Curriculum Vitae

Byrav Ramamurthy
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1 Brief Biographical Sketch

Byrav Ramamurthy received his B.Tech. degree in Computer Science and Engineering from Indian Institute of Technology, Madras (India) in 1993. He received his M.S. and Ph.D. degrees in Computer Science from University of California (UC), Davis in 1995 and 1998, respectively. He is currently a Professor in the School of Computing at the University of Nebraska-Lincoln (UNL). He has held visiting positions at AT&T Labs-Research, New Jersey, U.S.A., the Indian Institute of Technology-Madras (IITM), in Chennai, India, and at the Indraprastha Institute of Information Technology (IIIT-D), New Delhi, India.

He is author of the book "Design of Optical WDM Networks - LAN, MAN and WAN Architectures" and a co-author of the book "Secure Group Communications over Data Networks" published by Kluwer Academic Publishers/Springer in 2000 and 2004 respectively. He has published in prestigious IEEE/ACM journals such as Proceedings of the IEEE, IEEE/ACM Transactions on Networking, IEEE/OSA Journal of Lightwave Technology and IEEE Journal on Selected Areas in Communications. He has authored over 200 peer-reviewed journal and conference publications. According to Google Scholar, his citation count is 10,877 and his h-index is 45.

He is currently serving as Editor-in-Chief of the Springer/Nature Photonic Network Communications (PNET) journal. He is an Associate Editor of the IEEE/ACM Transactions on Networking (ToN) journal. He has served as an Editor for the IEEE/OSA Journal of Optical Communications and Networking, IEEE Communications Surveys and Tutorials, Elsevier Computer Networks and Elsevier Optical Switching and Networking journals. He served as the guest co-editor of the IEEE Communications magazine Feature topic on Multi-domain optical networks (June 2008 issue). He was the Feature Editor on Theses for the Optical Network Magazine. He served as a guest co-editor for a special issue of IEEE Network magazine on Optical Communication Networks.

He was elected as Chair of the IEEE ComSoc Optical Networking Technical Committee (ONTC) for a two-year term (2009-11). ONTC is IEEE ComSoc's focal point in the area of optical networking technologies and plays an active role in stimulating/organizing leading-edge optical networking symposia, workshops, sessions and tutorials serving OFC and other premier venues.

Dr. Ramamurthy served as the TPC Co-Chair for the IEEE INFOCOM 2011 conference held in Shanghai, China. IEEE INFOCOM is the premier computer networking conference, which attracted over 1750 paper submissions that year. He served as a TPC member of the prestigious ACM SIGCOMM 2011 conference. He serves on the Steering Committee of IEEE ANTS conference, IEEE ComSoc's flagship conference in India. He served as the General Co-Chair for the IEEE LANMAN 2013 workshop, the ICCCN 2009 conference and the IEEE ANTS 2014 conference held in New Delhi, India. He served as the TPC Chair for the ICCCN 2008 conference and as the TPC Co-Chair for the IEEE MASS 2018 Conference in Chengdu, China, the 2016 IEEE Sarnoff Symposium, IEEE MASS 2012 conference, IEEE ANTS 2011 conference, IEEE LANMAN 2011 workshop and the IEEE ICC 2006 Optical Systems and Networks Symposium.

He is a recipient of the College of Engineering Faculty Research Award for 2000 and the UNL CSE Dept. Student Choice Outstanding Teaching Award for Graduate-level Courses for 2002-2003, 2006-2007 and 2017-2018. He has graduated 15 Ph.D. and 50 M.S. students under his research supervision. His former PhD advisees hold faculty positions at Purdue University, Indiana University-Purdue University at Indianapolis (IUPUI), Dakota State University and University of Costa Rica as well as Post-doc/Senior Researcher/Engineer positions at Argonne National Labs, DOE ESnet, Google and Microsoft.

Dr. Ramamurthy has given invited talks at several International locations including NASA JPL, AT&T Labs-Research, Lucent Bell Labs, Nokia Research Labs, IIT-Madras, IIT-Delhi, IIT-Bombay and Tsinghua University (Beijing). He has collaborated on projects with international partners from Ireland, India and China. His research interests include optical networks, application-aware networking, wireless sensor networks and Internet of Things (IoT), peer-to-peer video streaming and network security. His research has been supported by the U.S. National Science Foundation (NSF), the U.S. Department of Energy (DOE), the U.S. Department of Agriculture (USDA), National Aeronatics and Space Administration (NASA), AT&T Corp., Agilent Tech., HP and OPNET Inc.

2 Education

1998   Ph.D. (CS)   University of California, Davis, CA.
Dissertation: **Efficient Design of Wavelength Division Multiplexing (WDM) Based Optical Networks**.
Advisor: Prof. Biswanath Mukherjee.
1995   M.S. (CS)   University of California, Davis, CA.
1993   B.Tech (CS)   Indian Institute of Technology, Madras, India.

3 Employment

2011 – present   Professor   University of Nebraska–Lincoln, Lincoln, NE.
2003 – 2011   Associate Professor   University of Nebraska–Lincoln, Lincoln, NE.
2009   Visiting Researcher   AT&T Labs-Research, NJ.
2009   Visiting Professor   Indian Institute of Technology-Madras, Chennai, India.
1998- 2003   Assistant Professor   University of Nebraska–Lincoln, Lincoln, NE.
1995   Summer Intern   Silicon Graphics Inc, Mountainview, CA.
1994–1998   Research Assistant   Networks Laboratory, UC Davis, CA.
1993–1994   Teaching Assistant   Dept. of Computer Science, UC Davis, CA.

4 Honors and Awards

2009   Elected by the Optical Networking Technical Committee (ONTC) of
        IEEE Communications Society (ComSoc) to be ONTC Chair (2009-2011)
2008   Invited to serve as TPC Co-Chair for
        IEEE INFOCOM 2011 conference, Shanghai, P.R. China, April 2011
        (the top conference in computer networking).
2007   Elected by the Optical Networking Technical Committee (ONTC) of
        IEEE Communications Society (ComSoc) to be ONTC Vice Chair (2007-2009)
2007   The UNL CSE Dept. Students Choice Award for Outstanding Teaching of Graduate-level Courses.
2005   Elected by the Optical Networking Technical Committee (ONTC) of
        IEEE Communications Society (ComSoc) to be ONTC Secretary and Online Content Chair (2005-2007)
2003   The UNL CSE Dept. Students Choice Award for Outstanding Teaching of Graduate-level Courses.
2000-2001   Outstanding Researcher Award (Assistant professor rank),
        College of Engineering & Technology, University of Nebraska-Lincoln.
1995–1996   Fellow, Professors for the Future Program, UC Davis.
1993–1998   Non–Resident Tuition Fellowship, UC Davis.
1989–1993   National Talent Search Scholarship awarded by the Government of India.

5 Funding Record

5.1 External Grants (Federal agencies)

5.1.1 As Principal Investigator (PI)

G1. Data-driven Machine Learning and AI-based Data Transfer Strategies for High Energy Physics Experiments (HEP) on Open Science Grid (OSG); Sponsor: US Department of Energy (DOE); PI: Ramamurthy, B.; Co-PI: Weitzel, D.; External Funds: **$300,000**; Start: 10/01/2023; End: 09/30/2025.

G2. CC* Integration-Small: Network cyberinfrastructure innovation with an intelligent real-time traffic analysis framework and application-aware networking; Sponsor: NSF; PI: Ramamurthy, B.; External Funds: **$500,000**; Start: 10/01/2023; End: 09/30/2025.

G3. On-demand QoT-aware optical phase conjugators (OPCs) for WDM networks - Physical Layer Implementations and Intelligent Network Design; Sponsor: National Science Foundation (NSF) and Indian Department

of Science and Technology (DST); Investigator: Ramamurthy, B. (US PI) with Venkitesh, D. (India PI); External funds: **$99,999**; Start: 07/01/2022; End: 03/31/2024.

G4. Center for Secure and Resilient Quantum Optical Networks; Sponsor: **Indo-U.S. Science and Technology Forum (IUSSTF)**; Investigator: Ramamurthy, B. (US PI) with Bhatia, V. (India PI) and others; External Funds: **INR 37,45,000 (approx. $49,906) to IIT-Indore, India**; Start: 01/01/2022; End: 12/31/2023.

G5. ATLANTIC-eVISION: Cross-Atlantic Experimental Validation of Intelligent SDN-controlled IoT Networks; Sponsor: EU Horizon 2020 Grant Agreement number 871582 – NGIatlantic.eu; Investigator: Ramamurthy, B. (UNL PI) with Sharma, S. (EU PI) and others; External Funds: **126,755 Euros (approx. $144,250) to TU-Dublin, Ireland and EU partners**; Start: 10/2021; End: 4/2022;

G6. Intelligent Optical Networks using Virtualization and Software-Defined Control; Sponsor: **NSF**; Investigators: Ramamurthy, B. (Sole PI); External Funds: **$665,995 (with supplements)**; Start: 10/01/2018; End: 03/31/2024;

G7. CC*DNI Integration: Innovating Network Cyberinfrastructure through Openflow and Content Centric Networking in Nebraska; Sponsor: **NSF**; Investigators: Ramamurthy, B. (PI) with Swanson, D. (Co-PI) and Bockelman, B. (Co-PI); External Funds: **$572,112**; Start: 01/01/2016; End: 12/31/2020;

G8. Delay Tolerant Networking for Interplanetary Mission Communications; Sponsor: **NASA Nebraska Space Grant**; Investigators: Ramamurthy, B. (PI); External Funds: **$20,000**; UNL Matching Funds (in-kind): $30,001; Start: 9/1/2014; End: 5/31/2015;

G9. FIA-NP: Collaborative Research: The Next-Phase MobilityFirst Project - From Architecture and Protocol Design to Advanced Services and Trial Deployment; Sponsor: **NSF**; Investigators: Ramamurthy, B (Co-PI and UNL Campus PI) with Raychaudhuri, Ray (Rutgers) (PI) and others; External Funds: UNL Share: **$150,000**; Start: 05/01/2014; End: 04/30/2016;

G10. Supplement to FIA: MobilityFirst: A Robust and Trustworthy Mobility-Centric Architecture for the Future Internet; Sponsor: **NSF**; Investigators: Ramamurthy, B (Co-PI and UNL Campus PI) with Raychaudhuri, Ray (Rutgers) (PI) and others;. External Funds: UNL Share: **$37,476**; Start: 09/01/2013; End: 08/31/2014;

G11. FIA: MobilityFirst: A Robust and Trustworthy Mobility-Centric Architecture for the Future Internet Sponsor: **NSF**; Investigators: Ramamurthy, B (Co-PI and UNL Campus PI) with Raychaudhuri, Ray (Rutgers) (PI) and researchers from U.Mass-Amherst, MIT, U.Wisconsin-Madison, U.North Carolina-Chapel Hill, Duke, U.Michigan and U.Mass-Lowell. External Funds: **$7,500,000** (UNL Share: **$300,000**); Start: 09/01/2010; End: 08/31/2013;

G12. Multimedia Communications Over Interplanetary Networks; Sponsor: **NASA Nebraska Space Grant**; Investigators: Ramamurthy, B. (PI) and Xu, L. (Co-PI); External Funds: **$25,000**; Start: 9/1/2010; End: 3/31/2011;

G13. Dynamic optimized advance scheduling of bandwidth demands for large-scale science applications; Sponsor: **U.S. Department of Energy (DOE)**; Investigators: Ramamurthy, B. (Sole PI); External Funds: **$449,976**; Internal Funds: **$45,331**; Start: 10/01/2009; End: 09/30/2013;

G14. Secure Group Communications (SGC) over Wired and Wireless Networks Sponsor: **National Science Foundation (NSF)**; Investigators: Ramamurthy, B. (PI) with X. Zou (Co-PI) and V. Variyam (Co-PI); External Funds: **$349,990**; Start: 08/01/2003; End: 06/30/2007;

G15. Secure Distributed Information (SDI) Infrastructure at the University of Nebraska (part of the NSF EPSCoR Research Infrastructure Improvement Grant); Sponsor: **National Science Foundation (NSF)**; Investigators: Ramamurthy, B. (PI) with Jiang, H. , Swanson, D., Finkelson, D., and Hendrickson, K (Co-PIs).; External Funds: **$1,937,478**; Internal Funds: **$1,126,575**; Start: 03/01/2001; End: 02/01/2004; Supported 2 Post-docs, over 35 graduate students, around 5 undergraduate students at UNL and provided research facilities for their work such as the PrairieFire Supercomputer (ranked 8th fastest among US academic institutions), Access Grid facility and storage resources.

G16. Design of Translucent WDM Optical Networks; Sponsor: **National Science Foundation (NSF)**; Investigators: Ramamurthy, B. (Sole PI); External Funds: **$271,023** + REU Supplement **$15,000**; Start: 01/01/2000; End: 05/31/2004;

5.1.2 As Co-Principal Investigator (Co-PI)

G17. Nebraska Experimental Internet of Things (NEXTT) PAWR Finalist Seed Grant; Sponsor: **NSF** through PAWR Project Office (PPO); Investigators: Ramamurthy, B (Co-PI) with Vuran, M.C. (PI) and others; External Funds: **$300,000**; Start: 07/01/2019; End: 12/31/2020;

G18. US-Ignite Lincoln Smart Cities Project; Sponsor: **NSF through US Ignite**; Investigators: Ramamurthy, B (Co-PI) with Vuran, M.C. (PI) and others; External and Internal Funds: **$372,329**; Start: 2017; End: 2020;

G19. CC-NIE: Accelerating Science for Nebraska;; Sponsor: **NSF**; Investigators: Ramamurthy, B. (Co-PI) with Askren, Mark (PI) and Swanson, David (Co-PI) and Bockelman, Brian (Co-PI); External Funds: $491,871; Start: 10/01/2013; End: 09/30/2015;

G20. GpENI: Great Plains Environment for Network Innovation; Sponsor: **NSF** (through **GENI** Project Office at BBN); Investigators: Ramamurthy, B. (Co-PI and UNL Campus PI) with Sterbenz, James (University of Kansas) (PI) and others; External Funds: $460,000 (UNL Share: **$110,832**); UNL Internal Funds: **$35,000**; Start: 10/01/2008; End: 09/30/2012;

G21. Integrated Real-Time Groundwater-Level Monitoring Network to Support Drought Impact Assessment and Mitigation Programs; Sponsor: **U.S. Department of Agriculture (USDA) - Risk Management Agency (RMA)**; Investigators: Ramamurthy, B. (Co-PI) with Burbach, Mark (PI) and others; External Funds: **$403,293**; Start: 09/21/2005; End: 05/31/2009; Supported Ms. Yuyan Xue, Ph.D. student at UNL CSE as well as sensor equipment for a statewide groundwater monitoring network designed by Dr. Ramamurthy (over $200K).

G22. Next Generation Enterprise Resource Planning (ERP) Systems (part of the Nebraska EPSCoR Infrastructure Improvement Grant); Sponsor: **NSF**; Investigators: Ramamurthy, B. (Co-PI) with Choobineh, F.F. (PI) and others. External Funds: **$1,214,937**; Internal Funds: **$1,360,743**; Start: 03/01/2001; End: 02/01/2004;

G23. MRI: Acquisition of High Performance Computing and Data Visualization for Scientists and Engineers; Sponsor: **NSF**; Investigators: Ramamurthy, B. (Co-PI) with Sincovec, R.F. (PI) and others; External Funds: **$500,000**; Internal Funds (Match): **$225,000**; Start: 08/01/2003; End: 07/31/2006;

G24. Building the Regional Middleware Infrastructure across the Great Plains; Sponsor: **NSF** through Educause Extending the Reach Program; Investigators: Ramamurthy, B. (Co-PI and UNL Campus PI) with Apon, Amy (University of Arkansas) (PI) and others; External Funds: **$75,000**; Start: 06/01/2004; End: 05/31/2006;

G25. Increasing participation in computer science, engineering and mathematics through scholarships; Sponsor: **NSF**; Investigators: Ramamurthy, B. (Co-PI) with Woodward, G. (PI) and Ballard, J., Goddard, S.M., Lee, K. (Co-PIs); External Funds: **$400,000**; Start: 09/01/2004; End: 08/31/2008; Provides scholarships of around $3000 per year to around 30 UNL CSE, Math and Engg. undergrad students.

G26. Increasing Participation in Computer Science, Engineering and Mathematics through Scholarship; Sponsor: **NSF**; Investigators: Ramamurthy, B. (Co-PI) with Scofield, S. (PI) and Goddard, S.M. (Co-PI); External Funds: **$270,000**; Start: 08/01/2001; End: 07/31/2003; Provided scholarships of around $3000 per year to around 30 UNL CSE, Math and Engg. undergrad students.

5.2 External Grants (Industry)

G27. Multi-layer survivability in telecommunication networks; Sponsor: **AT&T** (Virtual University Research Initiative); Investigators: Ramamurthy, B. (Sole PI); External Funds: **$20,000**; Start: 03/01/2009; End: 12/31/2012;

G28. Routing and Wavelength Assignment Tool for Optical WDM Networks; Sponsor: **Agilent Technologies Inc.**; Investigators: Ramamurthy, B. (PI-UNL) and Mukherjee, B. (PI-UC Davis); Sponsor Funds: **$43,241** (at UNL); Start: 06/01/2000; End: 07/31/2001

G29. OPNET Software Licenses (for research and teaching); Sponsor: OPNET Inc.; Investigators: Ramamurthy, B. (PI); Duration: 2003-current (30 OPNET Modeler and WDMGuru licenses renewed annually); Estimated Value: **$30,000** (annually);

G30. HP computers for Planetlab (for research and teaching); Sponsor: Hewlett-Packard Corp. ; Investigators: Ramamurthy, B. (PI); Duration: 2008-current (2 high-end computers for UNL site); Estimated Value: **$10,000**;

5.3 Internal Grants

5.3.1 As Principal Investigator (PI)

G31. Smart Grid cybersecurity enhancement using smart authentication and intelligent threat detection; Sponsor: Nebraska Center for Energy Sciences Research (NCESR), University of Nebraska-Lincoln; Investigator: Ramamurthy, B. (PI) with Ghose, N. (Co-PI); Funds: **$170,000**; Start: 01/01/2023; End: 12/31/2024.

G32. Summer Research Opportunities Program on Mobile Security at UNL; Sponsor: UNL Graduate Studies; PI: Ramamurthy, B. with Srisa-An, W., Wei, S. and Yan, Q. (Co-PIs); Funds: $25,500 (approx. for 3 students); Start: June 2016; End: August 2016;

G33. 2015 ACM Programming Contest at UNL; Sponsor: Nebraska EPSCoR, UNL Raikes School, Garmin, Koch, IBM and others; PI: Ramamurthy, B. (Fundraising Chair) with Detweiler, C. (Site Chair) and others; Funds: **$10,000** approx.; Start: Fall 2015; End: Spring 2016; Raised funds to support outreach event on UNL campus attracting over 30 programming teams from colleges in Nebraska, Iowa, Minnesota and the North Central North America region.

G34. 2014 ACM Programming Contest at UNL; Sponsor: Nebraska EPSCoR, Garmin, Union Pacific, UNL Raikes School, IBM and others; PI: Ramamurthy, B. (Fundraising Chair) with Detweiler, C. (Site Chair) and others; Funds: **$11,225**; Start: Fall 2014; End: Spring 2015; Raised funds to support outreach event on UNL campus attracting over 30 programming teams from colleges in Nebraska, Iowa, Minnesota and the North Central North America region.

G35. 2013 ACM Programming Contest at UNL; Sponsor: Nebraska EPSCoR, Garmin, Software Technologies, UNL Raikes School and others; PI: Ramamurthy, B. (Fundraising Chair) with Riedesel, C. (Chair) and others; Funds: **$12,134**; Start: Fall 2013; End: Spring 2014; Raised funds to support outreach event on UNL campus attracting over 30 programming teams from colleges in Nebraska, Iowa, Minnesota and the North Central North America region.

G36. Academic Program Priorities Programs of Excellence (PoE) in the areas of Simulation and Computing Engineering (SCE) and Information Technology and Telecommunications (ITT); Sponsor: University of Nebraska-Lincoln; Investigators: Ramamurthy, B. (Coordinator and Co-Director) with Sincovec, R.F. (Director) and others; Internal Funds: **$260,000** (year one), approx. **$1.6M** over five years; Start: Fall 2002; Funds Endowed Chair faculty lines in the Department of Computer Science and Engineering and staff support for the Holland Computing Center. Funded several graduate students for research on scientific and grid computing.

G37. Nebraska Rural Broadband project; Sponsor: State of Nebraska/UNL; Investigators: Ramamurthy, B. (PI); Sponsor Funds: **$40,870**; Start: 2/1/2007; End: 06/30/2007;

G38. Control and Management Framework for Next-Generation Optical WDM Networks; Sponsor: Layman Awards (UNL); Investigators: Ramamurthy, B. (PI); Sponsor Funds: **$7,500**; Internal Funds: 0;

G39. Architectures and Protocols for the Next-Generation Optical Networks; Sponsor: UNL Research Council (Grant-In-Aid Award); Investigators: Ramamurthy, B. (PI); Sponsor Funds: **$4,000**; Start: 01/01/1999; End: 12/31/1999;

5.3.2 As Co-Principal Investigator (Co-PI)

G40. Enhanced New Mother's Network with Mobile Phones; Sponsor: UNMC College of Nursing: Dean's small grant program; Investigators: Ramamurthy, B. (Co-PI) with Brage-Hudson, D. (PI) and others; Sponsor Funds: **$10,000**; Start: 1/1/2015; End: 05/31/2016;

G41. Neuro TelNet: Telecommunications and Computer Networking in Neuroscience; Sponsor: UNL Office of Research - Big Ideas Seed Grant; Investigators: Ramamurthy, B. (Co-PI) with Pierobon, M. (PI) and Molfese, D. (Co-PI); Sponsor Funds: **$10,000**; Start: 11/17/2014; End: 02/29/2016;

G42. Developing a regional climate modeling facility at UNL; Sponsor: UNL Office of Research - Strategic Research Clusters program; Investigators: Oglesby, R.J. (PI), Ramamurthy, B. (Co-PI) and others; Sponsor Funds: **$50,000**; Start: 07/01/2008; End: 06/30/2009;

G43. Bio-Inspired Peer-to-Peer Network Symbiosis: From Competition to Cooperation; Sponsor: UNL Office of Research - Layman program; Investigators: Xu, L. (PI) and Ramamurthy, B. (Co-PI); Sponsor Funds: **$10,000**; Start: 05/01/2008; End: 04/30/2009;

G44. Adaptive Decision Support System for Water Management; Sponsor: UNL PoE on Water Resources Research Initiative Seed Grant; Investigators: Ramamurthy, B. (Co-PI) with Woldt, W. (PI) and others; Sponsor Funds: **$19,900** (no indirect costs); Start: 07/1/2006; End: 06/30/2007;

G45. High-Performance Arts Applications over Internet2; Sponsor: UNL Office of Research; Investigators: Ramamurthy, B. (Co-PI) with Richmond, John (PI) and others; Sponsor Funds: **$20,000**; Internal Funds: 0; Start: 08/31/2005; End: 05/31/2006;

G46. Integrated Wireless Systems for Assistive Technology; Sponsor: UNL Strategic Clusters Grant Program; Investigators: Ramamurthy, B. (Co-PI) with L. Perez (PI) and others; Sponsor Funds: **$50,000**; Matching Funds: **$30,000**; Start: 07/01/2004; End: 06/30/2006;

G47. Program checking infrastructure for cybersecurity applications; Sponsor: UNL Layman program; Investigators: Ramamurthy, B. (Co-PI) with V. Variyam (PI); Sponsor Funds: **$10,000**; Start: 08/01/2004; End: 07/31/2005;

G48. A Phenological Network for Ecological Viticulture Sponsor: ARD Interdisciplinary Research Program, UNL; Investigators: Ramamurthy, B. (Co-PI) with P.E. Read (PI) and others; Sponsor Funds: **$39,000**; Start: 07/01/2004; End: 06/30/2006;

5.4   Other Funding

In addition, Dr. Ramamurthy has participated in the preparation of the following proposal and project activities.

G49. Great Plains Software Initiative; Sponsor: Federal Congressional Earmark funds; Investigators: Reichenbach, S.M. (PI) and others; External Funds: **$800,000**; Start: 2002 (Estd.);

G50. The Water Resources Research Initiative (WRRI); Sponsor: UNL Program of Excellence (PoE) Priority funds; Investigators: Hoagland, K. (PI) and others; Role: Member, WRRI Steering Committee (appointed by Vice Chancellor Dr. Prem Paul, UNL) Sponsor Funds: **$1,600,000** (approx.); Duration: 2003-current;

5.5   Other Initiatives

- CAFE ERC: I was a Research Thrust Lead (part of the leadership team) for the highly prestigious and competitive NSF Engineering Research Center (ERC) proposal ($20M requested for first period) on "Center for Advanced Food Engineering and Manufacturing (CAFE)." The proposal was reviewed successfully and resulted in a campus site visit (Nov. 2019) followed by an NSF Blue Ribbon Panel meeting (Dec. 2019) at Washington, D.C. Unfortunately the project was not selected for funding in the final round.

- PAWR NEXTT: I have been working with Prof. Can Vuran on several major initiatives centered around Advanced Wireless Testbeds. Our previous efforts included NSF MRI, NSF PAWR (Round 2) and most recently, NSF PAWR (Round 3, $16M requested with $8M in cash). Platforms for Advanced Wireless Research (PAWR) project office selected two finalists for seed funding (Iowa State was the other finalist). UNL was not selected as the eventual winner during this round.

6   Publication Record

About the List

- All refereed (peer-reviewed) work are indicated and in general, in my field, all journal articles, conference and workshop regular papers and conference and workshop poster/short papers are rigorously reviewed by 3 independent reviewers.
- Note: Student authors are listed in *italics.*
- Citation count from Google Scholar as of August 2010.
- Impact factors are 5 year impact factors of journal from 2009 JCR Science Edition (ISI Web of Knowledge).

6.1 Books

B1. B. Ramamurthy, G. Rouskas, and K. Sivalingam, eds., *Next-Generation Internet Architectures and Protocols*. London, UK: Cambridge University Press, January 2011.

B2. X. Zou, B. Ramamurthy, and S. S. Magliveras, *Secure Group Communications Over Data Networks*. Springer, October 2004. ISBN: 0387229701. (Contribution: 40%) (Citations: 54)

B3. B. Ramamurthy, *Design of Optical WDM Networks - LAN, MAN and WAN Architectures*. Boston, MA: Springer, January 2001. (Citations: 14)

6.2 Book Chapters

BC1. A. Ravula and B. Ramamurthy, "Grid networking," in *Next-Generation Internet: Architectures and Protocols* (B. Ramamurthy, G. N. Rouskas, and K. M. Sivalingam, eds.), ch. 5, pp. 88–103, New York, NY, USA: Cambridge University Press, 2011. (Contribution: 50%)

BC2. C. Cavdar, S. Rai, A. Gencata, B. Ramamurthy, and B. Mukherjee, "Logical-topology design and optimization," in *The Handbook of Graph Algorithms and Applications, Volume II: Applications* (K. Thulasiraman, A. K. Somani, and S. Vrudhula, eds.), New York, NY: Chapman & Hall/CRC Computer & Information Science Series, September 2010. ISBN: 9781584885979. (Contribution: 20%)

BC3. J. Feng, K. Kothamachu, L. Xu, and B. Ramamurthy, "Overlay construction in mobile peer-to-peer networks," in *Mobile Peer-to-Peer Computing for Next Generation Distributed Environments: Advancing Conceptual and Algorithmic Applications* (B.-C. Seet, ed.), ch. 3, IGI Global, May 2009. ISBN: 9781605667157.

BC4. Y. Wang, G. Attebury, and B. Ramamurthy, "Security in wireless sensor networks," in *Security in Wireless Mesh Networks* (Y. Zhang, J. Zheng, and H. Hu, eds.), Auerbach Publications, CRC Press, 2008. ISBN: 9780849382505. (Contribution: 30%)

BC5. B. Ramamurthy, "Dynamic grooming algorithms," in *Traffic Grooming for Optical Networks: Foundations, Techniques and Frontiers (Optical Networks)* (R. Dutta, A. E. Kamal, and G. N. Rouskas, eds.), Springer, August 2008. ISBN:0387745173.

BC6. K. Potharlanka, T. Antani, B. Ramamurthy, L. Sahasrabuddhe, and B. Mukherjee, "Design aspects of optical communication networks," in *The Handbook of Optical Communication Networks (Electrical Engineering Handbook)* (M. Ilyas and H. Mouftah, eds.), ch. 3, pp. 45–66, CRC, April 2003. ISBN: 0849313333. (Contribution: 25%)

BC7. B. Ramamurthy, "Electro-optic and wavelength conversion," in *IP over WDM: Building the Next Generation Optical Internet* (S. Dixit, ed.), ch. 4, Wiley-Interscience, March 2003. ISBN: 0471212482.

BC8. B. Ramamurthy and J. Jue, "Fiber, lasers, receivers, and amplifiers," in *Optical WDM Networks: Principles and Practice* (K. M. Sivalingam and S. Subramaniam, eds.), pp. 27–50, Boston, MA: Kluwer Academic Publishers, 2000. ISBN: 0792378253. (Contribution: 50%)

BC9. B. Ramamurthy, "Switches, wavelength routers, and wavelength converters," in *Optical WDM Networks: Principles and Practice* (K. M. Sivalingam and S. Subramaniam, eds.), ch. 3, pp. 51–75, Boston, MA: Kluwer Academic Publishers, 2000. ISBN: 0792378253. (Citations: 6)

BC10. B. Ramamurthy, L. Shen, and E. Sawma, "Connection management for wavelength-routed optical WDM networks," in *Optical Networks: Recent Advances (Network Theory and Applications)* (L. Ruan and D.-Z. Du, eds.), pp. 187–204, Springer, September 2001. ISBN: 0792371666. (Contribution: 40%) (Citations: 3)

6.3 Journal Editorials

JE1. B. Ramamurthy, V. Sivaraman, R. Dutta, and B. Mukherjee, "Guest editorial - Special issue on ANTS 2011 conference," *Optical Switching and Networking*, 2013. (to appear). (Contribution: 25%)

JE2. C. V. Saradhi, B. Ramamurthy, D. A. Schupke, and E. Oki, "Guest editorial - multidomain optical networks: issues and challenges," *IEEE Communications Magazine*, vol. 46, no. 6, pp. 76–77, June 2008. (Contribution: 30%)

JE3. B. Ramamurthy, S. Subramaniam, and A. K. Somani, "Guest editorial - Special issue on wavelength conversion," *Optical Networks Magazine*, vol. 3, no. 2, p. 13, March 2002. (Contribution: 34%)

JE4. A. K. Somani and B. Ramamurthy, "Guest editorial - Optical communication networks for the next-generation Internet," *IEEE Network*, vol. 14, no. 6, pp. 6–7, 2000. (Contribution: 50%)

6.4   Edited Proceedings

1. S. Basagni and B. Ramamurthy, "Proceedings of the IEEE MASS 2012 conference program," in *MASS 2012. The 9th IEEE International Conference on Mobile Ad hoc and Sensor Systems*, October 2012. (Contribution: 50%)
2. B. Ramamurthy and V. Sivaraman, "Proceedings of the IEEE ANTS 2011 conference program," in *ANTS 2011. The Fifth IEEE International Conference on Advanced Networking and Telecommunication Systems*, December 2011. (Contribution: 50%)
3. B. Ramamurthy and K. Steenhaut, "Proceedings of the IEEE LANMAN 2011 workshop program," in *LANMAN 2011. The IEEE Workshop on Local and Metropolitan Area Networks*, October 2011. (Contribution: 50%)
4. B. Ramamurthy, J. Wu, and Q. Zhang, "Proceedings of the IEEE INFOCOM 2011 conference program," in *INFOCOM 2011. The 30th IEEE Conference on Computer Communications*, April 2011. (Contribution: 34%)
5. K. K. Ramakrishnan and B. Ramamurthy, "Proceedings of the mini-conference program," in *INFOCOM 2008. The 27th IEEE Conference on Computer Communications*, p. vi, April 2008. (Contribution: 50%)
6. N. Ghani and B. Ramamurthy, "Message from the Chairs," in *IEEE INFOCOM High-Speed Networks (HSN) Workshop*, (Piscataway, N.J.), April 2007. (Contribution: 50%)
7. B. Ramamurthy, "Proceedings of the ICCCN 2008 conference program," in *ICCCN 2008. The 17th International Conference on Computer Communications and Networks*, August 2008.

6.5   Dissertation

1. B. Ramamurthy, *Efficient Design of Wavelength-Division Multiplexing (WDM)-Based Optical Networks*. Ph.D. Dissertation, Dept. of Computer Science, University of California, Davis, July 1998. UMI Publication No. AAT 0599745. (Citations: 16)

6.6   Journal Articles (Peer-Reviewed)

Published/Accepted

J1. S. Yavary Mehr and B. Ramamurthy, "Protection Techniques using Resource Delayed Release for SDN-based OTN over WDM Networks," *Optical Switching and Networking*, vol. 51, p. 100762, Feb. 2024. Contribution: 40%)

J2. S. Sharma, A. Nag, and B. Ramamurthy, "Cross-Atlantic experiments on EU-US test-beds," *IEEE Networking Letters*, vol. 4, no. 3, pp. 108–112, 2022. (Contribution: 30%)

J3. S. Sharma, S. Urumkar, G. Fontanesi, B. Ramamurthy, and A. Nag, "Future wireless networking experiments escaping simulations," *Future Internet*, vol. 14, no. 4, 2022. (Contribution: 15%)

J4. D. Nadig, B. Ramamurthy, and B. Bockelman, "Snag: Sdn-managed network architecture for gridftp transfers using application-awareness," *IEEE/ACM Transactions on Networking*, vol. 30, no. 4, pp. 1585–1598, 2022. (Contribution: 40%)

J5. S. Yavary Mehr, B. Ramamurthy, Y. Zhou, B. Guo, and S. Huang, "Performance of resource delayed release strategy in software-defined otn over wdm networks for uniform and non-uniform traffic," *Optical Switching and Networking*, vol. 44, p. 100663, 2022. (Contribution: 30%)

J6. M. Alhowaidi, D. Nadig, B. Hu, B. Ramamurthy, and B. Bockelman, "Cache management for large data transfers and multipath forwarding strategies in Named Data Networking," *Computer Networks*, vol. 199, p. 108437, 2021. (Contribution: 20%)

J7. M. Alhowaidi, B. Ramamurthy, B. Bockelman, and D. Swanson, "Enhancing the SDTMA-NDN architecture for transferring the scientific data software using named data networking," *Computer Networks*, vol. 166, p. 106954, 2020. (Contribution: 30%)

J8. R. Kaur, A. Gupta, A. Srivastava, B. C. Chatterjee, A. Mitra, B. Ramamurthy, and V. A. Bohara, "Resource allocation and qos guarantees for real world ip traffic in integrated xg-pon and ieee802.11e edca networks," *IEEE Access*, vol. 8, pp. 124883–124893, 2020. (Contribution: 20%)

J9. S. El Alaoui and B. Ramamurthy, "Mars: A multi-attribute routing and scheduling algorithm for DTN interplanetary networks," *IEEE/ACM Transactions on Networking*, vol. 28, no. 5, pp. 2065–2076, Oct 2020. (Contribution: 40%)

J10. N. Hoque and B. Ramamurthy, "Dynamic wavelength and bandwidth allocation for supporting diverse customers and prioritized traffic in ng-pon2 networks," *Photonic Network Communications*, vol. 40, no. 3, pp. 194–208, 2020. (Contribution: 40%)

J11. P. K. Vairam, G. Mitra, C. Rebeiro, B. Ramamurthy, and K. Veezhinathan, "Approxbc: Blockchain design alternatives for approximation-tolerant resource-constrained applications," *IEEE Communications Standards Magazine*, vol. 2, no. 3, pp. 45–51, 2018. (Contribution: 20%)

J12. A. Lara and B. Ramamurthy, "Opensec: Policy-based security using software-defined networking," *IEEE Transactions on Network and Service Management*, vol. 13, no. 1, pp. 30–42, 2016. (Contribution: 40%)

J13. P. Yi and B. Ramamurthy, "Provisioning virtualized cloud services in IP/MPLS-over-EON networks," *Photonic Network Communications*, pp. 418–431, 2016. (Contribution: 40%)

J14. P. Yi, H. Ding, and B. Ramamurthy, "Budget-optimized joint resource allocation in grids/clouds over optical networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 34, no. 16, pp. 3890–3900, 2016. (Contribution: 30%)

J15. J. Mukherjee and B. Ramamurthy, "The interplanetary internet implemented on a terrestrial testbed," *Ad Hoc Networks*, vol. 27, no. C, pp. 147–158, Apr. 2015. (Contribution: 40%)

J16. D. Medhi, B. Ramamurthy, C. Scoglio, J. P. Rohrer, E. K. Cetinkaya, R. Cherukuri, X. Liu, P. Angu, A. Bavier, C. Buffington, and J. P. Sterbenz, "The gpeni testbed: Network infrastructure, implementation experience, and experimentation," *Computer Networks*, vol. 61, pp. 51–74, 2014. (Contribution: 15%)

J17. A. Lara, A. Kolasani, and B. Ramamurthy, "Network innovation using openflow: A survey," *Communications Surveys Tutorials, IEEE*, vol. 16, no. 1, pp. 493–512, First 2014. (Contribution: 30%)

J18. H. Ding, P. Yi, and B. Ramamurthy, "Cost-optimized reservation and routing for scheduled traffic in optical networks," *Optical Communications and Networking, IEEE/OSA Journal of*, vol. 5, no. 11, pp. 1215–1226, 2013. (Contribution: 30%)

J19. J. Mukherjee and B. Ramamurthy, "Communication technologies and architectures for space network and interplanetary internet," *Communications Surveys Tutorials, IEEE*, vol. 15, no. 2, pp. 881–897, 2013. (Contribution: 50%)

J20. D. Xu, G. Li, B. Ramamurthy, A. Chiu, D. Wang, and R. Doverspike, "On provisioning diverse circuits in heterogeneous multi-layer optical networks," *Computer Communications*, vol. 36, no. 6, pp. 689–697, March 2013. (Contribution: 25%)

J21. M. Wang, L. Xu, and B. Ramamurthy, "Exploring the design space of multichannel peer-to-peer live video streaming systems," *Networking, IEEE/ACM Transactions on*, vol. 21, no. 1, pp. 162–175, 2013. (Contribution: 30%)

J22. Z. Ouyang, L. Xu, B. Ramamurthy, and N. Yossef, "Partial forwarding vs. partial participation for dynamic window resizing in P2P streaming," *Computer Networks*, vol. 56, no. 6, pp. 1782–1796, April 2012. (Contribution: 25%)

J23. P. Adusumilli, Y. Sui, X. Zou, B. Ramamurthy, and F. Li, "A key distribution scheme for distributed group with authentication capability," *International Journal of Performability Engineering*, vol. 8, no. 2, pp. 199–212, 2012. (Contribution: 20%)

J24. Y. Xue, B. Ramamurthy, and M. C. Vuran, "SDRCS: A service-differentiated real-time communication scheme for event sensing in wireless sensor networks," *Comput. Netw.*, vol. 55, no. 15, pp. 3287–3302, 2011. (Contribution: 30%)

J25. M. Wang, L. Xu, and B. Ramamurthy, "Improving multi-view peer-to-peer live streaming systems with the divide-and-conquer strategy," *Comput. Netw.*, vol. 55, no. 18, pp. 4069–4085, 2011. (Contribution: 30%)

J26. Z. Ouyang, L. Xu, and B. Ramamurthy, "Diverse community: Demand differentiation in P2P live streaming," *Peer-to-peer Networking and Applications*, vol. 4, no. 1, pp. 23–36, August 2010. (Contribution: 30%)

J27. Y. Wang, B. Ramamurthy, X. Zou, and Y. Xue, "An efficient scheme for removing compromised sensor nodes from wireless sensor networks," *Security and Communication Networks*, vol. 3, no. 4, pp. 320–333, July/August 2010. (Contribution: 30%)

J28. Y. Xue, B. Ramamurthy, and Y. Wang, "LTRES: A loss-tolerant reliable event sensing protocol for wireless sensor networks," *Computer Communications*, vol. 32, pp. 1666–1676, September 2009. (Contribution: 30%) (Impact factor=**1.012**)

J29. W. Yao, G. Sahin, M. Li, and B. Ramamurthy, "Analysis of multi-hop traffic grooming in WDM mesh networks," *Optical Switching and Networking*, vol. 6, no. 1, pp. 64–75, January 2009. (Contribution: 20%) (Citations: 7)

J30. J. Feng, Z. Ouyang, L. Xu, and B. Ramamurthy, "Packet reordering in high-speed networks and its impact on high-speed TCP variants," *Computer Communications*, vol. 32, no. 1, pp. 62–68, January 2009. (Contribution: 20%) (Citations: 4) (Impact factor=**1.012**)

J31. L. Shen, X. Yang, and B. Ramamurthy, "A load-balancing spare capacity reallocation approach in the next-generation SONET metro networks," *Optical Switching and Networking*, vol. 5, no. 1, pp. 38–50, March 2008. (Contribution: 30%) (Citations: 3)

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J33. A. Todimala and B. Ramamurthy, "A scalable approach for survivable virtual topology routing in optical WDM networks," *IEEE Journal on Selected Areas in Communications*, vol. 25, no. 6, pp. 63–69, August 2007. (Contribution: 40%) (Citations: 9) (Impact factor=**4.626**)

J34. R. K. Balachandran, X. Zou, B. Ramamurthy, A. Thukral, and V. N. Variyam, "An efficient and attack-resistant key agreement scheme for secure group communications in mobile ad-hoc networks," *Wireless Communications and Mobile Computing (WCMC)*, December 2007. (Contribution: 20%) (Impact factor=**2.069**)

J35. M. Li and B. Ramamurthy, "Heterogeneous waveband switching in wavelength division multiplexed networks based on autonomous clustering architecture [**invited paper**]," *OSA Journal of Optical Networking (JON)*, vol. 5, no. 9, pp. 667–680, September 2006. (Contribution: 40%) (Citations: 16) (Impact factor=**1.489**)

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J37. L. Shen, X. Yang, and B. Ramamurthy, "Shared risk link group (SRLG)-diverse path provisioning under hybrid service level agreements in wavelength-routed optical mesh networks," *IEEE/ACM Transactions on Networking*, vol. 13, no. 4, pp. 918–931, 2005. (Contribution: 30%) (Citations: **74**) (Impact factor=**3.322**)

J38. X. Yang and B. Ramamurthy, "Dynamic routing in translucent WDM optical networks: The intradomain case," *IEEE/OSA Journal of Lightwave Technology*, vol. 23, no. 3, pp. 955–957, March 2005. (Contribution: 40%) (Citations: **26**) (Impact factor=**2.598**)

J39. X. Yang, L. Shen, and B. Ramamurthy, "Survivable lightpath provisioning in WDM mesh networks under shared path protection and signal quality constraints," *IEEE/OSA Journal of Lightwave Technology*, vol. 23, no. 4, pp. 1556–1567, April 2005. (Contribution: 30%) (Citations: **43**) (Impact factor=**2.598**)

J40. X. Yang and B. Ramamurthy, "Sparse regeneration in translucent wavelength-routed optical networks: Architecture, network design and wavelength routing," *Photonic Network Communications*, vol. 10, no. 1, pp. 39–53, July 2005. (Contribution: 40%) (Citations: **40**) (Impact factor=0.847)

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J42. N. Mohamed, X. Liu, A. Davis, and B. Ramamurthy, "JOR: a content-based object router," *Computer Communications*, vol. 28, no. 6, pp. 654–663, April 2005. (Contribution: 30%) (Citations: 2) (Impact factor=**1.012**)

J43. W. Yao and B. Ramamurthy, "Survivable traffic grooming with path protection at the connection level in WDM mesh networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 23, no. 10, pp. 2846–2853, 2005. (Contribution: 40%) (Citations: **31**) (Impact factor=**2.598**)

J44. W. Yao and B. Ramamurthy, "A link bundled auxiliary graph model for constrained dynamic traffic grooming in WDM mesh networks," *IEEE Journal on Selected Areas in Communications*, vol. 23, no. 8, pp. 1542–1555, 2005. (Contribution: 40%) (Citations: **44**) (Impact factor=**4.626**)

J45. X. Yang and B. Ramamurthy, "Inter-domain wavelength routing in the next-generation translucent optical Internet backbones," *OSA Journal of Optical Networking (JON)*, vol. 3, no. 3, pp. 169–187, March 2004. (Contribution: 40%) (Citations: **31**) (Impact factor=**1.489**)

J46. A. Todimala and B. Ramamurthy, "A dynamic partitioning protection routing technique in WDM networks," *Cluster Computing*, vol. 7, no. 3, pp. 259–269, July 2004. (Contribution: 40%) (Citations: 18) (Impact factor=0.695)

J47. L. Shen, X. Yang, and B. Ramamurthy, "Signaling schemes for distributed connection management in wavelength-routed optical mesh networks," *Photonic Network Communications*, vol. 8, no. 1, pp. 89–103, June 2004. (Contribution: 30%) (Citations: 3) (Impact factor=0.847)

J48. *S. Zhang* and B. Ramamurthy, "Dynamic traffic grooming algorithms for reconfigurable SONET over WDM networks," *IEEE Journal on Selected Areas in Communications*, vol. 21, no. 7, pp. 1165–1172, 2003. (Contribution: 40%) (Citations: **44**) (Impact factor=**4.626**)

J49. *L. Shen* and B. Ramamurthy, "Provisioning and restoration in the next-generation optical core," *Optical Networks Magazine*, vol. 4, no. 2, pp. 32–45, March 2003. (Contribution: 40%) (Citations: 7)

J50. B. Ramamurthy and *A. Ramakrishnan*, "Design of virtual private networks (VPNs) over optical wavelength division multiplexed (WDM) networks," *Optical Networks Magazine*, vol. 3, no. 1, pp. 59–67, January 2002. (Contribution: 60%) (Citations: 18)

J51. *J. T. Lee* and B. Ramamurthy, "A novel wavelength converter node architecture for WDM wavelength-routed networks," *Optical Networks Magazine*, vol. 3, no. 2, pp. 31–43, March 2002. (Contribution: 40%) (Citations: 1)

J52. *M. Ali*, B. Ramamurthy, and J. S. Deogun, "Routing and wavelength assignment with power considerations in optical networks," *Computer Networks*, vol. 32, no. 5, pp. 539–555, May 2000. (Contribution: 30%) (Citations: **36**) (Impact factor=**1.610**)

J53. *T. Schroeder*, S. Goddard, and B. Ramamurthy, "Scalable web server clustering technologies," *IEEE Network*, vol. 14, no. 3, pp. 38–45, 2000. (Contribution: 30%) (Citations: **209**) (Impact factor=**3.529**)

J54. *X. Gan*, *T. Schroeder*, S. Goddard, and B. Ramamurthy, "LSMAC vs. LSNAT: Scalable cluster-based web servers," *Cluster Computing*, vol. 3, no. 3, pp. 175–185, November 2000. (Contribution: 25%) (Citations: 18) (Impact factor=0.695)

J55. *X. Gan* and B. Ramamurthy, "LSMAC: An improved load sharing network service dispatcher," *World Wide Web*, vol. 3, no. 1, pp. 53–59, July 2000. (Contribution: 40%) (Citations: 4) (Impact factor=**1.564**)

J56. B. Ramamurthy, D. Datta, H. Feng, J. P. Heritage, and B. Mukherjee, "Impact of transmission impairments on the teletraffic performance of wavelength-routed optical networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 17, no. 10, pp. 1713–1723, 1999. (Contribution: 35%) (Citations: **268**) (Impact factor=**2.598**)

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J58. B. Ramamurthy, J. Iness, and B. Mukherjee, "Optimizing amplifier placements in a multiwavelength optical LAN/MAN: the equally powered-wavelengths case," *IEEE/OSA Journal of Lightwave Technology*, vol. 16, no. 9, pp. 1560–1569, 1998. (Contribution: 40%) (Citations: **40**) (Impact factor=**2.598**)

J59. B. Ramamurthy, J. Iness, and B. Mukherjee, "Optimizing amplifier placements in a multiwavelength optical LAN/MAN: the unequally powered wavelengths case," *IEEE/ACM Transactions on Networking*, vol. 6, no. 6, pp. 755–767, 1998. (Contribution: 40%) (Citations: **40**) (Impact factor=**3.322**)

J60. B. Ramamurthy and B. Mukherjee, "Wavelength conversion in WDM networking," *IEEE Journal on Selected Areas in Communications*, vol. 16, no. 7, pp. 1061–1073, 1998. (Contribution: 60%) (Citations: **336**) (Impact factor=**4.626**)

J61. M. S. Borella, J. P. Jue, D. Banerjee, B. Ramamurthy, and B. Mukherjee, "Optical components for WDM lightwave networks," *Proceedings of the IEEE*, vol. 85, no. 8, pp. 1274–1307, 1997. (Contribution: 20%) (Citations: **165**) (Impact factor=**6.039**)

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6.7 Conference and Workshop Regular papers (Peer-Reviewed)

Published/Accepted

C1. S. Urumkar, B. Ramamurthy, and S. Sharma, "Energy efficiency and fault tolerance in open ran and future internet," in *2023 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, (Jaipur, India), pp. 1–3, Dec 2023. (Best ERF Poster award).

C2. S. Urumkar, B. Ramamurthy, and S. Sharma, "Improving energy efficiency in open ran through dynamic cpu scheduling," in *2023 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, (Jaipur, India), pp. 1–6, Dec 2023.

C3. V. S. S. L. Karanam and B. Ramamurthy, "Deep network matrix factorization for large-scale modeling of the internet backbones," in *2023 IEEE Future Networks World Forum (FNWF) - Symposium on Future Optical Networks and Communications*, (Baltimore, MD, USA), pp. 1–6, Nov 2023.

C4. B. Hu, M. Krishna, D. Venkitesh, and B. Ramamurthy, "Integrating physical layer modeling in the simulation of dynamic wdm optical networks with direct and coherent detection," in *2023 IEEE Future Networks World Forum (FNWF) - Symposium on Future Optical Networks and Communications*, (Baltimore, MD, USA), pp. 1–6, Nov 2023.

C5. V. S. S. L. Karanam, F. Afrin, B. Ramamurthy, and N. Ghose, "Cross-layer device identification for smart grid substation networks (poster)," in *2023 IEEE Conference on Communications and Network Security (CNS)*, (Orlando, FL, USA), pp. 1–2, Oct 2023.

C6. V. S. S. L. Karanam and B. Ramamurthy, "Dycrono: Dynamic cross-layer network orchestration and real-time deep learning-based network load prediction," in *2023 International Conference on Optical Network Design and Modeling (ONDM)*, (Coimbra, Portugal), pp. 1–6, May 2023.

C7. S. Yavary Mehr and B. Ramamurthy, "Hierarchical classic controllers (hcc) with an enhanced svm method for ddos attack detection in sdn," in *2022 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, (Gandhinagar, India), pp. 1–6, Dec 2022. (Best Paper Runner-up award).

C8. B. Hu, M. Majid, and B. Ramamurthy, "Dynamic network simulation using deeprmsa in elastic optical networks," in *2022 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, (Gandhinagar, India), pp. 1–6, Dec 2022.

C9. S. Sharma, S. Urumkar, G. Fontanesi, V. S. S. L. Karanam, B. Hu, B. Ramamurthy, and A. Nag, "Towards emulation of intelligent iot networks on EU-US testbeds," in *2022 International Seminar on Intelligent Technology and Its Applications (ISITIA)*, pp. 484–489, 2022.

C10. S. El Alaoui and B. Ramamurthy, "A contact-based classification to aid routing in heterogeneous wireless networks," in *IEEE International Conference on Advanced Networks and Telecommunications Systems*, pp. 1–6, IEEE, 2021.

C11. B. Hu, D. Nadig, and B. Ramamurthy, "Improving service performance through multilayer routing and service intelligence in a network service mesh," in *IEEE International Conference on Advanced Networks and Telecommunications Systems*, (Hyderabad, India), pp. 1–6, IEEE, Dec. 2021.

C12. B. Hu and B. Ramamurthy, "Towards simulating dynamic routing and wavelength assignment using gnpy and simon," in *IEEE International Conference on Advanced Networks and Telecommunications Systems*, pp. 1–3, IEEE, 2021.

C13. M. M. R. Lunar, J. Sun, J. Wensowitch, M. Fay, H. B. Tulay, V. S. S. L. Karanam, B. Qiu, D. Nadig, G. Attebury, H. Yu, J. Camp, C. E. Koksal, D. Pompili, B. Ramamurthy, M. Hashemi, E. Ekici, and M. C. Vuran, "Onelnk: One link to rule them all: Web-based wireless experimentation for multi-vendor remotely accessible indoor/outdoor testbeds," in *Proceedings of the 15th ACM Workshop on Wireless Network Testbeds, Experimental Evaluation & CHaracterization*, WiNTECH'21, (New York, NY, USA), p. 85–92, Association for Computing Machinery, 2021.

C14. S. Y. Mehr and B. Ramamurthy, "Protection techniques for Wavelength Division Multiplexing networks using resource delayed release strategy (invited paper)," in *2021 International Conference on Computer Communications and Networks (ICCCN)*, pp. 1–6, 2021.

C15. D. Nadig, B. Ramamurthy, B. Bockelman, and D. Swanson, "APRIL: An application-aware, predictive and intelligent load balancing solution for data-intensive science," in *IEEE INFOCOM 2019 - IEEE Conference on Computer Communications*, pp. 1909–1917, April 2019. (Best in-session presentation award).

C16. P. K. Vairam, G. Mitra, V. Manoharan, C. Rebeiro, B. Ramamurthy, and Kamakoti, "Towards measuring quality of service in untrusted multi-vendor service function chains: Balancing security and resource consumption," in *IEEE INFOCOM 2019 - IEEE Conference on Computer Communications*, pp. 163–171, April 2019. (Best in-session presentation award).

C17. M. Alhowaidi, D. Nadig, and B. Ramamurthy, "Cache management for large data transfers in Named Data Networking using SDN," in *2019 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, pp. 1–6, Dec 2019.

C18. S. Nayak, D. Nadig, and B. Ramamurthy, "Analyzing malicious urls using a threat intelligence system," in *2019 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, pp. 1–4, Dec 2019.

C19. S. El Alaoui and B. Ramamurthy, "Stan+petra: A statistical analysis aided routing algorithm for qos in mission-driven iot networks," in *2019 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, pp. 1–6, Dec 2019.

C20. N. Hoque. and B. Ramamurthy, "Supporting diverse customers and prioritized traffic in next-generation passive optical networks," in *Optical Network Design and Modeling. ONDM 2019. Lecture Notes in Computer Science* (T. A. et al. (eds), ed.), vol. 11616, Springer, Cham., 2020. (Contribution: 40%)

C21. P. Yi and B. Ramamurthy, "Network-aware virtual data center resource orchestration in an optical data center," in *2017 International Conference on Computing, Networking and Communications (ICNC)*, (Silicon Valley, California), pp. 313–317, January 2017. (Contribution: 40%)

C22. M. Alhowaidi, P. Yi, and B. Ramamurthy, "Dynamic provisioning in virtualized cloud infrastructure in IP/MPLS-over-WDM networks," in *2017 International Conference on Computing, Networking and Communications (ICNC)*, pp. 83–87, 2017. (Contribution: 30%)

C23. D. Nadig Anantha, Z. Zhang, B. Ramamurthy, B. Bockelman, G. Attebury, and D. Swanson, "SNAG: SDN-managed Network Architecture for GridFTP Transfers," in *Proceedings of the Third Workshop on Innovating the Network for Data-Intensive Science, INDIS '16*, (Salt Lake City, Utah), November 2016. (Contribution: 20%)

C24. S. Poyyeri, V. Sivadasan, B. Ramamurthy, and J. Nieveen, "Mhealthint: Healthcare intervention using mobile app and google cloud messaging," in *2016 IEEE International Conference on Electro Information Technology, EIT 2016*, IEEE International Conference on Electro Information Technology, pp. 145–150, IEEE Computer Society, Aug. 2016. 2016 IEEE International Conference on Electro Information Technology, EIT 2016 ; Conference date: 19-05-2016 Through 21-05-2016. (Contribution: 25%)

C25. S. El Alaoui and B. Ramamurthy, "Routing optimization for dtn-based space networks using a temporal graph model," in *2016 IEEE International Conference on Communications (ICC)*, pp. 1–6, 2016. (Contribution: 40%)

C26. S. El Alaoui, S. Palusa, and B. Ramamurthy, "The interplanetary internet implemented on the geni testbed," in *2015 IEEE Global Communications Conference (GLOBECOM)*, pp. 1–6, 2015. (Contribution: 40%)

C27. A. Lara and R. B., "Design challenges in using software-defined networking for science networks," in *SDN for Scientific Computing Workshop at SuperComputing '15*, November 2015. (Contribution: 40%)

C28. P. Yi and B. Ramamurthy, "Provisioning virtualized cloud services in IP/MPLS-over-EON networks," in *Optical Network Design and Modeling (ONDM), 2015 International Conference on*, pp. 45–50, May 2015. (Contribution: 40%)

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C122. *X. Yang* and B. Ramamurthy, "An analytical model for virtual topology reconfiguration in optical networks and a case study," in *ICCCN 2002: Eleventh International Conference on Computer Communications and Networks*, pp. 302–308, October 2002. (Contribution: 40%) (Citations: **18**) (Acceptance rate: **26%**)

C123. *A. Todimala* and B. Ramamurthy, "A dynamic partitioning sub-path protection routing technique in WDM mesh networks," in *ICCC '02: International Conference on Computer Communications*, (Mumbai, India), pp. 327–340, August 2002. (Contribution: 40%) (Citations: **18**) (Acceptance rate: **21%**)

C124. *X. Yang* and B. Ramamurthy, "An analysis model for virtual topology reconfiguration in optical networks," in *HSN 2002. IEEE INFOCOM Workshop on High-Speed Networking*, June 2002. (Contribution: 40%)

C125. *L. Shen* and B. Ramamurthy, "Centralized vs. distributed connection management schemes under different traffic patterns in wavelength-convertible optical networks," in *ICC 2002. IEEE International Conference on Communications*, vol. 5, pp. 2712–2716, April/May 2002. (Contribution: 40%) (Citations: **11**) (Acceptance rate: 41%)

C126. *X. Yang* and B. Ramamurthy, "Dynamic routing in translucent WDM optical networks," in *ICC 2002. IEEE International Conference on Communications*, vol. 5, pp. 2796–2802, April/May 2002. (Contribution: 40%) (Citations: **77**) (Acceptance rate: 41%)

C127. *X. Zou*, S. Magliveras, and B. Ramamurthy, "A dynamic conference scheme extension with efficient burst operation," *Thirty-Third Southeastern International Conference on Combinatorics, Graph Theory and Computing, Congressus Numerantium*, vol. 158, pp. 83–92, Mar. 2002. (Contribution: 30%)

C128. *X. Zou*, B. Ramamurthy, and S. Magliveras, "Routing techniques in wireless ad hoc networks-classification and comparison," in *6th World Multiconference on Systemics, Cybernetics and Informatics*, vol. vol.4, pp. 84–89, January 2002. (Contribution: 30%) (Citations: **48**)

C129. *X. Zou*, B. Ramamurthy, and S. Magliveras, "Efficient key management for secure group communications with bursty behavior," in *International Conference on Communications, Internet, and Information Technology (CIIT)*, January 2002. (Contribution: 30%) (Citations: **10**)

C130. *G. Rao* and B. Ramamurthy, "DiffServer: application level differentiated services for web servers," in *ICC 2001. IEEE International Conference on Communications*, vol. 5, pp. 1633–1637, 2001. (Contribution: 40%) (Citations: **15**)

C131. J. C. Birget, *X. Zou*, G. Noubir, and B. Ramamurthy, "Hierarchy-based access control in distributed environments," in *ICC 2001. IEEE International Conference on Communications*, vol. 1, pp. 229–233, 2001. (Contribution: 25%) (Citations: **31**)

C132. *L. Zhong* and B. Ramamurthy, "Optimization of amplifier placements in switch-based optical networks," in *ICC 2001. IEEE International Conference on Communications*, vol. 1, pp. 224–228, 2001. (Contribution: 40%) (Citations: **10**)

C133. B. Ramamurthy, *S. Yaragorla*, and *X. Yang*, "Translucent optical WDM networks for the next-generation backbone," in *GLOBECOM '01. IEEE Global Telecommunications Conference*, vol. 1, pp. 60–64 vol.1, 2001. (Contribution: 40%) (Citations: **47**)

C134. *X. Zou*, B. Ramamurthy, and S. Magliveras, "Chinese remainder theorem based hierarchical access control for secure group communication," in *International Conference on Information and Communications Security (ICICS), Lecture Notes in Computer Science (LNCS)*, vol. 2229/2001, pp. 381–385, Springer, 2001. (Contribution: 30%) (Citations: **42**)

C135. *X. Yang* and B. Ramamurthy, "Sparse regeneration in a translucent WDM optical network," in *SPIE Asia-Pacific Optical and Wireless Communications (APOC) Conference, Optical Networking*, vol. 4585, (Country of Publication: USA), pp. 61–70, SPIE-Int. Soc. Opt. Eng SPIE., January 2001. (Contribution: 40%) (Citations: **17**)

C136. B. Ramamurthy and *A. Ramakrishnan*, "Virtual topology reconfiguration of wavelength-routed optical WDM networks," in *GLOBECOM '00. IEEE Global Telecommunications Conference*, vol. 2, pp. 1269–1275, November/December 2000. (Contribution: 60%) (Citations: **79**)

C137. *X. Gan*, *T. Schroeder*, S. Goddard, and B. Ramamurthy, "LSMAC and LSNAT: Two approaches for cluster-based scalable web servers," in *ICC 2000. IEEE International Conference on Communications*, vol. 2, pp. 1164–1168, June 2000. (Citations: **26**)

C138. B. Ramamurthy and *A. Ramakrishnan*, "Design of virtual private networks (VPNs) over optical wavelength-division-multiplexed (WDM) networks," in *SPIE Opticomm 2000: Optical Networking and Communications Conference*, vol. 4233, (Richardson, TX, USA), pp. 76–86, SPIE-Int. Soc. Opt. Eng, January 2000. (Citations: **18**)

C139. *M. Ali*, B. Ramamurthy, and J. S. Deogun, "Routing and wavelength assignment (RWA) with power considerations in all-optical wavelength-routed networks," in *GLOBECOM 1999. IEEE Global Telecommunications Conference*, vol. 2, pp. 1433–1437, December 1999. (Contribution: 30%) (Citations: **36**)

C140. M. Ali, B. Ramamurthy, and J. S. Deogun, "Routing algorithms for all-optical networks with power considerations: the unicast case," in *ICCCN 1999. Eighth International Conference on Computer Communications and Networks*, pp. 237–241, October 1999. (Contribution: 30%) (Citations: **17**)

C141. B. Ramamurthy, D. Datta, H. Feng, J. P. Heritage, and B. Mukherjee, "Simon: a simulator for optical networks," in *Proceedings of the SPIE - All Optical Networking 1999: Architecture, Control and Management Issues*, vol. 3843, (Country of Publication: USA), pp. 130–135, SPIE-Int. Soc. Opt. Eng SPIE., September 1999. (Contribution: 30%) (Citations: **25**)

C142. B. Ramamurthy, H. Feng, D. Datta, J. P. Heritage, and B. Mukherjee, "Transparent vs. opaque vs. translucent wavelength-routed optical networks," in *Optical Fiber Communication Conference, 1999, and the International Conference on Integrated Optics and Optical Fiber Communication. OFC/IOOC '99. Technical Digest*, vol. 1, pp. 59–61 vol.1, February 1999. (Contribution: 30%) (Citations: **71**)

C143. D. Datta, B. Ramamurthy, H. Feng, J. P. Heritage, and B. Mukherjee, "BER-based call admission in wavelength-routed optical networks," in *Optical Fiber Communication Conference*, vol. 2 of *1998 OSA Technical Digest Series*, pp. 1–3, Optical Society of America, February 1998. (Contribution: 30%) (Citations: **15**)

C144. B. Ramamurthy, J. Iness, and B. Mukherjee, "Minimizing the number of optical amplifiers needed to support a multi-wavelength optical LAN/MAN," in *INFOCOM '97. The 16th Conference on Computer Communications*, vol. 1, pp. 261–268, 1997. (Contribution: 60%) (Citations: **23**)

C145. B. Ramamurthy, J. Iness, and B. Mukherjee, "Optical amplifier optimization in a multi-wavelength passive-star-based optical metropolitan area network," in *Proceedings, Institute for Operations Research and the Management Sciences – INFORMS*, (Atlanta, GA), Nov. 1996. (invited paper). (Contribution: 60%)

6.8 Conference and Workshop *Poster and Short* Papers

1. D. Nadig, S. El Alaoui, B. Ramamurthy, and S. Pitla, "ERGO: A scalable edge computing architecture for infrastructureless agricultural internet of things," in *2021 IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN)*, pp. 1–2, 2021.

2. S. Y. Mehr and B. Ramamurthy, "An SVM based DDoS attack detection method for Ryu SDN controller," in *Proceedings of the 15th International Conference on Emerging Networking EXperiments and Technologies*, CoNEXT '19 Companion, (New York, NY, USA), p. 72–73, Association for Computing Machinery, 2019. (Best Poster Award).

3. A. Lara and B. Ramamurthy, "Balancing exchange points communication and inter-controller communication for inter-domain routing," in *NSF Beyond the Internet workshop on Software Defined Infrastructure and Software Defined Exchanges.*, February 2016. (Contribution: 40%)

4. S. El Alaoui, S. Palusa, and B. Ramamurthy, "The ipn implemented on the geni testbed," in *2015 Annual Meeting of the Nebraska Academy of Sciences, Aeronautics & Space Science Section*, April 2015. (Contribution: 30%)

5. *M. Subedee, P. Angu*, B. Ramamurthy, and K. Christensen, "GpENi@UNL: UNL contributions to a regional network testbed (poster)," in *Great Plains Network Annual Meeting*, (Kanas City, MO, USA), July 2010. **Best Student Poster Award**. (Contribution: 30%)

6. C. Rowe, R. Oglesby, B. Ramamurthy, and D. Swanson, "Regional climate change and its impacts in the Great Plains region: An end-to-end approach (poster paper)," in *Nebraska State EPSCoR Conference*, (Lincoln, NE), October 2008. (Contribution: 30%)

7. *J. Ghoshal, M. Wang*, B. Ramamurthy, and L. Xu, "Variable neighbor selection in live peer-to-peer multimedia streaming networks (poster paper)," in *Broadnets 2008: Fifth International Conference on Broadband Communications, Networks and Systems*, (London, U.K.), pp. 344–346, September 2008. (Contribution: 30%)

8. *Y. Xue*, B. Ramamurthy, M. Burbach, and C. Knutson, "A real-time groundwater monitoring network for drought imapact assessment (poster paper)," in *Nebraska Water Colloquium*, (Lincoln, NE), September 2007. (Contribution: 30%)

9. *Y. Wang* and B. Ramamurthy, "A key management protocol for hybrid wireless sensor networks (poster paper)," in *Broadnets 2007: Fourth International Conference on Broadband Communications, Networks and Systems*, pp. 303–305, September 2007. (Citations: 5) (Contribution: 40%)

10. *Y. Xue*, B. Ramamurthy, and Y. Lu, "A distributed reliable data transport strategy for event based wireless sensor networks," in *SenSys '06: 4th ACM International conference on Embedded networked sensor systems*, (New York, NY, USA), pp. 407–408, ACM, November 2006. ISBN: 1595933433. (Citations: 3) (Contribution: 30%)

11. *Y. Wang* and B. Ramamurthy, "A centralized group rekeying scheme for secure group communication in wireless sensor networks (poster)," in *SecureComm 2006, Second International Conference on Security and Privacy in Communication Networks*, (Baltimore, MD), August 2006. (Citations: 4) (Contribution: 40%)

6.9 Magazine Columns

Dr. Ramamurthy has authored several articles for his "Feature on Theses" column in the Optical Networks magazine (2000-2004).

1. B. Ramamurthy, "Review of Laxman Sahasrabuddhe's thesis," *Optical Networks Magazine*, vol. 2, no. 1, pp. 23–25, January 2001.

2. B. Ramamurthy, "Review of Jonathan P. Lang's thesis," *Optical Networks Magazine*, vol. 2, no. 2, pp. 16–17, March 2001.

3. B. Ramamurthy, "Review of Hui Zang's thesis," *Optical Networks Magazine*, vol. 3, no. 3, p. 109, May 2002.

6.10 Invited Articles

Dr. Ramamurthy has contributed invited articles for E-newsletters.

1. *M. Wang, Z. Ouyang*, L. Xu, and B. Ramamurthy, "Multi-channel peer-to-peer multimedia streaming," *E-Letter of IEEE Multimedia Communications Technical Committee*, vol. 6, no. 9, pp. 35–37, September 2011. (invited article).

6.11 U.S. Patents Filed

1. "A distributed scalable local-optimized method for saving energy in core router ports," Lin Liu and Byrav Ramamurthy, US Provisional Patent, Application No. 61719578, October 2012.

6.12   Tutorials

1. Byrav Ramamurthy. Optical Networking and the Future Internet. In *Proceedings, IEEE ANTS 2012 Conference*, Bangalore, India December 2012.
2. Byrav Ramamurthy. Optical Networks for Future Internet. In *Proceedings, IEEE ANTS 2011 Conference*, Bangalore, India December 2011.
3. Biswanath Mukherjee and Byrav Ramamurthy. Wavelength-routed optical networks - a tutorial. In *Proceedings, Photonics 2000 Conference*, Calcutta, India, December 2000.
4. Byrav Ramamurthy. Wavelength-routed optical WDM networks. In *Proceedings, Opticomm 2001 Conference*, Denver, Colorado, August 2001.

6.13   Invited Conference and Workshop Presentations

1. Byrav Ramamurthy and K.K. Ramakrishnan and Rakesh K. Sinha. Cost and Reliability Considerations in Designing the Next-Generation IP over WDM Backbone Networks In *The 20th International Conference on Computer Communications and Networks (ICCCN 2011)*, Maui, HI, August 2011.
2. Byrav Ramamurthy. "Security for High-Confidence Software Platforms for Cyber-Physical Systems," at the "National Workshop on High Confidence Software Platforms for Cyber-Physical Systems: Research Needs and Roadmap" organized by The High Confidence Software and Systems Coordinating Group Federal Networking and Information Technology Research & Development – National Science and Technology Council, Alexandria, VA, November/December 2006.
3. Byrav Ramamurthy and Xukai Zou. Secure Group Communications," In *Third Annual Regional Workshop in the Mathematical Sciences*, University of Nebraska-Lincoln, Lincoln NE, October 2000.
4. Byrav Ramamurthy. Virtual private networks (VPNs) over optical WDM wavelength-routed networks. In *IEEE Computer Communications Workshop (CCW) 2000*, Captiva Island, FL, October 2000.
5. Byrav Ramamurthy, Debasish Datta, Helena Feng, Jonathan P. Heritage, and Biswanath Mukherjee. SIMON: A Simulator for Optical Networks. In *IEEE Computer Communications Workshop (CCW) 1999*, (Estes Park, CO), October 1999.

6.14   Invited Talks

Dr. Ramamurthy has given invited talks at the following institutions/venues.

1. "Routing in Satellite networks," NASA Jet Propulsion Laboratory (JPL), Pasadena, CA, March 2015.
2. "Research on high-speed networks," DOE annual networking PI meeting, Washington DC, March 1-2, 2012.
3. "Research on a high-speed regional network," GPN Annual Meeting, Kansas City, MO. May/June 2012.
4. "Optical core networks for MobilityFirst architecture," NSF PI meeting, Rutgers Univ., New Brunswick, NJ, 2011.
5. "UNL contributions to GpENI testbed and research," GPN Annual Meeting, Kansas City, MO. 2011.
6. "GpENI project presentation," GEC12 GENI project meeting, Kansas City, MO. 2011.
7. "GpENI connectivity to MAX through ProtoGENI," GEC8 GENI conference, San Diego, July 2010.
8. "Application-driven Internet design," Temple University, April 2010.
9. "Redesigning the Carrier Backbone" at AT&T Labs-Research, Florham Park, New Jersey, May 2009.
10. "Application-driven Networking" at Indian Institute of Technology-Madras, Chennai, India, February 2009.
11. "Security in Wireless Sensor Networks" at Defence Research Development Organization (DRDO), Bangalore, India, February 2009.
12. "Optical Grid networks" North Carolina State University, January 2009.
13. "Dynamic Lightpath Scheduling in Optical WDM Grid Networks" at Beijing University of Posts and Telecommunications, Beijing, China, May 2008.
14. "Optical Grid Networks" at Dept. of Computer Science and Technology, Tsinghua University, Beijing, China, May 2008.
15. "Security in Wireless Sensor Networks (WSNs): Attacks and countermeasures" to the NSF-CSEMS Scholarship Recipients, UNL, Fall 2006.
16. "Security in Wireless Sensor Networks," Lucent Bell Labs, Bangalore, India, July 2006.
17. "Security in Wireless Sensor Networks," Indian Institute of Technology-Madras, Chennai, India, July 2006.

18. "WLAN Security," Special presentation to NSF-CSEMS Scholarship Recipients, Lincoln, NE, 2005.
19. "Wireless Local Area Networks (WLANs): Security Concerns and Solutions" at the Lincoln Downtown Tech Fair, April 2004.
20. "Secure Group Communications" at the Nebraska Information Technology Security Day, Lincoln, Nebraska, November 2004.
21. "Wireless Local Area Networks (WLAN) Security," UNL-CSE Graduate recruiting talk at Nebraska Wesleyan University, Lincoln NE, March 2004.
22. "CSE Graduate Program and Facilities," Special presentation to NSF-CSEMS Scholarship Recipients, Lincoln, NE, October 2003.
23. "UNL Access Grid Node Facilities," UNL PRISM Priority Initiative sponsored CSE Research Facility Open House, September 2003.
24. "CSE Graduate Program and Facilities," Special presentation to Dr. Zlatuska, President, Masaryk University, Brno, The Czech Republic, Lincoln, NE, September 2003.
25. "Grid Computing at UNL," Lincoln MENSA club meeting, September, 2002.
26. "Scalable enterprise systems," J.D. Edwards Co., Denver, CO, August 2001.
27. "Simulation and Modeling of Optical WDM Networks", OPNET Technologies Inc., Washington, DC, August 2000.
28. "Design of wavelength-routed optical WDM networks," Department of Computer Science & Engineering, Indian Institute of Technology (IIT-M), Chennai, India, January 2001.
29. "Design of Optical WDM Networks with Power Considerations", Nokia Research Lab, Boston, MA, Oct. 1999.
30. "Efficient design of Wavelength Division Multiplexed Optical Networks," University of Nebraska-Lincoln (Lincoln, NE), 1998.
31. "On the amplifier placement problem in optical networks using WDM," Department of Computer Science & Engineering, Indian Institute of Technology, Madras, India, April 1997.
32. Seminar, Case Western Reserve University, Cleveland, OH, 1997.
33. Seminar, University of Arizona, Tucson, AZ, 1997.
34. Seminar, University of Delaware, Newark, DE, 1997.
35. Seminar, University of Pennsylvania, Philadelphia, PA, 1997.
36. "Wavelength conversion in WDM networking," Pacific Bell, San Ramon, CA, 1997.
37. "Impact of transmission impairments on teletraffic performance of wavelength-routed optical networks," Lawrence Livermore National Laboratory, Livermore, CA, 1997.
38. "Helping TA's in enabling computer usage for classes — Information dissemination/retrieval," *Professors for the Future* ceremony, University of California-Davis, CA, 1996.
39. "On the scalability of the Interactive TV System," Interactive Digital Solutions Unit, Silicon Graphics Inc., Mountain View, CA, Sept. 1995.

7   Teaching Record

Highlights

- **Teaching Awards:** Dr. Ramamurthy has thrice won the UNL CSE Dept. Students Choice Award for Outstanding Teaching of Graduate-level Courses (for 2006-2007, 2002-2003 and 2017-18).
- Dr. Ramamurthy has graduated **16** Ph.D. students and **50** M.S. students (17 Thesis and 33 Project).
- Supervised the research of 2 post-doctoral scholars.
- Has supervised research by **6** undergraduate students (3 supported by NSF REU) and **2** undergraduate honors project students.
- Currently supervising 3 Ph.D. students and 2 undergrad student.
- Currently leading an active research group ("UNL Netgroup: Computer Networks group").
- Former graduate advisees have been employed by prestigious companies such as Google, Microsoft, Sprint, Juniper, EMC, Cisco and Intel Corp. and prestigious research units such as DOE ESnet, AT&T Labs-Research and Argonne National Labs.
- One of his former Ph.D. students (Dr. Xukai Zou) is a Full Professor in the Department of Computer Science at Purdue University-Indianapolis. Other former students in academia include Dr. Deepak Nadig, Asst. Professor, Purdue University and Dr. Yong Wang, Research Associate Professor, Dakota State University.

- External Ph.D. examiner of students worldwide: IIT-Delhi, India (1), BITS-Pilani, India (1), National University of Singapore (2), IIT-Kanpur, India (1), IIT-Madras, India (1), Iowa State University (1) and University of Ghent, Belgium (1).
- Developed three new courses on Optical Communication Networks (CSCE953), Data and Network Security (CSCE463/863) and Cybersecurity in the Age of Cloud, Big Data and Cryptocurrencies (CSCE492).
- Created (with Prof. Goddard) the UNL CSE Networks Systems Seminar (CSCE990) which has been held for 20 consecutive semesters.

7.1 Students

7.1.1 Current Students

Student Name	Topic	Degree
Boyang Hu	Software-defined optical networks	Ph.D. (CE)
Venkat Sai Suman Lamba Karanam	Optimization in optical networks	Ph.D. (CE)
Mohammad Majid	Machine learning in optical networks	Ph.D. (CS)
Lance Althouse	Optical networks	B.S.
Justin Nguyen	Optical networks	B.S.

7.1.2 Ph.D. Dissertations Supervised

Student Name	Title	Degree	Term
Xukai Zou	Secure Group Communications and Hierarchical Access Control (co-advisor with Prof. Spyros Magliveras, FAU) Job:Professor, Purdue University-Indianapolis	Ph.D. (CS)	Fall 2000
Xi Yang	Efficient Design and Operation of Translucent Optical WDM Networks Job: Research Scientist, USC ISI-East, Arlington, VA	Ph.D. (CS)	Summer 2004
Wang Yao	Traffic Grooming in Next-Generation Optical WDM Mesh Networks	Ph.D. (CS)	Summer 2005
Mengke Li	Cost-Efficient Design of Waveband Switching in Optical Wavelength Division Multiplexed Networks Job:Microsoft, Seattle, WA	Ph.D. (CS)	December 2005
Lu Shen	Resource Allocation in Wavelength-Routed WDM Mesh Networks Job: CEO, Dealmoon, Inc., San Jose, CA	Ph.D. (CS)	May 2006
Ajay Kumar Todimala	Fault-tolerance using Shared Path Protection in Wavelength Division Multiplexing Optical Transport Networks Job:AT&T Labs-Research, Florham Park, NJ	Ph.D. (CS)	December 2006
Yong Wang	Key management protocols for Hybrid Wireless Sensor Networks Job: Res. Assoc. Prof., Dakota State Univ., Madison, SD	Ph.D. (CS)	December 2007
Yuyan Xue	Service-Differentiated And Reliable Communication In Event-Based Wireless Sensor Networks co-advisor: Prof. M. Can Vuran	Ph.D.(CE)	Spring 2010
Miao Wang	Multi-Channel Peer-to-Peer Streaming Systems as Resource Allocation Problems co-advisor with Prof.Lisong Xu Job: A10 Networks, San Jose CA	Ph.D.(CS)	Spring 2011
Zhipeng Ouyang	On Heterogeneous User Demands In Peer-To-Peer Video Streaming Systems co-advisor with Prof.Lisong Xu Job: OPNET, Washington DC area	Ph.D.(CS)	Summer 2012

Student Name	Title	Degree	Term
Adrian Lara	Using Software-Defined Networking to Improve Campus, Transport and Future Internet Architectures Job: Faculty, University of Costa Rica	Ph.D.(CS)	Fall 2015
Pan Yi	Joint Resource Provisioning in Optical Cloud Networks Job: Microsoft	Ph.D.(CE)	Summer 2016
Mohammad Alhowaidi	Optical Cloud Networking and Named Data Networking for High Speed Scientific Data Transfer Job: A10 Networks	Ph.D.(CE)	Summer 2019
Sara El Alaoui	Routing Optimization in Heterogeneous Wireless Networks for Space and Mission-Driven Internet of Things (IoT) Environments Job: Post-doc, Argonne National Labs	Ph.D.(CS)	August 2020
Deepak Nadig	Application-awareness in softwarized networks: Building intelligent networks through application and network-layer collaboration Job: Asst. Professor, Purdue University	Ph.D.(CE)	August 2021
Shideh Yavary Mehr	Software Defined Networking for Survivable Optical Layer Provisioning, Network Security Using Machine Learning and an Intelligent Traffic Engineering Method Job: Visting Asst. Prof, Univ of Wisconsin-Milwaukee	Ph.D.(CE)	August 2022

7.1.3 M.S. Theses Supervised

Student Name	Abbreviated Title	Term
Jong-Tae Lee	Wavelength Converter Placement in Optical Networks	Spring 1999
Ashok Ramakrishnan	Virtual Topology Reconfiguration in Optical Networks	Spring 2000
Srinath Yaragorla	Sparse Regeneration in a Translucent Network	Summer 2000
Ling Zhong	Optimizing of Amplifier Placements in Switched Optical Networks	Spring 2000
Shu Zhang	Dynamic traffic grooming for reconfigurable WDM networks	Spring 2001
Lu Shen	Signaling Schemes for in GMPLS-based WDM Mesh Networks	Spring 2002
Kalpana Ganesan	P-Lambda Scheduler for WDM Optical Packet Switching	Spring 2003
Ajay Kumar Todimala	Fault-Tolerance in Optical WDM Mesh Networks	Spring 2003
Siva Sunkavalli	Scatternet Formation in Bluetooth Networks	Summer 2003
Ravi Balachandran	Secure Group Communication over Wireless Ad Hoc Networks	Fall 2004
Garhan Attebury	Federated Network Management through Attribute Access Control	Summer 2006
Pratheeswaran Angu	Offline Optimization of Advance Reservation over Dynamic Networks	Summer 2011
Lin Liu	Distributed Algorithms for Energy Savings in the Core Network	Fall 2011
Joyeeta Mukherjee	Routing Over The Interplanetary Internet	Summer 2012
Santiago Gimenez Ocano	Remote Mobile Screen (RMS): An approach for secure BYOD environments	Spring 2015
Sara El Alaoui	Routing Optimization in Interplanetary Networks	Fall 2015
Naureen Hoque	Supporting Diverse Customers and Prioritized Traffic in Next-Generation Passive Optical Networks	Fall 2018

7.1.4   M.S. Projects Supervised

Student Name	Abbreviated Title	Term
Xuehong Gan	A Prototype of a Web Server Clustering System	Spring 1999
Qingyuan Lou	Sparse Multicasting Simulator for Optical Networks	Fall 1999
Xingchun Chen	IP Multicast Experiments in a Campus Network	Spring 2000
Chandrakant Yemparala	Integrated Simulation Environment for SIMON	Summer 2000
Gautam Rao	Application Level Differentiated Services for Web Servers	Spring 2000
Elie Sawma	Connection Management in Optical Networks	Fall 2000
Sree Rama Nomula	ARTHUR: An RWA Tool for Optical Networks	Fall 2000
Mir Hussain Ali	Static vs. Dynamic Routing in WDM Networks	Fall 2001
Aditya Srinivasa Ivaturi	Transcoding Proxy for Wireless Web	Summer 2002
Lai Lim	Challenges in deploying Access Grid at UNL	Summer 2002
Mohan Krishna Chirumamilla	An Intrusion Detection System for Wireless LANs	Fall 2002
Jun Li	Integrated Distributed Simulation using Visual SIMON	Spring 2003
Daneal Tesse Fekersillassie	Design of a Sensor Network for Irrigation Management	Spring 2003
Vaidehi Ajit Kasarekar	Distributed Intrusion Detection for Wireless LANs	Fall 2003
Sarang Deshpande	A Scalable Scheme for Secure Dynamic Conferencing	Spring 2004
Mukesh Babu Raghuraman	Implementation of a system for the visually impaired	Summer 2004
Bhavana Lekkala	Waveband Routing with Non-uniform Wavebands	Summer 2004
Ashok Janardhanan	Implementation of a Secure Group Communication Protocol	Summer 2004
Srikanth Anumalla	Groundwater Monitoring using Smart Sensors	Summer 2004
John Hodges	Wireless Mesh Networking: A Solution for Broadband Access	Fall 2007
Jagannath Ghoshal (Co-advisor: Prof. L. Xu)	Neighbor-Selection in Live Peer-to-Peer Multimedia Streaming Networks	Fall 2007
Srikanth Mallu (Co-advisor: Prof. Vuran)	A Secure Group Key Management (SGKM) Scheme for Wireless Sensor Networks	Spring 2008
Vaidhehi Lakshmiraman	Joint Scheduling in a Lambda Grid Network	Summer 2008
Anusha Ravula	A Tabu Search Approach for Joint Scheduling of Resources in a Lambda Grid Network	Spring 2010
Mukesh Subedee	Co-scheduling of Resources in a Lambda Grid/Cloud Environment	Summer 2010
Anisha Kolasani	Dynamic Network Traffic Isolation Through OpenFlow	Summer 2012
Steven Becker	Experiments On Video Streaming Over Computer Networks	Fall 2012
Saichand Palusa	The Interplanetary Internet implemented on GENI Testbed	Fall 2014
Sonith Raveendran Poyyeri	Healthcare Intervention using Mobile phones and Google Cloud Messaging	Summer 2015
V.R.K. Bhargav Gorthi	Medical Intervention Using IPhones and Cloud Messaging	Summer 2016
Vishnu Sivadasan	MOHIN: A Modular, Mobile and Multi-platform solution for Healthcare Interventions	Fall 2016
Lalita Kumawat	DDoS attack detection using machine learning techniques	December 2021

7.1.5   Supervisory Committee Activities

Student	Assignment	Level	Term
Bhagat, Deepankar	Member	MS	Spring 1999
Liu, Fang	Member	MS	Spring 1999
Tang, Xiaolin	Member	MS	Spring 1999
Wang, Yili	Member	MS	Summer 1999
Xu, Hui	Member	MS	Summer 1999
Dang, Hui	Member	MS	Fall 1999
Dondeti, Lakshminath	Reader	PhD	Fall 1999
Fan, Hanchang	Member	MS	Fall 1999
Kulkarni, Amit	Member	MS	Fall 1999
Sarkar, Amartya	Member	MS	Fall 1999
Thiruchendur, Sankar	Member	MS	Fall 1999
Yalavarthi, Seshu	Member	MS	Fall 1999
Ali, Maher	Member	PhD	Fall 1999
Malladi, Sada	Member	MS	Fall 1999
Kong, Yan	Reader	PhD (EE)	Fall 1999
Ci, Song	Member	PhD (EE)	Spring 2000
Wang, Yang	Reader	PhD (EE)	Spring 2000
Cusack, Charles	Reader	PhD	Fall 2000
Subramani, Kavitha	Member	MS	Fall 2000
Wei, Caina	Member	MS	Fall 2000
Narla, Smita	Member	MS	Spring 2001
Gable, David	Member	MS	Spring 2001
Yang, Guangsheng	Member	MS	Fall 2001
Li, Lin	Member	PhD	Spring 2002
Liu, Xin	Member	MS	Spring 2002
Fu, Jing	Member	MS	Summer 2002
Wu, Tao	Member	PhD reading committee (Iowa State Univ-ECE)	Summer 2003
Newbold, Stefan	Member	MS	Summer 2003
Qin, Xiao	Member	PhD	Summer 2003
Gao, Jun	Member	PhD	Summer 2003
Ramanathan, Visu	Member	MS	Fall 2003
Anderson, Scot	Member	MS	Fall 2003
Liu, Xin	Member	PhD	Spring 2004
Nkwocha, Fidel	Member	MS	Spring 2004
Lueninghoener, Cory	Member	MS	Spring 2004
Krishnapura, Rohini	Member	MS	Fall 2004
Nathan, Ahalya	Member	MS	Spring 2005
Al-Nahas, Huzaifa	Member	PhD	Fall 2005-2008
Gerard, Jeffrey	Member	BS	Spring 2006
Jayanavula, Sumanth	Member	PhD	2005-2007
Feng, Jie	Member	PhD	Fall 2006-present
Sunkara, Vandana	Member	MS	Fall 2008
William, Peter	Reader	PhD (EE)	Fall 2007
Anonymous	Member	PhD external examiner (IIT Kanpur, IIT Madras, NUS Singapore)	2006-2008
De Leenheer, Marc	Member	PhD Jury (University of Ghent, Belgium)	Fall 2008

Student (contd.)	Assignment	Level	Term
Phani Kiran Vabbina	Member	MS (EE)	Summer 2009
Deli Qiao	Member	PhD (EE)	Fall 2009-2012
Agnelo Silva	Member	MS	Spring 2010
Ranjini Srinivas	Member	MS	Summer 2010
Xin Dong	Member	PhD	Fall 2010
Shuai Xie	Member	MS	Fall 2011
Ertong Zhang	Reader	PhD	Fall 2012
Katharine Shultis	Member	PhD (Math)	Fall 2012
Anonymous	Member	MS external examiner (U. New South Wales, Auz)	2012
Tongqing Liu	Member	PhD (EE)	Fall 2013
Kartik Vedalaveni	Member	MS	Fall 2014
Abdul Salam	Member	PhD	Fall 2015
Zhe Zhang	Member	PhD	Fall 2015
Andrew Windle	Member	PhD (Math)	Fall 2015
Nitya Kovur	Member	MS	Spring 2016

7.1.6 Independent Study Supervisor

Students: Chin-Kiat Chim, Chon Ming Lee, Srini Utpala, Xin Liu
(Note: This list does not include students currently doing M.S. work under my supervision.)

7.1.7 Undergraduate Senior Design Supervisor

Students: Pavel Patino, John Steinbach, Anthony Foster, Alex Baruth (CompEng-2011 with Prof. S. Reichenbach).
Supervisor for 47 students in Fall 2012 (ComEng-2012 with Prof. M. Dwyer).

7.1.8 Undergraduate Honors Thesis/Course Project Supervisor

Students: Ryan Shuck, Roger Perry, Daniel Geschwender, Michael Rogers, Keegan Lunn, Jedd Patterson, Spencer Landis, Tri Minh Nguyen.

7.1.9 Undergraduate Thesis Committee Member

Student: Mark Smith

7.1.10 REU and UCARE Students

Madeline Hardojo (UCARE), Francis Ridder (REU), Jeremiah Wessels (REU), Ray Perry (UCARE), Zachary Berns (UCARE).

7.1.11 Internship Supervisor

Students: Kenson Goo (Fall 2004)

7.2 Courses and Curriculum Development

Since his arrival at UNL in 1998, he has taught the following courses:

Course Number	Name	Credit Hours	Class Size	Term
CSCE 492	Cybersecurity for Cloud	3 credits	25	F21
CSCE 952	Advanced Computer Networks	3 credits	9-44	F 1998-2010,F13,S16
CSCE 462/862	Communication Networks	3 credits	34-50	S 1999-2005
CSCE 463/863	Data and Network Security	3 credits	10-22	S 2006-2010, S12, S14,F15,S22
CSCE 953	Optical Communication Networks	3 credits	8-31	S 1999-2008,2010,S16,F21
CSCE 990	Networks Systems Seminar	1 credit	3-8	S 1999-2008
CSCE 310	Data Structures and Algorithms	3 credits	25	F 2008-2009,S/F 2011, F 2012
CSCE 150E	Intro to Computer Programming	3 credits	72	F 2010
CSCE 488/489	Senior Design (Comp. Engg)	3 credits	4-47	S/F11, F12/S13, S13/F14, S14

8 Service Record

8.1 External Service

1. Community Leadership

   - **Chair**, IEEE Communications Society Optical Networks Technical Committee (ONTC) (2009-2011).
   - **Vice Chair**, IEEE Communications Society Optical Networks Technical Committee (ONTC) (2007-2009).
   - **Online Content Chair**, IEEE Communications Society Optical Networks Technical Committee (2004-2010).
   - **Secretary**, IEEE Communications Society Optical Networks Technical Committee (2005-2007).
   - **Founding Secretary**, IEEE Communications Society Optical Networks Technical Committee (2002-2004).
   - **Steering Committee Member**, IEEE Advanced Networking and Telecommunication Systems (ANTS) conference (2016-present).

2. Editorships

   - **Editor-in-Chief**, Springer Photonic Network Communications (PNET), 2013-present.
   - **Editor**, IEEE/ACM Transactions on Networking (ToN), 2019-present.
   - **Editor**, Elsevier Optical Switching and Networking (OSN), 2011-2015.
   - **Editor**, IEEE/OSA Journal of Optical Communications and Networking (JOCN), Feb. 2008-2011.
   - **Editor**, IEEE Communications Surveys and Tutorials (ComST) (2002-2012).
   - **Editor**, Elsevier Computer Networks journal (ComNet), 2011.
   - **Editor**, *IEEE Communications Magazine: Optical Communications Supplement (OCS)*, 2004-2007.
   - **Editor**, SPIE/Kluwer Optical Networks magazine (2002-2004).
   - **Guest Co-editor**, IEEE Communications - Feature topic on Multi-domain optical networks, April 2008.
   - **Guest Co-editor**, *IEEE Network* magazine – Special issue on "Optical Communication Networks," November/December 2000.
   - **Guest Co-editor**, *Optical Networks* magazine – Special issue on "Wavelength Conversion," March/April 2002.
   - **Feature Editor on Theses**, *Optical Network Magazine* (2000 - 2004).

3. Conference/Workshop Chair

   - **General Chair**, IEEE ANTS 2014 conference, New Delhi, India, December 2014.
   - **General Vice-Chair**, IEEE ANTS 2013 conference, Chennai, India, December 2013.
   - **General Co-Chair**, IEEE LANMAN 2013, Brussels, Belgium, April 2013.
   - **TPC Co-Chair**, IEEE MASS 2012 conference, Las Vegas, NV, October 2012.
   - **TPC Co-Chair**, IEEE ANTS 2011 conference, Bangalore, India, December 2011.
   - **TPC Co-Chair**, IEEE INFOCOM 2011 conference, Shanghai, P.R. China, April 2011.
   - **TPC Co-Chair**, IEEE LANMAN 2011, Chapel Hill, NC, USA, October 2011.
   - **General Co-Chair**, ICCCN 2009 conference, San Francisco, USA, August 2009.
   - **General Co-Chair**, Opticomm 2009 conference, Dallas, TX, June 2009.
   - **General Co-Chair**, Broadnets 2008 conference, London, UK, September 2008.
   - **General Co-Chair**, INFOCOM 2008 High Speed Networks (HSN) workshop, Phoenix, AZ, USA, April 2008.
   - **TPC Chair**, ICCCN 2008 conference, US Virgin Islands, USA, August 2008.
   - **TPC Vice Chair for Information Systems (EDAS) and Mini-Conference Co-Chair**, IEEE INFOCOM 2008, Phoenix, Arizona, April 2008, 2007-2008.

- **TPC Vice Chair**, ICCCN 2007 conference, Hawaii, USA, October 2007.
- **Technical Program Committee Co-chair**, The Third International Conference on Broadband Networks (BroadNets): Symposium on Optical Networks, Communications and Systems, (San Jose, CA), 2006.
- **Technical Program Committee Co-Chair**, IEEE International Conference on Communications (ICC) - Symposium on Optical Systems and Networks, (Istanbul, Turkey), 2006.
- **Workshops Co-Chair**, ICST/IEEE BroadNets Conference, (Boston, MA), 2005.

4. Conference/Workshop Organizing Committee

- **Panels and Invited Speakers Co-chair**, Broadnets Conference, 2004.
- **Panels Chair**, Optical Networks and Communications Conference (OptiCom 2000), Dallas, TX, October 2000.
- **Panels Chair**, Optical Networks and Communications Conference (OptiCom 2001), Denver, CO, October 2001.
- **Co-organizer, Optical networks session** for the IEEE 14th Annual Computer Communications Workshop (CCW), Estes Park, Colorado, October 17-20, 1999.

5. Proposal/Dissertation/Promotion/Tenure Reviewer/Panelist

- **Proposal Review Panelist**, National Science Foundation, 2019-2022.
- **External Reviewer**, MS Committee, University of New South Wales, Australia, 2012.
- **Tenure & Promotion Reviewer**, Invited to serve as External Reviewer for 6 universities, 2009-present.
- **External Dissertation Committee member**, PhD Committee, National University of Singapore, 2010.
- **Proposal Reviewer**, Kuwait Foundation for the Advancement of Sciences, 2010.
- **Proposal Review Panelist**, National Science Foundation, 2009.
- **Proposal Review Panelist**, Department of Energy, 2009.
- **External Dissertation Reviewer**, PhD Committee, Indian Institute of Technology-Madras (IIT-M), 2008.
- **Proposal Reviewer**, US Department of Energy, 2008.
- **Proposal Reviewer**, National Science Foundation (NSF), 2007.
- **Proposal Reviewer**, Chilean Research Fund Council (FONDECYT), 2007.
- **External Dissertation Reviewer**, PhD Committee, National University of Singapore, 2007.
- **External Dissertation Reviewer**, PhD Committee, Indian Institute of Technology-Kanpur (IIT-K), 2007.
- **Proposal Reviewer**, NSERC, Canada, 2006-2007, 2008.
- **External Dissertation Reviewer**, PhD Committee, National University of Singapore, 2006.
- **Proposal Review Panelist**, National Science Foundation, 2004.
- **Proposal Review Panelist**, National Science Foundation, 2002.
- **Proposal Reviewer**, National Science Foundation, 2001.

6. Technical Program Committee Member

- **Area TPC Chair, Technical Program Committee**, "IEEE INFOCOM 2014 Conference", Toronto, Canada, April 2014.
- **Member, Technical Program Committee**, "RNDM 2013 workshop", Almaty, Kazakhstan, September 2013.
- **Area TPC Chair, Technical Program Committee**, "IEEE INFOCOM 2013 Conference", Turin, Italy, April 2013.
- **Member, Technical Program Committee**, "IEEE ICC conference ONS Symposium", Budapest, Hungary, June 2013.
- **Member, Technical Program Committee**, "IEEE ANTS conference", Bangalore, India, December 2012.
- **Member, Technical Program Committee**, "IEEE GLOBECOM conference ONS Symposium", Anaheim, California, December 2012.
- **Area TPC Chair, Technical Program Committee**, "IEEE INFOCOM 2012 Conference", Orlando, FL, March 2012.
- **Member, Technical Program Committee**, "RNDM 2012 workshop", St. Petersburg, Russia, October 2012.
- **Member, Technical Program Committee**, "ACM SIGCOMM 2011 Conference", Toronto, Canada, August 2011.
- **Area TPC Chair, Technical Program Committee**, "IEEE INFOCOM 2010 Conference", San Diego, CA, March 2010.
- **Member, Technical Program Committee**, "IEEE INFOCOM 2009 Conference", Rio de Janeiro, Brazil, April 2009.
- **Member, Technical Program Committee**, "IEEE INFOCOM 2007 Conference", Alaska, USA, May 2007.

- **Member, Technical Program Committee**, International Conference on Communication, Convergence and Broadband Networking (ICCBN), Bangalore, India, June 2008.
- **Member, Technical Program Committee**, "IEEE GLOBECOM 2005 (General Conference)", November 2005.
- **Member, Technical Program Committee**, "IEEE GLOBECOM 2005 (Symposium on Photonics Systems and Technologies)", November 2005.
- **Member, Technical Program Committee**, "IEEE High Performance Switching and Routing 2005 (HPSR 2005)", Hong Kong, May 2005.
- **Member, Technical Program Committee** for the Optical Networks Symposium (part of the IEEE ICC 2005 Conference), Seoul, Korea, May 2005.
- **Member, Technical Program Committee**, ICST/IEEE BroadNets Conference: Optical Symposium, (Boston, MA), 2005.
- **Member, Technical Program Committee**, "IEEE INFOCOM 2004 Conference", Hong Kong, March 2004.
- **IEEE ComSoc TCCC representative** to the IEEE GLOBECOM conference (with Drs. S. Kota and E. Al-Shaer) (2002-2004).
- **Member, Technical Program Committee**, " The 23rd IEEE International Conference on Distributed Computing Systems (ICDCS 2003)," Providence, Rhode Island, May 19–22, 2003.
- **Member, Technical Program Committee**, "IEEE INFOCOM 2003 Conference", San Francisco, CA (USA), April 1-3 2003.
- **Member, Technical Program Committee** for the Optical Networks Symposium (part of the IEEE ICC 2003 Conference), Anchorage, Alaska (USA), May 11 – 15, 2003.
- **Member, Technical Program Committee**, Optical Networks and Communications Conference (OptiComm 2002), Boston, MA (USA), July 29 – August 1, 2002.
- **Member, Technical Program Committee**, "IEEE INFOCOM 2001 Conference", Anchorage, Alaska (USA), April 22-26 2001.
- **Member, Technical Program Committee** for the Symposium on High Speed Networks (part of the IEEE GLOBECOM 2000 Conference), San Francisco, CA, November 27 – December 1, 2000.
- **Member, Technical Program Committee** for the Optical Networks Workshop (ONW), Richardson, TX, 2000.
- **Member, Technical Program Committee** for the IEEE GLOBECOM'99 Symposium on High Speed Networks, Rio de Janeiro, Brazil, 1999.
- **Member, Technical Program Committee** for the IEEE International Conference On Networks (ICON'99) Conference, Brisbane, Australia, 1999.
- **Member, Technical Program Committee** for the Eighth IEEE International Conference on Computer Communications and Networks (ICCCN), Boston-Natick, Massachussetts, U.S.A., October 11-13, 1999.

7. Other External Service

- Served as Reviewer for leading journals such as IEEE/ACM Transactions on Networking, IEEE Transactions on Computers, Computer Networks and ISDN Systems, IEEE/OSA Journal of Lightwave Technology, IEEE Communications Surveys, IEEE Communications Letters, IEEE Network, Photonic Network Communications and conferences such as INFOCOM '97-'99, ICC '99, Singapore International Conference on Networks (SICON '97), ICC 2003, INFOCOM 2003.
- Was **interviewed** as a Wireless networks security expert for a local TV segment on "Wardriving" (*KLKN TV, Lincoln, NE*), July 14-15, 2004.
- Was **interviewed** as an Optical networks expert for an *IEEE Computer* article (March 2000).
- Was **interviewed** as an Optical networks expert for an online industry magazine (*LightReading*) article (2000).
- Was **interviewed** as a Network security expert for an article on Jeep Hacker attacks - Daily Nebraskan, 2015.
- Was **interviewed** as a Network security expert for a story on FREAK attacks - NBC Nebraska TV, 2015.

8.2 University Level Service

- **Member**, UNL Telecommunications Advisory Committee, 2007-present.
- **Judge**, SigmaXi Student Poster Competition, Computer Science, Engineering, Math & Statistics area, UNL Research Fair, April 2007.

- **Co-organizer and Fundraising Chair**, "The 2007 ACM North Central North America Regional Programming Contest (Lincoln site)," November 2006-present.
- **Co-organizer and Chief Judge**, "The 2006 ACM North Central North America Regional Programming Contest (Lincoln site)," November 2006.
- **Member**, UNL Water Resources Research Initiative (WRRI) Faculty Search Committee on Hydrological Information Systems, 2006-2007.
- **Member**, UNL Water Resources Research Initiative (WRRI) Steering Committee, 2003-present.
- **Co-organizer and Chief Judge**, "The 2005 ACM North Central North America Regional Programming Contest (Lincoln site)," November 2005.
- **Co-organizer and Chief Judge**, "The 2003 ACM North Central North America Regional Programming Contest (Lincoln site)," November, 2003.
- **Co-organizer and Chief Judge**, "The 2002 ACM North Central North America Regional Programming Contest (Lincoln site)," November, 2002.
- **Co-organizer**, "The 2004 ACM North Central North America Regional Programming Contest (Lincoln site)," November, 2004.
- **Co-organizer and Track co-chair**, NSF-EPSCoR conference on "Diversity of Informatics," April 4-5, 2002, Lincoln, NE.
- **Co-organizer and Computer Science Track Chair**, "Fourth Annual Regional Workshop in the Mathematical Sciences", University of Nebraska-Lincoln, November 2-3, 2001.
- **Co-organizer and Chief Judge**, "The 2001 ACM North Central North America Regional Programming Contest (Lincoln site)," November 10, 2001.
- **Co-organizer**, "The NSF-EPSCoR funded workshop on Secure Distributed Information (SDI) and Bioinformatics Research Laboratories (UNL)," November 11, 2001.
- **Co-organizer and Computer Science Track Chair**, "Third Annual Regional Workshop in the Mathematical Sciences", University of Nebraska-Lincoln, October 27-28, 2000.
- **Co-organizer and Chief Judge**, "The 2000 ACM North Central North America Regional Programming Contest (Lincoln site)," November 11, 2000.
- **Judge**, "The 1999 ACM North Central North America Regional Programming Contest," Lincoln, NE, 1999.
- **Speaker**, **UNL Red Letter Day**, Student Union, UNL City Campus, Lincoln, NE, 1999.

8.3 College Level Service

- **Member**, UNL College of Engineering Undergraduate Computer Engineering Program (UCEP) Coordinating Committee, 2022-present.
- **Member**, UNL College of Engineering Graduate Student Awards Committee, 2021.
- **Member**, UNL College of Engineering Graduate Chairs Committee, 2018-present.
- **Judge**, UNL College of Engineering Outstanding Thesis/Dissertation Competition, 2015.
- **Chair**, UNL College of Arts and Sciences Promotion and Tenure Committee, 2014-2015.
- **Member**, UNL College of Arts and Sciences Promotion and Tenure Committee, 2011-2015.
- **Member**, UNL College of Arts and Sciences Associate Dean Search Committee, 2014.
- **Judge**, UNL College of Engineering Senior Design Projects for IEEE R4 recognition, 2011.
- **Judge**, UNL College of Engineering Graduate Research Symposium, 2011.
- **Principal Coordinator**, College of Engineering and Technology, Priority program on Information Technology and Telecommunications (Director: Prof. R.F. Sincovec), University of Nebraska-Lincoln, 2002.
- **Principal Coordinator**, College of Engineering and Technology, Priority program on Simulation and Computing Engineering (Director: Prof. R.F. Sincovec), University of Nebraska-Lincoln, 2002.
- **Member**, "New Equipment Grants Committee," College of Engineering and Technology, University of Nebraska-Lincoln, 2000.

8.4 Department Level Service

1. Committee Chair

   - **Chair**, SoC Curriculum Committee, 2022-present.
   - **Chair**, SoC Graduate Subcommitte on Computer Engineering, 2016-2022.
   - **Co-Chair**, SoC Strategic Planning Committee, 2019-present.
   - **Chair**, CSE Graduate Committee, 2012-2016.
   - **Chair**, "Nebraska Hall of Computing Committee and Awards Committee," 2011-2012.
   - **Graduate Collaborative Programs Chair**, Department of Computer Science and Engineering, University of Nebraska-Lincoln, Fall 2009 - current.
   - **Fundraising Chair**, "ACM Programming Contest Committee," 2006-current.
   - **Graduate Admissions Chair**,Department of Computer Science and Engineering, University of Nebraska-Lincoln, Fall 2007 - 2008.
   - **Chair**, "CSE Graduate Recruiting Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, Fall 2006 - 2008.
   - **Chair**, "CSE Faculty Search Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, Spring 2004.
   - **Chair**, "Priority Area Faculty Search Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2003-2004.

2. Committee Member

   - **Member**, SoC Stewardship Committee, 2021-present.
   - **Member**, "CSE Department Advisory Committee," 2013-2016.
   - **Member**, "ACM Programming Contest Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2000-2018.
   - **Graduate Admissions Commitee Member**,Department of Computer Science and Engineering, University of Nebraska-Lincoln, Fall 2006 - 2010.
   - **Member**, "Nebraska Hall of Computing Committee and Awards Committee," 2010-2011.
   - **Member**, "CSE Faculty Search Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, Fall 2006 - Fall 2007.
   - **Member**, "CSE Facilities and Space Planning Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2006 - 2008.
   - **Member**, "Industry Advisory Panel Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2003-2004.
   - **Member**, "CSE Department Advisory Committee," 2003-2005.
   - **Member**, "Graduate Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2003-04.
   - Designed (with Ms. Melissa Dunne, Publications & Photography) the CSE Graduate recruitment poster for 2004 and mailed it to 260 CS departments in U.S. and Canada.
   - **Member**, "PhD Qualifying Exams Committeee (CS) – Systems Track," 1998-present.
   - **Member**, "PhD Qualifying Exams Committeee (CS) – Applications Track: Communications and Networking," 1998-present.
   - **Member**, "PhD Qualifying Exams Committeee (CE) – Telecommunications and Networking," 2003-present.
   - **Member**, "Industry Advisory Panel Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2003-2004.
   - **Member**, "Ad Hoc committee for Contests and special events," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2002.
   - **Member**, "Services Commitee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2002-2003.
   - **Member**, "Graduate Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2000,2001,2002.
   - **Member**, "Undergraduate Committee," Department of Computer Science and Engineering, University of Nebraska-Lincoln, 2000-2001.

8.5   Professional Memberships and Affiliations

Member, Institute of Electrical and Electronics Engineers (IEEE).
Member, IEEE Communications Society (IEEE ComSoc).
Chair, Optical Networking Technical Committee (ONTC) of IEEE ComSoc.
Member, Technical Committee on Computer Communications (TCCC) of IEEE Communications Society (IEEE ComSoc).
Member, Technical Committee on High Speed Networks (TCHSN) of IEEE Communications Society (IEEE ComSoc).
Member, IEEE Technical Committee on Scalable Computing (TCSC).
Member, Discrete, Experimental and Applied Mathematics (DEAM), UNL.
Founding Co-director, Advanced Networking and Distributed Experimental Systems (ANDES) Laboratory, UNL.