," *COMPCON*, Crystal Gateway, VA, September 1983.

B. Jabbari, K. Purswani, "An Interface Message Processor with a Multiprocessing Architecture," *International Conference on Digital Processing*, Bellaire, MI, August 1983.

B. Jabbari, B. Mukherjee, "Satellite Databanks Using Packet Reservation and Combined FDMA-TDMA Techniques," *International Conference on Communications*, Boston, MA, June 1983.

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B. Jabbari, K. Purswani, "A Distributed Architecture System for Switching High Volume Integrated Voice and Data Traffic," *Third Phoenix Conference on Computers and Communications*, Phoenix, AZ, March 1983.

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B. Jabbari, "Multiple Access Schemes for a Central Databank System," *Proceedings of GLOBECOM '82*, Miami, FL, November 1982.

B. Jabbari, "Combined FDMA-TDMA: A Cost-Effective Technique for Digital Satellite Networks," *International Conference On Communications*, Philadelphia, PA, June 1982.

C.C. Han, B. Jabbari, "Optimization of Communication Satellite Systems," *Intelcom '80*, Los Angeles, CA, November 1980.

d. Books Authored, Book Chapters and Books Edited

i) Books

A. Babaei, P. Agrawal and B. Jabbari, *Stochastic Geometry Methods in Cognitive Radio Networks*, Springer USA, ISBN 978-1-4614-2262-4, under preparation.

B. Jabbari and X. Lagrange, *Wireless Networks*, to be published by Prentice-Hall (manuscript in progress).

ii) Refereed Chapters in Books

B. Jabbari and A. Babaei "Interference and its Impact on System Capacity," in *The Mobile Communications Handbook*, J.D. Gibson (Ed.), CRC Press, 3rd edition, September 2012.

A. Babaei, P. Agrawal and B. Jabbari, "Interference Modeling, Shaping and Avoidance in Cognitive Cellular Networks" in *Cognitive Radio for Wireless Cellular and Vehicular Networks*, Springer-Verlag, 2012

A. Babaei, P. Agrawal and B. Jabbari, "Throughput Modeling, Analysis and Optimization in Cognitive Wireless Networks," in *Cognitive Radio and Interference Management: Technology and Strategy*, IGI Global, 2012

B. Jabbari, "Fixed and Dynamic Channel Assignment," in *The Mobile Communications Handbook*, J.D. Gibson (Ed.), CRC Press, 2nd edition, 1999, 1995. (Also in *The Communications Handbook*, J.D. Gibson (Ed.), CRC Press, 1996).

B. Jabbari, S. Tekinay, "Mobile Communication Networks and Architecture," in *Encyclopedia of Telecommunications*, Published by Marcel Dekker, Inc., New York, 1995.

B. Jabbari, "Wireless Communications," in *Electronics Engineers Handbook*, McGraw-Hill, Inc., 4th Edition, 1996.

iii) Edited Books

X. Lagrange, B. Jabbari (Eds.), *Multiaccess, Mobility and Teletraffic for Wireless Communications (Vol. 6)*, Kluwer Academic Publishers, 2002.

G. Stuber, B. Jabbari (Eds.), *Multiaccess, Mobility and Teletraffic for Wireless Communications (Vol. 5)*, Kluwer Academic Publishers, 2000.

E. Biglieri, L. Fratta, B. Jabbari (Eds.), *Multiaccess, Mobility and Teletraffic for Wireless Communications (Vol. 4)*, Kluwer Academic Publishers, 1999.

B. Jabbari, P. Godlewski, X. Lagrange (Eds.), *Multiaccess, Mobility and Teletraffic for Personal Communications (Vol. 1)*, Kluwer Academic Publishers, 1996.

B. Jabbari, Ed. and Co-author, *Worldwide Advances in Communication Networks*, Plenum Publishing, 1994.

e. Guest Editorship

Lead Guest Editor (with E. Oki, J-P Vasseur, and S. Chong), *Journal of Communications and Networks (JCN)*, Special Issue on Routing, Path Computation and Traffic Engineering in Future Internet, December 2007.

Guest Editor (with G. Karetsos, A. Rouskas and B. Walke), *Journal of Computer Networks*, Special Issue on Topics in Wireless Broadband Systems, Volume 51, Number 9, June 2007.

Guest Editor (with B. Walke, E. Mingozzi and A. Sibille), *European Transactions on Telecommunications* Special Issue on Next Generation Wireless and Mobile Communications, June 2006.

Guest Editor (with B. Walke and L. Lenzi), *Journal of Computer Networks*, Special Issue on Selected Papers from the European Wireless 2004 Conference, Volume 49, Number 3, October 2005.

Guest Editor, *Proceedings of the IEEE*, Special Issue on Internet Technology and Convergence of Communications Services, September 2002.

Guest Editor, *IEEE Communications Magazine*, Special Feature Topic Issue on Wideband CDMA, September 1998.

Guest Editor, *IEEE Communications Magazine*, Special Feature Topic Issue on Wireless Networks, August 1997.

Guest Editor, *Proceedings of the IEEE*, Special Issue on Wireless Networks for Mobile and Personal Communications, September 1994.

Lead Guest Editor, *IEEE Communications Magazine*, Special Issue on Intelligent Networks, February 1992.

Lead Guest Editor, *IEEE Journal on Selected Areas in Communications*, Protocols and Architectures for Integrated Broadband Switching, December 1991.

f. Other Publications: Introductory, Review and Editorial Articles

B. Jabbari, E. Oki, JP Vasseur, and S. Chong, "Routing, Path Computation, and Traffic Engineering for Future Internet, Guest Editorial," *Journal of Communications and Networks (JCN)* December 2007.

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B. Walke, B. Jabbari, E. Mingozzi, and A. Sibille, "Next Generation Wireless and Mobile Communications, Guest Editorial," *European Transactions on Telecommunications*, Vol. 17, No. 3, May-June 2006, pp. 295-301.

B. Walke, L. Lenzini, and B. Jabbari, "Guest Editorial," *Journal of Computer Networks*, Special Issue on Selected Papers from the European Wireless 2004 Conference, Vol. 49, No. 3, October 2005, pp. 295-298.

B. Jabbari, Daniel Awduche, Yakov Rekhter, Jean Walrand, "Internet Technology and the Convergence of Communications Services, Guest Editorial," *Proceedings of the IEEE*, September 2002.

B. Jabbari, "Wideband CDMA, Guest Editorial," *IEEE Communications Magazine*, September 1998, pp. 46.

B. Jabbari, "Introduction to the Classic Paper by Marconi," Invited Paper, *Proceedings of the IEEE*, Vol. 85, No. 10, October 1997, pp. 1523-1525.

B. Jabbari, "Wireless Networks, Guest Editorial," *IEEE Communications Magazine*, August 1997, pp. 28.

B. Jabbari, "Wireless Networks for Mobile and Personal Communications, Scanning the Issue," *Proceedings of the IEEE*, Special Issue, Vol. 82, No. 9, September 1994, pp. 1331-1332.

B. Jabbari, "Graduate Studies in Communications Engineering at U.S. Universities," *IEEE Communications Magazine*, Vol. 29, No. 1, January 1991, pp. 14-16.

g. Invited Talks and Seminar Presentations

1. "Dynamic Spectrum Access and Management" Invited Talk on Cognitive Radio Workshop of DNAC 2010 Congress, November 2010, Pairs, France.

2. "Modeling of Interference in Cognitive Wireless Networks", Talk at Shanghai Jiao Tong University (SJTU), Shanghai, China, June 15, 2010.

3. "Packet Wireless Networks," Invited Talk in IFIP Wireless Days 2009 Conference, held in Paris, France, Dec 15 - 17, 2009.

4. Panelist on US State Department Workshop on the Internet of Future, July 13, 2009.

5. "Statistical Modeling of Interference in Cognitive Wireless Networks", Invited Talk at Seoul National University (SNU), Seoul, Korea, June 8, 2009.

6. "IP and Packet-based Wireless Networks," Invited Talk in 2008 IEEE International Conference on Circuits and Systems for Communications (IEEE ICCSC 2008), held in Shanghai, China, May 26 -28, 2008.

7. "When Optical Networking Meets Grid Computing?" Invited Talk and Panelist, International Conference

On Computer Communications and Networks (IEEE ICCCN06), held in Arlington, VA, October 9 - 11, 2006.

8. "High Performance Distributed Computing Research and Enabling Technologies," technical presentation, IEEE Computer Society, Northern Virginia Chapter, Reston, VA, September 20, 2006.

9. "A Scalable Dynamic Path Computation Framework for Inter-Domain IP and Optical Networks," Invited talk at NASA Goddard Space Flight Center's Information Science and Technology (IS&T) Colloquium Series, January 11, 2006.

10. "Self-Organizing Packet Radio Ad hoc Networks," Invited by the IEEE Northern Virginia, June 2002.

11. "Next Generation Internet Infrastructure," technical presentation, French IETF Day, Paris, France, December 2002.

12. "SOPRANO Project," technical presentation, IEEE Communications Society, Northern Virginia Chapter, June 2002.

13. "NGI: Scalability and Interoperability in Internet," opening technical presentation in A University Research Day, sponsored by the Virginia's CIT and AOL, July 2000.

14. "Wireless Internet," technical presentation, A University Research Day, sponsored by the Virginia's CIT and AOL, July 2000.

15. "Traffic Performance Modeling in Wireless Packet Networks," ECE Research Seminar Day, November 19, 1999.

16. "Future Directions in Mobile Computing and Networking Systems" (panel) Workshop sponsored by NSF, at University of Cincinnati, June 1999.

17. "Performance of Multilink Packet Access Wireless Cellular Networks" (Invited Seminars) at NJIT, Feb 8, 1999.

18. "Implementation Issues in the Support of Mobility for IPng," (with R. Nagarajan), Second TRAIL Workshop, Sponsored by NSF, Arlington, VA, February 1998.

19. "Performance of Wireless Intelligent Networks," Opening Presentation at the second Summit on Intelligent Networks, London, England, May 16, 1997.

20. "Wireless Networks: Promises and Reality," invited talk, IIT Research Institute, October 21, 1996, Lanham, MD.

21. "Overflow Traffic Models in Wireless Networks", invited talk at the 6th IEEE Workshop on Computer-Aided Modeling, Analysis and Design of Communication Links and Networks, McLean Hilton, McLean, Virginia, October 20, 1996.

22. "Fairness in Cellular Wireless Networks," invited talk, IEEE Computer Communications Committee Workshop, Reston, VA, September 96.

23. "Statistical Characterization of VBR Encoded Video," (with Y. Kuo and S. Zafar), TRIO Conference, Canada, August 1995.

24. Opening Technical Talk for De Nouvelles Architectures pour les Communications (9th French Congress),

Paris, France, 13–15 October 1992 (Invited Presentation).

25. “Control Architectures for Fixed and Mobile Networks,” (with S. Tekinay), Symposium on Worldwide Advances in Communications Networks,” George Mason University, Fairfax, VA, May 1992.

26. “Dynamic Channel Allocation and Reallocation for Dual System Cellular Networks,” (with S. Tekinay and A. Kakaes), in Third WINLAB Workshop, Rutgers, NJ., April 1992.

27. “Traffic Modeling for Broadband Integrated Networks,” (with F. Yegenoglu), in the Workshop on High Speed Networks, Stuttgart University, September 1991.

28. “Advanced Call Control in Mobile Cellular Networks,” in the IEEE Intelligent Network 91 Workshop, April 1991.

29. “Architectural Alternatives in Multicompany Intelligent Network,” (with K. Chao and R. Watts), in the IEEE Intelligent Network 91 Workshop, April 1991.

30. “High Speed Network Architecture,” invited talk, Defense Communications Engineering Center Workshop, Reston, VA, June 1990.

31. “Signalling System No. 7 and X.25,” (with L. Patterson), MCI Communications Symposium, Reston, VA, November 1989.