Daniel Zappala

Associate Professor in Computer Science
Director of the Internet Research Lab and the BYU Open Source Lab
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Research Area

Networking, security and usability

Professional Preparation

9/86 – 6/90	B.Sc., Electrical Engineering, Stanford University
6/90 – 8/97	Ph.D., Computer Science, University of Southern California

Appointments

8/04 –	Associate Professor, Computer Science Department, Brigham Young University
	Director, Internet Research Lab
9/97 – 8/04	Assistant Professor, Department of Computer and Information Science, University of Oregon
9/97 – 12/98	Consultant, Information Sciences Institute, University of Southern California
6/94 – 8/97	Research Assistant, Information Sciences Institute, University of Southern California
6/92 – 8/92	Summer Intern, Xerox Palo Alto Research Center
6/91 – 6/94	Research Assistant, Network and Distributed Systems Lab, Department of Computer Science, University of Southern California

Publications

- Scott Ruoti, Kent Seamons, and Daniel Zappala. Layering Security at Global Control Points to Secure Unmodified Software, IEEE Secure Development Conference (IEEE SecDev), September 2017. Best Paper Award. (conference, 11/34 = 32%)

- Mark O'Neill, Scott Heidbrink, Scott Ruoti, Jordan Whitehead, Dan Bunker, Luke Dickinson, Travis Hendershot, Joshua Reynolds, Kent Seamons, and Daniel Zappala, TrustBase: An Architecture to Repair and Strengthen Certificate-based Authentication, *USENIX Security*, August 2017. (conference, 85/522 = 16%)

- Elham Vaziripour, Justin Wu, Mark O'Neill, Ray Clinton, Jordan Whitehead, Scott Heidbrink, Kent Seamons, Daniel Zappala, Is that you, Alice? A Usability Study of the Authentication Ceremony of Secure Messaging Applications, USENIX Symposium on Usable Privacy and Security (SOUPS), July 2017. (conference, 26/98 = 27%)

- Scott Ruoti, Tyler Monson, Justin Wu, Daniel Zappala, and Kent Seamons, Brigham Young University, Weighing Context and Trade-offs: How Suburban Adults Selected Their Online Security Posture, USENIX Symposium on Usable Privacy and Security (SOUPS), July 2017. (conference, 26/98 = 27%)

- Mark O'Neill, Scott Ruoti, Kent Seamons, Daniel Zappala. TLS Proxies: Friend or Foe? *ACM Internet Measurement Conference*, November, 2016. (conference, 46/182 = 25%)

- Mark O'Neill, Elham Vaziripour, Justin Wu, Daniel Zappala. Condensing Steam: Distilling the Diversity of Gamer Behavior, *ACM Internet Measurement Conference*, November, 2016. (conference, 46/182 = 25%)

- Scott Ruoti, Jeff Anderson, Travis Hendershot, Daniel Zappala, Kent Seamons. Private Webmail 2.0: Simple and Easy-to-Use Secure Email, *ACM Symposium on User Interface Software and Technology (UIST 2016)*, OCtober, 2016. (conference, 79/384 = 21%)

- Alexander Afanasyev, J. Alex Halderman, Scott Ruoti, Kent Seamons, Yingdi Yu, Daniel Zappala, Lixia Zhang. Content-Based Security for the Web, *New Security Paradigms Workshop (NSPW)*, September, 2016. (workshop)

- Elham Vaziripour, Mark O'Neill, Justin Wu, Scott Heidbrink, Kent Seamons, and Daniel Zappala, Social Authentication for End-to-End Encryption. *Who Are You?! Adventures in Authentication Workshop*, July 2016. (workshop)

- Scott Ruoti, Mark O'Neil, Daniel Zappala, Kent Seamons. User Attitudes Toward the Inspection of Encrypted Traffic, *Symposium on Usable Privacy and Security (SOUPS)*, July 2016. (conference)

- David Grimsman, Vasu Chetty, Nathan Scott Woodbury, Elham Vaziripour, Sandip Roy, Daniel Zappala, Sean Warnick. A Case Study of a Systematic Attack Design Method for Critical Cyber-Physical Systems, *2016 American Control Conference (ACC 2016)*, July 2016. (conference)

- Scott Ruoti, Jeff Andersen, Scott Heidbrink, Mark O'Neill, Elham Vaziripour, Justin Wu, Daniel Zappala, Kent Seamons. "We're on the Same Page": A Usability Study of Secure Email Using Pairs of Novice Users. *Proceedings of the 34th Annual ACM Conference on Human Factors in Computing Systems (CHI 2016)*, May 2016. (conference, 23.4%, Honorable Mention Award, 4%))

- Elham Vaziripour, Christophe Giraud-Carrier, Daniel Zappala. Analyzing the Political Sentiment of Tweets in Farsi, *10th International AAAI Conference on Web and Social Media (ICWSM 2016)*, May 2016 (conference, poster paper)

- Mark O'Neill, Scott Ruoti, Kent Seamons, and Daniel Zappala. TLS Proxies: Friend or Foe? *2014 ACM SIGSAC Conference on Computer and Communications Security (CCS 2014)*, October 2014, pages 1487-1489. (conference, poster)

- Daniel Zappala, Using Visualization and Search to Locate Genealogy Holes, *13th Annual Family History Technology Workshop*, March 2013, 3 pages. (workshop)

- Randy Buck, Rich Lee, Phil Lundrigan and Daniel Zappala, WiFu: A Composable Toolkit for Experimental Wireless Transport Protocols, *IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS)*, October 2012, 9 pages. (conference, 50/166 = 30%)

- Charles Knutson and Daniel Zappala, The Twenty Minute Genealogist: Assisting Family History Research through Navigation and Context Preservation, *12th Annual Family History Technology Workshop*, March 2012, 4 pages. (workshop)

- Travis Andelin, Vasu Chetty, Devon Harbaugh, Sean Warnick and Daniel Zappala, Quality selection for Dynamic Adaptive Streaming over HTTP with Scalable Video Coding, *3rd ACM Multimedia Systems Conference (MMSys)*, February 2012, pages 149–154. (conference, 12/37 = 32%)

- David Ripplinger, Sean Warnick and Daniel Zappala, First Principles Modeling of Wireless Networks for Rate Control, *50th IEEE Conference on Decision and Control (CDC)*, December 2011, 6 pages. (conference, 1354/2300 = 59%)

- Xingang Zhang, Randy Buck, and Daniel Zappala, Experimental Performance Evaluation of ATP in a Wireless Mesh Network, *IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS)*, October 2011, 10 pages. (conference, 49/256 = 19%)

- Lei Wang, David Ripplinger, Anurag Rai, Sean Warnick, and Daniel Zappala, A Convex Optimization Approach to Decentralized Rate Control in Wireless Networks with Partial Interference, *49th IEEE Conference on Decision and Control (CDC)*, December 2010, 8 pages. (conference, 1280/2060 = 62%)

- Brian Sanderson and Daniel Zappala, Reducing Source Load in BitTorrent, *The 18th International Conference on Computer Communications and Networks (ICCCN 2009)*, August, 2009, 6 pages. (conference)

- Daniel Scofield, Lei Wang and Daniel Zappala, HxH: A Hop-by-Hop Transport Protocol for Multi-Hop Wireless Networks, *The Fourth International Wireless Internet Conference (WICON 2008)*, November 2008, 9 pages. (conference, 48/128 = 34%)

- Manoj Pandey and Daniel Zappala, Hop-by-Hop Multicast Transport for Mobile Ad Hoc Wireless Networks, *The Fifth IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS)*, October 2008, Pages 450-455. (conference, 60/250 = 24%)

- Manoj Pandey and Daniel Zappala, Scalable Multicast Routing for Ad Hoc Networks, *The Fourth International Workshop on Localized Communication and Topology Protocols for Ad Hoc Networks (LOCAN)*, October 2008, Pages 559-564. (workshop)

- Jared Jardine and Daniel Zappala, A Hybrid Architecture for Massively Multiplayer Online Games, *The Seventh Annual Workshop on Network and Systems Support for Games (NetGames)*, October 2008, Pages 60-65. (conference, 15/31 = 48%)

- Qiuyi Duan, Lei Wang, Charles D. Knutson and Daniel Zappala, Autonomous and Intelligent Radio Switching for Heterogeneous Wireless Networks, *The Fourth IEEE International Workshop Heterogeneous Multi-Hop Wireless and Mobile Networks (MHWMN)*, October, 2008, Pages 666-671. (workshop)

- Qiuyi Duan, Lei Wang, Charles D. Knutson and Daniel Zappala, Link Quality Prediction for Wireless Devices with Multiple Radios, *IEEE International Symposium on World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, June 2008, Pages 31-41. (conference, 32/181 = 18%)

- Manoj Pandey, Roger Pack, Lei Wang, Qiuyi Duan and Daniel Zappala, To Repair or Not to Repair: Helping Routing Protocols to Distinguish Mobility From Congestion, *IEEE Infocom*, May 2007, Anchorage, Pages 2311-2315. (conference, 350+/1400+ = 25%)

- Manoj Pandey, Daniel Delorey, Qiuyi Duan, Lei Wang, Charles Knutson, Daniel Zappala, and Ryan Woodings, RIA: An RF Interference Avoidance Algorithm for Heterogeneous Wireless Networks, *IEEE WCNC*, March 2007, Hong Kong, Pages 4051-4056. (conference, 256/568 = 45% networking track)

- Manoj Pandey and Daniel Zappala, A Scenario Based Evaluation of Mobile Ad Hoc Multicast Routing Protocols. *IEEE International Symposium on World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, June 2005, Italy, Pages 31-41. (conference, 18/180 = 10%)

- Chris GauthierDickey, Virginia Lo, and Daniel Zappala. Using N-Trees for Scalable Event Ordering in Peer-to-Peer Games. *ACM Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, June 2005, Skamania, Washington, Pages 87-92. (conference, 33/88 = 37%)

- Daniel Stutzbach, Daniel Zappala, and Reza Rejaie, The Scalability of Swarming Peer-to-Peer Content Delivery. *IFIP Networking 2005*, May, 2005, Waterloo, Ontario, Pages 15-26. (conference, 106/430 = 25%)

- C. GauthierDickey, D. Zappala, V. Lo, and J. Maar, Low Latency and Cheat-Proof Event Ordering for Peer-to-Peer Games. *The 14th ACM International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV)*, June 2004, Pages 134 - 139. (workshop, 24/95 = 25%)

- D. Zappala, V. Lo, and C. GauthierDickey. The Multicast Address Allocation Problem: Theory and Practice. *Computer Networks*, Special Issue on the Global Internet, Elsevier Science, Volume 45, Issue 1, Pages 55 - 73, May 2004. (journal, 5/28 = 18%, best papers from Global Internet Symposium 2002)

- A. Farley, A. Proskurowski, D. Zappala, and K. Windisch, Spanners and Message Distribution in Networks. *Discrete Applied Mathematics*, Elsevier Science, Volume 137, Issue 2, Pages 159-171, March 2004. (journal)

- V. Lo, D. Zappala, D. Zhao, Y. Liu, and S. Zhao, Cluster Computing on the Fly: P2P Scheduling of Idle Cycles in the Internet. *Third International Workshop on Peer-to-Peer Systems*, February 2004, 6 pages. (conference, 27/145 = 19%)

- D. Zappala, Alternate Path Routing for Multicast. em IEEE/ACM Transactions on Networking, Volume 12, Issue 1, Pages 30 - 43, February 2004. (journal)

- D. Zappala, C. GauthierDickey, and V. Lo, Modeling the Multicast Address Allocation Problem. IEEE Globecom, Seventh Global Internet Symposium, November 2002, pages 2113-2117. (conference, 28/142 = 20%, top rated paper)

- V. Lo, D. Zappala, C. GauthierDickey, and T. Singer, A Theoretical Framework for the Multicast Address Allocation Problem. *IEEE Globecom, Seventh Global Internet Symposium*, November 2002, Pages 2108-2112 (conference, 28/142 = 20%)

- D. Zappala and D. Zhou, Performance Evaluation of Path Searching Heuristics for Multicast QoS Routing. *IEEE 11th International Conference on Computer Communications and Networks (ICCCN)*, October 2002, Pages 248-254. (conference, 80/300 = 27%)

- D. Zappala, A. Fabbri, and V. Lo, An Evaluation of Shared Multicast Trees with Multiple Cores. *Journal of Telecommunication Systems*, Kluwer Academic Publishers, March 2002, Pages 461-479. (journal, 14/169 = 8%, best papers from ICN'01)

- L. Zhang, S. Deering, D. Estrin, S. Shenker, and D. Zappala, RSVP: A New Resource ReSerVation Protocol. *IEEE Network*, September 1993. Re-published in *IEEE Communications Magazine*, 50th Anniversary Issue, 10 Landmark Articles from the IEEE Communications Society, 2002. (journal)

- D. Zappala, and A. Fabbri, Using SSM Proxies to Provide Efficient Multiple-Source Multicast Delivery. *IEEE Globecom, Sixth Global Internet Symposium*, November 2001, Pages 1590-1594. (conference, 18/74 = 24%, top rated paper)

- D. Zappala and A. Fabbri, An Evaluation of Shared Multicast Trees with Multiple Active Cores. *IEEE International Conference on Networking*, ICN'01, July 2001. (conference)

- A. Farley, V. Lo, A. Proskurowski, and D. Zappala, Issues in Scalable Multicast Protocols. Invited paper, *DIMACS Workshop on Multicasting: Architecture, Algorithms, and Applications*, May 2001. (workshop)

- D. Zappala and A. Fabbri, Deploying SSM Proxies for Efficient Multiple-Source Multicast Delivery. *Internet2 Network Research Workshop*, April 2001. (workshop)

- D. Zappala, Alternate Path Routing for Multicast. *IEEE Infocom 2000, Conference on Computer Communications*, March 2000. (conference, 192/717 = 27%)

- M. Livingston, V. Lo, K. Windisch, and D. Zappala, Cyclic Block Allocation. *First International Workshop on Networked Group Communication*, November 1999. (conference)

- S. Bajaj, L. Breslau, D. Estrin, K. Fall, S. Floyd, P. Haldar, M. Handley, A. Helmy, J. Heidemann, P. Huang, S. Kumar, S. McCanne, R. Rejaie, P. Sharma, S. Shenker, K. Varadhan, H. Yu, Y. Xu, and D. Zappala, Improving Simulation for Network Research. Department of Computer Science, University of Southern California, USC-CS-TR-98-702, March 1999. (technical report)

- S. Bajaj, L. Breslau, D. Estrin, K. Fall, S. Floyd, P. Haldar, M. Handley, A. Helmy, J. Heidemann, P. Huang, S. Kumar, S. McCanne, R. Rejaie, P. Sharma, S. Shenker, K. Varadhan, H. Yu, Y. Xu, and D. Zappala, Virtual InterNetwork Testbed: Status and Research Agenda. Department of Computer Science, University of Southern California, USC-CS-TR-98-678, July 1998. (technical report)

- D. Zappala, D. Estrin, and S. Shenker, Alternate Path Routing and Pinning for Interdomain Multicast Routing. Department of Computer Science, University of Southern California, USC-CS-TR-97-655, July 1997. (technical report)

- D. Zappala, and J. Kann, RSRR: A Routing Interface for RSVP. Internet Draft for RSVP Working Group, July 1998.

- D. Estrin, T. Li, Y. Rekhter, K. Varahdan, and D. Zappala, Source Demand Routing Protocol: Packet Format and Forwarding Specification, RFC 1940, May 1996.

- D. Zappala, RSVP Loop Prevention for Wildcard Reservations. RSVP Working Group Draft, February 1996.

- L. Breslau, D. Estrin, D. Zappala, and L. Zhang, Limited Distribution Updates to Reduce Overhead in Adaptive Internetwork Routing. Department of Computer Science, University of Southern California, USC-CS-TR-93-532, 1993. (technical report)

- L. Breslau, D. Estrin, D. Zappala, and L. Zhang, Exploiting Locality to Provide Adaptive Routing of Real-Time Flows in Global Internets. *4th IEEE ComSoc International Workshop on Multimedia Communication*, April 1992. (conference)

GRANTS AND GIFTS

- DHS, TrustBase: A Platform for Deploying Certificate-Based Authentication Services, 2016-2018, $527,112 (PIs: Daniel Zappala, Kent Seamons)

- NSF CNS/SaTC, TWC Small: Middleware for Certificate-Based Authentication, 2015-2018, $496,900 (PIs: Kent Seamons, Daniel Zappala)

- BYU, College High Impact Research Proposal: Usable Secure Email, 2015-2016, $30,850 (PIs Kent Seamons, Daniel Zappala)

- Google Faculty Research Award: Friend or Foe? Detection and Reporting of TLS Proxies, 2014-2015, $30,952 (PI: Kent Seamons, Daniel Zappala)

- Verisign: IPv6 Spam Measurement, 2014, $5,000 gift (PI: Daniel Zappala)

- DHS: Attack Modeling for Distributed Decision Architectures, 2013-2015, $329,389 (PIs: Sean Warnick, Daniel Zappala)

- BYU, College High Impact Research Proposa: TLS Proxy Analysis, 2013-2014, $10,000 (PIs Kent Seamons, Daniel Zappala)

- AFRL: Fast, Non-Invasive Topology Discovery, Geolocation and Intrusion Detection in Wireless Networks, 2012-2013, $129,990 (PIs: Sean Warnick, Daniel Zappala)

- Subset Software: Video Streaming, 2012-2013, $35,000 gift (PI: Daniel Zappala)

- AFRL: Analysis and Design of Complex Network Environments, 2011-2012, $100,425 (PIs: Sean Warnick, Daniel Zappala)

- Subset Software: Video Streaming, 2011-2012, $5,000 gift (PI: Daniel Zappala)

- AFRL: Analysis and Design of Complex Network Environments, 2010-2011, $100,317 (PIs: Sean Warnick, Daniel Zappala)

- NSF CNS, NeTS Small: Wifu: A Software Toolkit for Wireless Transport Protocols, 2009-2012, $298,216 (PI: Daniel Zappala)

- AFRL: Analysis and Design of Complex Network Environments, 2009-2010, $79,501 (PIs: Sean Warnick, Daniel Zappala)

- Google Equipment Donation: Android Phones for Educational use, 2010, $12,500. (PI: Daniel Zappala)

- Cisco Systems, University Research Program (URP) Award: Building A Global Multicast Service, 2002-2003, $100,000 (PIs: Daniel Zappala, Kevin Almeroth)

- NSF Special Projects: Virtual Topologies for Multiparty Communication. 1999-2003, $922,825 (PIs: Virginia Lo, Arthur Farley, Andrzej Proskurowski, Daniel Zappala)

- Intel Equipment Donation: Equipment for Network Research Lab. 2001, $13,327 (PI: Daniel Zappala)

- Intel/OCECS Faculty Fellowship: New Laboratory-based Courses in Networking and Operating Systems. 2000-2002, $70,000 (PIs: Virginia Lo, Daniel Zappala, Allen Malony)

PATENTS

- Charles Douglas Knutson, Jonathan Leo Krein, Daniel Zappala, Daniel Pierce Delorey, Genealogy Context Preservation, US Patent 8,452,805.

AWARDS

- Honorable Mention Award, 34th Annual ACM Conference on Human Factors in Computing Systems (CHI 2016), for "We're on the Same Page": A Usability Study of Secure Email Using Pairs of Novice Users, Scott Ruoti, Jeff Andersen, Scott Heidbrink, Mark O'Neill, Elham Vaziripour, Justin Wu, Daniel Zappala, Kent Seamons. Nominated for Best Paper award, given Honorable Mention (approximately top 4% of papers at the conference).

- Landmark Article in IEEE Communications Magazine 50th Anniversary Issue, for RSVP: A New Resource ReSerVation Protocol, L. Zhang, S. Deering, D. Estrin, S. Shenker, and D. Zappala. Chosen as one of top 10 papers in 50 years of the magazine being published by the IEEE Communications Society, 2002.

- Best Teacher Award, University of Oregon Department of Computer and Information Science, as chosen by students, 2004.

SOFTWARE SYSTEMS

○ *leaf*

- leaf is a free genealogy site that loads a user's FamilySearch data and uses visualization and search to identify ancestors that need additional work.

- Available at http://leaf.byu.edu. Helped over 2,700 users.

○ *Citizen Budget*

- Citizen Budget is an open source application that helps residents to view their city's budget using charts and graphs.

- Code is available at http://citizenbudget.org.

○ *WiFu: A Software Toolkit for Experimental Wireless Transport Protocols.*

- WiFu is an open-source software toolkit for developing experimental wireless transport protocols. WiFu provides for user space development of reliable transport and rate control algorithms, greatly simplifying the implementation effort required.

- Code is available at https://github.com/zappala/wifu.

○ *Treecalc: A Tool for Evaluating Multicast Routing.*

- Treecalc is a simulator that compares different types of multicast trees based on delay, cost, traffic concentration, and router state. It was used in publications cited above for multiple cores and SSM proxies.

- Code is available by request.

○ *RSRR: A Routing Interface for RSVP.*

- RSRR is the interface between RSVP (Internet resource reservation protocol) and multicast routing protocols; RSRR is implemented in *mrouted* (multicast routing daemon) and *RSVPd* (Resource Reservation Protocol daemon). *mrouted* is distributed with most Unix operating systems.

- Code can be downloaded from Xerox at `ftp://parcftp.xerox.com/pub/net-research/ipmulti` and from ISI at `http://www.isi.edu/rsvp`.

○ *RSVP: Resource Reservation Protocol. Member of Development Team.*

- RVSP helps to provide Quality of Service connections in the Internet by making resource reservations on routers. It is a proposed standard within the IETF.

- Primary author of RSVP code in SunOS 4.3 kernel, later ported to the BSD operating system kernels. For reference, code can be downloaded from http://www.freebsd.org.

- Member of the development team for the RSVP daemon distributed by ISI at http://www.isi.edu/rsvp. ISI's RSVP daemon is a reference implementation for various vendors; RSVP is currently implemented in most Cisco routers.

○ *SDRP: Source Demand Routing Protocol.*

- SDRP can be used to source route packets in the Internet, for example to avoid congestion.

- Code and documentation can be downloaded from USC at `http://netweb.usc.edu/sdrp`.

Supervised Ph.D. Students

○ *Brigham Young University*

- Lei Wang, Modeling and Designing Fair Rate Control for Wireless Mesh Networks With Partial Interference, December 2011.

- Manoj Pandey, A Hop-by-Hop Architecture of Multicast Transport in Ad Hoc Wireless Networks, December 2009.

- Qiuyi Duan, Autonomous and Intelligent Radio Switching, December 2008. (co-chair)

○ *University of Oregon*

- Chris GauthierDickey, Fall 2002 - Spring 2004.

- James Hiebert, Fall 2002 - Spring 2004.

- Daniel Stutzbach, Fall 2001 - Spring 2004.

Supervised M.S. Students

○ *Brigham Young University*

- Randy Buck, WiFu Transport: A User-level Protocol Framework, April 2012.

- Ryan Padilla, Performance Evaluation of Optimal Rate Allocation Models for Wireless Networks, April 2012.

- Rich Lee, Feasibility of TCP for Wireless Mesh Networks, April 2012.

- Travis Andelin, Quality Selection for Dynamic Adaptive Streaming over HTTP with Scalable Video Coding, December 2011.

- Xingang Zhang, Experimental Evaluation of ATP in a Wireless Mesh Network, August 2011.

- Michael Heath, Asynchronous Database Drivers, December 2010.

- Roger Pack, Automatic Transition to Peer-to-Peer Download, April 2010.

- Tim Larsen, Studying the Performance of Wireless Mesh Networks Using the HxH Transport Control Protocol, February 2010.

- Jared Jardine, The Hybrid Game Architecture: Distributing Bandwidth for MMOGs While Maintaining Central Control, December 2008.

- Brian Sanderson, Reducing Seed Load in the BitTorrent File Sharing System, August 2008.

- Robert Larsen, A BitTorrent Proxy, April 2008.

- Daniel Scofield, Hop-by-Hop Transport Control for Multi-Hop Wireless Networks, April 2007.

- Michael Simonsen, Design and Measurement of a Real-Time Peer-to-Peer Game, April, 2006.

○ *University of Oregon*

- Chris GauthierDickey, NEO: A Low-Latency and Cheat-proof Event Ordering Protocol for Peer-to-Peer Games, University of Oregon, June 2002.

- Aaron Fabbri, Multiple-Source Multicast Using SSM Proxies, University of Oregon, June 2001.

- Rayen Mohanty, Evaluation of Alternate Path Routing, University of Oregon, June 2000.

- Prajna Dasgupta and Nita Viswanath, Real-Time Display of Multicast Routing State, University of Oregon, June 2000.

- Tobias Brick, Muthu Muthiah, and Laxman Pulumati, VSAM: Visual SNMP Monitor, University of Oregon, June 2000.

- Jiangbi Lin, Alternate Path Construction for Unicast and Multicast, University of Oregon, June 1999.

Supervised Undergraduate Students

○ *University of Oregon*

- Nicholas Dale Trebon, Measuring the Performance of Multicast Proxies on the Internet, May 2002.

Courses Taught

○ *Brigham Young University*

2016 – Fall	CS 360 Internet Programming
2016 – Winter	CS 460 Computer Communications and Networking
	CS 601 Topics in Usability Research
	CS 665 Advanced Computer Security
2015 – Fall	CS 360 Internet Programming
2015 – Winter	CS 460 Computer Communications and Networking
2014 – Fall	CS 360 Internet Programming
	CS 660 Computer Networks
2014 – Winter	CS 360 Internet Programming
	CS 460 Computer Communications and Networking
2013 – Fall	CS 360 Internet Programming
	CS 660 Computer Networks
2013 – Winter	CS 460 Internet Programming
	CS 601 Topics in Social Networking
2012 – Fall	CS 360 Internet Programming
	Honors 250/261 Networks, Crowds, and Markets
2012 – Spring	CS 360 Internet Programming
2012 – Winter	CS 460 Computer Communications and Networking
	Honors 202 Western Civilization 2 (Digital Civilization)
2011 – Fall	CS 460 Computer Communications and Networking
2011 – Winter	CS 360 Internet Programming

	CS 460 Computer Communications and Networking
2010 – Fall	CS 660 Computer Networks
	Honors 202 Western Civilization 2 (Digital Civilization)
2010 – Winter	CS 360 Internet Programming
2009 – Fall	CS 460 Computer Communications and Networking
2009 – Winter	CS 360 Internet Programming
2008 – Fall	CS 460 Computer Communications and Networking
	CS 601R Wireless Mesh Networks
2008 – Winter	CS 360 Internet Programming
2007 – Fall	CS 460 Computer Communications and Networking
	CS 660 Computer Networks
2007 – Winter	CS 360 Internet Programming
2006 – Fall	CS 460 Computer Communications and Networking
	CS 660 Computer Networks
2006 – Winter	CS 360 Internet Programming
	CS 460 Computer Communications and Networking
2005 – Fall	CS 460 Computer Communications and Networking
	CS 660 Computer Networks
2005 – Spring	CS 345 Operating Systems
2005 – Winter	CS 460 Computer Communications and Networking
	CS 601R Peer-to-Peer Networking

○ *University of Oregon*

2004 – Spring	Seminar on Peer-to-Peer Networking
2004 – Winter	CIS 432/532 Introduction to Computer Networks
2003 – Fall	CIS 610 Peer-to-Peer Networking
2003 – Spring	CIS 632 Computer Networks
2003 – Winter	CIS 415 Operating Systems
	CIS 607 Seminar on Advanced Topics in Computer Networks
2002 – Fall	CIS 432/532 Introduction to Computer Networks
2002 – Spring	CIS 607 Seminar on Advanced Topics in Computer Networks
2002 – Winter	CIS 632 Computer Networks
2001 – Fall	CIS 415 Operating Systems
	CIS 432/532 Introduction to Computer Networks
2001 – Spring	CIS 632 Computer Networks
2001 – Winter	CIS 432/532 Introduction to Computer Networks
	CIS 607 Seminar on Multicast Routing
2000 – Spring	CIS 632 Computer Networks
2000 – Winter	CIS 415 Operating Systems
	CIS 607 Seminar on Multicast Address Allocation
1999 – Fall	CIS 410/510 Introduction to Computer Networks
	CIS 607 Seminar on Advanced Topics in Computer Networks
1999 – Spring	CIS 632 Computer Networks
	CIS 607 Seminar on Multicast Address Allocation
1999 – Winter	CIS 415 Operating Systems
	CIS 607 Seminar on Multicast Routing
1998 – Fall	CIS 410/510 Introduction to Computer Networks
1998 – Spring	CIS 632 Computer Networks
1998 – Winter	CIS 410/510 Introduction to Computer Networks

Professional Service

- 2016: TPC for Named Data Networks for Challenged Communication Environments (NDN-CCE), Globecom workshop.

- 2015: Chair for 15th Annual Family History Technology Workshop.

- 2014: Chair for 14th Annual Family History Technology Workshop.

- 2013: Chair for 13th Annual Family History Technology Workshop, Chair for the 2013 Network Mapping and Measurement Conference, TPC for IFIP Networking 2013.

- 2012: TPC for IEEE Infocom 2013, reviewer for CDC 2012

- 2011: TPC for IEEE Infocom 2012, TPC for IEEE ICNP 2011

- 2010: TPC for IEEE Infocom 2011, TPC for IEEE SECON 2011, TPC for IEEE Global Internet 2010

- 2009: TPC for IEEE Infocom 2010, IEEE PerCom Workshop on Pervasive Wireless Networking 2010, IEEE Global Internet 2009, Reviewer for GENI (Global Environment for Network Innovations) Solicitation 2

- 2008: TPC for IEEE Infocom 2009 and IEEE Global Internet 2008

- 2007: TPC for IEEE Global Internet 2007 and IFIP Networking Conference 2008, Reviewer for Infocom 2008

- 2006: Reviewer for IEEE WCNC 2007, NTMS 2007 and Elsevier Science Computer Networks

- 2005: TPC for IFIP Networking Conference 2006, SIGCOMM 2005 Poster Committee, Reviewer for IEEE Wireless Communications Magazine and IEEE/ACM Transactions on Networks

- 2004: TPC for IFIP Networking Conference 2005, Infocom 2004 Travel Grant Committee, Reviewer for IPDPS 2005

- 2003: TPC for Conference on High Performance Computing 2004, Reviewer for Infocom 2004, IFIP Networking 2004, IEEE/ACM Transactions on Networks, and Elsevier Science Computer Networks

- 2002: TPC for ACM NOSSDAV 2003, Reviewer for ICC 2003

- 2001: TPC for ACM NOSSDAV 2002 and Globecom/Global Internet Symposium 2002, Organized and chaired Topology Generation/Measurement panel at Global Internet Symposium 2001, served on NSF CISE Research Infrastructure Panel

- 2000: TPC for Globecom/Global Internet Symposium 2001

University Service

- BYU Departmental Committees: Graduate Committee, Recruiting Committee, Computing Committee, Undergraduate Education, PhD Recruiting, External Funding

- UO Departmental Committees: Computer Resources, Faculty Hiring, Graduate Education, Undergraduate Education, CIT Minor, Constitution.

Community Service

- Cedar Hills City Council, August 2012 - present

- Cedar Hills City Planning Commission, January 2010 - August 2012