Bhaskaran Raman

Curriculum Vitae

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Current Employment

Professor in the Department of Computer Science and Engineering, at the Indian Institute of Technology - Bombay, INDIA.

Research Interests

Computer networks, Wireless and mobile networks, Protocol design & evaluation, Wireless measurement studies, Computing and communication system design for the developing world, System building and protocol design for embedded sensor applications.

Teaching Interests

Graduate as well as undergraduate teaching; wireless networks, computer networks and protocols, Internet-based distributed systems, operating systems.

Education

- **Aug 1997-Dec 2002: Doctor of Philosophy (PhD) in Computer Science**
  University of California at Berkeley, CA
  Research advisor: Prof. Randy H. Katz
  Thesis topic: An Architecture for Performance and Availability Constrained Composition of Services in the Wide-Area Internet

- **Aug 1997-May 1999: Master of Science (M.S.) in Computer Science**
  University of California at Berkeley, CA
  Research advisor: Prof. Randy H. Katz
  Thesis topic: Personal Mobility in the ICEBERG Integrated Communication Network

- **Aug 1993-May 1997: Bachelor of Technology (B. Tech) in Computer Science & Engineering**
  Indian Institute of Technology - Madras, India
  Advisor: Prof. C. R. Muthukrishnan
  CGPA: 9.75/10

Research Experience

- **Professor, Department of CSE, Indian Institute of Technology - Bombay, INDIA, Sep 2014 to present.**
  Associate Professor, Department of CSE, Indian Institute of Technology - Bombay, INDIA, Feb 2009 to Aug 2014.
  Assistant Professor, Department of CSE, Indian Institute of Technology - Bombay, INDIA, Jul 2007 to Feb 2009.

  - As part of the CARTS (Communication Assisted Road Transportation System) and CityProbe projects, we are looking at technical issues in the use of wireless communication to improve road traffic in Indian conditions. A significant output of this project is the ROADCARE (ROad Anomaly Detection and Commuter-Assisted Roughness Estimator) system.
    http://www.roadcare.in/
  - In the Smart-Teaching project, I am interested in looking at technical and pedagogical issues which arise when students in a large classroom use smart devices (phones, tablets) for improved classroom interaction. A significant output of this project is the SAFE (Smart, Authenticated, Fast Exams) system.
    http://safe.cse.iitb.ac.in/
  - In the Witals project, our research group explored WiFi performance diagnosis, especially in dense situations.
  - I worked on the FRACTEL project, which extends my earlier work on RuralNet, by considering a mesh network consisting of long-distance as well as short-distance links. The goal of FRACTEL is to provide scalable and predictable mesh network performance.
  - I worked on Lo3, a low-power, low-cost, local communication system for village settings, based on a mesh network of IEEE 802.15.4 radios.

- **Visiting Scientist, AirTight Networks, Mountainview, CA, USA, June 2012 to June 2013**
  I worked on various Wi-Fi performance related issues as part of AirTight's R&D team

- **Visiting Researcher, Microsoft Research India (MSRI), May-Jul 2008**
  We identified future areas of collaboration with researchers at MSRI. Specifically, two areas of common interest are: (1) Lo3 (Low-cost, Low-power, Local voice and messaging), and (2) CARTS (Communication Assisted Road Transportation System).

- **Visiting Researcher, Alcatel-Lucent Bell Labs, Bangalore, India, May-Jul 2007**
  I worked on the above-mentioned FRACTEL project, in collaboration with researchers at Bell Labs, Bangalore.

- **Assistant Professor, Department of CSE, Indian Institute of Technology - Kanpur, INDIA, Jun 2003 to Jul 2007.**
  I have worked on the RuralNet (Digital Gangetic Plains) project, exploring the use of IEEE 802.11 for low-cost, long-distance rural networking.

- **Visiting Researcher, CalIT2, University of California at San Diego, Jul-Dec 2004.**
  I worked on exploring the use of the "claims allocation" literature in the domain of economics, to network scheduling.

- **Graduate Student Researcher, SAHARA Project, University of California at Berkeley, EECS Department, Summer 2001 to Fall 2002.**

As a senior graduate student, I played an active part in the development of the SAHARA architecture. My PhD thesis explored a specific form of *service composition* – the central theme of the SAHARA project.

- **Summer Intern, IBM T.J.Watson Research Center, New York, 1999.**
  I worked on issues related to service discovery and network layering in Bluetooth scatternets. (See paper titled "Arguments for Cross-layer optimizations in Bluetooth Scatternets" below).

- **Graduate Student Researcher, ICEBERG Project, University of California at Berkeley, EECS Department, Summer 1998 to Summer 2001.**

  - I have been part of the team involved with the design of ICEBERG – an Internet-based architecture for integration of services across heterogeneous access networks and devices.
  - I have played a lead role in the two code releases of different versions of ICEBERG software.
  - In Summer 1998, I worked on building a gateway to interface cell-phones on a GSM wireless network to the Internet. This was done as part of testbed development for the ICEBERG project.
  - I worked on the design and implementation of the "Universal Inbox" for my Master's thesis.

- **Graduate Operating Systems Course, University of California at Berkeley, Fall 1997.**
  I worked on a project that looked at techniques for reordering data on the fly in data processing applications. The idea was to reorder the data based on continuous user feedback so that the user has control over which data items are processed first. (See under "publications" below).

Refereed Publications

1. "Quantification of COVID-19 Vaccine Coercion in India: A Survey Study", Bhaskaran Raman, Amitav Banerjee, Sai Mahesh Vajjala, Cureus 15(11): e48638. doi:10.7759/cureus.48638, 11 Nov 2023

2. "CSMA/CA-based MAC Protocol for Aerial Audio Networking", Dania Qara Bala, Bhaskaran Raman, The 15th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2023.
   [Acceptance rate: 36.6%]

3. "Hummingbird: Leveraging Heterogeneous System Architecture for deploying dynamic NFV chains", Avinash Kumar Chaurasia, Bhaskaran Raman, Praveen Kumar Gupta, Omkar Prabhu, Shashank P, Anshuj Garg, The 22nd IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid), 2022.

4. "Will My Packet Reach On Time? Deadline-Based Uplink OFDMA Scheduling in 802.11ax WLANs", Muhammad Inamullah, Bhaskaran Raman, Nadeem Akhtar, Proceedings of the 23rd International ACM Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM'20), Nov 2020.
   [Acceptance rate: 25%]

5. "RoadCare: A Deep-learning Based Approach to Quantifying Road Surface Quality", Ravi Bhandari, Saurabh Tiwari, Bhaskaran Raman, ACM COMPASS 2020. **One of the two "Best Paper Honorable Mention" winners.**
   [Acceptance rate: 31.0%]

6. "PHY-Based Key Agreement Scheme Using Audio Networking", Dania Qara Bala, Bhaskaran Raman, The 12th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2020. **Best Paper Award**.
[Acceptance rate: 33.3%]

7. "802.11ac Frame Aggregation is Bottlenecked: Revisiting the Block ACK", Muhammad Inamullah, Bhaskaran Raman, Proceedings of the 22nd International ACM Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM'19), Nov 2019.

8. "BaroSense: Using Barometer for Road Traffic Congestion Detection & Path Estimation with CrowdSourcing", ANUJ DIMRI, HARSIMRAN SINGH, NAVEEN AGGAR-WAL, BHASKARAN RAMAN, K. K. RAMAKRISHNAN, DIVYA BANSAL, *Accepted at ACM Transactions on Sensor Networks*, Sep 2019.
Extended version of the COMSNETS'16 paper

9. "Driving Lane Detection on Smartphones using Deep Neural Networks", Ravi Bhandari, Akshay Uttama Nambi, Bhaskaran Raman, Venkata N. Padmanabhan, *Accepted at ACM Transactions on Sensor Networks*, Aug 2019.
Extended version of the BuildSys'18 paper

10. "FullStop: A Camera-Assisted System for Characterizing Unsafe Bus Stopping", Ravi Bhandari, Bhaskaran Raman, Venkata N. Padmanabhan, *Accepted at IEEE Transactions of Mobile Computing, Jun 2019.*
Extended version of the COMSNETS'18 paper

11. "DeepLane: Camera-assisted GPS for Driving Lane Detection", Ravi Bhandari, Akshay Uttama Nambi, Bhaskaran Raman, Venkata N. Padmanabhan, BuildSys'18, November 7–8, 2018, Shenzen, China.

12. "Demo: HAMS: Driver and Driving Monitoring using a Smartphone", Akshay Uttama Nambi, Shruthi Bannur, Ishit Mehta, Harshvardhan Kalra, Aditya Virmani, Ravi Bhandari, Venkata N. Padmanabhan, Bhaskaran Raman, DEMO at MobiCom'18, Oct 2018, New Delhi, India.

13. "SafeStreet: An automated road anomaly detection and early-warning system using mobile crowdsensing", Vikrant Singh, Deepthi Chander, Umang Chhaparia, Bhaskaran Raman, WACI Workshop (part of COMSNETS), Jan 2018.

14. "FullStop: Tracking Unsafe Stopping Behaviour of Buses", Ravi Bhandari, Bhaskaran Raman, Venkata N. Padmanabhan, The 10th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2018.

15. "CrowdLoc: Cellular Fingerprinting for Crowds by Crowds", Ravi Bhandari, Bhaskaran Raman, K.K. Ramakrishnan, Deepthi Chander, Naveen Aggarwal, Divya Bansal, Mahima Choudhary, Nisha Moond, Aneesh Bansal, Megha Chaudhary, *Accepted for publication*, ACM Transactions on Sensor Networks, Oct 2017.
Extended version of the COMSNETS'15 paper

16. "Witals: AP-centric Health Diagnosis of WiFi Networks", Mukulika Maity, Avinash Chaurasia, Rachit Srivastava, Bhaskaran Raman, Mythili Vutukuru, IEEE Transactions on Mobile Computing, Issue 99, Aug 2017.

17. "SAFE: Smart Authenticated Fast Exams for Student Evaluation in Classrooms", Kameswari Chebrolu, Bhaskaran Raman, Vinay Chandra, Akshay Veer, Kurien Zacharia, SIGCSE, Seattle, USA, Mar 2017.
[Acceptance rate: 30.0%]

18. "Multi-channel Allocation to Coexisting Networks in TV White Spaces", Akanksha Patel, Sundar Vishwanathan, Bhaskaran Raman, The 9th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2017.

19. "TCP Download Performance in Dense WiFi Scenarios: Analysis and Solution", Mukulika Maity, Bhaskaran Raman, Mythili Vutukuru, *Accepted for publication Feb 2016*, IEEE Transactions on Mobile Computing.
    Extended version of the COMSNETS 2015 paper

20. "RoadSphygmo: Using Barometer for Traffic Congestion Detection" Anuj Dimri, Harsimran Singh, Naveen Aggarwal, Bhaskaran Raman, Divya Bansal, K. K. Ramakrishnan, The 8th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2016.
    [Acceptance rate: 27.3%]

21. "Finding Occupancy in Buses using Crowdsourced Data from Smartphones", Megha Chaudhary, Aneesh Bansal, Divya Bansal, Bhaskaran Raman, K K Ramakrishnan and Naveen Aggarwal, *Concise paper* in ICDCN 2016 (Networking Track), Singapore, Jan 2016.

22. "Bus Boarding Event Detection using Smartphone Sensors", Naveen Aggarwal, Shubham Chaudhary, Tanjot Kaur, Bhaskaran Raman, Divya Bansal, K. K. Ramakrishnan, Workshop on Intelligent Transportation Systems, a workshop in COMSNETS'16, Jan 2016, Bangalore, India.

23. "HTTPDissect: Detailed Performance Analysis of HTTP Web Browsing Traffic in TDMA Mesh Networks", Vishal Sevani, Bhaskaran Raman, Issue 99, June 2015, IEEE Transactions on Mobile Computing.
    Extended version of the COMSNETS 2013 paper

24. "TCP Download Performance in Dense WiFi Scenarios", Mukulika Maity, Bhaskaran Raman, Mythili Vutukuru, The 7th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2015.
    [Acceptance rate: 20.0%]
    Extended version accepted in IEEE TMC

25. "Usage of 802.11n in Practice: A Measurement Study", Naman Mishra, Avinash Kumar Chaurasia, Arun Kallavi, Bhaskaran Raman, Purushottam Kulkarni, The 7th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2015.
    [Acceptance rate: 20.0%]

26. "Improving Public Transportation Through Crowd-Sourcing", Anirudh Vemula, Nikhil Patil, Vivek Paharia, Aneesh Bansal, Megha Chaudhary, Naveen Aggarwal, Divya Bansal, K. K. Ramakrishnan, Bhaskaran Raman, Workshop on Intelligent Transportation Systems, a workshop in COMSNETS'15, Jan 2015, Bangalore, India.

27. "GSM - based Positioning for Public Transportation Commuters", Ravi Bhandari, Megha Chaudhary, Aneesh Bansal, Bhaskaran Raman, Naveen Aggarwal, Divya Bansal, K. K. Ramakrishnan, Workshop on Intelligent Transportation Systems, a workshop in COMSNETS'15, Jan 2015, Bangalore, India.

28. "Deployments Made Easy: Essentials Of Managing A (Rural) Wireless Mesh Network", Vijay Gabale, Rupesh Mehta, Jeet Patani, Ramakrishnan Kalyanaraman, Bhaskaran Raman, 3rd ACM Symposium on Computing for Development (DEV 2013), Bangalore, India, Jan 2013.
    [Acceptance rate: 34.1%]

29. "Understanding HTTP Traffic Performance in TDMA Mesh Networks", Vishal Sevani, Bhaskaran Raman, The 5th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2013.
[Acceptance rate: 26%]

30. "Minimum Weight Multicast Scheduling in Multi-channel Wireless Mesh Networks for Real-time Voice Applications", Jeet Patani, Vijay Gabale, Bhaskaran Raman, The 5th International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2013.
[Acceptance rate: 26%]

31. "Implementation Based Evaluation of a Full-Fledged Multi-Hop TDMA-MAC for WiFi Mesh Networks", Vishal Sevani, Piyush Joshi, Bhaskaran Raman, Dec 2012, Vol 13 (2), pp. 392-406, IEEE Transactions on Mobile Computing.
Journal impact factor: 2.280
CORE ranking: A^*

32. "KyunQueue: A Sensor Network System To Monitor Road Traffic Queues", Rijurekha Sen, Abhinav Maurya, Bhaskaran Raman, Rupesh Mehta, Ramakrishnan Kalyanaraman, Nagamanoj Vankadhara, Swaroop Roy, Prashima Sharma, 10th ACM Conference on Embedded Networked Sensor Systems (SenSys'12), Toronto, Canada, Nov 6-9, 2012.
[Acceptance rate: 18.7%]
CORE ranking: A^*

33. "PIP: A Multi-Channel, TDMA-based MAC for Efficient and Scalable Bulk Transfer in Sensor Networks", Vijay Gabale, Kameswari Chebrolu, Bhaskaran Raman, Sagar Bijwe, Sep 2012, Vol. 8 (4), ACM Transactions on Sensor Networks (TOSN)
Extended version of the SenSys 2010 paper
Journal impact factor: 1.810
CORE ranking: C

34. "Building A Low Cost Low Power Wireless Network To Enable Voice Communication In Developing Regions", Vijay Gabale, Jeet Patani, Bhaskaran Raman, Rupesh Mehta, Ramakrishnan Kalyanaraman, April 2012, Vol. 16 (2), pp. 2-15, Mobile Computing and Communication Review (MC2R). *Invited paper.*

35. "A Classification Framework for Scheduling Algorithms in Wireless Mesh Networks", Vijay Gabale, Bhaskaran Raman, Partha Dutta, Shivkumar Kalyanaraman, Mar 2012, Vol. 15 (1), pp. 199-222, IEEE Communications Surveys and Tutorials.
Journal impact factor: 6.311

36. "SIR Based Interference Modeling For Wireless Mesh Networks: A Detailed Measurement Study", Vishal Sevani, Bhaskaran Raman, The Fourth International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2012.
[Acceptance rate: 28.0%]

37. "Wolverine : Traffic and Road Condition Estimation using Smartphone Sensors", Ravi Bhoraskar, Nagamanoj Vankadhara, Bhaskaran Raman, Purushottam Kulkarni, The 6th Annual Worshop on Wireless Systems: Advanced Research and Development (WISARD'12), Bangalore, India, Jan 3-4, 2012.
[Acceptance rate: not available]

38. "RoadSoundSense: Acoustic Sensing based Road Congestion Monitoring in Developing Regions", Rijurekha Sen, Pankaj Siriah, Bhaskaran Raman, The 8th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON'11), Salt Lake City, Utah (USA), June 27-30, 2011.

39. "The Pilot Deployment of A Low Cost, Low Power Gateway To Extend Cellular Coverage In Developing Regions", Vijay Gabale, Ramesh Gopalakrishnan, Bhaskaran Raman, 5th ACM Workshop on Networked Systems for Developing Regions (NSDR), Washington, D.C., U.S., June 2011.
[Acceptance rate: 52.4%]

40. "WirelessAcrossRoad: RF based Road Traffic Congestion Detection", Swaroop Roy, Rijurekha Sen, Swanand Kulkarni, Purushottam Kulkarni, Bhaskaran Raman, Lokendra Singh, The 5th Annual Worshop on Wireless Systems: Advanced Research and Development (WISARD'11), Bangalore, India, Jan 4-5, 2011.
[Acceptance rate: 33.3%]

41. "DelayCheck: Scheduling Voice Over Multi-hop Multi-channel Wireless Mesh Networks", Vijay Gabale, Ashish Chiplunkar, Bhaskaran Raman, Partha Dutta, The Third International Conference on COMmunication Systems and NETworkS (COMSNETS), Bangalore, India, January 2011.
[Acceptance rate: 16.0%]

42. "LiT MAC: Addressing The Challenges of Effective Voice Communication in a Low Cost, Low Power Wireless Mesh Network", Vijay Gabale, Bhaskaran Raman, Kameswari Chebrolu, Purushottam Kulkarni, The First Annual Symposium on Computing for Development (ACM DEV 2010), London, UK, Dec 2010.
[Acceptance rate: 43.6%]

43. "PIP: A Connection-Oriented, Multi-Hop, Multi-Channel TDMA-based MAC for High Throughput Bulk Transfer", Bhaskaran Raman, Kameswari Chebrolu, Sagar Bijwe, Vijay Gabale, The 8th ACM Conference on Embedded Networked Sensor Systems (SenSys 2010), Zurich, Switzerland, Nov 2010.
[Acceptance rate: 17.2%]
CORE ranking: *A**
Among the four papers shortlisted for the Best Paper; fast-tracked for publication in IEEE TOSN
Extended version appears in ACM Transactions on Sensor Networks (TOSN)

44. "Horn-Ok-Please", Rijurekha Sen, Bhaskaran Raman, Prashima Sharma, The Eighth International Conference on Mobile Systems, Applications, and Services, ACM MobiSys 2010, Jun 2010, San Francisco, CA (USA).
[Acceptance rate: 20.2%]
CORE ranking: *B*

45. "SIR-Based Interference-Maps for TDMA-Based Outdoor Mesh Networks", Bhaskaran Raman and Rahul Jain, The 17th IEEE Workshop on Local and Metropolitan Area Networks (LANMAN'10), May 5-7, 2010, Long Branch, New Jersey, USA. *Invited paper.*

46. "Implementation and Evaluation of a TDMA MAC for WiFi-based Rural Mesh Networks", Ashutosh Dhekne, Nirav Uchat, Bhaskaran Raman, 3rd ACM Workshop on Networked Systems for Developing Regions (NSDR'09), a workshop in SOSP'09, Big Sky, Montana, USA, 11 Oct 2009.

47. "Lo3: Low-cost, Low-power, Local Voice and Messaging for Developing Regions", Bhaskaran Raman, Kameswari Chebrolu, 3rd ACM Workshop on Networked Systems for Developing Regions (NSDR'09), a workshop in SOSP'09, Big Sky, Montana, USA, 11 Oct 2009.

48. "Challenges In Communication Assisted Road Transportation Systems for Developing Regions", Rijurekha Sen, Vishal Sevani, Prashima Sharma, Zahir Koradia, Bhaskaran Raman, 3rd ACM Workshop on Networked Systems for Developing Regions (NSDR'09), a workshop in SOSP'09, Big Sky, Montana, USA, 11 Oct 2009.

49. "Link-level Measurements of Outdoor 802.11g Links", Pulkit Gupta, Bharat Jain, Bhaskaran Raman, Purushottam Kulkarni, The 4th IEEE International Workshop on Wireless Mesh Networks (WiMesh 2009), A workshop in SECON 2009, Jun 2009, Rome, Italy.

50. "On the Feasibility of the Link Abstraction in Wireless Mesh Networks", Bhaskaran Raman, Kameswari Chebrolu, Dattatraya Gokhale, and Sayandeep Sen, April 2009, Vol. 17 (2), pp. 528-541, IEEE/ACM Transactions on Networking.
    Extended version of the INFOCOM 2008 paper
    Journal impact factor: 2.033
    CORE ranking: A^*

51. "TDMA Scheduling in Long-Distance WiFi Networks", Debmalya Panigrahi and Bhaskaran Raman, The 26th Annual Conference on Computer Communications, IEEE INFOCOM 2009 Mini-Conference, April 2009.
    [Mini-Conference: top 19.7%-26.6% of INFOCOM 2009 submissions]

52. "Censor Networks: A Critique of "Sensor Networks" from a Systems Perspective", Bhaskaran Raman and Kameswari Chebrolu, Editorial Note, Computer Communication Review (CCR), July 2008.
    Journal impact factor: 0.650
    CORE ranking: C

53. "BriMon: A Sensor Network System for Railway Bridge Monitoring", Kameswari Chebrolu, Bhaskaran Raman, Nilesh Mishra, Phani Kumar Valiveti, Raj Kumar, The Sixth International Conference on Mobile Systems, Applications, and Services, ACM MobiSys 2008, Jun 2008, Breckenridge, CO (USA).
    Received an honorable mention.
    [Acceptance rate: 17.9%]
    CORE ranking: B

54. "On the Feasibility of the Link Abstraction in (Rural) Mesh Networks", Dattatraya Gokhale, Sayandeep Sen, Kameswari Chebrolu, and Bhaskaran Raman, The 25th Annual Conference on Computer Communications (IEEE INFOCOM), Phoenix, Arizona (USA), April 2008. **Selected as one of the 'Top Three Outstanding Papers'**.
    [Acceptance rate: 20.5%]
    CORE ranking: A
    Extended version published in IEEE Transactions on Networking

55. "FRACTEL: A Fresh Perspective on (Rural) Mesh Networks", Kameswari Chebrolu and Bhaskaran Raman, ACM SIGCOMM Workshop on Networked Systems for Developing Regions (NSDR'07), A Workshop in SIGCOMM 2007, Aug 2007, Kyoto, Japan. [Acceptance rate: 21.3%]

56. "Long Distance Wireless Mesh Network Planning: Problem Formulation and Solution", Sayandeep Sen and Bhaskaran Raman, The 16th Annual International World Wide Web Conference (WWW 2007), May 2007, Banff, Canada. [Acceptance rate: 14.7%]

57. "Experiences in using WiFi for Rural Internet in India", Bhaskaran Raman and Kameswari Chebrolu, IEEE Communications Magazine, Vol. 45, No. 1, pp. 104-110, Jan 2007, Special Issue on New Directions In Networking Technologies In Emerging Economies.

58. "Implications of Link Range and (In)Stability on Sensor Network Architecture", Bhaskaran Raman, Kameswari Chebrolu, Naveen Madabhushi, Dattatraya Y Gokhale, Phani K Valiveti, and Dheeraj Jain, The First ACM International Workshop on Wireless Network Testbeds, Experimental evaluation and CHaracterization (WiNTECH 2006), A MOBICOM 2006 Workshop, Sep 2006, Los Angeles, USA. [Acceptance rate: 35.5%]

59. "Long-Distance 802.11b Links: Performance Measurements and Experience", Kameswari Chebrolu, Bhaskaran Raman, and Sayandeep Sen, 12th Annual International Conference on Mobile Computing and Networking (MOBICOM), Sep 2006, Los Angeles, USA. [Acceptance rate: 11.7%]

60. "Rural Telephony: A Socio-Economic Case Study", Sayandeep Sen, Sukant Kole, and Bhaskaran Raman, International Conference on Information and Communication Technologies and Development (ICTD-2006), May 2006, U.C.Berkeley.

61. "Wake-on-WLAN", Nilesh Mishra, Kameswari Chebrolu, Bhaskaran Raman, and Abhinav Pathak, The 15th Annual International World Wide Web Conference (WWW 2006), May 2006, Edinburgh, Scotland. [Acceptance rate: 11%]

62. "Channel Allocation in 802.11-based Mesh Networks", Bhaskaran Raman, The 25th Annual Conference on Computer Communications (IEEE INFOCOM), Barcelona, Spain, April 2006. [Acceptance rate: 18%]

63. "Feasibility Study of Spatial Reuse in an 802.11 Access Network", A. R. Harish, Sreekanth Garigala, Bhaskaran Raman, and Phalguni Gupta, XXVIII URSI General Assembly, New Delhi, India, Oct 2005.

64. "Design and Evaluation of a new MAC Protocol for Long-Distance 802.11 Mesh Networks", Bhaskaran Raman and Kameswari Chebrolu, 11th Annual International Conference on Mobile Computing and Networking (MOBICOM), Aug/Sep 2005, Cologne, Germany. [Acceptance rate: 10.3%]

65. "A Network Layer Approach to Enable TCP over Multiple Interfaces", Kameswari Chebrolu, Bhaskaran Raman, Ramesh Rao, Wireless Networks (WINET), Springer Science + Business Media, Volume 11, Issue 5, Sep 2005, Pages 637-650.

66. "Revisiting MAC Design for an 802.11-based Mesh Network", Bhaskaran Raman and Kameswari Chebrolu, Third Workshop on Hot Topics in Networks (HotNets-III), 15-16 Nov 2004, San Diego, CA, USA. [Acceptance rate: 19.7%]

67. "Turning 802.11 Inside-Out", Pravin Bhagwat, Bhaskaran Raman, and Dheeraj Sanghi, ACM SIGCOMM Computer Communication Review, Vol. 34, No: 1, pp. 33-38, Jan 2004. (Also appears in HotNets-II proceedings).

68. "Turning 802.11 Inside-Out", Pravin Bhagwat, Bhaskaran Raman, and Dheeraj Sanghi, Second Workshop on Hot Topics in Networks (HotNets-II), 20-21 Nov 2003, Cambridge, MA, USA. [Acceptance rate: 19.3%] (Also appears in CCR).

69. "An Architecture for Highly Available Wide-Area Service Composition", Bhaskaran Raman and Randy H. Katz, Computer Communications Journal, Vol. 26, No: 15, pp. 1727-1740, Special issue on "Recent Advances in Communication Networking", Sep 2003.

70. "Load Balancing and Stability Issues in Algorithms for Service Composition", Bhaskaran Raman and Randy H. Katz, The 22nd Annual Joint Conference of the IEEE Computer and Communications Societies, IEEE INFOCOM, Apr 2003. [Acceptance rate: 21%].

71. "Emulation-based Evaluation of an Architecture for Wide-Area Service Composition", Bhaskaran Raman and Randy H. Katz, International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS 2002), July 2002. [Acceptance rate: 60%].

72. "The SAHARA Model for Service Composition Across Multiple Providers", Bhaskaran Raman, Sharad Agarwal, Yan Chen, Matthew Caesar, Weidong Cui, Per Johansson, Kevin Lai, Tal Lavian, Sridhar Machiraju, Z. Morley Mao, George Porter, Timothy Roscoe, Mukund Seshadri, Jimmy Shih, Keith Sklower, Lakshminarayanan Subramanian, Takashi Suzuki, Shelley Zhuang, Anthony D. Joseph, Randy H. Katz, Ion Stoica, *Invited Paper*, International Conference on Pervasive Computing (Pervasive 2002), pp. 1-14, Aug 2002.

73. "Arguments for Cross-Layer Optimizations in Bluetooth Scatternets", Bhaskaran Raman, Pravin Bhagwat, and Srinivasan Seshan, Symposium on Applications and the Internet (SAINT'01), pp. 176-184, Jan 2001. [Acceptance rate: 18.5%].

74. "Universal Inbox: Providing Extensible Personal Mobility and Service Mobility in an Integrated Communication Network", Bhaskaran Raman, Randy H. Katz, and Anthony D. Joseph, Workshop on Mobile Computing Systems and Applications (WMSCA'00), pp. 95-106, Dec 2000. [Acceptance rate: 37.7%].

75. "Online Dynamic Reordering", Vijayshankar Raman, Bhaskaran Raman, and Joseph M. Hellerstein, The VLDB Journal – The International Journal on Very Large Data Bases, Vol. 9, No: 3, pp. 247-260, Dec 2000.

76. "ICEBERG: An Internet-core Network Architecture for Integrated Communications", Helen J. Wang, Bhaskaran Raman, Chen-nee Chuah, Rahul Biswas, Ramakrishna Gummadi, Barbara Hohlt, Xia Hong, Emre Kiciman, Zhuoqing Mao, Jimmy S. Shih, Lakshminarayanan Subramanian, Ben Y. Zhao, Anthony D. Joseph, and Randy H. Katz, IEEE Personal Communications, Vol. 7, No: 4, pp. 10-19, Aug 2000: Special Issue on IP-based Mobile Telecommunication Networks.

77. "The ICEBERG Project: Defining the IP and Telecom Intersection", Bhaskaran Raman, Helen J. Wang, Jimmy S. Shih, Anthony D. Joseph, and Randy H. Katz, IT Professional, Vol. 1, No: 6, pp. 38-45, Nov/Dec 1999.

78. "Online Dynamic Reordering for Interactive Data Processing", Vijayshankar Raman, Bhaskaran Raman, and Joseph M. Hellerstein, Proc. of the 25th International Conference on Very Large Databases (VLDB), pp. 709-720, Sep 1999. **Selected one of the best papers.** [Acceptance rate: 16%].

Theses

- "An Architecture for Performance and Availability Constrained Service Composition in the Wide-Area Internet", Bhaskaran Raman, PhD Thesis, EECS Department, U.C.Berkeley, Dec 2002.

- "Personal Mobility in the ICEBERG Integrated Communication Network", Bhaskaran Raman, Master's Thesis, EECS Department, U.C.Berkeley, May 1999.

- "A Portable User-Level Thread Package", Bhaskaran Raman, B. Tech Project Report, Indian Institute of Technology, Madras, May 1997.

Selected Presentations

- "Experience with WiFi for Rural Internet in India", Bhaskaran Raman, Invited presentation at Australia-India Broadband and IT Workshop, Melbourne, Australia, 10-11 July 2006.

- "RuralNet (Digital Gangetic Plains): WiFi-Based Low-Cost Rural Networking", Bhaskaran Raman, Keynote Presentation, Symposium on Wireless Networking Systems, University of Philippines, 19 Nov 2005.

- "Digital Gangetic Plains (DGP): 802.11-based Low-Cost Networking for Rural India", Bhaskaran Raman, Invited presentation at Wireless4Development, Djursland, Denmark, Sep 2004.

Sponsored Projects and Consultancy Projects

- *Project type:* Sponsored research
  Title: CARTS: Communication Assisted Road Transportation Systems
  Funding agency: Department of Information Technology
  Objectives: Develop techniques for automated and semi-automated sensing of road traffic conditions, using smart-phones and crowd-sourced information.
  Duration: 3 years: Jan 2014 to Jan 2017
  Approved budget: Rs. 75.90 lakhs.

- *Project type:* Sponsored research
  Title: India-UK Advanced Technology Centre (IU-ATC) of Excellence in Next Generation Networks Systems and Services - Phase 2
  Funding agency: Department of Science & Technology
  Objectives: Lo3: Low-cost, low-power, and local voice and messaging for rural regions, using IEEE 802.15.4.
  Duration: 2.5 years: Dec 2012 to Jun 2015
  Approved budget: Rs. 30 lakhs (approx.) for this activity of IU-ATC.

- *Project type:* Sponsored research
  Title: Village Communication Network by Rural Internet Service Provider leveraging on Fiber to the Village
  Funding agency: Ministry of Human Resource Development
  Objectives: Implement and evaluate a prototype of a Wi-Fi PHY based TDMA MAC system for multi-hop mesh networks, for rural broadband connectivity.
  Duration: 2 years: Jun 2012 to Jun 2014
  Approved budget: Rs. 1 crore

- *Project type:* Sponsored research
  Title: SPARC: Spectrum Aware Rural Connectivity
  Funding agency: Department of Information Technology
  Objectives: Explore techniques for effective use of unused spectrum, to provide Internet and voice connectivity in rural regions.
  Duration: 2.5 years: Mar 2012 to Sep 2014
  Approved budget: Rs. 25.2 lakhs

- *Project type:* Consultancy
  Title: Understanding 802.11a/g/n performance issues
  Funding agency: AirTight Networks
  Objectives: Understand the various performance related features of 802.11 variants taking a measurement based approach.
  Duration: 3 months: Mar 2012 to Jun 2012
  Approved budget: Rs. 3.2 lakhs

- *Project type:* Sponsored research
  Title: Rural Technology Action Group (RuTAG)
  Funding agency: Department of Science & Technology
  Objectives: A centre for technology enhancement initiatives in rural context.
  Duration: 3 years: Jul 2011 to Jul 2014
  Approved budget: Rs. 9.3 lakhs

- *Project type:* Sponsored research
  Title: Structural Health Monitoring with Networked Embedded Systems
  Funding agency: Department of Science & Technology
  Objectives: Develop a railway bridge monitoring system using embedded wireless sensors.
  Duration: 3 years: Apr 2011 to Apr 2014
  Approved budget: Rs. 11.9 lakhs

- *Project type:* Sponsored research
  Title: India-UK Advanced Technology Centre (IU-ATC) of Excellence in Next Generation Networks Systems and Services
  Funding agency: Department of Science & Technology
  Objectives: Lo3: Low-cost, low-power, and local voice and messaging for rural regions, using IEEE 802.15.4.
  Duration: 3.5 years: May 2009 to Dec 2012
  Approved budget: Rs. 40 lakhs (approx.) for this activity of IU-ATC.

- *Project type:* Sponsored research
  Title: Mobile and Wireless Systems
  Funding agency: Microsoft Research India (MSRI)
  Objectives: Research Collaboration on Mobile and Wireless Systems, with Microsoft Research India (MSRI).
  Duration: 1 year: Aug 2008 to Aug 2009
  Approved budget: Rs. 8.4 lakhs

- *Project type:* Sponsored research
  Title: FRACTEL
  Funding agency: Tata Telecom Center, IIT Bombay
  Objectives: To address system level issues in the design and implementation of a multi-hop TDMA-based WiFi mesh network.
  Duration: 5 years: May 2008 to May 2013
  Approved budget: Rs. 1.2 crores

- *Project type:* Consultancy
  Title: 802.11a/g/n measurements
  Funding agency: AirTight Networks
  Objectives: Link-level measurement studies on 802.11a/g/n wireless technologies on a campus wireless testbed.
  Duration: 5 months: Feb 2008 to Jul 2008
  Approved budget: Rs. 1 lakh

- *Project type:* Sponsored research
  Title: WiFiNetMon
  Funding agency: Lucent Bell Labs Research, Bangalore
  Objectives: To identify and address issues related to network monitoring and management in long-distance WiFi networks, and WiFi mesh networks in general.
  Duration: 3 months: Feb 2007 to April 2007
  Approved budget: Rs. 1.5 lakhs

- *Project type:* Sponsored research
  Title: RuralNet (Digital Gangetic Plains II)
  Funding agency: Media Lab Asia
  Objectives: To explore mechanisms for robust, cost-effective, and high-performance operation of large (100-300 nodes) long-distance 802.11 mesh networks as well as point-to-point networks, to explore 802.11g performance, to characterize application performance on such networks.
  Duration: 15 months: May 2005 to July 2006
  Approved budget: Rs. 33.78 lakhs

- *Project type:* Consultancy
  Title: Bharani: An Implementation of Sectorized WiFi MAC
  Objectives: Implementation and testing of a sectorized WiFi-based MAC protocol, designed to operate in a point-to-multipoint (P2MP) setting.
  Duration: 5 months: Sep 2005 to Jan 2006
  Approved budget: Rs. 5.90 lakhs

- *Project type:* Sponsored research
  Title: Turning 802.11 Inside Out: Wireless Networking for Rural India
  Funding agency: Ministry of Human Resource Development (MHRD)
  Objectives: To build research infrastructure, explore specific research issues geared towards making 802.11 a commercially viable option for rural networking, to improve the technological base in 802.11 wireless networking in India.
  Duration: Two years: May 2004 to April 2006
  Approved budget: Rs. 20.00 lakhs

PhD Theses Guided

1. Heinsamding Thou, "Visual feedback for audio communication in poor network conditions", since Aug 2022

2. Abhijeet Vijay Salunkhe, "Performance of web-pages and apps in poor network conditions", since Aug 2019

3. Avinash Chaurasia, "High Throughput NFV Chaining by Leveraging Novel GPU Architectures", defended 21 Aug 2023

4. Dania Qara Bala, "Secure Ad-Hoc Aerial Audio Networking: PHY-Based Key Agreement and CSMA/CA-Based MAC Protocol", defended 12 May 2022

5. Muhammad Inamullah, "Throughput Optimization and Delay Sensitive Scheduling in Next Generation Wi-Fi", defended 02 Nov 2021

6. Ravi Bhandari, "Improving Road Safety Through Smart Sensing", defended 08 Jun 2020

7. Mukulika Maity, "Health Diagnosis and Congestion Mitigation of Wireless Networks", defended 03 Oct 2016 [jointly advised by Mythili Vutukuru, IIT Bombay]

8. Zahir Koradia, "Exploring the Role of Information and Communiation Technologies in Community Radio Stations in India", defended Apr 2015 [jointly advised by Aaditeshwar Seth, IIT Delhi]

9. Vishal Sevani, "Improving Performance In TDMA OverWiFi-PHY Mesh Networks for Rural Internet Connectivity", defended on 26 Feb 2015

10. Rijurekha Sen, "Different Sensing Modalities for Traffic Monitoring in Developing Regions", defended on 10 Jan 2014

11. Vijay Gabale, "Lo3: A Low Cost Low Power Wireless Network to Enable Voice Communication in Developing Regions", defended on 24 Jul 2013 [jointly advised by Kameswari Chebrolu, IIT Bombay]

Master's Theses Guided

1. Deepali Gupta, "Reliable Data Transfer in Classroom Environments using Wi-Fi Multicast", July 2016

2. Meenakshi Singh, "WiFicast: Scalable and Reliable Multicast within a WLAN", July 2016

3. Pratapa Sridhar, "WiFi Capacity Planning", July 2016

4. Gaurav Gupta, "User Reputation Module for Public Transport Crowdsourcing Application", July 2016

5. Bhushan Prakash Kalal, "SafeStreet: Road and Traffic Condition Estimation Using Smartphone", July 2016

6. Mahima, "Audio Based Networking", July 2016

7. Nisha, "Sound Tone Communication", July 2016

8. Aurobindo Mondal, "FindMyTrain : A Crowdsourcing Approach to Real-time Train Tracking", July 2016

9. Ponraj Kumar, "Throughput Analysis of White Space Networks in NS3 Simulator", July 2015

10. Dixita Bothra, "Analyzing and Improving Server Performance in the Bodhitree Learning Management System", June 2015

11. Akanksha Patel, (converted to dual degree MTech-PhD admission), since July 2013 [jointly advised by Purushottam Kulkarni]

12. Naman Misra, "Characterizing Usage of 802.11n in Practice Through Trace-based Measurements", June 2014 [jointly advised by Purushottam Kulkarni]

13. Nikhil Patil, "Content Centric Crowdsourcing and Dissemination of Realtime Public Transportation Information", June 2014 [jointly advised by K. K. Ramakrishnan, AT&T Labs Research]

14. Sidhartha Sahoo, "IEEE 802.11n: Demystifying Performance By Hands-on Experience", June 2014

15. Jeet Patani, "Low Cost, Low Power Gateway Development, Deployment of Lo3 System and Real-time Multicast Scheduling in Wireless Mesh Networks", June 2012

16. Abhinav Maurya, "Machine Learning Algorithms for Road Traffic State Classification in WirelessAcrossRoad", June 2012 [jointly advised by Saketha Nath]

17. Nagamanoj Vankadhara, "Wolverine : Traffic and Road Condition Estimation using Sensors in Smartphones", June 2012

18. Mukulika Maity, (converted to PhD admission), June 2012 [jointly advised by Kameswari Chebrolu]

19. Kaustav Das, "Implementation of Stored Voice Messaging for Lo3, an 802.15.4 based Mesh Network", June 2012

20. Mayur Deolasee, "Optimizations in Traffic Sensing", June 2012

21. Vishnu Kanth T., "Evaluation of LiTMAC: A Light weight TDMA MAC in Ath9k driver", June 2012 [jointly advised by Kameswari Chebrolu]

22. Megha Jain, "Characterization and Measurement of 3G performance in India", June 2012 [jointly advised by Kameswari Chebrolu]

23. Nikhil Mogallapalli, "Implementation and Evaluation of LiT MAC on ath9k", June 2012 [jointly advised by Kameswari Chebrolu]

24. Antara De, "Design, Implementation and Analysis of Stability Aware Routing in IEEE 802.15.4 Mesh Networks", June 2011

25. Ramesh Gopalakrishnan, "Development of 802.15.4 Based Handset for Voice Communication", June 2011

26. Piyush Joshi, "Design, Implementation and Evaluation of Stability Aware Routing for WiFi Mesh Networks", June 2011

27. Kaustav Dey Biswas, "Design and Evaluation of a Distributed TDMA MAC Protocol for 802.11 Mesh Networks", June 2011

28. Pravin Chaudhury, "Design & Development of Distributed Collaborative Command & Control Centre", June 2010

29. Lokendra Kumar Singh, "Design and Implementation of Long Distance Multihop TDMA System with Link Layer Recovery Schemes", June 2010

30. Prashima Sharma, "Algorithms and A Deployment Platform for Honk-Based Speed Estimation", June 2010

31. Srinadh Gunnam, "NS-2 Based Simulation and Evaluation of the Lo3 TDMA MAC Protocol for Wireless Mesh Networks", Jan 2010

32. Pulkit Gupta, "Measurement Study of 802.11a/b/g Wireless Mesh Network Links", June 2009 [jointly advised by Purushottam Kulkarni]

33. Vijay Gabale, "PIP-A Multi-Channel, TDMA-based MAC for Efficient and Scalable Bulk Transfer in Sensor Networks", June 2009 [jointly advised by Kameswari Chebrolu]

34. Sagar Bijwe, "PIP: A Connection-Oriented Multi-Channel TDMA-based MAC", June 2009 [jointly advised by Kameswari Chebrolu]

35. Ashutosh Dhekne, "Multihop Synchronization in FRACTEL and Communication through Energy Sensing", June 2009 [jointly advised by Kameswari Chebrolu]

36. Nirav Uchat, "Design, Implementation and Evaluation of a Multihop WiFi-based TDMA System", June 2009

37. Rahul Jain, "Evaluation of Signal to Interference Ratio based Interference Mapping Strategy for 802.11b/g Wireless Mesh Network", June 2009

38. Rahul Mittal, "WiFi NetMon : Performance Analysis,Anomaly Detection, Diagnosis and Resolution in WiFi Mesh Networks", June 2009

39. Pradeep Gopaluni, "Interference Estimation and Automated Generation of Spatial Re-Use Map for Wireless Mesh Networks", IIT Kanpur, Aug 2008

40. Gaurav Chhawchharia, "Framing and Schedule Dissemination for Multi-hop TDMA-based Wireless Networks", IIT Kanpur, Aug 2008

41. Dheeraj Golchha, "Wi-Fi NetMon: Performance Observation, Anomaly Detection and Diagnosis in Long Distance Wi-Fi Networks", IIT Kanpur, Jul 2007

42. Akhilesh Bhadauria, "WiFiNetMon: Interference Measurement in Long Distance WiFi Mesh Networks", IIT Kanpur, Jun 2007

43. Zahir Koradia, "Scalable Routing for Mechanical Backhaul Networks", IIT Kanpur, Jun 2007 [jointly advised by S. Keshav (U. Waterloo)]

44. Raj Kumar, "A Prototype Development of Reliable Sensor Network Based Structural Health Monitoring System For Railway Bridges", IIT Kanpur, Jun 2007 [jointly advised by Kameswari Chebrolu]

45. Dattatraya Y Gokhale, "The Feasibility And Usefulness Of Link Abstraction In Wireless Networks", IIT Kanpur, May 2007 [jointly advised by Kameswari Chebrolu]

46. Phani Kumar Valiveti, "Routing and Time Synchronization Protocols for Low Duty Cycle Operation of a Sensor Network Based Bridge Monitoring System", IIT Kanpur, May 2007 [jointly advised by Kameswari Chebrolu]

47. Naveen Madabhushi, "KMote - Design and Implementation of a low cost, low power platform for wireless sensor networks", IIT Kanpur, May 2007 [jointly advised by Kameswari Chebrolu and Rajat Moona]

48. Nilesh Mishra, "Design Issues and Experiences with BRIMON Railway BRIdge MONitoring Project", IIT Kanpur, Aug 2006 [jointly advised by Kameswari Chebrolu]

49. Narasimha Puli Reddy, "The SRAWAN MAC Protocol to support Real-Time Services in Long Distance 802.11 Networks", IIT Kanpur, Aug 2006

50. VMD Jagannath, "WiBeaM: Design and Implementation of Wireless Bearing Monitoring System", IIT Kanpur, Jun 2006

51. Abhishek Maheshwari, "Implementation and Evaluation of a MAC scheduling algorithm for IEEE 802.16 WirelessMAN", IIT Kanpur, May 2006

52. Sayandeep Sen, "Topology Planning for Long Distance Wireless Mesh Networks", IIT Kanpur, May 2006

53. Manikantah Kodali, "Improving Fault Tolerance in 802.11 Wireless Long Distance Rural Networks", IIT Kanpur, May 2006 [jointly advised by A. R. Harish]

54. Hemanth Haridas, "BriMon: Design and Implementation of Railway Bridge Monitoring Application", IIT Kanpur, May 2006 [jointly advised by Kameswari Chebrolu]

55. Pavan Kumar, "Design, Implementation, and Evaluation of new MAC Protocols for Long Distance 802.11 Networks", IIT Kanpur, May 2006, **Cadence Silver Medal - 2006**, *Best M.Tech. Thesis in the Departments of Computer Science & Engineering and Electrical Engineering for Good Academic Performance, Innovation in Thesis, Development of New Technology and/or Substantial Betterment of Existing Technology*

56. Prashant Sharma, "Radio Placement Algorithm and Dynamic Channel Allocation for Large Area Community Networks", IIT Kanpur, Aug 2005

57. Venkata Rao Chimata, "Implementation and Performance Issues of VoIP in Long Distance 802.11b Networks", IIT Kanpur, June 2005

58. Sridhar Kumar Kotturu, "ScaleNet: A Platform for Scalable Network Emulation", IIT Kanpur, June 2005

59. Mohit Choudhury, "Three Beacon Sensor Network Localization through Self Propogation", IIT Kanpur, May 2005, **Cadence Silver Medal - 2005**, *Best M.Tech. Thesis in the Departments of Computer Science & Engineering and Electrical Engineering for Good Academic Performance, Innovation in Thesis, Development of New Technology and/or Substantial Betterment of Existing Technology*

60. Sreekanth Garigala, "Experimental Validation of Simultaneous Operation in an 802.11 Multi-hop Mesh Network", IIT Kanpur, July 2004 [jointly advised by Phalguni Gupta]

BTech Projects Guided

1. Amit Panghal, "BattMan: Acoustic short-range communication leveraging ultrasoundParticipatory GPS duty cyclinng in smartphones", Apr 2014

2. Vivek Paharia, "Content Centric Information Crowdsourcing and Dissemination for Better Public Transportation", Apr 2014

3. Ashish Busi Baburao, "IEEE 802.11n Wireless Network Power Save Modes: Measurement and Performance Studies", Apr 2014

4. Ravi Bhoraskar, "Wolverine : Traffic and Road Condition Estimation using Smartphone Sensors", Apr 2012

5. Apekshit Sharma, "WiFi War Driving", Apr 2012

6. Saurabh Goyal, "WiFi War Driving", Apr 2012

7. Abhinav Pathak, "IPv4 Support for HIP", May 2006

8. Ayush Ghai and Nihit Purwar, "Evaluation of IEEE 802.16 Broadband Wireless Access MAC", May 2006

9. Abhimanyu Singh Shekhawat, "Measurement And Analysis Of Packet Delivery Performance For The Tmote Sky Mote In Wireless Sensor Networks", May 2006 [jointly advised by Kameswari Chebrolu]

10. Deepak Jorwal and Gaurav Singh, "Analysis of Throughput Gain using Directional Antennae in Community Networks", May 2006 [jointly advised by Dheeraj Sanghi]

11. Sabyasachi Roy and Ashwini Kumar, "Realistic Support For IEEE802.11b MAC in NS", IIT Kanpur, May 2004

12. Paul Ipe, "Power Allocation Issues in a Wireless Mesh Network", IIT Kanpur, May 2004

13. Santosh Kumar and Abhay Gupta, "Modeling of Web User Behaviour and User Perceived Website Availability", IIT Kanpur, May 2004

Teaching Experience

1. Autumn 2007 to present: Assistant/Associate Professor in the Department of Computer Science and Engineering, at Indian Institute of Technology - Bombay, INDIA.

   (a) Autumn 2013: "CS699: Software Lab"

   (b) Autumn 2011: "CS305: Computer Architecture", Student evaluation: 81.03% [Departmental **nominee** for the "Excellence in Teaching" award]

   (c) Autumn 2011: "CS341: Computer Architecture Lab"

   (d) Autumn 2011: "CS699: Software Lab"

   (e) Autumn 2010: "CS305: Computer Architecture", Student evaluation: 83.35%

   (f) Autumn 2010: "CS341: Computer Architecture Lab"

   (g) Autumn 2010: "CS641: Advanced Computer Networks", Student evaluation: 84.41%

   (h) Spring 2010: "CS647: Advanced Wireless Networks", Student evaluation: 88.37%

   (i) Autumn 2009: "CS305: Computer Architecture", Student evaluation: 72.04%

   (j) Autumn 2009: "CS341: Computer Architecture Lab"

   (k) Spring 2009: "IC211: Experimentation and Measurement Lab"

   (l) Spring 2009: "CS296: Software Systems Lab"

   (m) Autumn 2008: "CS641: Advanced Computer Networks", Student evaluation: 81.61%

   (n) Spring 2008: "CS348: Computer Networks", Student evaluation: 69.71%

   (o) Spring 2008: "CS378: Computer Networks Lab"

   (p) Autumn 2007: "CS620: New Trends in Information Technology", Student evaluation: 85.45%

2. Autumn 2003 to Autumn 2007: Assistant Professor in the Department of Computer Science and Engineering, at Indian Institute of Technology - Kanpur, INDIA.

   (a) Jan-Apr 2007: "CS698t: Wireless Networks, Principles and Practice", Student evaluation: 3.41/4.00 [Institute average: 3.12/4.00].

   (b) Aug-Nov 2006: "CS425: Computer Networks", Student evaluation: 3.38/4.00 [Institute average: 3.11/4.00].

   (c) Jan-Apr 2006: "CS725: Topics in Networking", Student evaluation: 3.71/4.00 [Institute average: 3.01/4.00], **Recognized in the Academic Senate meeting**.

   (d) Aug-Nov 2005: "CS698t: Wireless Networks, Principles and Practice", Student evaluation: 3.41/4.00 [Institute average: 3.12/4.00].

   (e) Aug-Nov 2005: "CS355: Programming Tools and Techniques" (course coordinator).

   (f) May 9-13 2005: "Fundamentals of Wired and Wireless Networks", QIP short term course (jointly taught with Kameswari Chebrolu)

(g) Jan-Apr 2005: "Esc101N: Fundamentals of Computing", Student evaluation: 3.28/4.00 [Institute average: 2.76/4.00].

(h) Jan-Apr 2004: "CS422: Computer Architecture", Student evaluation: 3.41/4.00 [Institute average: 3.07/4.00].

(i) Aug-Nov 2003: "CS625: Advanced Computer Networks", Student evaluation: 3.60/4.00 [Institute average: 3.11/4.00], **Recognized in the Academic Senate meeting**.

3. Fall 1997, Spring 1998: Teaching Assistant for CS61a - "Structure and Interpretation of Computer Programs", U.C.Berkeley.
Fall 1996, Spring 1997: Teaching Assistant for CS110 - "Introduction to Computing", Indian Institute of Technology, Madras.

Professional Activities

- **Area Editor:** Computer Communication Review (CCR), since Jun 2010

- **Associate Editor:** IEEE Transactions on Mobile Computing, Feb 2008 to Feb 2013

- **General Chair:**

  – COMSNETS 2013 General Co-Chair, Jan 2013, Bangalore, India

- **Technical Program Committee Chair:**

  – WiNMeE TPC Co-Chair, May 2015, Mumbai, India
  – ACM DEV-4 TPC Co-Chair, Dec 2013, Cape Town, South Africa
  – COMSNETS 2012 TPC Co-Chair, Jan 2012, Bangalore, India
  – COMSNETS 2011 PhD Forum, Jan 2011, Bangalore, India.
  – SIGCOMM 2010 Poster/Demo session, Aug/Sep 2010, New Delhi, India.
  – NSDR 2010: The 4th ACM Workshop on Networked Systems for Developing Regions, A workshop in MobiSys 2010, 15 Jun 2010, San Francisco, CA, USA.
  – WISARD 2008: WIreless Systems: Advanced Research and Development, A workshop in COMSWARE 2008, 05-06 Jan 2008, Bangalore, INDIA.
  – WiNTECH 2007: The Second ACM International Workshop on Wireless Network Testbeds, Experimental evaluation and CHaracterization, A workshop in MobiCom 2007, 10 Sep 2007, Montreal, QC, Canada.
  – WISARD 2007: WIreless Systems: Advanced Research and Development, A workshop in COMSWARE 2007, 07-08 Jan 2007, Bangalore, INDIA.

- **Technical Program Committee Member:**
  2018: INFOCOM
  2017: SIGCOMM, SECON, COMSNETS, ICNP
  2016: WiOpt, SECON, ACM DEV, COMSNETS, ICNP
  2015: COMSNETS, ICNP, WiOpt, SECON
  2014: COMSNETS
  2013: COMSNETS, ACM DEV, MobiHoc
  2012: NSDR, ACM DEV, SIGCOMM, SECON
  2011: MobiCom, NSDR, ICDCN, COMSNETS, WISARD, NSDR, PhoneSense
  2010: INFOCOM, SIGCOMM, COMSNETS, WISARD, ACM DEV, INFOCOM-WIP
  2009: INFOCOM, SIGCOMM, COMSNETS, CoNEXT, NSDR
  2008: INFOCOM, MobiCom, COMSWARE, HotMobile, NCC, NSDR, WWW, ANTS,

WiMesh, WiNS-DR
2007: SIGCOMM, NSDR, NCC, WiNTECH, WWW mobility track
2006: IWDC, COMSWARE, WMCSA, ICDCS, WWW mobility track, WWW developing regions track
2005: MSWiM

- Member of ACM.

- Member of IEEE Communications Society.

Awards won by students working with me

- Departmental Award for Excellence in BTech Project, Sep 2016, Vinay Chandra for his contribution to Android application building through a software project called SAFE.

- IBM Rising Research Scholar Award, Aug 2015, Mukulika Maity for her ongoing PhD work "Health Diagnosis and Congestion Mitigation of Wireless Networks"

- ACM-India Best Doctoral Dissertation Award 2015, Rijurekha Sen for her thesis "Different Sensing Modalities for Traffic Monitoring in Developing Regions"

- "Kyun Queue: A Sensor Network System To Monitor Road Traffic Queues", Rijurekha Sen, 2nd Prize, Techvista 2012, Microsoft Research India's annual research symposium.

- Vijay Gabale (Ph.D student): IBM PhD Fellowship award in 2011.

- Rijurekha Sen (Ph.D student): among the five MSR India PhD Fellows for 2010.

- "Horn-Ok-Please", Rijurekha Sen and Prashima Sharma, 4th Prize, Techvista 2010, Microsoft Research India's annual research symposium.

- "WiFiDump - A Wireless Network Debugging Tool", Madhuresh Agrawal and Bhaskaran Raman, Best Poster Award, WISARD 2008.

- "Wake-on-WLAN", Nilesh Mishra, Best Poster Award, Techvista 2007, Microsoft Research India's annual research symposium.

- "BRIMON: Railway BRIdge MONitoring", Nilesh Mishra, Raj Kumar, Phani Kumar, Hemanth Haridas, Best Poster Award, WISARD 2007.

- "Design, Implementation, and Evaluation of new MAC Protocols for Long Distance 802.11 Networks", M.Tech thesis, IIT Kanpur, May 2006, Cadence Silver Medal - 2006.

- "Three Beacon Sensor Network Localization through Self Propogation", Mohit Choudhury, M.Tech thesis, IIT Kanpur, May 2005, Cadence Silver Medal - 2005.

Awards and Honours

- Smart Authenticated Fast Exams (SAFE) won the Dr. P.K.Patwardhan Technology Development Award 2022 (Sep 2023). Award talk: `https://tinyurl.com/safepkptalk`

- I was part of the TICET centre (TTSL IITB Centre of Excellence in Telecommunication), which won the TCOE award of excellence for the year 2011

- IBM Faculty Award, 2008

- Ranked 12th (100,000 total candidates) in the Joint Entrance Examination for admission to the Indian Institute of Technology - 1993

- Recipient of National Talent Scholarship (1991-1997)

- Placed among top 0.1% of students in Mathematics in All India Senior School Certificate Examination - 1991

Administration

- Faculty Advisor for batch of BTech CSE 2010, 2010 to present (with a 1 year break during sabbatical: June 2012 to June 2013)

- Departmental Under-Graduate Committee (DUGC) member, 2011 to present (with a 1 year break during sabbatical: June 2012 to June 2013)

- Post-Graduates Programmes Committee (PGPC) member, 2009-2011

- Systems Committee (SysComm) member, 2008-2012

- Member of Senate Committee on Course Evaluation (chair: Prof. Ravi Sinha), 2012