

Vishal Misra

Associate Professor
Department of Computer Science
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EDUCATION	University of Massachusetts Amherst Ph.D. in Electrical Engineering Advisor: Wei-Bo Gong	Amherst, MA May 2000
	University of Massachusetts Amherst M.S. in Electrical Engineering Advisor: Lewis E. Franks	Amherst, MA May, 1996
	Indian Institute of Technology Bachelor of Technology in Electrical Engineering	Mumbai, India 1992
EXPERIENCE	Columbia University <i>Associate Professor, Dept. of Computer Science</i> <i>Assistant Professor, Dept. of Computer Science</i>	New York, NY Spring 2006 - Present Fall 2001 - Fall 2005
	University of Massachusetts <i>Post-Doctoral Research Associate, Computer Networks Research Group</i>	Amherst, MA 2000-Fall 2001
	University of Massachusetts <i>Research Assistant, Complex Systems Modeling and Control Lab</i>	Amherst, MA 1996-2000
	Verizon (formerly Nynex Science & Technology) <i>Student Intern</i>	White Plains, NY Summer 1994, 1995
	CricInfo (http://www.cricket.org) <i>Programming Coordinator</i>	London, UK 1994-1998
	Indian Institute of Technology <i>Research Associate</i>	Mumbai, India 1992-93

AWARDS

- Elected to the Board of Directors, ACM Sigmetrics, 2007-2009
- Elected Member, IFIP Working Group 7.3 on Computer Performance Modeling and Analysis, 2005.
- NSF Career Award, 2003
- IBM Faculty Award, 2007, 2002
- DoE Early Career Principal Investigator Award in Applied Mathematics, Computer Science and High Performance Networks, 2002

PUBLICATIONS

Journal Publications

1. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Distributed Algorithms for Secure Multi-path Routing in Attack-Resistant Networks**, *IEEE/ACM Transactions on Networking*, To appear.
2. Samuli Aalto, Urtzi Ayesta, Sem Borst, Vishal Misra and Rudesindo Nunez-Queija, **Beyond Processor Sharing**, *ACM/Sigmetrics Performance Evaluation Review, Special issue on "New Perspectives on Scheduling"*, March, 2007.
3. Wei-Bo Gong, Yong Liu, Vishal Misra and Don Towsley, **Self-Similarity and Long Range Dependence on the Internet: A Second Look at the Evidence, Origins and Implications**, *Computer Networks*, Volume 48, pp. 377-399, June, 2005.
4. Daniel R. Figueiredo, Benyuan Liu, Anja Feldmann, Vishal Misra, Don Towsley and Walter Willinger, **On TCP and self-similar traffic**, *Performance Evaluation*, Volume 61, pp. 129-141, July, 2005.
5. Yossi Chait, C.V. Hollot, Vishal Misra, Don Towsley, H. Zhang and Y. Cui, **Throughput Differentiation Using Coloring at the Network Edge and Preferential Marking at the Core**, *IEEE/ACM Transactions on Networking*, Volume 13, Number 4, August, 2005.
6. Angelos Stavrou, Debra L. Cook, William G. Morein, Angelos D. Keromytis, Vishal Misra and Dan Rubenstein, **WebSOS: An Overlay-based System For Protecting Web Servers From Denial of Service Attacks**, *Journal of Communication Networks*, Volume 48, Number 5, August, 2005.
7. Yong Liu, Francesco LoPresti, Vishal Misra, Don Towsley and Yu Gu, **Scalable fluid models and simulations for large-scale IP networks**, *ACM Transactions on Modeling and Computer Simulation (TOMACS)*, July, 2004.
8. Angelos Keromytis, Vishal Misra and Dan Rubenstein, **SOS: An Architecture for Mitigating DDoS Attacks**, *IEEE Journal on Selected Areas in Communications (JSAC), special issue on Service Overlay Networks*, Volume 22, Number 1, January, 2004.
9. D. R. Figueiredo, B. Liu, Vishal Misra and Don Towsley, **On the Autocorrelation Structure of TCP Traffic**, *Journal of Computer Networks*, 2002, Special Issue on Advances in Modeling and Engineering of Long-Range Dependent Traffic.
10. C.V. Hollot, Vishal Misra, Don Towsley and Wei-Bo Gong, **Analysis and design of controllers for AQM routers supporting TCP flows**, *IEEE Transactions on Automatic Control*, 2002.
11. J. Arias, A.K. Chhabra, and Vishal Misra, **A Practical Application of Graphics Recognition: Helping with the Extraction of Information from Telephone Company Drawings**, *Lecture Notes in Computer Science*, Volume 1389, 1998.
12. A.K. Chhabra, Vishal Misra and J. Arias, **Detection of horizontal lines in noisy run length encoded images: The FAST method**, *Lecture Notes in Computer Science*, Volume 1072, 1996.

Refereed Conference Publications

1. Alix L.H. Chow, Leana Golubchik and Vishal Misra, **Improving BitTorrent: A Simple Approach**, *Proceedings of IPTPS*, 2008.
2. Joshua Reich, Vishal Misra and Dan Rubenstein, **Roomba MADNeT: a Mobile Ad-hoc Delay Tolerant Network Testbed**, *MC2R: Mobile Computing and Communications Review*, ACM Sigmobile, 2008.

3. Joshua Reich, Vishal Misra and Dan Rubenstein, **The Time Correlated Update Problem**, *Performance Evaluation Review*, Proceedings of MAMA, ACM Sigmetrics, ACM Special Interest Group on Measurement and Evaluation, Volume 35, Number 2, pp. 33-35, September, 2007.
4. Joshua Reich, Vishal Misra and Dan Rubenstein, **MADNeT Testbed**, *Joint Mobicom / Mobihoc Student Demo Competition*, ACM, Montreal, QC, September, 2007, Best Student Demo Award Recipient.
5. Richard T.B. Ma, Dahming Chiu, John C.S. Lui, Vishal Misra and Dan Rubenstein, **Internet Economics: The use of Shapley value for ISP settlement**, *Proceedings of 2007 ACM Conference on Emerging network experiment and technology (CoNEXT 2007)*, Columbia University, New York, December, 2007, (Acceptance Rate: 20.3%).
6. Abhinav Kamra, Vishal Misra and Dan Rubenstein, **CountTorrent: Ubiquitous Access to Query Aggregates in Dynamic and Mobile Sensor Networks**, *ACM SenSys*, Sydney, Australia, November, 2007, (Acceptance Rate: 16.6%).
7. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Toward Optimal Network Fault Correction via End-to-End Inference**, *Proceedings of IEEE INFOCOM*, Anchorage, Alaska, May, 2007, (Acceptance Rate: 18.0%).
8. Bong-Jun Ko, Vishal Misra, Jitendra Padhye and Dan Rubenstein, **Distributed Channel Assignment in Multi-Radio 802.11 Mesh Networks**, *IEEE Wireless Communications and Networking Conference (WCNC) 2007*, Hong Kong, March, 2007.
9. Raj Kumar Rajendran, Vishal Misra and Dan Rubenstein, **Theoretical Bounds on Control-Plane Self-Monitoring in Routing Protocols**, *Proceedings of ACM Sigmetrics*, San Diego, CA, June, 2007, (Acceptance Rate: 17.1%).
10. Hanhua Feng, Vishal Misra and Dan Rubenstein, **PBS: A Unified Priority-Based Scheduler**, *Proceedings of ACM Sigmetrics*, San Diego, CA, June, 2007, (Acceptance Rate: 17.1%).
11. Hoon Chang, Vishal Misra and Dan Rubenstein, **Fairness and Physical Layer Capture in Random Access Networks**, *Proceedings of IEEE SECON: Fourth Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks*, San Diego, CA, U.S.A., June, 2007, (Acceptance Rate: 21.3%).
12. Abhinav Kamra, Jon Feldman, Vishal Misra and Dan Rubenstein, **Growth Codes: Maximizing Sensor Network Data Persistence**, *Proceedings of ACM Sigcomm*, Pisa, Italy, September, 2006, (Acceptance Rate: 12.4%).
13. Raj Kumar Rajendran, Vishal Misra and Dan Rubenstein, **Control Plane Resilience: The Method of Strong Detection**, *Control Plane Resilience: The Method of Strong Detection*, Allerton 2006, September, 2006.
14. Hoon Chang, Vishal Misra and Dan Rubenstein, **Exploiting Opportunistic Packet Delivery for Rate Control in 802.11 Wireless Networks**, *IEEE ICCS: Tenth IEEE International Conference on Communication Systems*, October, 2006.
15. Richard T.B. Ma, Vishal Misra and Dan Rubenstein, **Modeling and Analysis of Generalized Slotted-Aloha MAC Protocols in Cooperative, Competitive and Adversarial Environments**, *The 26th International Conference on Distributed Computing Systems (ICDCS 06)*, Lisboa, Portugal, July, 2006, (Acceptance Rate: 13.8%).
16. Eli Brosh, Salman A. Baset, Vishal Misra, Dan Rubenstein, and Henning Schulzrinne, **Understanding the Behavior of TCP for Real-time CBR workloads**, *Proceedings 2nd CoNEXT Conference (short paper)*, Lisboa, Portugal, December, 2006.
17. Daniel Villela, Vishal Misra, Dan Rubenstein and Sambit Sahu, **Impact of Load Sharing on Provisioning Services**, *Annual Joint Conference of the IEEE Computer and Communications Societies (IEEE Infocom)*, Barcelona, Spain, April, 2006, (Acceptance Rate: 18.0%).

18. Hoon Chang, Vishal Misra and Dan Rubenstein, **A General Model and Analysis of Physical Layer Capture in 802.11 Networks**, *Annual Joint Conference of the IEEE Computer and Communications Societies (IEEE Infocom)*, Barcelona, Spain, April, 2006, (Acceptance Rate: 18.0%).
19. Abhinav Kamra, Jon Feldman, Vishal Misra and Dan Rubenstein, **Encoding for Persistent Sensor Networks**, *Allerton Conference on Communication, Control and Computing*, September, 2005.
20. Hanhua Feng, Vishal Misra and Dan Rubenstein, **Optimal state-free, size-aware dispatching for heterogeneous M/G/-type systems**, *Performance Evaluation (Proceedings of Performance 2005)*, Volume 62, Number Issues 1-4, October, 2005, (Acceptance Rate: 21.8%).
21. Hoon Chang and Vishal Misra, **802.11 Link Interference: A Simple Model and A Performance Enhancement**, *International IFIP-TC6 Networking Conference (NETWORKING)*, Waterloo, Canada, pp. 1330 - 1333, May, 2005, (Acceptance Rate: 24.7%).
22. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Distributed Algorithms for Secure Multipath Routing**, *Proceedings of IEEE Infocom*, Miami, FL, March, 2005, (Acceptance Rate: 17.2%).
23. Abhinav Kamra, Jon Feldman, Vishal Misra and Dan Rubenstein, **Data Persistence in Sensor Networks: Towards Optimal Encoding for Data Recovery in Partial Network Failures**, *Workshop on Mathematical performance Modeling and Analysis*, June, 2005.
24. Raj Kumar Rajendran, Vishal Misra and Dan Rubenstein, **Brief Announcement: Strong Detection of Misconfigurations**, *Principles of Distributed Computing (PODC)*, Las Vegas, NV, July, 2005, (Acceptance Rate: 22.5%).
25. Angelos Stavrou, Angelos D. Keromytis, Jason Nieh, Vishal Misra and Dan Rubenstein, **MOVE: An End-to-End Solution To Network Denial of Service**, *Proceedings of the Internet Society (ISOC) Symposium on Network and Distributed Systems Security (SNDSS)*, San Diego, CA, February, 2005, (Acceptance Rate: 12.9%).
26. Abhinav Kamra, Hanhua Feng, Vishal Misra and Angelos Keromytis, **The Effect of DNS Delays on Worm Propagation in an IPv6 Internet**, *Proceedings of IEEE Infocom*, IEEE, Miami, FL, USA, 2005, (Acceptance Rate: 17.2%).
27. John Lui, Vishal Misra and Dan Rubenstein, **On the Robustness of Soft State Protocols**, *12th IEEE International Conference on Network Protocols (ICNP)*, Berlin, Germany, October, 2004, (Acceptance Rate: 15.5%).
28. Angelos Stavrou, John Ioannidis, Angelos D. Keromytis, Vishal Misra and Dan Rubenstein, **A Pay-per-Use DoS Protection Mechanism For The Web**, *In Proceedings of the 2nd Applied Cryptography and Network Security (ACNS) Conference*, Yellow Mountain, China, June, 2004, (Acceptance Rate: 12.1%).
29. Abhinav Kamra, Vishal Misra and Erich Nahum, **Yaksha: A Self-Tuning Controller for Managing the Performance of 3-Tiered Web Sites**, *International Workshop on Quality of Service (IWQoS)*, June, 2004, (Acceptance Rate: 15.6%).
30. Abhinav Kamra, Vishal Misra and Erich Nahum, **Controlling the Performance of 3-Tiered Web sites: Modeling, Design and Implementation**, *ACM Sigmetrics*, June, 2004.
31. Hanhua Feng and Vishal Misra, **On the relationship between coefficient of variation and the performance of M/G/1-FB queues**, *MAMA*, ACM, 2004.
32. H. Han, C.V. Hollot, Yossi Chait and Vishal Misra, **TCP Networks Stabilized by Buffer-Based AQMs**, *Proceedings of IEEE Infocom*, 2004, (Acceptance Rate: 18.4%).
33. Laura Wynter, Don Towsley, Zhen Liu and Vishal Misra, **Dynamic offloading in a multi-provider environment: a behavioral framework and a polynomial-time dual algorithm for modeling and influencing peering**, *PRIXNET 2004 - Internet Pricing Workshop*, 2004.

34. Zhen Liu, Naceur Malouch, Vishal Misra, Dan Rubenstein and Sambit Sahu, **Bandwidth-Sharing Schemes for Multiple Multi-Party Sessions**, *Proceedings of the 18th International Teletraffic Congress (ITC 18)*, Berlin, Germany, September, 2003.
35. William G. Morein, Angelos Stavrou, Debra L. Cook, Angelos D. Keromytis, Vishal Misra and Dan Rubenstein, **Using Graphic Turing Tests to Counter Automated DDoS Attacks Against Web Servers**, *Proceedings of the 10th ACM International Conference on Computer and Communications Security (CCS)*, Washington D.C., Oct, 2003, (Acceptance Rate: 13.8%).
36. Honggang Zhang, C.V.Hollot, Don Towsley and Vishal Misra, **A Self-Tuning Structure for Adaptation in TCP/AQM Networks**, *ACM Sigmetrics (short paper)*, June, 2003.
37. Abhinav Kamra, Vishal Misra and Don Towsley, **Achieving High Throughput in Low Multi-plexed, High Bandwidth, High Delay Environments**, *First International Workshop on Protocols for Fast Long-Distance Networks*, February, 2003.
38. Honggang Zhang, C. V. Hollot, Don Towsley and Vishal Misra, **A self-tuning structure for adaptation in TCP/AQM networks**, *Proceedings of IEEE Globecom*, Volume 22, Number 1, pp. 3641-3645, December, 2003.
39. C.V. Hollot, Yong Liu, Vishal Misra and Don Towsley, **Unresponsive Flows and AQM performance**, *Proceedings of IEEE Infocom*, April, 2003, (Acceptance Rate: 20.8%).
40. Hanhua Feng and Vishal Misra, **Mixed Scheduling Disciplines for Network Flows**, *MAMA*, ACM, 2003.
41. Yong Liu, Francesco LoPresti, Vishal Misra and Don Towsley, **Fluid Models and Solutions for Large-Scale IP Networks**, *Proceedings of ACM Sigmetrics*, San Diego, CA, 2003, (Acceptance Rate: 11.7%).
42. M. Vojnovic, J.-Y. Le Boudec, Don Towsley and Vishal Misra, **A Note on the Stochastic Bias of Some Increase-Decrease Congestion Controls: HighSpeed TCP Case Study**, *PFLDNet*, CERN, Geneva, 2003.
43. E.G. Coffman Jr., Z. Ge, Vishal Misra and Don Towsley, **Network Resilience: Exploring Cascading Failures within BGP**, *Allerton Conference on Communication, Control and Computing*, October, 2002.
44. Angelos Keromytis, Vishal Misra, and Dan Rubenstein, **Using Overlays to Improve Network Security**, *SPIE ITCOM Conference on Scalability and Traffic Control in IP Networks II*, Boston, MA, July, 2002, Invited Paper.
45. Angelos Keromytis, Vishal Misra and Dan Rubenstein, **SOS: Secure Overlay Services**, *Proceedings of ACM Sigcomm*, Pittsburgh, PA, August, 2002, (Acceptance Rate: 8.3%).
46. Yossi Chait, C.V. Hollot, Vishal Misra, Don Towsley, Honggang Zhang and John Lui, **Providing Throughput Differentiation for TCP Flows Using Adaptive TwoColor Marking and Multi-Level AQM**, *Proceedings of IEEE Infocom*, 2002, (Acceptance Rate: 20.5%).
47. Yossi Chait, C.V. Hollot, Vishal Misra, Huaizhong Han and Yoram Halevi, **Dynamic Analysis of Congested TCP Networks**, *Proceedings of American Control Conference*, 2002.
48. C.V. Hollot, Vishal Misra, Don Towsley and Wei-Bo Gong, **A Control Theoretic Analysis of RED**, *Proceedings of IEEE Infocom*, April, 2001, (Acceptance Rate: 23.1%).
49. C. V. Hollot, Vishal Misra, Don Towsley and Wei-Bo Gong, **On Designing Improved Controllers for AQM Routers Supporting TCP Flows**, *Proceedings of IEEE Infocom*, April, 2001, (Acceptance Rate: 23.1%).
50. Yong Liu, Wei-Bo Gong, Vishal Misra and Don Towsley, **On the tails of Web filesize distributions**, *Allerton Conference on Communication, Control and Computing*, 2001.

51. Yossi Chait, C.V. Hollot, Vishal Misra, Salomon Oldak, Don Towsley and Wei-Bo Gong, **Fixed and Adaptive Model-Based Controllers for Active Queue Management**, *Proceedings of American Control Conference*, 2001.
52. Yossi Chait, Salomon Oldak, C.V. Hollot and Vishal Misra, **An Adaptive Control Strategy For AQM Routers Supporting TCP Flows**, *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, 2001.
53. Vishal Misra, Wei-Bo Gong and Don Towsley, **Fluid-based Analysis of a Network of AQM Routers Supporting TCP Flows with an Application to RED**, *Proceedings of ACM Sigcomm*, Stockholm, Sweden, August, 2000, (*Acceptance Rate: 10.9%*).
54. Vishal Misra, Wei-Bo Gong and Don Towsley, **Stochastic Differential Equation Modeling and Analysis of TCP Window Size Behavior**, *Proceedings of IFIP WG 7.3 Performance*, November, 1999.
55. Vishal Misra, A.K. Chhabra, and J. Arias, **A Memory Efficient Method for Fast Transposing Run-Length Encoded Images**, *Proceedings of the International Conference on Document Analysis and Recognition (ICDAR'99)*, 1999.
56. Vishal Misra and Wei-Bo Gong, **A Hierarchical Model for Teletraffic**, *Proceedings of the 37th Annual IEEE CDC*, Tampa, pp. 1674-1679, 1998.
57. J. Arias, A.K. Chhabra, and Vishal Misra, **Finding straight lines in drawings**, *Proceedings of the International Conference on Document Analysis and Recognition (ICDAR'97)*, Ulm, Germany, August, 1997.
58. J. Arias, A.K. Chhabra, and Vishal Misra, **Interpreting and representing tabular documents**, *Proceedings of International Conference on Computer Vision and Pattern Recognition (CVPR)*, July, 1996.
59. J. Arias, A.K. Chhabra, and Vishal Misra, **Efficient interpretation of tabular documents**, *Proceedings of 13th International Conference on Pattern Recognition (ICPR)*, Volume III, pp. 681-685, August, 1996.
60. A.K. Chhabra, S. Surya, and Vishal Misra, **Detection of horizontal lines in telephone company drawings**, *Proceedings of the IAPR Workshop on Graphics Recognition (GREC'95)*, August, 1995.
61. A.K. Chhabra and Vishal Misra, **Experiments with Statistical Connectionist Methods and Hidden Markov Models for Recognition of Text in Telephone Company Drawings**, *Proceedings of the Second International Workshop on Applications of Neural Networks to Telecommunications (IWANN'95)*, 1995.
62. Vishal Misra and P.G. Poonacha, **A New Approach to the Design of Cascade Form Powers of Two FIR Filters using Karmarkar's Algorithm**, *Proceedings of the Fifth Annual International DSP Workshop held in the Starved Rock Resort, Illinois*, 1992.

GRANTS

1. PI, **SMA/PDOS Collaborative Research: Design, Analysis, and Control of Adaptive Sharing Mechanisms**, NSF, with Coffman (EE), Jelenkovic (EE), Rubenstein (EE), Harchol-Balter (CMU), \$750,000, September 2006-August 2009.
2. PI, **CT-ISG: Understanding Control Plane Security: The Method of Strong Detection**, NSF, with Rubenstein (EE), \$400,000, September 2006-August 2009.
3. PI, **Wireless Internet Center for Advanced Technology**, NSF I/UCRC Center, \$250,000 with Schulzrinne, Maxemchuk (EE) and Rubenstein (EE), August 2004- May 2008.
4. co-PI **Zero Outage Dynamic Intrinsically Assurable Communities (ZODIAC)**, DARPA/STO, \$835,357 with Bellovin (PI), Keromytis, Schulzrinne, Dan Rubenstein (EE), Maxemchuck (EE), November 2007 - May 2009

5. co-PI **Funneling Impulses in Sensor Networks**, NSF, \$750,000, with Jelenkovic (EE), Maxemchuk (PI, EE) and Rubenstein (EE), August 2004- May 2007.
6. PI, **Expecting the Unexpected: A Study of Network Vulnerabilities** \$425K, 8/1/2003-7/31/2008. NSF Career Award
7. co-PI Cisco, **Secure Overlay Services**, with Keromytis (PI) and Rubenstein (EE), \$70,000 in July 2002 and \$76,000 in July 2003.
8. co-PI Intel, **Secure Overlay Services** with Keromytis, Rubenstein (PI, EE), \$120,000 in August 2003, \$90,000 in June 2004, \$75,000 and 25 Thinkpad T20 laptops in August 2005.
9. PI Microsoft with Rubenstein (also PI, EE), \$20,000 and ten mesh boxes, July 2005.
10. co-PI **Secure Overlay Services**, AFRL/DARPA, with Keromytis (PI) and Rubenstein (EE), \$615,000, June 2002-May 2004
11. co-PI **Scalable AQM routers supporting heterogeneous traffic**, NSF, with Holloot (PI, UMass) and Chait (UMass), \$340,000, June 2002-May 2005
12. PI **A Study of Transport Protocols for Wide Area Scientific Applications**, DOE Career Award, \$303,000, September 2002-May 2005
13. IBM Faculty Award, \$40,000, 2002
14. IBM Faculty Award, \$30,000, 2007
15. co-PI **Distributed Intrusion Detection Feasibility Study**, NSA, with Stolfo (PI), Malkin and Keromytis, \$200,000, March 2003-March 2004.

PATENTS

- US Patent Number: US05923782, “System for detecting and identifying substantially linear horizontal and vertical lines of engineering drawings”, inventors A.K. Chhabra, Vishal Misra and S. Surya
Filed Aug 1, 1996. Awarded Jul 13, 1999.
- US Patent Number: US7085236, “Active queue management for differentiated services”, inventors Salomon Oldak, Wei-Bo Gong, Christopher V. Holloot, Don Towsley, Vishal Misra and Yossi Chait
Filed May 20, 2002. Awarded Aug 1, 2006.

INVITED
TALKS

- Invited expert to formulate strategic long term research priorities of EU Networked Media Program (FP7): Brussels, March 2007
- IBM Watson Performance Modeling and Analysis Seminar Series, August 2006
- Microsoft Research, Cambridge, July 2006.
- Statslab, Dept. of Mathematics, Cambridge University, July 2006.
- Invited Paper, INFORMS conference, Pittsburgh November 2006.
- USC Computer Science Lecture Series, May 2006
- CMU, Computer Science Lecture Series, May 2005
- Keynote Speaker, Performance Track of SBC (Brazil’s Annual Computer Science Conference), July 2005
- Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, March 2004.

- Institute for Pure and Applied Mathematics (IPAM), Large-Scale Communication Networks: Topology, Routing, Traffic, and Control Workshop, UCLA, September 2003
- The Congestion Control and Heavy Traffic Modeling Workshop, Statistical and Applied Mathematical Sciences Institute (SAMSI), North Carolina, September 2003
- The COST(EU)-NSF(USA) Workshop on Exchanges & Trends in Networking, Crete, June 2003
- Lecture Series, IBM Research Labs, New Delhi, January 2003
- Hot Topic on Long Range Dependence, Performance 2002 Conference, Rome, October 2002
- Computer Science Colloquium, University of Pittsburgh, April 2002
- Lab Colloquium, HP Labs, Palo Alto, March 2002
- IPAM Communication Networks Workshop, LA, March 2002
- Invited Talk, Nortel Networks, Billerica, October 2001
- Invited Paper, Informs 2001, New York City, July 2001
- Caltech, October 2000
- Computer Science Lecture Series, UCLA, October 2000
- Computer Science Lecture Series, USC/ISI, October 2000
- Invited Talk, 15th annual IEEE Computer Communications Workshop, October 2000
- Invited Talk, TCP Workshop, ENS Paris, September 2000
- Invited Paper, Informs 2000, Boca Raton, March 2000
- Invited Paper, Performance 99, Istanbul, October 1999

PROFESSIONAL SERVICE

- Program Committee, CoNeXT 2008
- TPC Co-Chair, ACM/Sigmetrics 2008
- Area Chair, IEEE/Infocom 2008
- Program Committee 25th IFIP WG 7.3 International Symposium on Computer Performance Modeling, Measurement and Evaluation (Performance 2007)
- Program Committee ACM/Sigmetrics 2007
- Program Committee IEEE/Infocom 2007
- Program Committee ACM/Sigcomm 2006
- Program Committee ACM/Sigmetrics 2006
- Program Committee IEEE/Infocom 2006
- Student Workshop co-chair, IEEE/Infocom 2006
- Program Committee 24th IFIP WG 7.3 International Symposium on Computer Performance Modeling, Measurement and Evaluation (Performance 2005)
- Guest-editor of Special issue of Journal of Performance Evaluation on Peer-to-Peer computing.
- Tutorials co-chair ACM/Sigmetrics 2005
- Program Committee ACM/Sigmetrics 2005
- Program Committee IEEE/Infocom 2005
- Local Arrangements Chair ACM/Sigmetrics and Performance 2004
- General Co-Chair, OpenSig 2003

- Program Committee IEEE/Infocom 2003
- Program Committee ICC Next Generation Internet Symposium 2003
- Program Committee 22nd IFIP WG 7.3 International Symposium on Computer Performance Modeling, Measurement and Evaluation (Performance 2002)
- Program Committee ACM/Sigmetrics 2002
- Program Committee ICC Next Generation Internet Symposium 2002
- Referee for submissions to the following professional conferences and journals: IEEE Transactions on Image Processing, IEEE Transactions on Automatic Control, IEEE Transactions on Networking, Automatica, Computer Networks, ICDAR 96, ICDAR 97, CVPR 96, Sigmetrics 1998, Sigmetrics 1999, Sigmetrics 2000, Sigmetrics 2001, Sigcomm 2000, Sigcomm 2001, Sigcomm 2002, Infocom 1999, Infocom 2000, Infocom 2001, Infocom 2002

DISSERTATIONS

Masters' Thesis

- **Simulation and Analysis of Self-Similar Processes** In my Masters' Thesis I developed analytical techniques based on wavelet models to detect self-similarity in stochastic processes. I also proposed simple algorithms for generating synthetic self-similar processes.

PhD Dissertation

- **Stochastic Models for Network Traffic** In my PhD dissertation I developed stochastic models which explain the behavior of network traffic. I modeled the behavior of TCP via a stochastic differential equation, that led to a fluid model. The fluid model forms the basis of much of the control theoretic analysis of TCP. The modeling additionally yielded a numerical technique which enables fast and accurate simulations of networks carrying TCP flows. I also developed Markovian models for Network traffic that explained long range dependence.

TEACHING

(Course, Score, Enrollment)

- Fall 2001: COMS 3824, Computer Organization. (3.8, 85)
- Spring 2002: COMS 4119, Computer Networks. (3.75, 83)
- Fall 2002: COMS 4119, Computer Networks. (3.32, 75)
- Spring 2003: COMS 6180, Modeling and Performance Evaluation (4.0, 16)
- Fall 2003: COMS 4119, Computer Networks. (3.21, 46)
- Spring 2004: COMS 6717, Information Theory. (3.73, 26)
- Fall 2004: COMS 4119, Computer Networks. (3.54, 40)
- Spring 2005: COMS 6180, Modeling and Performance Evaluation. (4.5, 5)
- Fall 2005: COMS 4119, Computer Networks. (3.64, 46)
- Spring 2006: COMS 6717, Information Theory. (3.03, 48)
- Fall 2006: COMS 4119, Computer Networks. (3.93, 50)

- Spring 2007: COMS 6180, Modeling and Performance Evaluation. (3.8, 16)
- Fall 2007: COMS 4119, Computer Networks. (3.8, 66)

PHD STUDENTS

- Hoon Chang (graduated Summer 2007, now at Samsung Electronics, Seoul Korea)
- Hanhua Feng (graduated Fall 2007, now at IBM Watson, Hawthorne NY)
- Abhinav Kamra (graduated Fall 2007, co-advised with Dan Rubenstein, now at Citicorp)
- Eli Brosh (in progress, co-advised with Dan Rubenstein)
- Kyung-Wook Hwang (in progress, co-advised with Dan Rubenstein)
- Patrick Lee (in progress, co-advised with Dan Rubenstein)
- Tianbai Ma (in progress, co-advised with Dan Rubenstein)
- Josh Reich (in progress, co-advised with Dan Rubenstein)