

Prasun Sinha

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Associate Professor, Computer Science and Engineering

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Research Interests: Mobile Computing and Wireless Networking

Education

1. **PhD in Computer Science**, University of Illinois, Urbana-Champaign, May 2001
2. **MS in Computer Science**, Michigan State University, East Lansing, Aug 1997
3. **B. Tech. in Computer Sc. and Engg.**, IIT, Delhi, India, May 1995

Awards and Honors

1. IEEE Senior Member, April 2010
2. Lumley Research Award, College of Engineering, Ohio State University, May 2009
3. Best Paper Finalist, IEEE SECON, Jun 2007
4. NSF CAREER Award, 2006
5. Nominated for ACM PhD Dissertation Award, Department of Computer Science, University of Illinois at Urbana-Champaign, 2002
6. Ray Ozzie Fellowship, Department of Computer Science, University of Illinois at Urbana-Champaign, April 2000 (Established for outstanding graduate students)
7. Mavis Memorial Scholarship, College of Engineering, University of Illinois at Urbana-Champaign, April 1999 (Awarded for excellence in research and teaching)
8. Project CEDAR (PhD Thesis) was selected among the top 4 out of approx. 60 projects nationwide, by DARPA in its Quorum Integration Project, 1999
9. Distinguished Academic Achievement Award, Michigan State University, 1997 (Awarded for excellence in research and teaching)
10. Secured All India Rank of 8th (1st in North India Zone) in GATE (Entrance Examination for Graduate Studies in the field of Computer Science in India), 1995
11. Vivekvir Puraskar (for academic excellence), State of Madhya Pradesh, India, 1992

Key Projects with Highlights

1. (2007-present) **Perpetual Networking**: Replacing batteries in sensor nodes is cumbersome especially when the number of sensors is large, the nodes are difficult to access and the application demands frequent communication taking a toll on the batteries. Renewable resources such as solar, wind and vibration energy are readily accessible in some application scenarios. We are developing provably optimal algorithms for operation of such networks.
2. (2011-present) **Lane Localization with Smartphones**: Detecting the relative position of another vehicle and the absolute lane number in a road are both important for many applications including assisted navigation, accident avoidance, and coordinated driving for reducing congestion. We are testing a multi-antenna system to be deployed in cars that works with the driver's smartphone to address the relative and absolute localization problems.

3. (2011-present) **Physical Layer Enhanced Network Design on SDR Platforms:** Full-duplex communication in the same channel is feasible over wireless links. But in typical TCP connections, traffic is asymmetric which makes it difficult to leverage the benefits of full-duplex. Using Software Defined Radio (SDR) platforms, we are building a solution to address this problem. We are also exploring how the performance impacts of interference can be eliminated in cognitive radio networks using techniques at the physical layer.
4. (2008-present) **Resource Management in Femtocells:** Femtocells are small cellular base stations which unlike the macrocells are deployed by individual owners at their premises. We are exploring both market based and non-market based techniques for assigning resources in hybrid macrocell-femtocell networks.
5. (2005-2010) **Sparse Networking:** Is there a way to strategically and sparsely deploy femtocells or WiFi access-points to provide high speed data connection to mobile users anywhere in the road network? Towards answering this question, we developed the foundations behind a new notion of sparse coverage called the *alpha-coverage* and a new metric to characterize the quality of such deployments called the *contact opportunity*
6. (2006-2009) **Scalable Low Power Sensor Networking:** We have proposed the first structure-free data aggregation technique that achieves high energy efficiency. To deal with idle listening and packet overhearing, we have developed a protocol for duty-cycled networks, called CMAC (Convergent MAC), that primarily uses anycasting to forward packets. We have investigated the problem of selection of the forwarding set of nodes in anycasting to optimize the end-to-end delay for all nodes.
7. (2003-2008) **Data Streaming over Wireless Networks:** We have leveraged *association control* to improve the performance of multicasting in WLANs and mesh networks. We have designed *Sprinkler*, a reliable data dissemination service and *Learn on the Fly (LOF)*, a data-driven routing protocol for energy constrained wireless embedded devices.
8. (1998-2004) **Ad-hoc Networking: Architecture and Routing Infrastructure:** We proposed the first solution for routing in ad-hoc networks based on virtual infrastructures, called CEDAR. We have proposed the Unified Cellular and Ad Hoc Network (UCAN) architecture for enhancing cellular network throughput while maintaining fairness.
9. (1998-2004) **Data Transport over Local Area and Wide-Area Wireless Networks:** In Wireless local-area networks (WLANs), we have studied TCP fairness in 802.11 networks in the presence of both mobile senders and receivers. Wireless wide-area networks (WWANs) are characterized by very low and variable bandwidths, very high and variable delays, significant non-congestion related loss, asymmetric uplink and downlink channels, and occasional blackouts. We have designed the WTCP protocol, that addresses rate control and reliability over commercial WWANs.

Current and Past Grants

1. **Co-PI, NeTS-NECO: A New Resource Management Paradigm for Sensor Networks with Energy Replenishment, NSF**, Total Funding: \$500,000, 09/01/08-08/31/12 PI: Ness Shroff, co-PI: Can Emre Koksal
2. **PI (at OSU), NeTS-NOSS: Collaborative Research: Doing More with Less: Tracking Movements Using a Sparse Sensor Network, NSF**, Total Funding: \$500,000, OSU/Sinha's share: \$204,017, 10/01/07-09/30/10, PI: Santosh Kumar, Co-PI: Bela Bolobas
(REU Supplement - Sinha's share: \$12,000, 09/01/07-08/30/08)
3. **Co-PI, NeTS-NOSS: Collaborative Research: Energy-Efficient Distributed Sensor Network Control: Theory to Implementation, NSF**, Total Funding: \$650,000, Sinha's share: \$230,542, 10/01/07-09/30/10, PI: Ness Shroff, Co-PI: Xiaojun Lin
(REU Supplement - Sinha's share: \$12,000, 09/01/07 - 08/30/08)
4. **PI, CAREER: On-the-fly Protocols for Data Dissemination in Wireless Mesh Networks, NSF**, Total Funding: \$400,000, 01/01/06 - 12/31/10
(REU Supplement: \$12,000, 05/25/06 - 05/24/08)
5. **PI, Katrina SGER: Mapping the Coverage Islands of Wireless Base-stations, NSF**, Total Funding: \$31,274, Sinha's share: \$22,000, 10/01/05 - 09/30/06

6. **Senior Personnel**, PI: Dhabaleswar K. Panda, Co-PIs: Joel Saltz, Han-Wei Shen, Stu Zweben, *High-End Computing and Networking Research Testbed for Next Generation Data Driven, Interactive Applications, NSF*, Total funding: \$3,014,063, Sinha's share: \$50,000, 07/01/04 - 06/30/09
7. **Senior Personnel**, *Project Echelon: A 10 Kilometer, 10,000 Node Sensor Network Experiment, DARPA-IXO*, Total funding: \$899,000, Sinha's share: \$32,000, 11/01/03 - 10/01/05

Professional Experience

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|-----|-----------------------------------|---|----------------------|
| 1. | Associate Professor (with tenure) | Dept of CSE, Ohio State University | Oct 2009 – present |
| 2. | Visiting Associate Professor | Dept of CS, Stanford University | Oct 2010 – June 2011 |
| 3. | Assistant Professor | Dept of CSE, Ohio State University | Oct 2003 – Sep 2009 |
| 4. | Visiting Assistant Professor | Dept of CSE, Ohio State University | Sep 2003 |
| 5. | Postdoctoral Researcher | Dept of Computer Science, UC Riverside | Feb 2003 – Aug 2003 |
| 6. | Member of Technical Staff | Bell Labs, Lucent Technologies, Holmdel, NJ | Mar 2001 – Jan 2003 |
| 7. | Research Assistant | Dr. Bharghavan, UIUC | May 1998 – Dec 2000 |
| 8. | Summer Intern | HRL Labs, Malibu, CA | May 1999 – Aug 1999 |
| 9. | Co-op student (MS thesis) | Almaden Research Center, IBM, San Jose, CA | Jan 1997 – Aug 1997 |
| 10. | Co-op student (MS thesis) | Almaden Research Center, IBM, San Jose, CA | May 1996 – Aug 1996 |

Teaching Experience

1. Teaching Assistant University of Illinois, Urbana-Champaign Jan 1998 – May 1998
2. Teaching Assistant Michigan State University, East Lansing Aug 1995 – Dec 1996

Journals

1. Zizhan Zheng, Prasun Sinha, and Santosh Kumar, "Intermittent Coverage: Bounding the Interconnection Gap for Vehicular Internet Access", *IEEE/ACM Transactions on Networking (TON)*, To Appear
2. Ren-Shiou Liu, Kai-Wei Fan, Zizhan Zheng and Prasun Sinha, "Perpetual and Fair Data Collection for Environmental Energy Harvesting Sensor Networks", *IEEE/ACM Transactions on Networking (TON)*, To Appear
3. Santosh Kumar, Ten H. Lai, Marc E. Posner, and Prasun Sinha, "Maximizing the Lifetime of a Barrier of Wireless Sensors", *IEEE Transactions on Mobile Computing (TMC)*, 9 (8), pp 1161 - 1172, August 2010
4. Joohwan Kim, Xiaojun Lin, Ness Shroff, and Prasun Sinha "Minimizing Delay and Maximizing Lifetime for Wireless Sensor Networks with Anycast", *IEEE/ACM Transactions on Networking (TON)*, 18 (2), pp 515-528, April 2010
5. Ren-Shiou Liu, Kai-Wei Fan, and Prasun Sinha, "Locally Scheduled Packet Bursting for Data Collection in Wireless Sensor Networks", *Elsevier Ad Hoc Networks (ADHOC)*, Volume 7, Number 5, pp 904-917, July 2009
6. Thang Le, Prasun Sinha, and Dong Xuan "Turning Heterogeneity into an Advantage in Wireless Ad-hoc Network Routing", *Elsevier Ad Hoc Networks (ADHOC)*, Volume 8, Number 1, pp 108-118, January 2010
7. Sha Liu, Kai-Wei Fan and Prasun Sinha, "CMAC: Energy Efficient MAC Layer Design for Sensor Networks with Anycasting," *ACM Transactions on Sensor Networks (TOSN)*, Volume 5, Number 4, November 2009
8. Ai Chen, Dongwook Lee and Prasun Sinha, "Efficient Multicasting over Large-Scale WLANs through Controlled Association," *Elsevier Computer Networks (COMNET)*, Volume 53, Number 1, pp 45-59, January 2009
9. Hongwei Zhang, Anish Arora, and Prasun Sinha, "Link Estimation and Routing in Sensor Network Backbones: Beacon-based or Data-driven?", *IEEE Transactions on Mobile Computing (TMC)*, Volume 8, Number 5, pp 653-667, May 2009
10. Kai-Wei Fan, Sha Liu, and Prasun Sinha, "Dynamic Forwarding over Tree-on-DAG for Scalable Data Aggregation in Sensor Networks", *IEEE Transactions on Mobile Computing (TMC)*, Volume 7, Number 10, pp 1271-1284, October 2008

11. Ai Chen, Gayathri Chandrasekaran, Dongwook Lee, and Prasun Sinha, "High Throughput MAC Layer Multicasting over Time-Varying Channels", *Elsevier Computer Communications (COMCOM)*, Volume 32, Number 1, pp 94-104, January 2009
12. Zizhan Zheng, and Prasun Sinha, "Buffer Coding for Reliable Transmissions over Wireless Networks", *Elsevier Computer Communications (COMCOM)*, Volume 32, Number 1, pp 111-123, January 2009
13. Sha Liu, Rahul Srivastava, Can Emre Koksall, and Prasun Sinha, "Pushback: A Hidden Markov Model Based Scheme for Energy Efficient Data Transmission in Sensor Networks", *Elsevier Ad Hoc Networks (ADHOC)*, Volume 7, Number 5, pp 973-986, July 2009
14. Dongwook Lee, Gayathri Chandrasekaran, Mukundan Sridharan and Prasun Sinha "Association Management for Data Dissemination over Wireless Mesh Networks", *Elsevier Computer Networks (COMNET)*, Volume 51, Number 15, pp 4338-4355, October 2007
15. Haiyun Luo, Xiaqiao Meng, Ram Ramjee, Prasun Sinha, and Li (Erran) Li, "The Design and Evaluation of Unified Cellular and Ad-Hoc Networks", *IEEE Transactions on Mobile Computing (TMC)*, Volume 6, Number 9, pp 1060-1074, September 2007
16. Kai-Wei Fan, Sha Liu, and Prasun Sinha, "Structure-free Data Aggregation in Sensor Networks", *IEEE Transactions on Mobile Computing (TMC)*, Volume 6, Number 8, pp 929-942, August 2007
17. Vinayak Naik, Anish Arora, Prasun Sinha and Hongwei Zhang, "Sprinkler: A Reliable and Energy Efficient Data Dissemination Service for Extreme Scale Wireless Networks of Embedded Devices" *IEEE Transactions on Mobile Computing (TMC)*, Volume 6, Number 7, pp 777-789, July 2007
18. Prasun Sinha, Danny Raz and Nidhan Choudhuri, "Estimation of Network Distances using Off-line Measurements", *Elsevier Computer Communications (COMCOM)*, Volume 29, Number 16, pp 3295-3305, 2006
19. Raghupathy Sivakumar, Prasun Sinha and Vaduvur Bharghavan, "Braving the Broadcast Storm: Infrastructural Support for Ad-hoc Routing", *Computer Networks (COMNET)*, 41(6), pp 687-706, 2003.
20. Prasun Sinha, Narayanan Venkitaraman, Raghupathy Sivakumar and Vaduvur Bharghavan, "WTCP: A Reliable Transport Protocol for Wireless Wide-Area Networks", *Wireless Networks (WINET)* 8(2-3): pp 301-316, 2002.
21. Raghupathy Sivakumar, Prasun Sinha and Vaduvur Bharghavan, "CEDAR: a Core-Extraction Distributed Ad-hoc Routing algorithm", *Journal on Selected Areas in Communications (JSAC)*, *Special Issue on Wireless Ad-Hoc Networks* 17(8), pp 1454-65, 1999.

Conference Publications

22. Practical, Real-time Full Duplex Wireless, Mayank Jain, Jung II Choi, Tae Min Kim, Dinesh Bharadia, Kannan Srinivasan, Philip Levis, Sachin Katti, Prasun Sinha and Siddharth Seth *Proc. of ACM MOBICOM*, Las Vegas, Sep 2012 (Acceptance rate: 13.6% = 29/214)
23. Shengbo Chen, Prasun Sinha, Ness Shroff, and Changhee Joo "Finite-Horizon Energy Allocation and Routing Scheme in Rechargeable Sensor Networks", *Proc. of IEEE INFOCOM*, Shanghai, Apr. 2011 (Acceptance rate: 17.6% = 276/1575)
24. Zizhan Zheng, Zhixue Lu, Prasun Sinha, and Santosh Kumar, "Maximizing the Contact Opportunity for Vehicular Internet Access", *Proc. of IEEE INFOCOM*, San Diego, Mar. 2010 (Acceptance rate: 17.6% = 276/1575)
25. Ren-Shiou Liu, Prasun Sinha, and Emre (Can) Koksall, "Joint Energy Management and Resource Allocation in Rechargeable Sensor Networks", *Proc. of IEEE INFOCOM*, San Diego, Mar. 2010 (Acceptance rate: 17.6% = 276/1575)
26. Paul Balister, Zizhan Zheng, Santosh Kumar, and Prasun Sinha, "Trap Coverage: Allowing Coverage Holes of Bounded Diameter in Wireless Sensor Networks", *Proc. of IEEE INFOCOM*, Rio de Janeiro, Brazil, Apr. 2009 (Acceptance rate: 19.6% = 282/1453)

27. Kai-Wei Fan, Zizhan Zheng and Prasun Sinha, "Steady and Fair Rate Allocation for Rechargeable Sensors in Perpetual Sensor Networks," *Proc. of ACM SENSYS*, Raleigh, NC, 14 pages, Nov. 2008 (Acceptance rate: 16.4% = 25/153)
28. Kai-Wei Fan and Prasun Sinha, "Distributed Online Data Aggregation for Large Scale Sensor Networks," *Proc. of IEEE MASS*, Atlanta, Georgia, 10 pages, Sep. 2008 (Acceptance rate: 10.4% = 26/250)
29. Zizhan Zheng, Kai-Wei Fan, Prasun Sinha and Yusu Wang, "Distributed Roadmap Aided Routing in Sensor Networks," *Proc. of IEEE MASS*, Atlanta, Georgia, 6 pages, Short Paper, Sep. 2008 (Acceptance rate: 24% = 60/250)
30. Joohwan Kim, Xiaojun Lin, Ness Shroff, and Prasun Sinha, "On Maximizing the Lifetime of Delay-Sensitive Wireless Sensor Networks with Anycast", *Proc. of IEEE INFOCOM*, Phoenix, Arizona, pp 807-815, Apr. 2008 (Acceptance rate: 20.5% = 236/1152)
31. Ren-Shiou Liu, Kai-Wei Fan, and Prasun Sinha, "ClearBurst: Clearing Congestion in Sensor Networks with Packet Bursts", *IEEE Wireless Communications and Networking Conference (WCNC)*, Las Vegas, pp 1899-1904, Apr. 2008 (Acceptance rate: 46.8% = 585/1250)
32. Tan Apaydin, Serdar Vural and Prasun Sinha, "On Improving Data Accessibility in Storage Based Sensor Networks", *Proc. of IEEE MASS*, Pisa, Italy, pp 1-9, Oct 2007 (Acceptance rate: 25.3% = 67/265)
33. Santosh Kumar, Ten H. Lai, Marc E. Posner and Prasun Sinha, "Optimal Sleep-Wakeup Algorithms for Barriers of Wireless Sensors", *Proc. of IEEE BROADNETS*, Raleigh, North Carolina, 10 pages, Sep 2007 (Acceptance rate: 35%)
34. Zizhan Zheng and Prasun Sinha, "XBC: XOR-based Buffer Coding for Reliable Transmissions over Wireless Networks", *Proc. of IEEE BROADNETS*, Raleigh, North Carolina, 10 pages, Sep 2007 (Acceptance rate: 35%)
35. Ai Chen, Dongwook Lee and Prasun Sinha, "Optimizing Multicast Performance in LargeScale WLANs", *Proc. of IEEE ICDCS*, Toronto, Canada, pp 17-24, Jun 2007 (Acceptance rate: 13.5% = 71/528)
36. Sha Liu, Kai-Wei Fan and Prasun Sinha, "CMAC: An Energy Efficient MAC Layer Protocol Using Convergent Packet Forwarding for Wireless Sensor Networks", *Proc. of IEEE SECON*, San Diego, CA, pp 11-20, Jun 2007 (Acceptance rate: 20% = 60/300)
37. Kai-Wei Fan, Sha Liu and Prasun Sinha, "Scalable Data Aggregation for Dynamic Events in Sensor Networks", *Proc. of ACM SENSYS*, Boulder, Colorado, pp 181-194, Nov 2006 (Acceptance rate: 19.4% = 24/124)
38. Ai Chen, Gayathri Chandrasekaran, Dongwook Lee, and Prasun Sinha, "HIMAC: High Throughput MAC Layer Multicasting in Wireless Networks", *Proc. of IEEE MASS*, Vancouver, Canada, pp 41-50, Oct 2006 (Acceptance rate: 24.8% = 49/197)
39. Hongwei Zhang, Anish Arora, and Prasun Sinha, "Learn on the Fly: Beacon-free Link Estimation and Routing in Sensor Network Backbones", *Proc. of IEEE INFOCOM*, pp 1607-1618, Apr. 2006 (Acceptance rate: 18% = 252/1400)
40. Kai-Wei Fan, Sha Liu, and Prasun Sinha, "On the Potential of Structure-free Data Aggregation in Sensor Networks", *Proc. of IEEE INFOCOM*, pp 1263-1274, Apr. 2006 (Acceptance rate: 18% = 252/1400)
41. Dongwook Lee, JongWon Kim and Prasun Sinha, "Handoff-aware Adaptive Media Streaming in Mobile IP", *ICOIN (The International Conference on Information Networking)*, Sendai (Japan), 10 pages, Jan. 2006 (Sponsored by Information Processing Society of Japan, Korea Information Science Society and Springer) (Acceptance rate: 30.1% = 141 among 468)
42. Anish Arora, Rajiv Ramnath, Emre Ertin, Prasun Sinha et. al. "ExScal: Elements of an Extreme Scale Wireless Sensor Network," Invited Paper, In *Proc. of RTCSA (11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications)*, Hong Kong, pp 102-108, Aug. 2005

43. Prasun Sinha, Yuval Shavitt, Ramachandran Ramjee, Danny Raz and Sneha Kasera, "FairMAC: Fair Sharing of Multi-Access Channels in WLAN Hotspots", In Proc of *IEEE ICCCN (Fourteenth International Conference on computer Communications and Networks)*, pp 113-118, San Diego, Oct. 2005. (Acceptance rate: $33.46\% = 87/260$)
44. Dan Berger, Zhenqiang. Ye, Prasun Sinha, Srikanth Krishnamurthy, Michalis Faloutsos and Satish K. Tripathi, "TCP Friendly Medium Access Control for Ad-Hoc Wireless Networks: Alleviating Self Contention", *Proc. of IEEE MASS*, Ft. Lauderdale, FL, pp 214-223, Oct. 2004. (Acceptance rate: 25%)
45. Haiyun Luo, Ramachandran Ramjee, Prasun Sinha, Li Li and Songwu Lu, "UCAN: A Unified Cellular and Ad-hoc Network Architecture", *Proc. of ACM MOBICOM*, San Diego, CA, pp 353-367, Sep. 2003. (Acceptance rate: $27/281 = 9.6\%$)
46. Saar Pilosof, Ramachandran Ramjee, Danny Raz, Yuval Shavitt and Prasun Sinha, "Understanding TCP fairness over Wireless LAN", *Proc. of IEEE INFOCOM*, San Francisco, CA, pp 863-872, Mar. 2003. (Acceptance rate: $224/1078 = 20.8\%$)
47. Prasun Sinha, Raghupathy Sivakumar and Vaduvur Bharghavan, "Enhancing Ad-hoc Routing with Dynamic Virtual Infrastructures", *Proc. of IEEE INFOCOM*, pp 1763-1772, Anchorage, Alaska, pp 1763-1772, Apr. 2001. (Acceptance rate: $192/830 = 23.1\%$)
48. Prasun Sinha and Srikanth Krishnamurthy, "Scalable Unidirectional Routing with Zone Routing Protocol (ZRP) Extensions for Mobile Ad-hoc Networks", *Proc. of IEEE WCNC*, Chicago, pp 1329-1339, Sep. 2000.
49. Prasun Sinha, Narayanan Venkitaraman, Raghupathy Sivakumar and Vaduvur Bharghavan, "A Wireless Transmission Control Protocol for CDPD", *Proc. of IEEE WCNC*, New Orleans, pp 953-957, Sep. 1999.
50. Prasun Sinha, Raghupathy Sivakumar and Vaduvur Bharghavan, "MCEDAR: Multicast extensions to Core-Extraction Distributed Ad-hoc Routing algorithm", *Proc. of IEEE WCNC*, New Orleans, pp 1313-1317, Sep. 1999.
51. Prasun Sinha, Narayanan Venkitaraman, Raghupathy Sivakumar and Vaduvur Bharghavan, "WTCP: A Reliable Transport Protocol for Wireless Wide-Area Networks", *Proc. of ACM MOBICOM*, pp 231-241, Seattle, Aug. 1999. (Acceptance rate: $23/170 = 13.5\%$)
52. Prasun Sinha, Raghupathy Sivakumar and Vaduvur Bharghavan, "CEDAR: a Core-Extraction Distributed Ad-hoc Routing algorithm", *Proc. of IEEE INFOCOM*, New York, NY, pp 202-209, Apr. 1999. (Acceptance rate: $184/600 = 30.7\%$)
53. Prasun Sinha and Jianchang Mao, "Combining Multiple OCRs for Optimizing Word Recognition", *International Conference on Pattern Recognition (ICPR)* Brisbane, Australia, pp 436-438, Aug. 1998
54. Jianchang Mao, Prasun Sinha and Mohiuddin Moidin, "A System for Cursive Handwritten Address Recognition", *International Conference on Pattern Recognition (ICPR)*, Brisbane, Australia, pp 1285-1287, Aug. 1998.

Mini-Conference Publications

55. Zizhan Zheng, Prasun Sinha, and Santosh Kumar, "Alpha Coverage: Bounding the Interconnection Gap for Vehicular Internet Access", *Proc. of IEEE INFOCOM Mini-Conference*, Rio de Janeiro, Brazil, Apr. 2009 (Acceptance rate: $26.7\% = 383/1453$)
56. Yigal Bejerano, Dongwook Lee, Prasun Sinha, and Lisa Zhang, "Approximation Algorithms for Scheduling Real-Time Multicast Flows in Wireless LANs", *Proc. of IEEE INFOCOM Mini-Conference*, Phoenix, Arizona, pp 151-155, Apr. 2008 (Acceptance rate: $27.9\% = 321/1152$)

Symposium Publications

57. Vinayak Naik, Anish Arora, Prasun Sinha and Hongwei Zhang, "Sprinkler: A Reliable and Scalable Data Dissemination Service for Wireless Embedded Devices", In Proc. of *the 26th IEEE Real-Time Systems Symposium (RTSS)*, Miami, Florida, 10 pages, 2005 (Acceptance rate: $21\% = 37/176$)

58. Kiran Kumar, Prasun Sinha and P. C. P. Bhatt, “Distributed and Object Oriented Geographical Information System (DO_GIS)”, *7th International Symposium on Spatial Data Handling (SDH)*, Netherlands, pp 263-275, Aug 1996.

Workshop Publications

59. Sha Liu, Rahul Srivastava, Can Emre Koksall, and Prasun Sinha, Achieving Energy Efficiency with Transmission Pushbacks in Sensor Networks *Proc. of IEEE IWQoS*, The Netherlands, Jun. 2008 (Acceptance rate: 35.6% = 26/73)
60. Dongwook Lee, Gayathri Chandrasekaran, and Prasun Sinha, “Optimizing Broadcast Load in Mesh Networks using Dual Association”, Invited Paper, In *Proc. of WiMESH (First IEEE Workshop on Wireless Mesh Networks)*, Santa Clara, 10 pages, Sep. 2005
61. Sha Liu, Kai-Wei Fan, Prasun Sinha, “Dynamic Sleep Scheduling using Online Experimentation for Wireless Sensor Networks” Invited Paper, In *Proc. of SenMetrics*, (Third Intl. Workshop on Measurement, Modeling and Performance Analysis of Wireless Sensor Networks), 9 pages, Jul. 2005
62. Li Li and Prasun Sinha, “Throughput and Energy Efficiency in Topology-Controlled Multi-hop Wireless Sensor Networks”, *Proc. of Second ACM International Workshop on Wireless Sensor Networks and Applications (WSNA)*, (Held in conjunction with ACM MOBICOM), pp 132-140, Sep. 2003.
63. Danny Raz and Prasun Sinha, “On the Power of Offline Data in Approximating Internet Distances”, *DI-MACS Workshop on Internet and WWW Measurement, Mapping and Modeling*, Rutgers University, Feb. 2002.
64. Jeff Monks, Prasun Sinha and Vaduvur Bharghavan, “Limitations of TCP-ELFN for Ad-hoc Networks”, *IEEE MOMUC (Mobile Multimedia Communications)*, Tokyo, 6 pages, Oct. 2000.
65. Thyagarajan Nandagopal, Tan-Eun Kim, Prasun Sinha and Vaduvur Bharghavan, “Service Differentiation Through End-to-end Rate Control in Low Bandwidth Wireless Packet Networks”, *IEEE MOMUC (Mobile Multimedia Communications)*, San Diego, pp 211-220, Nov. 1999.

Demonstrations with Abstract

66. Somnath Mitra, Zizhan Zheng, Santanu Guha, Animikh Ghosh, Prabal Dutta, Bhagavathy Krishna, Kurt Plarre, Santosh Kumar, and Prasun Sinha, “Demo Abstract: An Affordable, Long-Lasting, and Autonomous Theft Detection and Tracking System”, *ACM SENSYS*, 2 pp, Nov. 2009

Poster Publications

67. Anish Arora, Rajiv Ramnath, Prasun Sinha, et. al. “Project Exscal” *DCOSS (International Conference on Distributed Computing in Sensor Systems)*, Invited Poster, 2005.
68. Anish Arora, Prasun Sinha, Emre Ertin, Vinayak Naik, Hongwei Zhang, Mukundan Sridharan and Sandip Bapat, “ExScal Backbone Network Architecture”, *MOBISYS (The Third International Conference on Mobile Systems Applications and Services) Poster*, Seattle, June 2005.
69. Zhenqiang Ye, Dan Berger, Prasun Sinha, Srikanth Krishnamurthy, Michalis Faloutsos and Satish K. Tripathi, “Alleviating MAC Layer Self-contention in Ad-hoc Networks”, *ACM MOBICOM Poster*, San Diego, 2003.

Internet Draft

70. Raghupathy Sivakumar, Prasun Sinha and Vaduvur Bharghavan, “CEDAR: a Core-Extraction Distributed Ad-hoc Routing algorithm”, *IETF MANET working group*, draft-ietf-manet-cedar-spec-00.txt, October 1998.

Bookchapters

71. Hongwei Zhang, Anish Arora, Prasun Sinha and Loren J. Rittle, “Messaging in Sensor Networks: Bridging Wireless Communications and Applications”, *Chapter in Handbook of Real-Time and Embedded Systems*, Edited by Insup Lee, Joe Leung, and Sang Son, ISBN: 1-58488-678-1, Chapman and Hall/CRC, Jul. 2007
72. Sha Liu, Kai-Wei Fan, and Prasun Sinha, “Protocols for Data Aggregation in Sensor Networks”, *Chapter in book titled Wireless Sensor Networks and Applications*, Edited by Yingshu Li, My Thai, and Weili Wu, Springer Verlag’s book series *Network Theory and Applications*, ISBN: 0-387-49591-6 and 978-0-387-49591-0, Mar. 2007
73. Ren-Shiou Liu, Lifeng Sang, and Prasun Sinha, “Boundary Detection for Sensor Networks”, *Chapter in book titled Wireless Sensor Networks and Applications*, Edited by Yingshu Li, My Thai, and Weili Wu, Springer Verlag’s book series *Network Theory and Applications*, ISBN: 0-387-49591-6 and 978-0-387-49591-0, Mar. 2007
74. Kai-Wei Fan, Sha Liu and Prasun Sinha, “Ad-hoc Routing Protocols”, *Chapter in book titled Algorithms and Protocols for Wireless and Mobile Networks*, Edited by A. Boukerche, CRC/Hall Publisher, pp 183-215, ISBN: 1-58488-465-7, 2005
75. Prasun Sinha, “QoS Issues in Ad-hoc Networks”, *Chapter in book titled Ad-hoc Networks: Technologies and Protocols*, Edited by P. Mohapatra and S. Krishnamurthy, ISBN: 0-387-22689-3, Springer, 2004
76. Satish K. Tripathi and Prasun Sinha, “Challenges in the Evolution from Single-hop to Multi-hop Wireless Networks”, *Chapter in book titled Performance Evaluation - Stories and Perspectives Symposium*, Editor – G. Kotsis, Austrian Computer Society, Volume 175, pp 333-352, Series OCG Schriftenreihe, ISBN 3-85403-175-0, Vienna, Austria, December 5-6, 2003.

Patents

1. Srikanth Krishnamurthy and Prasun Sinha, “Scalable Unidirectional Routing for Mobile Ad-hoc Networks”, European Patent 01904908.9-2413-US0101624 (Sep 2002), US6990075 (Jan 24, 2006)
2. Prasun Sinha, Yuval Shavitt, Ramachandran Ramjee, Danny Raz and Sneha Kasera, “Fair Sharing of Multi-Access Channels”, Bell Labs, Lucent Technologies, Holmdel, NJ, US7317686 (Jan 8, 2008)

External Professional Activities

1. Guest Editor, Special Section on IWQoS, IEEE Transactions on Network and Service Management (TNSM), 2012
2. Steering Committee Member, IEEE IWQoS, April 2011 – present
3. Program Co-Chair, IEEE IWQoS 2011
4. Program Co-Chair, BROADNETS 2010
5. Program Chair, QShine 2009
6. Invited Session Organizer, WICON 2008
7. Session Chair, IEEE INFOCOM 2008, IEEE ICCCN 2005, ACM MobiDE 2003
8. Publicity Chair, Mobiquitous 2006
9. Registration Chair, MobiHoc 2005
10. Publicity Co-Chair, ICDCS 2005
11. Panels Chair, QShine 2004

12. Co-Organizer, Special Session on Actor based Sensor Networks, SANPA 2004
13. Submissions Chair, ACM SenSys 2004
14. TPC member: ACM MOBICOM 2004-2005,2008,2010; IEEE ICNP 2010; ACM MOBIHOC 2006-2009; IEEE INFOCOM 2004-2011; WICON 2008, IEEE ICPP 2008, Createnet, IEEE PERCOM 2005; ACM MobiDE 2003; ACM WMASH 2003; IEEE ICC 2003; IEEE PERCOM 2007; ICPADS 2007;
15. Reviewer for various conferences/journals including INFOCOM, IWQoS, SIGCOMM, MOBICOM, ICON, Computer Networks Journal, IEEE Personal Communication Magazine, MONET, TMC, TOSN, TPDS, TAC
16. NSF Panelist, 2005, 2006, 2009
17. Proposal reviewer for Louisiana Board of Regents, 2006
18. Proposal reviewer for SBIR (Argonne National Labs), 2006
19. Proposal reviewer for Indiana 21st Century Research and Technology Fund (2006)
20. Proposal reviewer for Kentucky Commercialization Fund (2008)

Editorship

1. Editorial Board, IEEE Transactions on Mobile Computing (TMC), July 2008 - present
2. Editorial Board, IEEE Transactions on Wireless Communications (TWC), Feb 2010 - Feb 2011

Internal Professional Services

1. Tutorial on Wireless Networking, ASTAR (The Advanced Science and Technology Adjudication Resource) Program for the Supreme Court of Ohio, On request from Dean Washington, May 19th, 2006
2. Offered a collaborative course on *Advanced Mobile Computing* with University of Cincinnati, Autumn 2007.
3. Final Exam (Dissertation Chair): Kai-Wei Fan (2008), Sha Liu (2008)
4. Final Exam (Dissertation Committee Member): Shansi Ren (2009), Vinod Kulathumani (2008), Hui Cao (2008), Vinayak Naik (2006), Hongwei Zhang (2006)
5. Graduate Faculty Representative: E. Paska (Geodetic Sc, 2009), Mehmet Emre Yavuz (ECE, 2007)
6. BS Honors Thesis Committee Member: Chad Sowald (2009)
7. Candidacy Exam, Committee Member: Yating Hsu (2010) Na Li (2008), Shansi Ren (2008), Gopalakrishnan Santhanaraman (2008), Vinayak Naik (2005), Hongwei Zhang (2005), Thang Nam Le (2006), Vinod Kulathumani (2007), Tan Apaydin (2007), Hui Cao (2007), Lei Guo (2007), Wenjun Gu (2007), Sha Liu (2007), Kai-Wei Fan (2007), Mukundan Sridharan (2008)
8. Candidacy Exam, Department Representative: Feng Chen (2009), Jiesheng Wu (2004), Weikuan Yu (2005)
9. Member, Graduate Admissions Committee, CSE, Ohio State University, 2003-2006, 2007, 2009
10. Member, Faculty Search Committee, CSE, Ohio State University, 2008
11. Member, Computer Committee, CSE, Ohio State University, 2004-2007
12. Member, Department Co-secretary, CSE, Ohio State University, 2003-2004

Supervision

- Current PhD Students
 1. Wenjie Zhou, Entry Quarter: Au '10
 2. Tarun Bansal, Entry Quarter: Au '09
 3. Dong Li, Entry Quarter: Au '09
 4. Yousi Zheng (co-advised with Ness B. Shroff), Entry Quarter: Au '09
 5. Shengbo Chen (co-advised with Ness B. Shroff), Entry Quarter: Wi '09
 6. Zhixue Lu, Entry Quarter: Au '08
- Alumni (Postdoc)
 1. Dongwook Lee, Postdoc: Sep '04 - Jan '07, Senior Engineer, Samsung, Suwon, Korea
Research Topic: "Network Support for Multimedia Streaming over Wireless Access Networks"
- Alumni (PhD)
 1. Zizhan Zheng, Graduated: Sp '10
Thesis Title: "Deployment of Large-Scale Wireless Networks for Mobile Targets"
 2. Ren-Shiou Liu, Graduated: Sp '10, Epic System, Madison, WI
Thesis Title: "Towards Perpetual Operation in Renewable Energy based Sensor Networks"
 3. Kai-Wei Fan, Graduated: Sp '08, Cisco, Sunnyvale, CA
Thesis Title: "On Structure-Less and Everlasting Data Collection in Wireless Sensor Networks"
 4. Sha Liu, Graduated: Sp '08, Epic Systems, Madison, WI
Thesis Title: "Energy Efficient MAC Layer Design for Wireless Sensor Networks"
- Alumni (MS)
 1. Daeyoung Choi, Sp '10
 2. Zizhan Zheng, MS, Sp '09
 3. Ren-Shiou Liu, MS, Sp '09
 4. Sha Liu, MS, Sp '08
 5. Kai-Wei Fan, MS, Au '07