

# Dan Rubenstein

Associate Professor  
Department of Computer Science  
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## Education

**University of Massachusetts Amherst** Amherst, MA  
Ph.D. in Computer Science Sep., 2000  
Advisors: Prof. Jim Kurose and Prof. Don Towsley

**University of California Los Angeles** Los Angeles, CA  
M.A. in Mathematics Jun., 1994

**Massachusetts Institute of Technology** Cambridge, MA  
B.S. in Mathematics May, 1992

## Professional Employment

**Infinio (formerly SilverLining Systems)** New York, NY  
Co-Founder and Former Chief Scientist Nov. 2011 – Present

**Columbia University** New York, NY  
Associate Professor, Department of Computer Science Jun. 2005 – Present  
Associate Professor, Department of Electrical Engineering Jun. 2005 – Jun. 2009  
Assistant Professor, Department of Computer Science Jan. 2001 – May 2005  
Assistant Professor, Department of Electrical Engineering Sep. 2000 – May 2005

**Google, Inc.** New York, NY  
Visiting Scientist Jan. 2011 – Nov. 2011

**University of Massachusetts** Amherst, MA  
Research Assistant, Computer Networks Research Group Jan. 1997 – Aug. 2000

**AT&T Research Laboratories** Florham Park, NJ  
Summer Intern, Networking and Distributed Systems Center Jun.–Sep. 1999

**Bell Laboratories, Lucent Technologies** Holmdel, NJ  
Summer Intern, High Speed Networking Department Jun.–Aug. 1997

**University of Massachusetts** Amherst, MA  
Research Assistant, Lab for Advanced Software Eng. Rsch, Sep. 1994 – Dec. 1996,

## Honors and Awards

- Elected Member, IFIP Working Group 7.3 on Computer Performance Modeling and Analysis, 2005.
- IBM Faculty Award, 2004.
- NSF CAREER Award, July 2002 - June 2007.
- “Best Paper” Awards: IEEE 2011 Outstanding Paper on New Communication Topics, ACM CoNext 2008 and 2016 Conference, IEEE ICNP 2003 Conference.
- “Best Student Paper” Award, ACM SIGMETRICS Conference, June 2000.
- SRC Graduate Finalist, Sigcomm 2010 Demo Competition, “Best Student Demo” Award, ACM Mobicom/Mobihoc 2007 Conference (co-Advisor of student winner, Josh Reich)

## Professional Positions

- Editorships
  - Editor, IEEE/ACM Transactions on Networking, 2007-2012.
  - Guest Editor, International Journal of Performance Evaluation, Special Issue on Peer-to-Peer Networking
- Member of Selection Committee: ACM Sigmetrics “Rising Star Award” 2008, 2009, 2010 (Chair)
- Member, Grant Review Panels, NSF, approximately one per year.
- Executive Program Committee Membership
  - General Chair, IFIP Performance 2017
  - Program Co-Chair, ACM Sigmetrics 2011
  - Program Co-Chair, IFIP Networking 2010
  - Area Program Chair, IEEE ICNP 2008
  - Area Program Chair, IEEE Infocom 2008, 2010
- Program Committee Memberships:
  - IFIP Networking 2010 (Program Co-chair)
  - IEEE DCOSS 2010
  - ACM NetEcon 2009, 2010, 2013
  - IEEE IPSN 2009
  - IEEE COMSNETS 2009
  - ACM SIGCOMM 2004
  - ACM CoNext 2009, 2013
  - ACM SIGMETRICS 2001, 2005, 2006, 2007, 2008, 2009, 2010, 2011 (co-Chair), 2013, 2015

- IEEE Infocom 2005, 2006, 2007, 2008, 2009, 2010
- IFIP Performance 2007, 2013
- ACM PODC 2008
- IEEE NetDB 2008
- IEEE Globecom Global Internet 2004
- IEEE International Conference on Network Protocols (ICNP) 2002, 2003, 2004, 2008
- IEEE OpenArch Workshop 2003
- IEEE Workshop on Network and Operating System Support for Digital Audio and Video (NOSS-DAV) 2001, 2002
- International Workshop on Networked Group Communication (NGC) 2002
- New York Metro Area Networking Workshop 2001
- SPIE Conference on Multimedia Computing and Networking (MMCN) 2003
- Usenix NDSI 2006
  
- Conference Organization
  - Tutorials Chair, IEEE Infocom 2006
  - Student Travel Grant Chair, ACM SIGCOMM 2003
  - Publicity Chair, ACM SIGMETRICS 2003
  - Co-chair, New York Metro Area Networking Workshop 2002
  - Co-chair, Opensig 2003 Workshop
  
- Member, IEEE and ACM

## Publications

- Journal Publications

1. Tingjun Chen, Javad Ghaderi, Dan Rubenstein, Gil Zussman, **Maximizing Broadcast Throughput Under Ultra-Low-Power Constraints**, *IEEE/ACM Transactions on Networking*, to appear.
2. Rob Margolies, Guy Grebla, Tingjun Chen, Dan Rubenstein and Gil Zussman, Panda: Neighbor Discovery on a Power Harvesting Budget, **IEEE Journal on Selected Areas in Communications (JSAC), Series on Green Communications and Networking**, Volume 34, Issue 12, December 2016
3. Kyung-Wook Hwang, Vijay Gopalakrishnan, Rittwik Jana, Seungjoon Lee, Visha Misra, K. K. Ramakrishnan, and Dan Rubenstein, **Joint-Family: Adaptive BitRate Video-on-Demand Streaming over Peer-to-Peer Networks with Realistic Abandonment Patterns**, *Journal of Computer Networks*, September, 2016.
4. Joshua Reich, Vishal Misra, Dan Rubenstein, Gil Zussman, **Connectivity Maintenance in Mobile Wireless Networks via Constrained Mobility**, *IEEE Journal on Selected Areas in Communications (JSAC)*, Volume 30, number 5, June 2012.
5. Richard T.B. Ma, Dahming Chiu, John C.S. Lui, Vishal Misra and Dan Rubenstein, **On Cooperative Settlement Between Content, Transit and Eyeball Internet Service Providers**, *IEEE/ACM Transactions on Networking*, Volume 19, Number 3, June 2011.
6. Maria Gorlatova, Peter Kinget, Ioannis Kymissis, Dan Rubenstein, Xiaodong Wang and Gil Zussman, **Energy Harvesting Active Networked Tags (EnHANTs) for Ubiquitous Object Networking**, *IEEE Wireless Communications*, Volume 17, Number 6, pp. 18-25, December, 2010, **Awarded 2011 Outstanding Paper on New Communication Topics**.
7. Eli Brosh, Salman Abdul Baset, Vishal Misra, Dan Rubenstein, and Henning Schulzrinne, **The Delay-Friendliness of TCP for Real-time Traffic**, *IEEE/ACM Transactions on Networking*, Volume 18, Number 5, pp. 1478-1491, 2010.
8. Richard T.B. Ma, Dah Ming Chiu, John C.S. Lui, Vishal Misra and Dan Rubenstein, **Internet Economics: The use of Shapley value for ISP settlement**, *IEEE/ACM Transactions on Networking*, Volume 18, Number 3, pp. 775-787, 2010.
9. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Toward Optimal Network Fault Correction in Externally Managed Overlay Networks**, *IEEE Transactions on Parallel and Distributed Systems*, Volume 21, Number 3, pp. 354-366, 2010.
10. P. Bahl, R. Chandra, P.P.C. Lee, V. Misra, J. Padhye, D. Rubenstein and Y. Yu, **Opportunistic Use of Client Repeaters to Improve Performance of WLANs**, *IEEE/ACM Transactions on Networking*, Volume 17, Number 4, pp. 1160-1171, August, 2009.
11. Tianbai Ma, Vishal Misra, and Dan Rubenstein, **An Analysis of Generalized Slotted-Aloha Protocols**, *IEEE/ACM Transactions on Networking*, Volume 17, Number 3, 2009.
12. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Distributed Algorithms for Secure Multipath Routing in Attack-Resistant Networks**, *IEEE/ACM Transactions on Networking*, Volume 15, Number 6, December, 2007.
13. Daniel Villela, Prashant Pradhan and Dan Rubenstein, **Provisioning Servers in the Application Tier for E-commerce Systems**, *ACM Transactions on Internet Technology*, Volume 7, Number 1, February, 2007.

14. Raj Kumar Rajendran and Dan Rubenstein, **Optimizing the Quality of Scalable Video Streams on P2P Networks**, *Journal of Computer Networks*, Volume 50, Number 15, pp. 2641 - 2658, October, 2006.
15. Daniel Vilella and Dan Rubenstein, **Performance Analysis of Server Sharing Collectives for Content Distribution**, *IEEE Transactions on Parallel and Distributed Systems*, Volume 16, Number 12, pp. 1178-1189, December, 2005.
16. 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.
17. Micah Adler and Dan Rubenstein, **Pricing Multicast in More Practical Network Models**, *ACM Transactions on Algorithms*, Volume 1, Number 1, November, 2005.
18. Bong-Jun Ko and Dan Rubenstein, **A Distributed, Self-stabilizing Protocol for Placement of Replicated Resources in Emerging Networks**, *IEEE/ACM Transactions on Networking*, Volume 13, Number 3, June, 2005.
19. Dan Rubenstein and Sambit Sahu, **Can Unstructured P2P Protocols Survive Flash Crowds?**, *IEEE/ACM Transactions on Networking*, Volume 13, Number 3, June, 2005.
20. Angelos Stavrou, Dan Rubenstein and Sambit Sahu, **A Lightweight, Robust, P2P System to Handle Flash Crowds**, *IEEE Journal on Selected Areas in Communications (JSAC)*, special issue on Service Overlay Networks, Volume 22, Number 1, January, 2004.
21. Dan Rubenstein, Sneha Kasera, Don Towsley and Jim Kurose., **Improving Reliable Multicast Using Active Parity Encoding Services (APES)**, *Journal of Computer Networks*, Volume 44, Number 1, January, 2004.
22. 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.
23. Yuliy Baryshnikov, Ed Coffman, Predrag Jelenkovic, Petar Momcilovic and Dan Rubenstein, **Flood Search Under the California Split Rule**, *Operations Research Letters*, Volume 32, Number 3, May, 2004.
24. Dan Rubenstein, Jim Kurose and Don Towsley, **Detecting Shared Congestion of Flows Via End-to-end Measurement**, *IEEE/ACM Transactions on Networking*, Volume 10, Number 3, June, 2002.
25. Dan Rubenstein, Jim Kurose and Don Towsley, **The Impact of Multicast Layering on Network Fairness**, *IEEE/ACM Transactions on Networking*, Volume 10, Number 2, April, 2002.
26. Dan Rubenstein, Jim Kurose and Don Towsley, **A Study of Proactive Hybrid FEC/ARQ and Scalable Feedback Techniques for Reliable Real-Time Multicast**, *Computer Communications Journal*, March, 2001.
27. Dan Rubenstein, Jim Kurose, and Don Towsley, **Optimistic Parallel Simulation of Reliable Multicast Protocols**, *ACM Performance Evaluation Review*, Volume 25, Number 4, pp. 22-29, March, 1998.
28. Dan Rubenstein, **Catalan Numbers Revisited**, *Journal of Combinatorial Theory, Series A*, pp. 486-490, November, 1994.

- Conference Publications

1. Tingjun Chen, Javad Ghaderi, Dan Rubenstein, Gil Zussman, **Performance Evaluation of Energy-Constrained Broadcast (EconCast) in Wireless Networks**, *Proceedings of IEEE WCNC17 Workshop on Energy Harvesting and Remotely Powered Wireless Communications for the IoT*, San Francisco, CA, March, 2017 **Invited Paper**
2. Tingjun Chen, Javad Ghaderi, Dan Rubenstein, Gil Zussman, **Maximizing Broadcast Throughput Under Ultra-Low-Power Constraints**, *Proceedings of 2016 ACM Conference on Emerging network experiment and technology (CoNEXT)*, Irvine, CA, December, 2016. **Best Paper Award Recipient.**
3. Robert Margolies, Guy Grebla, Tingjun Chen, Dan Rubenstein, Gil Zussman, **Panda: Neighbor Discovery on a Power Harvesting Budget**, *Proceedings of IEEE Infocom*, San Francisco, CA, April, 2016.
4. Yudong Yang, Vishal Misra, Dan Rubenstein, **On the Optimality of Greedy Garbage Collection Algorithms for SSDs**, *The Workshop on Mathematical performance Modeling and Analysis (MAMA)*, Portland, OR, June, 2015.
5. Kyung-Wook Hwang, Vijay Gopalakrishnan, Seungjoon Lee, Vishal Misra, K. K. Ramakrishnan, and Dan Rubenstein, **Joint-Family: Enabling Adaptive Bitrate Streaming in Peer-to-Peer Video-on-Demand**, *Proceedings of the 21st IEEE International Conference on Network Protocols (ICNP 2013)*, Goettingen, Germany, October, 2013.
6. Joshua Reich, Oren Laaden, Eli Brosh, Alex Sherman, Vishal Misra, Jason Nieh, and Dan Rubenstein, **VMTorrent: Scalable P2P Virtual Machine Streaming**, *Proceedings of 2012 ACM Conference on Emerging network experiment and technology (CoNEXT)*, Nice, France, December, 2012.
7. Richard T. B. Ma, Dah Ming Chiu, John Chi Shing Lui, Vishal Misra and Dan Rubenstein, **Price Differentiation in the Kelly Mechanism**, *W-PIN 2012: The first Workshop on Pricing and Incentives in Networks (extended abstract)*, London, UK, June, 2012.
8. Seung Geol Choi, Kyung-Wook Hwang, Jonathan Katz, Tal Malkin and Dan Rubenstein, **Secure Multi-Party Computation of Boolean Circuits with Applications to Privacy in On-Line Marketplaces**, *CT-RSA*, San Francisco, CA, February, 2012.
9. Josh Reich, Vishal Misra, Dan Rubenstein and Gil Zussman, **Connectivity Maintenance in Mobile Wireless Networks via Constrained Mobility**, *Proceedings of IEEE Infocom*, Shanghai, China, April, 2011.
10. Joshua Reich, Oren Laadan, Eli Brosh, Alex Sherman, Vishal Misra, Jason Nieh and Dan Rubenstein, **VMTorrent: Virtual Appliances On-Demand (Extended Abstract)**, *ACM SIGCOMM*, New Delhi, India, August, 2010, **SRC: Graduate Finalist.**
11. Maria Gorlatova, Tarun Sharma, Deep Shrestha, Enlin Xu, Jiasi Chen, Abraham Skolnik, Dongzhen Piao, Peter Kinget, John Kymissis, Dan Rubenstein and Gil Zussman, **Prototyping Energy Harvesting Active Networked Tags (EnHANTs) with MICA2 Motes**, *IEEE Secon 2010*, Boston, MA, June, 2010.
12. Patrick P.C. Lee, Vishal Misra and Dan Rubenstein, **On the Robustness of Wireless Opportunistic Routing Toward Inaccurate Link-Level Measurements**, *COMSNETS*, Bangalore, India, January, 2010 (Invited Paper).

13. Maria Gorlatova, Peter Kinget, Ioannis Kymissis, Dan Rubenstein, Xiaodong Wang and Gil Zussman, **Challenge: Ultra-Low-Power Energy-Harvesting Active Networked Tags (EHANTs)**, *Proceedings of ACM MOBICOM 2009*, Beijing, China, September, 2009.
14. Victor Bahl, Ranveer Chandra, Patrick P. C. Lee, Vishal Misra, Jitendra Padhye, Dan Rubenstein and Yan Yu, **Opportunistic Use of Client Repeaters to Improve Performance of WLANs**, *Proceedings of 2008 ACM Conference on Emerging network experiment and technology (CoNEXT)*, Madrid, Spain, December, 2008, **Best Paper Award Recipient**.
15. Richard T.B. Ma, Dahming Chiu, John C.S. Lui, Vishal Misra and Dan Rubenstein, **On Cooperative Settlement Between Content, Transit and Eyeball Internet Service Providers**, *Proceedings of 2008 ACM Conference on Emerging network experiment and technology (CoNEXT)*, Madrid, Spain, December, 2008.
16. Richard T.B. Ma, Dah-ming Chiu, John C.S. Lui, Vishal Misra and Dan Rubenstein, **Interconnecting Eyeballs to Content: A Shapley Value Perspective on ISP Peering and Settlement**, *ACM NetEcon*, Seattle, WA, August, 2008.
17. Salman Baset, Eli Brosh, Dan Rubenstein, Henning Schulzrinne, **The Delay Friendliness of TCP**, *ACM SIGMETRICS*, Annapolis, MD, June 2008.
18. Richard Ma, Dah Ming Chiu, John C.S. Lui, Vishal Misra and Dan Rubenstein, **Internet Economics: The Use of Shapley Value for ISP Settlement**, *ACM CoNEXT*, New York, NY, December 2007.
19. 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.
20. 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.
21. 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.
22. Hanhua Feng, Vishal Misra and Dan Rubenstein, **PBS: A Unified Priority-Based Scheduler**, *Proceedings of ACM SIGMETRICS*, San Diego, CA, June, 2007.
23. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Toward Optimal Network Fault Correction via End-to-End Inference**, *IEEE Infocom*, Anchorage, Alaska, USA, May, 2007.
24. Vishnu Navda, Aniruddha Bohra, Samrat Ganguly, Rauf Izmailov and Dan Rubenstein, **Using Channel Hopping to Increase 802.11 Resilience to Jamming Attacks**, *IEEE Infocom Minisymposium*, Anchorage, AK, May, 2007.
25. 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.
26. 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.

27. Abhinav Kamra, Jon Feldman, Vishal Misra and Dan Rubenstein, **Growth Codes: Maximizing Sensor Network Data Persistence**, *Proceedings of ACM SIGCOMM*, Pisa, Italy, September, 2006.
28. 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.
29. Rakesh Kumar, David Yao, Amitabha Bagchi, Keith Ross and Dan Rubenstein, **Fluid Modeling of Pollution Proliferation in P2P Networks**, *Proceedings of ACM SIGMETRICS*, St. Malo, France, June, 2006.
30. Daniel Villela, Vishal Misra, Dan Rubenstein and Sambit Sahu, **Impact of Load Sharing on Provisioning Services**, *Proceedings of IEEE Infocom*, Barcelona, Spain, April, 2006.
31. Hoon Chang, Vishal Misra and Dan Rubenstein, **A General Model and Analysis of Physical Layer Capture in 802.11 Networks**, *Proceedings of IEEE Infocom*, Barcelona, Spain, April, 2006.
32. Richard T.B. Ma, Vishal Misra and Dan Rubenstein, **Modeling and Analysis of Generalized Slotted-Aloha MAC Protocols in Cooperative, Competitive and Adversarial Environments**, *ICDCS*, Lisboa, Portugal, July, 2006.
33. Abhinav Kamra, Jon Feldman, Vishal Misra and Dan Rubenstein, **Encoding for Persistent Sensor Networks**, *Allerton Conference on Communication, Control and Computing*, September, 2005.
34. Raj Kumar Rajendran, Vishal Misra and Dan Rubenstein, **Brief Announcement: Strong Detection of Misconfigurations**, *Principles of Distributed Computing (PODC)*, Las Vegas, NV, July, 2005.
35. 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.
36. Richard T.B. Ma, Vishal Misra and Dan Rubenstein, **Cooperative and Non-cooperative Models for slotted-Aloha type MAC protocols**, *ACM SIGMETRICS Performance Evaluation Review*, Volume 33, Number 2, pp. 30-32, 2005.
37. Patrick P. C. Lee, Vishal Misra and Dan Rubenstein, **Distributed Algorithms for Secure Multipath Routing**, *Proceedings of IEEE Infocom*, Miami, FL, March, 2005.
38. Micah Adler, Rakesh Kumar, Keith W. Ross, Dan Rubenstein, Torsten Suel and David. D. Yao, **Optimal Peer Selection for P2P Downloading and Streaming**, *Proceedings of IEEE Infocom*, Miami, FL, March, 2005.
39. 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.
40. 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.



41. Yuliy Baryshnikov, Ed G. Coffman, Guillaume Pierre, Dan Rubenstein, Mark Squillante and Teddy Yimwadsana, **Predictability of Web-Server Traffic Congestion**, *10th International Workshop on Web Content Caching and Distribution (WCW 2005)*, Sophia Antipolis, France, September, 2005.
42. 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.
43. Raj Kumar Rajendran and Dan Rubenstein, **Extended Abstract: Optimizing the Quality of scalable video streams on P2P Networks**, *ACM SIGMETRICS*, New York, NY, June, 2004.
44. Daniel Villela, Prashant Pradhan and Dan Rubenstein, **Provisioning Servers in the Application Tier for E-commerce Systems**, *Proceedings of the Twelfth IEEE International Workshop on Quality of Service (IWQoS 2004)*, Montreal, Canada, June, 2004.
45. 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.
46. Raj Kumar Rajendran and Dan Rubenstein, **Optimizing the Quality of scalable video streams on P2P Networks**, *IEEE Globecom*, Dallas, TX, November, 2004.
47. Bong-Jun Ko and Dan Rubenstein, **A Distributed, Self-stabilizing Protocol for Placement of Replicated Resources in Emerging Networks**, *Proceedings of the 11th IEEE International Conference on Network Protocols (ICNP)*, Atlanta, GA, Nov, 2003, **Best Paper Award Recipient**.
48. 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.
49. 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.
50. Daniel Villela and Dan Rubenstein, **A Queueing Analysis of Server Sharing Collectives for Content Distribution**, *Proceedings of the Eleventh IEEE International Workshop on Quality of Service (IWQoS 2003)*, Monterey, CA, June, 2003.
51. Angelos Keromytis, Vishal Misra and Dan Rubenstein, **SOS: Secure Overlay Services**, *Proceedings of ACM SIGCOMM*, Pittsburgh, PA, August, 2002.
52. Angelos Stavrou, Dan Rubenstein and Sambit Sahu, **A Lightweight, Robust P2P System to Handle Flash Crowds**, *In Proceedings of IEEE ICNP 2002*, Paris, France, November, 2002.
53. Naceur Malouch, Zhen Liu, Dan Rubenstein and Sambit Sahu, **A Graph Theoretic Approach to Bounding Delay in Proxy-Assisted, End-System Multicast**, *In Proceedings of the Tenth IEEE International Workshop on Quality of Service (IWQoS)*, Miami Beach, FL, May, 2002.
54. Micah Adler and Dan Rubenstein, **Pricing Multicast in More Practical Network Models**, *Thirteenth Annual ACM-SIAM Symposium on Discrete Algorithms (ACM SODA'02)*, San Francisco, CA, January, 2002.

55. Panagiotis Sebos, Jennifer Yates, Dan Rubenstein, and Albert Greenberg, **Effectiveness of Shared Risk Link Group Auto-Discovery in Optical Networks**, *Optical Fiber Communication Conference (OFC 2002)*, Anaheim, CA, March, 2002.
56. Dan Rubenstein, Nicholas F. Maxemchuk and David Shur, **A Centralized, Tree-Based Approach to Network Repair Service for Multicast Streaming Media**, *Proc. IEEE NOSS-DAV'00*, Chapel Hill, NC, June, 2000.
57. Dan Rubenstein, Jim Kurose, and Don Towsley, **Detecting Shared Congestion of Flows Via End-to-end Measurement**, *Proceedings of ACM SIGMETRICS'00*, Santa Clara, CA, June, 2000, **Best Student Paper Award Recipient**.
58. Dan Rubenstein, Jim Kurose, and Don Towsley, **The Impact of Multicast Layering on Network Fairness**, *Proceedings of ACM SIGCOMM*, Cambridge, MA, September, 1999.
59. Dan Rubenstein, Sneha Kasera, Don Towsley, and Jim Kurose, **Improving Reliable Multicast Using Active Parity Encoding Services (APES)**, *Proceedings of IEEE Infocom*, New York, NY, April, 1999.
60. Dan Rubenstein, Jim Kurose, and Don Towsley, **Real-Time Reliable Multicast Using Proactive Forward Error Correction**, *Proceedings of IEEE NOSSDAV'98*, Cambridge, UK, July, 1998.

## Patents

- Dan Rubenstein, Jim Kurose, and Don Towsley, *Multicast with Proactive Forward Error Correction*. (US Patent no. 6,278,716 issued 8/21/01).
- Angelos Stavrou, Angelos Keromytis, Jason Nieh, Vishal Misra, Dan Rubenstein, *Methods, Media and Systems for Responding to a Denial of Service Attack*. (US Patent no. 8,549,646, issued 10/1/13).
- Abhinav Kamra, Vishal Misra, Jon Feldman, Dan Rubenstein, *Methods, Systems, and Media for Forming Linear Combinations of Data*. (US Patent no. 8,655,839, issued 2/18/14).
- Joshua Reich, Oren Laadan, Vishal Misra, Eliahu Brosh, Jason Nieh, Daniel Stuart Rubenstein, Alexander Sherman, *Methods, Systems, and Media for Stored Content Distribution and Access*. (US Patent no. 9,609,044, issued 3/28/2017).
- Daniel Rubenstein, Vishal Misra, Hanhua Feng, Martin C. Martin, *Content Centric Networking*. (US Patent no. 9,667,735, issued 5/30/2017).
- Vijay Gopalakrishnan, Rittwik Jana, Seungjoon Lee, Kadangode K. Ramakrishnan, Kyung-Wook Hwang, Vishal Misra, Daniel Rubenstein, *System and Method of Adaptive Bit-Rate Streaming*, (US Patent no. 9,699,236, issued 7/4/2017).
- Prashanth Pappu, Gary Kumfert, Daniel Rubenstein, *Mobile-to-TV deeplinking*. (US Patent no. 9,720,887, issued 8/1/2017).

## Provisional Patents / Applications

- Angelos D Keromytis, Vishal Misra, Daniel Rubenstein, System and methods for protecting network sites from denial of service attacks WO 2003069828 / PCT/US2003/004535
- Samrat Ganguly, Vishnu Navda, Aniruddha Bohra, Daniel S. Rubenstein, Distributed Channel Management Based on Channel Hopping in Uncoordinated 802.11 Based WLAN, US20090080377 A1, US 11/860,104

## Graduated PhD Students

- Daniel Villela PhD 2005, current employment: CEPTEL, Rio, Brazil.
- Bong-Jun Ko, PhD 2006, current employment: IBM Research, NY.
- Hoon Chang, PhD 2007 (co-advised with Misra), current employment: Samsung Labs, Korea.
- Hanhua Feng, PhD 2007 (co-advised with Misra), current employment: IBM Research, NY.
- Abhinav Kamra, PhD 2007 (co-advised with Misra), current employment: Citigroup, NY.
- Raj Kumar, PhD 2008, current employment: Telcordia
- Patrick Lee, PhD 2008 (co-advised with Misra), current employment: Assistant Professor, Chinese University of Hong Kong.
- Tianbai Ma, PhD 2009 (co-advised with Misra), current employment: Assistant Professor in School of Computing, National University of Singapore.
- Eli Brosh, PhD 2010 (co-advised with Misra), current employment: Vidyo.
- Josh Reich, PhD 2011 (co-advised with Misra), current employment: AT&T Labs / UC Berkeley
- Kyung-Wook Hwang, PhD 2013 (co-advised with Misra), current employment: AT&T Labs

## PhD Committee Service (graduated PhDs)

Jonathan Rosenberg (Advisor: Schulzrinne), 2001; Xin Wang (Advisor: Schulzrinne), 2001; Sushil da Silva (CS, Advisor: Yemini), 2002; Hari Sundaram (Advisor: Chang), 2002; Ping Pan (Advisor: Schulzrinne), 2002; Wenyu Jiang (CS, Advisor: Schulzrinne), 2003; Lisa Amini (CS, Advisor: Schulzrinne), 2003; Alex Konstantinou (CS, Advisor: Yemini), 2003; Jonathan Lennox (CS, Advisor: Schulzrinne), 2003; Michael Kounavis (Advisor: Campbell), 2004; Sadaki Maeda (Advisor: Diamant), 2004; Yong Wang (Advisor: Chang), 2005; Xiaowei Zhang (Advisor: Maxemchuk), 2006; Weibin Zhao (CS, Advisor: Schulzrinne), 2006; Santosh Krishnan (CS, Advisor: Schulzrinne), 2006; Rita Wouhabi (Advisor: Campbell), 2006; Kundan Singh (CS, Advisor: Schulzrinne), 2006; Sangho Shin (CS, Advisor: Schulzrinne), 2006; Xiaotao Wu (CS, Advisor: Schulzrinne), 2007; Janak Parekh (CS, Advisor: Stolfo), 2007; Congzhou Zhou (Advisor: Maxemchuk), 2007; Jing Feng (Advisor: Coffman), 2007; Alberto Lopez Toledo (Advisor: Wang), 2007; Andreas Constantinides (Advisor: Coffman), 2007; Mike Locasto (CS, Advisor: Keromytis), 2007; Sangho Shin (CS, Advisor: Schulzrinne), 2008; Patrick Cheung, (EE, Advisor: Maxemchuk), 2008; Kyung Joon

Kwak (EE, Advisor: Coffman), 2008; Stelios Sidiroglou, (CS, Advisor: Keromytis), 2008; Wei-Jen Li, (CS, Advisor: Stolfo), 2008; Vanessa Frias-Martinez (CS, Advisor: Stolfo), 2008; Ahutosh Dutta (EE, Advisor: Schulzrinne), 2010; Theodore Wilke (EE, Advisor: Maxemchuk), 2010; Congzhou Zhou (EE, Advisor: Maxemchuk), 2010; Shuzo Tarumi (EE, Advisor: Zussman), 2010; Ashutosh Dutta (CS, Advisor: Schulzrinne), 2010; Salman Baset (CS, Advisor: Schulzrinne), 2010; Patcharinee Tientrakool (EE, Advisor: Maxemchuk), 2011; Arezu Moghadam (CS, Advisor: Schulzrinne), 2011; Se Gi Hong (CS, Advisor: Schulzrinne), 2011; John Vicente (EE, Advisor: Campbell, 2011); Hang Zhao (CS, Advisor: Bellovin), 2012.

## Invited Talks

- Detecting Shared Congestion of Flows via End-to-end Measurement
  - IBM Research, Hawthorne, NY, March 1, 2001.
  - Bell Labs Research, Holmdel, NJ, April 12, 2001.
- Pricing Multicast in More Practical Network Paradigms, Computer Communications Workshop, Charlottesville, VA, October 16, 2001.
- Using Overlays to Increase Network Robustness
  - University of Massachusetts, Amherst, MA, May 8, 2002.
  - Microsoft Research, Redmond, WA, July 22, 2002.
  - University of Washington, Seattle, WA, July 25, 2002.
  - IBM Research, Hawthorne, NY, Nov 4, 2002.
  - Eurecom, Sophia Antipolis, France, Nov 8, 2002.
  - RPI, Troy, NY, Nov 18, 2002.
  - Purdue University, Lafayette, IN, Nov 25, 2002.
  - IIT Bombay, Mumbai, India, Dec 12, 2002.
- Distributed Replicated Tasking in Emerging Network Environments
  - UC Berkeley, April 7, 2004
  - Stanford University, April 8, 2004
- Global Robustness and Correctness in Massively Distributed Network Systems
  - Polytechnic University, Brooklyn, NY, Oct 15, 2004
  - University of Pennsylvania, Philadelphia, PA, Nov 1, 2004.
  - NEC Research, Princeton, NJ, Jan 25, 2005.
  - Rutgers University, Piscataway, NJ, Jan 31, 2005.
  - University of Maryland, College Park, MD, March 4, 2005
  - Paris LIP6, Paris, France, June 26, 2006.

- Microsoft Research, Redmond, WA, July 18, 2006
- 802.11 Spread Spectrum: Jam-Resilience via Channel Hopping, IEEE Computer Communications Workshop, Pittsburgh, PA, Feb 5, 2007.
- Increasing the Resilience of Routing in Untrusted and Collapsing Networks
  - Federal University of Rio de Janeiro (UFRJ), June 29, 2007.
  - Summer Research Institute, EPFL, Lausanne, Switzerland, July 17, 2007.
  - University of Texas Austin, October 25, 2007.
  - University of Maryland, December 6, 2007.
  - MITACS/MASCOS summer workshop, Montreal, Canada, June 18, 2008.
  - Google Research, New York, June 26, 2008.
- VMTorrent: Quick and Scalable Cloud-based VM Deployments
  - McGill University, September 23, 2011
- Using Energy Constrained Tag-to-tag networks for Tracking
  - Dartmouth University, June 17, 2016
  - Upsala University, August 29, 2016
- Keynote Address: Resilient Networking - A Performance Perspective, SBC 2007: XXVII Congresso da Sociedade Brasileira de Computacao, Rio de Janeiro, Brazil, July 3, 2007
- Network Resilience: Using One's Neighbors Wisely in Cooperative Networks, IEEE ICCCN 2007, Distinguished Invited Talk, Honolulu, HI, August 15, 2007.
- Keynote Lecture: Energy-harvesting Active Networked Tags (EnHANTs), 12th Annual IFIP International Conference on Network and Parallel Computing, Sep 17, 2015.

## Tutorials at Workshops and Conferences

- **Overlay and P2P Systems: Protocols, Applications, and Analysis**, full-day, co-presented with Samrat Bhattacharjee, the 4th International Workshop on Networked Group Communication (NGC), October 2002.
- **Peer-to-Peer Systems**, half-day co-presented with Keith Ross, IEEE Annual Conference, March 2003
- **Peer-to-Peer Systems**, half-day co-presented with Keith Ross, IEEE Annual Conference, March 2004
- **P2P Systems**, half-day, the annual ACM Sigmetrics Conference, June 2003.

## Teaching

- F'00: ELEN 6761: Computer Communication Networks (78 students)
- S'01: ELEN 6762: Broadband Networks (48 students)
- F'01: ELEN 3910: Elements of Digital Systems (35 students)
- S'02: ELEN 4710: Intro to Network Engineering (43 students)
- F'02: ELEN 3910: Elements of Digital Systems (32 students), ELEN 3082: Digital Systems Lab (67 students)
- S'03: ELEN 4710: Intro to Network Engineering (32 students)
- F'03: ELEN 4710: Intro to Network Engineering (32 students)
- S'04: ELEN 3910: Elements of Digital Systems (33 students), ELEN 3082: Digital Systems Lab (51 students)
- F'04: ELEN 4710: Intro to Network Engineering (43 students)
- S'05: ELEN 6768: Topics in Telecommunications, Emerging Networks (19 students)
- S'06: COMS 4119: Computer Networks (32 students)
- F'06: ELEN 6772: Topics in Telecommunications, Resilient Networks (10 students)
- S'07: CSEE 4119: Computer Networks (29 students)
- F'07: CSEE 3827: Fundamentals of Computer Systems (22 students)
- S'08: ELEN 6768: Topics in Telecommunications, Network Security (17 students)
- F'08: CSEE 3827: Fundamentals of Computer Systems (28 students)
- S'09: CSEE 4119: Computer Networks (21 students)
- F'09: CSEE 3827: Fundamentals of Computer Systems (40 students)
- S'10: CSEE 4119: Computer Networks (28 students)
- F'10: CSEE 3827: Fundamentals of Computer Systems (57 students)
- S'13: CSEE 3827: Fundamentals of Computer Systems (129 students)
- F'13: COMS 4995-4: Web, App and Mobile Programming (9 students)
- S'14: CSEE 3827: Fundamentals of Computer Systems (136 students)
- S'15: CSEE 3827: Fundamentals of Computer Systems (143 students)
- F'15: COMS 6998-12: Topics in Networked Tags (7 students)
- F'16 CSEE 4119: Computer Networks (126 students)

- S'17: CSEE 3827: Fundamentals in Computer Systems (104 students)
- F'17: CSEE 6998-15: Video Over the Internet (12 students)
- S'18: CSEE 3827: Fundamentals in Computer Systems (213 students)

### **Departmental Service (CS)**

- Faculty Recruiting Committee, F'08, '09, S'10, S'13
- MS Advising, F'08, '09, S'10, S'13
- PhD Admissions, F'08, '09, S'10, S'13
- Course Scheduling, F'09, S'10, F'10, S'13, F'13, S'14, S'15, F'15, S'16, F'16, S'17, F'17, S'18
- TA Assignment, S'13, F'13
- MS Masters advising (Networks Track), F'16
- Undergrad advising, F'14, F'15

### **Departmental Service (EE)**

- Curriculum Committee, F'01, S'02 (Chair), F'02, S'03: In S'02, F'02, S'03, participated in redesign of curriculum into current multi-track system format.
- Computing Committee F'03 (Chair), S'04 (Chair), F'04 (Chair), S'05 (Chair), F'05 (Chair), S'06 (Chair): led in the hiring of Departmental System Administrators.
- Faculty Recruiting Committee F'05, S'06, F'06, S'07.
- EE Website Development: F'06, S'07
- Created course ELEN 4710: Intro to Network Engineering, Fall 2001.