

Tara Javidi

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Electrical and Computer Engineering
University of California, San Diego

Education

University of Michigan, Ann Arbor, MI

Ph.D., Electrical Engineering and Computer Science: Systems May 2002
Major: Communications; Minor: Control
Dissertation: "Resource Allocation: Issues and Applications in Networks"

Master of Science, Applied Mathematics December 1999
Mathematics of Optimization and Stochastic Processes

Master of Science, Electrical Engineering and Computer Science: Systems May 1998
Major: Communications; Minor: Control

Sharif University of Technology, Tehran, Iran

Baccalaureate of Science, Electrical Engineering June 1996
Major: Electronics

Honors/ Awards

National Science Foundation, Early Career (CAREER) award April 2004

Barbour Scholarship: Rackham School of Graduate Studies, University of Michigan September 1999

Ranked first in the nation-wide entrance exam for Iranian universities (among 300,000 examinees) June 1992

Awards for distinction from

- Presidential Office, Tehran, Iran
- The Ministry of Education, Tehran, Iran
- Educational Vice-President, Sharif University of Technology, Tehran, Iran
- Iranian Women Association, Tehran, Iran

IEEE Member

Work Experience

Assistant Professor

Electrical and Computer Engineering Department, University of California, San Diego Jan 2005-present
Electrical Engineering Department, University of Washington, Seattle Sept 2002-Dec 2004

Research Focus: Network design and control in wireless communication; Cross-layer Wireless Network Design, Multi-Access Control in OFDM and CDMA; Radio-aware Mesh Network Routing

Center Affiliations: Center for Wireless Communications (CWC), Advanced Network Science Group (ANS-CALIT2), Center for Information Theory and Applications (ITA-CALIT2), Center for Networked Systems (CNS)

Teaching: Dynamical Systems under Uncertainty (ECE272A); Stochastic Processes and Markov Chains (EE508); Computer and Communications Networks (EE566, ECE257A); Discrete Signals and Systems (EE341, ECE161A); Microeconomics and Distributed Optimizations in Networks (EE597)

Research Intern, Network Group

Tellabs Research Center, Tellabs Inc., Mishawaka, IN 46545

Summer 2000

Publications

Journal Publications

1. T. Javidi, N. Song, and D. Teneketzis. Expected Makespan Minimization in Two Interconnected Queues on Identical Parallel Machines. *Journal of Probability in Engineering and Information Science*, vol. 15, pp 409-443, 2001
2. T. Javidi and D. Teneketzis. An Approach to Connection Admission Control in Single-hop Multi-service Wireless Networks with QoS Requirements. *IEEE Transactions on Vehicular Technology*, July 2003
3. T. Javidi and D. Teneketzis. Sensitivity Analysis for Optimal Routing in Wireless Ad Hoc Networks in Presence of Error in Channel Quality Estimation. *IEEE Transactions on Automatic Control*, August 2004
4. J. Price and T. Javidi. Decentralized Rate Assignments in a Multi-Sector CDMA Network, *IEEE Transactions on Wireless Communications*, December 2006
5. P. Elia, S. Kittipiyakul, T. Javidi, Cooperative Diversity Schemes for Asynchronous Wireless Networks, *Wireless Personal Communications, Springer Netherlands*, Volume 43, No 1, October, 2007
6. S. Kittipiyakul and T. Javidi, Resource allocation in OFDMA with time-varying channel and bursty arrivals, *IEEE Communications Letters*, v. 11, no. 9, pp. 708-710, Sept 2007
7. J. Price and T. Javidi, Leveraging Downlink for Efficient Uplink Allocation in a Single-Hop Wireless Network, *IEEE Transactions on Information Theory*, v. 53. no. 11, pp. 4330-4339, Nov 2007
8. S. Kittipiyakul and T. Javidi. Optimal Operating Point for MIMO Multiple-access Channel with Bursty Traffic. *IEEE Trans. Wireless Communication*, v. 6. no. 12, pp. 4464-4474, December 2007.
9. J. Price and T. Javidi, Distributed Rate Assignments for Simultaneous Interference and Congestion Control in CDMA-Based Wireless Networks. *IEEE Transactions on Vehicular Technology*, Volume 57, Issue 3, pp.1980 - 1985, May 2008
10. D. Klein, P. Lee, K. Morgansen, T. Javidi, Integration of Communication and Control using Discrete Time Kuramoto Models for Multivehicle Coordination over Broadcast Networks, *IEEE Journal of Selected Areas in Communications*, v. 26. no. 4. May 2008
11. N. Ehsan and T. Javidi, Delay Optimal Transmission Policy in a Wireless Multi-access Channel. *IEEE Transactions on Information Theory*, Volume 54, Issue 8, pp. 3745 – 3751, August 2008
12. J. Price and T. Javidi. Network Coding Games with Unicast Flows. *IEEE Journal on Selected Areas in Communications*, Volume 26, Issue 7, pp. 1302 – 1316, September 2008
13. T. Javidi. Cooperative and Non-cooperative Resource Sharing in Networks: A Delay Perspective. *IEEE Transactions on Automatic Control*, Volume 53, Number 9, pp 2134-2142, October 2008
14. S. Kittipiyakul, P. Elia, T. Javidi. High-SNR Analysis of Outage-Limited Communications with Bursty and Delay-Limited Information. *IEEE Transaction on Information Theory*, Volume 55, Issue 2, pp 746 – 763, February 2009
15. S. Kittipiyakul and T. Javidi, Delay-Optimal Server Allocation in Multi-Queue Multi-Server Systems with Time-Varying Connectivities. To appear in *IEEE Trans. on Info. Theory*
16. S. Haji Ali Ahmad, M. Liu, T. Javidi, Q. Zhao, and B. Krishnamachari, Optimality of Myopic Sensing in Multi-Channel Opportunistic Access, *Submitted to IEEE Trans. on Info. Theory*
17. V. Subramanian, S. Kittipiyakul, T. Javidi, Many-Sources Large Deviations for Max-Weight Scheduling, *Submitted to IEEE Trans. on Info. Theory*

Book Chapters

- 1 J. Price and T. Javidi, “On Dual Methods for Adaptive Distributed Resource Allocation in Wireless Networks: A Taxonomy of Practical Challenges in CDMA,” in *Resource Allocation in Next Generation Wireless Networks*, Eds. Wei Li and Yi Pan, Nova Science Publishers, 2005

Selected List of Conference Publications (Refereed)

- 1 T. Javidi, B. Krishnamachari, Q. Zhao, M. Liu, "Optimality of Myopic Sensing in Multi-Channel
Opportunistic Access," In Proceedings of *IEEE International Communications Conference*, May 2008
- 2 J. Price and T. Javidi, "On Pricing Methods to Address Preference Revelation and Distributed Control in
Random Access Networks," In Proceedings of *Asilomar Conference on Signals, Systems, and Computers*,
November 2007. [Invited]
- 3 P. Gupta and T. Javidi, "Towards Throughput and Delay Optimal Routing for Wireless Ad-Hoc
Networks" In Proceedings of *Asilomar Conference on Signals, Systems, and Computers*, November 2007.
[Invited]
- 4 S. Kittipiyakul and T. Javidi, "Relay scheduling and cooperative diversity for delay-sensitive and bursty
traffic," in Proceedings of *Allerton Conference on Communication, Control, and Computing*, Sept. 2007
[invited]
- 5 P. Elia, S. Kittipiyakul, T. Javidi, "Cooperative diversity in wireless networks with stochastic and bursty
traffic," *IEEE International Symposium on Information Theory*, Nice, France, June 24, 2007
- 6 P. Elia, S. Kittipiyakul, T. Javidi, "On the responsiveness-diversity-multiplexing tradeoff," *Int'l
Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*,
Limassol, Cyprus, April 16, 2007
- 7 D. Lim, J. Shim, T. Simunic Rosing, and T. Javidi, "Scheduling Data Delivery in Heterogenous
Wireless Sensor Networks," *IEEE International Symposium on Multimedia*, December 2006.
- 8 Y. Lin, T. Javidi, R. L. Cruz and L. B. Milstein, Distributed Link Scheduling, Power Control and
Routing for Multi-hop Wireless MIMO Networks. In Proceedings of *Asilomar Conference on Signals,
Systems, and Computers*, November 2006. [Invited]
- 9 J. Price and T. Javidi, Leveraging Downlink for Optimal Uplink Allocation: An Incentive Compatible
Approach, In Proceedings of *Asilomar Conference on Signals, Systems, and Computers*, November 2006.
- 10 T. Javidi, Cooperation and Resource Sharing in Data Networks: A Delay Perspective. In Proceedings of
Allerton Conference on Communication, Control, and Computing, October 2006.
- 11 J. Price and T. Javidi. Leveraging Forward Link for Regulation of Distributed Reverse Link CDMA. In
Proceedings of the *IEEE Globecom Conference*, November 2006
- 12 S. Kittipiyakul and T. Javidi. Optimal Operating Point in MIMO Channel for Delay-Sensitive and Bursty
Traffic. in Proceedings of the *IEEE International Symposium on Information Theory*, July 2006
- 13 M. Arisoylu, T. Javidi and R. L. Cruz. End-to-End and Mac-Layer Fair Rate Assignment in Interference
Limited Wireless Access Networks. In Proceedings of the *IEEE Communication Conference, June 2006*
- 14 J. Price and T. Javidi, Jointly Optimal MAC and Transport Layers in CDMA Broadband Networks. In
Proceedings of *IEEE Conference on Decision and Control*, December 2005. [invited]
- 15 T. Javidi, M. Liu, and R. Vijayakumar. Revisiting Saturation Throughput in 802.11. In proceedings of the
43rd Allerton Conference on Communication, Control, and Computing, September 2005 [invited]
- 16 M. Arisoylu, R. L. Cruz, and T. Javidi, Rate Assignment in Micro-Bu®ered High Speed Networks. In
proceedings of the *43rd Allerton Conference on Communication, Control, and Computing*, September 2005
- 17 S. Kittipiyakul and T. Javidi. A Fresh Look at Optimal Subcarrier Allocation in OFDMA Systems. *IEEE
Conference on Decision and Control (CDC 2004)*, Dec 2004 [Invited]
- 18 J. Price and T. Javidi. Cross-Layer (MAC and Transport) Optimal Rate Assignment in CDMA-Based
Wireless Broadband Networks. In proceedings of *Asilomar Conference on Signals, Systems, and
Computers*, November 2004
- 19 T. Javidi. Rate Stable Resource Allocation in OFDM Systems: From Waterfilling to Queue-Balancing.
Allerton Conference on Communication, Control, and Computing, September 2004 [invited]
- 20 J. Price and T. Javidi. Joint Scheduling for Self-Configuring Ad-Hoc CDMA Networks. In proceedings of
the *42nd Allerton Conference on Communication, Control, and Computing*, September 2004
- 21 T. Javidi. Decentralized Rate Assignment in a Multi-Sector CDMA Network. Proceedings of *IEEE
Globecom Conference, November 2004*
- 22 T. Javidi and D. Teneketzis. Outage-Based Admission Region in a Cellular Network. In Proceedings of
IEEE Wireless Communications and Networking Conference, vol. 1, pp. 124-129, March 2002
- 23 T. Javidi and D. Teneketzis. Ad Hoc Network Routing: Channel Quality Estimation and Robustness. In
Proceedings *40th Allerton Conference on Communication, Control, and Computing*. October 2002
- 24 T. Javidi and D. Teneketzis. Resource Allocation in Multi-Service Cellular Networks with Outage-based
QoS Requirements. In Proceedings of *39th Allerton Conference on Communication, Control, and
Computing*. Oct. 2001
- 25 T. Javidi, R. Magill, and T. Hrabik. A High Throughput Scheduling Algorithm for a Buffered Crossbar
Switch Fabric. In Proceedings of *IEEE International Conference on Communications*, vol. 5, pp. 1586-
1591

Patents

US Patent: 6915372. Methods and apparatus for managing traffic through a buffered crossbar switch fabric, Issued July 5, 2005

Technical Program Committee (Conferences)

1. International Symposium on Information Theory, 2009
2. IEEE International Communications Conference, 2008
3. IEEE Globecom Conference, 2007 and 2008
4. Mobihoc (ACM Int'l Symposium on Mobile Ad Hoc Networking and Computing) 2007
5. WiOpt, 2007
6. IEEE INFOCOM Conference, 2007
7. Information Theory and Application (ITA), San Diego, 2007 [Technical Chair], 2008 [General Chair]
8. Asilomar Conference on Signals, Systems, and Computers, 2006 [Communications and Networking Track Chair]
9. Information Theory and Application (ITA) Workshop, San Diego, 2006
10. WiOPT (Int'l Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks) 2006

Professional Services

1. National Science Foundation (NSF), Proposal Review Panel
2. Peer Reviewer for various IEEE Transactions and Magazine
3. Guest Editor, Journal on Selected Areas in Communications

Funded Projects

1. Cross-layer and Network Design, Funded by NSF (CAREER), ARO (Multi University Research Initiative, PI: J. Ziedler), UC-Discovery, and Industrial Members of CWC
2. MIMO Communications and Ad Hoc Networking, Funded by ARO (Multi University Research Initiative, PI: J. Ziedler), UC-Discovery and Industrial Members of CWC
3. Integrated Communications and Control, Funded by AFOSR (Co-PI: K. Morgansen), NSF (Co-PIs: K. Morgansen and A. Scaglione)
4. Diversity Routing in Radio Aware Mesh Networking, Funded by Ericsson and CALIT2 (Co-PI: R. Cruz)
5. Cognitive Radio, Funding Provided by UC-Discovery and Industrial sponsors of CWC