FACULTY VITA
COLLEGE OF ENGINEERING

Date: Jan 26, 2017

I. CANDIDATE INFORMATION

A. Name: **Srikanta Tirthapura**

B. Department and Current Rank: **Professor of Electrical and Computer Engineering**

C. Degrees Held

Brown University	Ph.D.	Computer Science	2002
Brown University	Sc.M.	Computer Science	1999
Indian Institute of Technology, Madras	B.Tech.	Computer Science and Engineering	1996

D. Academic Positions Held

Iowa State University	Kingland Professor of Data Analytics	Dept. of Electrical and Computer Engg.	Jan 2017 –
Iowa State University	Professor	Dept. of Electrical and Computer Engg.	Aug 2016 –
Iowa State University	Associate Professor	Dept. of Electrical and Computer Engg.	Aug 2008 – July 2016
Iowa State University	Associate Professor (Courtesy)	Dept. of Computer Science	Aug 2008 – July 2016
Iowa State University	Assistant Professor	Dept. of Electrical and Computer Engg	Aug 2002 – July 2008

E. Other Professional Employment and Visiting Positions

Laserlike Inc., CA	Visiting Engineer	Sep, Oct 2016
Sandia Labs, Albuquerque, NM	Temporary Visitor	Two weeks in Aug-Sep 2015
Microsoft Research, Cambridge, UK	Visiting Researcher	May 2013 – Aug 2013
Oracle Corporation, Redwood Shores, CA	Consulting Member of Technical Staff	Summer 2009 – Summer 2010
Bell Labs, Murray Hill, NJ	Summer Intern	May 1999 – Aug 1999

F. Honors and Awards

1. 2016 Dec, Invited as a distinguished visitor to IBM Research Lab, India.
2. 2016, co-authored paper in Euro-Par 2016, 22nd International European Conference on Parallel and Distributed Computing was invited to a special issue of the journal "Concurrency and Computation: Practice and Experience", dedicated to best papers from the conference

3. 2015, Patent Recipient Recognition, Iowa State University College of Engg.
4. 2015, co-authored paper in the conference ICDE 2015 invited to a special issue of IEEE Transactions on Knowledge and Data Engineering for the best papers from the conference
5. 2014, IBM Faculty Award
6. 2014, Patent Recipient Recognition, Iowa State University College of Engg.
7. 2013, IBM Faculty Award
8. 2013, Patent Recipient Recognition, Iowa State University College of Engg.
9. 2012, Warren B. Boast Undergraduate Teaching Award, Iowa State University Dept. of Electrical and Computer Engg.
10. 2009, Recognition of Service Award, The Association of Computing Machinery (ACM)
11. 2009, co-authored paper in SIAM International Conference on Data Mining was selected as one of the best papers in the conference and invited to a special issue of the journal "Statistical Analysis and Data Mining"
12. 2004, co-authored paper in IEEE IPDPS 2004 selected one of the best papers in the conference, invited to a special journal issue of Journal of Parallel and Distributed Computing
13. 2002, co-authored paper in ACM Symposium on Parallel Algorithms and Architectures selected one of the best papers in the conference, invited to a special journal issue of Theory of Computing Systems
14. 1992, 27th Rank (among more than 100,000 students) in the Joint Entrance Examination for admission to the Indian Institutes of Technology
15. 1991, 2nd Rank in the Nationwide Science Talent Search Exam
16. 1990-96, National Talent Search Scholarship, Govt. of India

G. Membership in Professional Societies

- Senior Member, IEEE
- Senior Member, ACM

II. RESEARCH / CREATIVE ACTIVITIES

A. Citation Information
1615 Citations
h-index is 22
i10-index is 42
Information collected from Google Scholar on Jan 19, 2017

B. Scholarship

$^{+}$ ***Denotes student co-author.***

Articles in Peer-Reviewed Journals – In Print or Accepted

1. Sneha A. Singh (+), Divesh Srivastava, and Srikanta Tirthapura, "Estimating Quantiles from the Union of Historical and Streaming Data", *Proceedings of the VLDB Endowment* (PVLDB) 10(4): 433-444 (2016), available at http://www.vldb.org/pvldb/vol10/p433-tirthapura.pdf

2. Arko Mukherjee (+), Pan Xu (+), Srikanta Tirthapura, "Enumeration of Maximal Cliques from an Uncertain Graph", accepted to *IEEE Transactions on Knowledge and Data Engineering (TKDE),* **special issue for the best papers from ICDE 2015**

3. Arko Mukherjee (+), Srikanta Tirthapura, "Enumerating Maximal Bicliques from a Large Graph Using MapReduce", accepted to *IEEE Transactions on Services Computing* (TSC)

4. Brock Bose, Bhargav Avasarala, Yung-Yu Chung (+), Srikanta Tirthapura, Donald Steiner, "Detecting Insider Threats using RADISH, a System for Real-time Anomaly Detection in Heterogeneous Data Streams", accepted to *IEEE Systems Journal,* special issue on Insider Threat

5. Yung-Yu Chung (+), Srikanta Tirthapura, David Woodruff, "A Simple Message-Optimal Algorithm for Random Sampling from a Distributed Stream", *IEEE Transactions on Knowledge and Data Engineering*, 28(6), 1356-1368, 2016, DOI: 10.1109/TKDE.2016.2518679

6. Bibudh Lahiri (+), Arko Mukherjee (+), Srikanta Tirthapura, "Identifying Correlated Heavy-Hitters in a Two-Dimensional Data Stream", *Data Mining and Knowledge Discovery* 30(4), 797-818, 2016, DOI: 10.1007/s10618-015-0438-6

7. Andrew McGregor, A. Pavan, Srikanta Tirthapura and David Woodruff, "Space-Efficient Estimation of Statistics over Sub-Sampled Streams", *Algorithmica* 74(2), 787-811, 2016, DOI 10.1007/s00453-015-9974-0

8. Sneha Aman Singh (+), Srikanta Tirthapura, "An Evaluation of Streaming Algorithms for Distinct Counting over a Sliding Window", *Frontiers in ICT, section Big Data*, 2(23), 2015, http://dx.doi.org/10.3389/fict.2015.00023 13 pages

9. Srikanta Tirthapura, David Woodruff, "A General Method for Estimating Correlated Aggregates on a Data Stream", *Algorithmica* 73(2): pages 235-260, 2015

10. Michael Svendsen (+), Arko Mukherjee (+), Srikanta Tirthapura, "Mining Maximal Cliques from a Large Graph using MapReduce: Tackling Highly Uneven Subproblem Sizes", *Journal of Parallel and Distributed Computing (Special Issue for Big Data),* 79: pages 104-114, May 2015

11. Sneha Singh (+), Srikanta Tirthapura, "Monitoring Persistent Items in the Union of Distributed Streams", *Journal of Parallel and Distributed Computing*, 74(11): pages 3115—3127, 2014

12. Pan Xu (+), Srikanta Tirthapura, "Optimality of Clustering Properties of Space Filling Curves", *ACM Transactions on Database System,* 39(2), article 10, 2014

13. Bibudh Lahiri (+), Jaideep Chandrashekar, Srikanta Tirthapura, "Space-Efficient Tracking of Persistent Items in a Massive Data Stream", *Statistical Analysis and Data Mining,* 7(1), pages 70-92, 2014

14. Costas Busch, Ryan LaFortune (+), Srikanta Tirthapura, "Sparse Covers for Planar Graphs and Graphs that Exclude a Fixed Minor", *Algorithmica, 69(3),* pages 658—684, 2014

15. Akshay Deepak (+), David Fernández-Baca, Srikanta Tirthapura; Michael J. Sanderson; Michelle M. McMahon, "EvoMiner: Frequent Subtree Mining in Phylogenetic Databases", *Knowledge and Information Systems* 41(3): 559-590 (2014)

16. Michael Svendsen (+), Albert Angel, Nick Koudas, Nikos Sarkas, Divesh Srivastava, and Srikanta Tirthapura, "Dense Subgraph Maintenance under Streaming Edge Weight Updates for Real-time Story Identification", *VLDB Journal 23(2),* pages 175—199, 2014

17. A. Pavan, Kanat Tangwongsan, Srikanta Tirthapura, Kun-Lung Wu, "Counting and Sampling Triangles from a Graph Stream", *Proceedings of the VLDB Endowment* (PVLDB), 6(14), pages 1870-1881, 2013

18. Zhenhui Shen (+), Srikanta Tirthapura: "Approximate Covering Detection among Content-Based Subscriptions Using Space Filling Curves", *Journal of Parallel and Distributed Computing* 72(12), pages 1591-1602, 2012

19. O. Wodo, S. Tirthapura, S. Chaudhary, B. Ganapathysubramanian: "Computational characterization of bulk heterojunction nanomorphology", *Journal of Applied Physics,*112, 064316 (2012)

20. O. Wodo, S. Tirthapura, S. Chaudhary, B. Ganapathysubramanian: "A novel graph based formulation for characterizing morphology with application to Organic Solar Cells", *Organic Electronics*, 13 (6), June 2012, pages 1105-1113

21. Bibudh Lahiri (+), Srikanta Tirthapura, "Identifying Frequent Items in a Network using Gossip", *Journal of Parallel and Distributed Computing* 70(12): 1241-1253, 2010

22. Costas Busch, Srikanta Tirthapura, "Concurrent Counting is Harder than Queuing", *Theoretical Computer Science* 411(43), pp. 3823-3833, 2010

23. Graham Cormode, Srikanta Tirthapura and Bojian Xu (+), "Time-decayed Correlated Aggregates over Data Streams", *Statistical Analysis and Data Mining* 2 (5-6), pp. 294-310, 2009. (**Special issue for the best papers in SDM 2009)**

24. Graham Cormode, Srikanta Tirthapura, Bojian Xu (+), "Time-Decaying Sketches for Robust Aggregation of Sensor Data", *SIAM Journal on Computing*, 39(4), pp. 1309-1339, 2009

25. Bojian Xu (+), Srikanta Tirthapura, Costas Busch, ``Sketching Asynchronous Streams over Sliding Windows", *Distributed Computing,* 20(5), pp 359-374, Feb 2008

26. A. Pavan and Srikanta Tirthapura, "Range Efficient Counting of Distinct Elements in a Massive Data Stream," *SIAM Journal on Computing,* 37(2), pp. 359–379, May 2007

27. Maurice Herlihy, Fabian Kuhn, Srikanta Tirthapura and Roger Wattenhofer, "Dynamic Analysis of the Arrow Distributed Protocol," *Theory of Computing Systems*, 39(6), pp. 875 – 901, November 2006 **(special issue for the best papers from SPAA 2004)**

28. Srikanta Tirthapura (#) and Maurice Herlihy, "Self-Stabilizing Distributed Queuing," *IEEE Transactions on Parallel and Distributed Systems*, 17(7), pp. 646–655, July 2006

29. Maurice Herlihy and Srikanta Tirthapura, "Self-Stabilizing Smoothing and Balancing Networks," *Distributed Computing* 18(5), pp. 345–357, April 2006

30. Maurice Herlihy and Srikanta Tirthapura, "Randomized Smoothing Networks," *Journal of Parallel and Distributed Computing*, 66(5), pp. 626–632, May 2006 **(special issue for the best papers from IPDPS 2004)**

31. Costas Busch and Srikanta Tirthapura, "Analysis of Link Reversal Routing Algorithms," *SIAM Journal on Computing*, 35(2), pp. 305–326, 2005

32. Phillip Gibbons and Srikanta Tirthapura, "Distributed Streams Algorithms for Sliding Windows," *Theory of Computing Systems* 37, pp. 457–478, 2004 **(special issue for the best papers from SPAA 2002)**

33. Maurice Herlihy, Srikanta Tirthapura (#) and Roger Wattenhofer, "Ordered Multicast and Distributed Swap," *Operating Systems Review*, 35(1), January 2001, pp. 85–96

Articles in Peer-Reviewed Journals – Submitted

1. Natcha Simsiri, Kanat Tangwongsan, Srikanta Tirthapura, Kun-Lung Wu, "Work-Efficient Parallel Union-Find", submitted to Concurrency and Computation: Practice and Experience, **special issue for best papers from Euro-Par 2016**

Books Edited or Co-Edited

1. Srikanta Tirthapura, Lorenzo Alvisi: *Proceedings of the 28th Annual ACM Symposium on Principles of Distributed Computing* (PODC 2009), Calgary, Alberta, Canada, ACM Press, 2009

2. Soma Chaudhuri, Samir R. Das, Himadri S. Paul, Srikanta Tirthapura, Distributed Computing and Networking: *Proceedings of the 8th International Conference* ICDCN 2006**,** Published by Springer as Lecture Notes in Computer Science 4308

Book Chapters

1. Bibudh Lahiri, Srikanta Tirthapura, "Stream Sampling", a chapter in *Encyclopedia of Database Systems 2009,* pp 2838-2842, published by Springer , 2009

Peer-Reviewed, Refereed, and Competitive Conference Proceedings, Bulletins, or Reports – In Print/Accepted

1. Yu Zhang, Kanat Tangwongsan, Srikanta Tirthapura, "Streaming Algorithms for k-Means Clustering with Fast Queries", accepted to IEEE International Conference on Data Engineering (ICDE), 2017

2. Natcha Simsiri, Kanat Tangwongsan, Srikanta Tirthapura, Kun-Lung Wu, "Work-Efficient Parallel Union-Find with Applications to Incremental Graph Connectivity", in Proc. 22nd International Conference on Parallel and Distributed Computing **(Euro-Par),** pages 561-573, 2016

3. Yung-Yu Chung (+) and Srikanta Tirthapura, "Distinct Random Sampling from a Distributed Stream", Proc. IEEE International Parallel and Distributed Processing Symposium (**IPDPS**) 2015 Acceptance Rate: 22% (108 out of 496)

4. Arko Mukherjee (+), Pan Xu, and Srikanta Tirthapura, "Mining Maximal Cliques from an Uncertain Graph", Proc. IEEE International Conference on Data Engineering (**ICDE**) 2015 Acceptance Rate: data unavailable
   Invited to a special issue of the Journal IEEE Transactions on Knowledge and Data

Engineering (TKDE) for the best papers from ICDE 2015

5. Kanat Tangwongsan, Srikanta Tirthapura, and Kun-Lung Wu, "Parallel Streaming Frequency-Based Aggregates", in Proc. *ACM Symposium on Parallel Algorithms and Architectures* (**SPAA**) pages 246 – 245, 2014. Acceptance Rate: 25 percent

6. Arko Mukherjee (+) and Srikanta Tirthapura, "Enumerating Maximal Bicliques from a Large Graph using MapReduce", in Proc. *IEEE International Congress on BigData*, 2014 Acceptance Rate: 35 percent

7. Kanat Tangwongsan, A. Pavan, and Srikanta Tirthapura, "Triangle Counting in a Massive Streaming Graph Using a Multicore Machine", in Proc. *ACM Conference of Information and Knowledge Management* (**CIKM**) pages 781—786, 2013. Acceptance Rate: 28 percent

8. Pan Xu (+) and Srikanta Tirthapura, "On Optimality of Clustering Through a Space Filling Curve", Proc. *ACM Symposium on Principles of Database Systems (***PODS),** pages 215 – 224, 2012. Acceptance Rate: 26 percent

9. Srikanta Tirthapura and David Woodruff, "Rectangle-Efficient Aggregation in Spatial Data Streams", Proc. *ACM Symposium on Principles of Database Systems* **(PODS),** pages 283 – 294, 2012. Acceptance Rate: 26 percent

10. Andrew McGregor, A. Pavan, Srikanta Tirthapura and David Woodruff, "Space-Efficient Estimation of Statistics over Sub-Sampled Streams", Proc. *ACM Symposium on Principles of Database Systems* **(PODS),** pages 273—282, 2012
    Acceptance Rate: 26 percent

11. Pan Xu (+) and Srikanta Tirthapura, "A Lower Bound on Proximity Preservation by Space Filling Curves", Proc. *IEEE International Parallel & Distributed Processing Symposium* **(IPDPS),** pages 1295—1305**,** 2012. Acceptance Rate: 21 percent (118 out of 569)

12. Srikanta Tirthapura and David Woodruff, "A General Method for Estimating Correlated Aggregates over a Data Stream", Proc. *IEEE International Conference on Data Engineering* **(ICDE),** pages 162—173, 2012. Acceptance Rate: 17 percent

13. Srikanta Tirthapura and David Woodruff, "Optimal Random Sampling from Distributed Streams Revisited", Proc. *25th International Symposium on Distributed Computing* **(DISC)** 2011, pages 283—297. Acceptance Rate: 23 percent (31 out of 136)

14. Bibudh Lahiri (+), Jaideep Chandrashekar, Srikanta Tirthapura: Space-efficient tracking of persistent items in a massive data stream. *Fifth ACM International Conference on Distributed Event-Based Systems* (**DEBS**) 2011, pages 255-266. Acceptance Rate: 24 percent

15. Bibudh Lahiri (+), Srikanta Tirthapura, "Finding correlated heavy-hitters over data streams", *Proc. 28th International Performance Computing and Communications Conference* **(IPCCC)** 2009, pp 307—314

16. Graham Cormode, Srikanta Tirthapura and Bojian Xu (+), "Time-decayed Correlated Aggregates over Data Streams"**,** To appear in *Proc. 9th SIAM International Conference on Data Mining* **(SDM), 2009**, pages 269—280
    Acceptance Rate: 15.7 percent

Invited to a special issue of the journal Statistical Analysis and Data Mining (SDM) dedicated to the best papers from SDM 2009

17. Bibudh Lahiri (+) and Srikanta Tirthapura, "Computing Frequent Elements using Gossip", *Proc. International Colloquium on Structural Information and Communication Complexity* **(SIROCCO), 2008,** pp. 119 – 130
Acceptance Rate: 42 percent

18. Tycho Andersen (+) and Srikanta Tirthapura, "Wireless Sensor Deployment for 3D with Coverage Constraints", International Symposium on Networked Sensing Systems (**INSS**) 2009

19. Graham Cormode, Flip Korn, Srikanta Tirthapura, ``Exponentially Decaying Aggregates in Out-of-order Streams'', short paper in *IEEE International Conference on Data Engineering* **(ICDE) 2008**, pp. 1379—1381

20. Graham Cormode, Flip Korn, Srikanta Tirthapura, "Time-Decaying Aggregates in Out-of-order Streams", *Proc. ACM Symposium on Principles of Database Systems* **(PODS) 2008,** pp. 89 – 98
Acceptance Rate: 18 percent

21. Costas Busch, Ryan LaFortune and Srikanta Tirthapura, "Improved Sparse Covers for Graphs Excluding a Fixed Minor," *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2007,** pp. 61—70
Acceptance Rate: 16 percent

22. Graham Cormode, Srikanta Tirthapura and Bojian Xu (+), "Time-Decaying Sketches for Sensor Data Aggregation," *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2007,** pp. 215—224
Acceptance Rate: 16 percent

23. Zhenhui Shen (+) and Srikanta Tirthapura, "Approximate Covering Detection among Content-Based Subscriptions using Space Filling Curves," *Proc. IEEE International Conference on Distributed Computing Systems* **(ICDCS) 2007**
Acceptance Rate: 13 percent

24. Costas Busch and Srikanta Tirthapura, "A Deterministic Algorithm for Summarizing Asynchronous Streams over Sliding Windows," *Proc. International Symposium on Theoretical Aspects of Computer Science* **(STACS) 2007**, pp. 465–476
Acceptance Rate: 15 percent

25. Srikanta Tirthapura, Bojian Xu (+) and Costas Busch, "Sketching Asynchronous Streams over Sliding Windows," *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2006**, pp. 82–91
Acceptance Rate: 24 percent

26. Zhenhui Shen (+) and Srikanta Tirthapura, "Faster Event Forwarding in a Content-based Publish-Subscribe System through Lookup Reuse," *Proc. IEEE International Symposium on Network Computing and Applications* **(NCA) 2006**, pp. 77–84
Acceptance Rate: 35 percent

27. Srikanta Tirthapura, Sudip Seal and Srinivas Aluru, "A Formal Analysis of Space Filling Curves for Parallel Domain Decomposition," *Proc. IEEE International Conference on Parallel*

Processing **(ICPP) 2006**, pp. 505–512
Acceptance Rate: 32 percent

28. Srikanta Tirthapura and Costas Busch, "Concurrent Counting is Harder than Queuing," *Proc. IEEE International Parallel and Distributed Processing Symposium* **(IPDPS) 2006**
Acceptance Rate: 23 percent

29. Srikanta Tirthapura, "Adaptive Counting Networks," *Proc. IEEE International Conference on Distributed Computing Systems* **(ICDCS) 2005**, pp. 241–250. Acceptance Rate: 14 percent

30. Pavan Aduri and Srikanta Tirthapura, "Range-Efficient computation of F_0 over massive data streams," *Proc. IEEE International Conference on Data Engineering* **(ICDE) 2005**, pp. 32–43
Acceptance Rate: 13 percent

31. Sai Sudhir Anantha-Padmanaban, Manimaran Govindarasu, Prasant Mohapatra, Srikanta Tirthapura, "Heterogeneous QoS Multicast in DiffServ-like Networks," Poster and short paper in **INFOCOM 2005**

32. Zhenhui Shen (+), Srinivas Aluru and Srikanta Tirthapura, "Indexing for Subscription Covering in Publish-Subscribe Systems," *Proc. ISCA International Conference on Parallel and Distributed Computing Systems* **(PDCS) 2005**, pp. 328–333

33. Maurice Herlihy and Srikanta Tirthapura, "Randomized Smoothing Networks," *Proc. IEEE International Parallel and Distributed Processing Symposium*, **(IPDPS) 2004**
Acceptance Rate: 32 percent
Selected one of the best papers in the conference and invited to a special issue of *Journal of Parallel and Distributed Computing.*

34. Zhenhui Shen (+) and Srikanta Tirthapura, "Self-Stabilizing Routing in Publish-Subscribe Systems," in *Proc. International Workshop on Distributed Event Based Systems* **(DEBS) 2004**, pp. 92–97

35. Srikanta Tirthapura, "Adaptive Balancing Networks," short paper in *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2004**

36. Costas Busch and Srikanth Surapaneni and Srikanta Tirthapura, "Analysis of Link Reversal Routing Algorithms for Mobile Ad Hoc Networks," *Proc. ACM Symposium on Parallel Algorithms and Architectures*, **(SPAA) 2003**, pp. 210–219. Acceptance rate: 35 percent

37. Maurice Herlihy and Srikanta Tirthapura, "Self-Stabilizing Smoothing and Counting," *Proc. IEEE International Conference on Distributed Computing Systems*, **(ICDCS) 2003**, pp. 4–11
Acceptance Rate: 18 percent

38. Srikanta Tirthapura, "Concurrent Counting is Harder than Queuing," short paper in *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2003**

39. Phillip Gibbons and Srikanta Tirthapura (#), "Distributed Streams Algorithms for Sliding Windows," *Proc. ACM Symposium on Parallel Algorithms and Architectures*, **(SPAA) 2002**, pp. 63–72. Acceptance Rate: 32 percent
Selected one of the best papers in the conference and invited to a special issue of *Theory of Computing Systems.*

40. Maurice Herlihy and Srikanta Tirthapura (#), "Self-Stabilizing Distributed Queuing," *Proc. International Symposium on Distributed Computing* **(DISC) 2001**, pp. 209–223
Acceptance Rate: 33 percent

41. Maurice Herlihy, Srikanta Tirthapura (#) and Roger Wattenhofer, "Competitive Concurrent Distributed Queuing," *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2001**, pp. 127–133. Acceptance Rate: 29 percent

42. Phillip Gibbons and Srikanta Tirthapura (#), "Estimating simple functions on the union of data streams," *Proc. ACM Symposium on Parallel Algorithms and Architectures* **(SPAA) 2001**, pp. 281–291. Acceptance Rate: 37 percent

43. Philip Klein, Srikanta Tirthapura, Daniel Sharvit and Ben Kimia, "A Tree-edit-distance algorithm for comparing simple, closed shapes," *Proc. ACM-SIAM Symposium on Discrete Algorithms* **(SODA) 2000**, pp. 696–704. Acceptance Rate: 33 percent

44. Srikanta Tirthapura, Philip Klein, Daniel Sharvit and Benjamin Kimia, "Indexing based on edit-distance matching of shape graphs," *Proc. SPIE International Symposium on Voice, Video, and Data Communications* **(SPIE) 1998.**

45. D. Janaki Ram, Srikanta T.N and M.V. Sudhakiran, "Banyan: A Language for Scalable Parallel Programming on Loosely Coupled Distributed Systems," *Proc. High Performance Computing Asia* **(HPC-ASIA) 1997**

Peer-Reviewed, Refereed, and Competitive Conference Proceedings, Bulletins, or Reports – Submitted

None

Other Non-Refereed Conference Proceedings, Bulletins, or Reports – In Print or Accepted. These are non-refereed conference papers.

1. O. Wodo, S. Tirthapura, S. Chaudhary, B. Ganapathysubramanian: "Graph and computational homology concepts to streamline process-structure-property relationships: Application to organic thin film devices" presented during 11th US National Congress on Computational Mechanics, Minneapolis, July 2011

2. O. Wodo, S. Tirthapura, S. Chaudhary, B. Ganapathysubramanian: "Morphology descriptors of bulk-heterojunctions in thin film organic solar cells" 2011 MRS Spring Meeting, San Fransisco, CA, Apr 2011.

3. Shan Zhou, Lei Ying, Srikanta Tirthapura, "Delay, cost and infrastructure tradeoff of epidemic routing in mobile sensor networks", *Proc. 6th International Wireless Communications and Mobile Computing Conference* **(IWCMC)** 2010, pp 1242-1246

Invited Lectures and Presentations (excluding conference presentations)

1. Dec 2016, "Algorithms for Random Sampling from Large Data Streams", **distinguished lecture** at IBM Research Lab, Bangalore, India

2. Dec 2016, “Efficient Algorithms and Software for Taming Big Transportation Data”, invited lecture at workshop on “Big Data Analysis for Transportation Engineering Systems”, held at IIT Madras, India,
3. Dec 2016, “Algorithms for Random Sampling from Large Data Streams”, Indian Institute of Science, Bangalore, India
4. Oct 2014, “Workshop on Streaming Graph Algorithms”, Sandia National Labs, New Mexico
5. July 2014, “Optimality of Clustering by Space Filling Curves”, Sandia National Labs
6. Nov 2013, “Software Tools for Big Data Analytics”, ISU College of Business
7. Nov 2013, “Uncovering Patterns in Big Data”, IBM Corporation, Rochester
8. July 2013, “Optimality of Clustering by Space Filling Curves”, Dept. of Computer Science, University of Warwick
9. May 2013, “Neighborhood Sampling for Estimating Local Properties on a Graph Stream”, Workshop on Big Data Analytics, Cambridge, UK
10. Jan 2013, “On Optimality of Clustering by Space Filling Curves”, Discrete Math Seminar, Mathematics Department, Iowa State University
11. Nov 2012, “Computing on Distributed and Incomplete Data Streams”, IBM T.J. Watson Research Center, Yorktown Heights, NY
12. Nov 2012, “On Optimality of Clustering by Space Filling Curves”, AT&T Labs Research, Florham Park, NJ
13. Jan 2012, “Random Sampling on Distributed Streams”, Meeting on Large-Scale Distributed Computation, National Institute of Informatics (NII), Shonan, Japan
14. Aug 2011, “Data Stream Computing: Platforms and Algorithms”, Indian Institute of Information Technology (IIIT) Bangalore, India
15. July 2011, “Data Stream Computing: Platforms and Algorithms”, Indian Institute of Technology (IIT) Madras, Chennai, India
16. Oct 2010, “Processing Asynchronous Data Streams”, DIMACS workshop on Network Data Streaming and Compressed Sensing, Rutgers University, New Jersey
17. Oct 2008, “Distributed Coordination Data Structures”, Oracle Corporation
18. June 2007, “Challenges in Processing Massive Data Streams”, York University, Canada
19. Dec 2006, “Range-efficient Counting of Distinct Elements over Massive Data Streams”, IIT-Kanpur Workshop on Algorithms for Data Streams
20. Aug 2006, “Challenges in Processing Massive Data Streams”, Ohio State University
21. Mar 2006, “Sketching and Processing Massive Data Streams”, Atlantic Theory Seminar (Joint Seminar between Iowa State University and University of Nebraska at Lincoln)
22. 2005, “Duplicate-Insensitive Computation of Aggregates on Data Streams”, IIT Bombay
23. 2005, “Duplicate-Insensitive Computation of Aggregates on Data Streams”, IBM Research Labs, New Delhi
24. “Duplicate-Insensitive Computation of Aggregates on Data Streams”, Bell Labs, Bangalore, Summer 2005
25. 2004, “Analysis of Link Reversal Algorithms”, University of Illinois at Urbana-Champaign
26. 2003, “Distributed Queuing and Applications”, Northeastern University, Boston, MA.
27. 2001, “Ordered Multicast and Distributed Swap”, Indian Institute of Science, Bangalore, India

C. Patents, Disclosures, and Technology Transfer

1. Graham Cormode, Flip Korn, Srikanta Tirthapura, “Computing Time-Decayed Aggregates under Smooth Decay Functions”, US Patent 9,170,984, issued October 2015

2. Mark Moir, David Dice, Srikanta Tirthapura, “System and Method for Optimizing a Code Section by Forcing a Code Section to be Executed Atomically”, filed in 2011, issued as US Patent

8,533,699, September 2013

3. Graham Cormode, Flip Korn, Srikanta Tirthapura, "Computing Time-Decayed Aggregates under Smooth Decay Functions", patent filed in 2008, issued as US Patent 8,484,269 on July 9, 2013

4. Srikanta Tirthapura, David P. Woodruff, "Random Sampling from Distributed Streams", filed in 2011, issued as patent US 8,392,434 on Mar 5, 2013.

5. Graham Cormode, Flip Korn, Srikanta Tirthapura, "Computing Time-Decayed Aggregates in Data Streams", filed in 2008, issued as Patent US 8,391,164 on March 5, 2013

6. David P. Woodruff, Srikanta Tirthapura, "Computing Correlated Aggregates Over a Data Stream", patent filed in 2011, issued as Patent US 8,908,554 on Dec 9, 2014

D. Funded Grants and Contracts

1. Anuj Sharma (PI), Soumik Sarkar (co-PI), Neal Hawkins (co-PI), Srikanta Tirthapura (co-PI), Stephen Gilbert (co-PI)
   PFI:BIC- A Smart Service System for Traffic Incident Management Enabled by Large-data Innovations (TIMELI)
   National Science Foundation, Aug 2016 – Aug 2019
   $1,000,000

2. Srikanta Tirthapura (PI)
   Unrestricted Research Award by **Northrop Grumman Corporation**, Jan 2016
   $70,000

3. Srikanta Tirthapura (PI)
   III: Small: Real-time Detection of Structures from a Massive Graph Stream
   National Science Foundation, Sep 2015 - Aug 2018
   $499,896

4. Julie Dickerson (PI), Theodore Heindel (co-PI), Carolyn Lawrence-Dill (co-PI), Patrick Schnable (co-PI)
   NRT-DESE: P3 – Predictive Phenomics of Plants
   National Science Foundation, 09/01/2015-08/31/2020
   $3000,000
   Role: Senior Personnel, working on data analytics

5. Suresh Kothari (PI), Srikanta Tirthapura (co-PI), Wei Le (co-PI), Jeremias Sauceda (co-PI), Jon Mathews (senior personnel), Nikhil Ranade (senior personnel)
   RULER: A system to identify Resource Usage Vulnerabilities in Software
   Defense Advanced Research Projects Agency (DARPA), May 1 2015 – April 30, 2019
   $4,648,672
   In my role as co-PI, I am responsible for design of scalable algorithms for analysis of graphs derived from software, and mathematical modeling of software defects. ISU's share of the grant is $2,505,194 and my share of this grant is $501,039

6. Srikanta Tirthapura (PI)
   Identifying Insider Threats Through Large-Scale Data Stream Mining
   Subaward Agreement from Virginia Tech Foundation (original contribution from **Northrop**

Grumman Corporation)
$41,092, Jan 2015 – Dec 2015

7. Srikanta Tirthapura (PI)
IBM Faculty Award
Gift from IBM, $30,000, Sep 2014

8. IBM Ph.D. Fellowship, for Ph.D. student Sneha Aman Singh
2014 Aug -2015 May, $30,000

9. Srikanta Tirthapura (PI)
IBM Faculty Award
Gift from IBM, $20,000, Nov 2013

10. Srikanta Tirthapura (PI)
Discovering Temporal Associations in a Massive Data Stream
Research Gift, **Northrop Grumman Corporation**, $70,000, Aug 2013

11. IBM Ph.D. Fellowship, for Ph.D. student Sneha Aman Singh
2013 Aug -2014 May, $30,000

12. Arun Somani (PI), Srikanta Tirthapura (co-PI), Z. J. Wang, James McCalley
II-NEW: Distributed Computing Laboratory for Large Scale System Modeling and Analysis
National Science Foundation, Sep 2012 – Aug 2015, $350,000
Amount allocated to Tirthapura: $70,000

13. Srikanta Tirthapura (PI)
Online Detection of Anomalies in Distributed Streams
NSF I/U CRC Security and Software Engineering Research Center (S2ERC)/ISU, Jan 2012, $23,148

14. Srikanta Tirthapura (PI)
Online Detection of Anomalies in Distributed Streams
Subcontract from Virginia Tech, Jan-Dec 2012, $10,000

15. Srikanta Tirthapura (PI)
NECO: Robust, Delay-Tolerant Sketches for Aggregating Sensor Data Streams
National Science Foundation, Sep 2008 – Aug 2012, $228,264

16. Srikanta Tirthapura (PI), Arun Somani (co-PI)
CSR-DMSS, SM: Design and Evaluation of a Scalable Meta-Event Dissemination System,
National Science Foundation, Sep 2008 – Aug 2012, $432,000
Amount allocated to Tirthapura: $302,400

17. Srikanta Tirthapura (PI), Daji Qiao (co-PI)
NeTS-NOSS: Distributed Algorithms for Sensor-Aided Directories to Mobile Objects
National Science Foundation, Sep 2005 – Aug 2009, Total Amount is $500,000, out of which ISU's share is $320,262, Additional REU supplement of $12,000
Amount allocated to Tirthapura: $232,262

18. Visual Analytics for Genome Biology and Comparative Genomics,
Srikanta Tirthapura (PI), Srinivas Aluru and Patrick Schnable,
Information Infrastructure Institute, Iowa State University, Spring 2008, $7,500

19. Srikanta Tirthapura (PI)
Distributed Network Monitoring through Data Stream Processing
Information Infrastructure Institute (ICube), Jan 2007, $7,000

20. Daji Qiao (PI), Yong Guan (co-PI) and Srikanta Tirthapura (co-PI)
Secure and Dependable Information Delivery in Wireless Ad Hoc and Sensor Networks
Center for Information Protection (CIP), Iowa State University, Jan 2006 – Dec 2006, $25,000

21. Srikanta Tirthapura (PI)
Foreign Travel Grant, Iowa State University, Summer 2005
Purpose: Travel to IEEE International Conference on Data Engineering (ICDE), Tokyo, $1000

22. Srikanta Tirthapura (PI)
Sketching Techniques for Efficient Data Aggregation in Sensor Networks
Information Infrastructure Institute (ICube), Iowa State University, Jan 2005, $7,000

23. Srikanta Tirthapura (PI) and Zhao Zhang
A Theoretical Foundation for Job Scheduling in Grid Computing
University Research Grant, Iowa State University, Jan 2004 – Dec 2004, $18,000
Amount allocated to Tirthapura: $9,000

24. Akhilesh Tyagi (PI), Arun Somani and Srikanta Tirthapura
Pervasive Atomic Information Semantic Web
ICube, Iowa State University, Aug 2006, $14,000

III. TEACHING / EDUCATION ACTIVITIES

In summary, out of the most recent 18 classroom courses that I taught after tenure, my mean instructor evaluation is

- At least 3.89/5 on all 18 courses
- At least 4.0/5 on 15 courses
- At least 4.5/5 on 10 courses

A. Instruction for ISU

Sem	Course Number	Course Name	Lab	TAs	Mean Instr. Eval. (Q29)	StdDev Eval
S 2016	CprE 528	Probabilistic Methods in Computer Engg.	N	0	**4.89**	**0.33**
S 2016	CprE 419	Software Tools for Large-Scale Data Analysis	Y	1/2	**4.00**	**0.71**
S 2015	CprE 528	Probabilistic Methods in Computer Engg.	N	0	**4.67**	**0.5**
S 2015	CprE 419X	Software Tools for Large-Scale Data Analysis	Y	1/2	**4.59**	**0.62**
F 2014	CprE 310	Theoretical Foundations of Computer Engg.	N	1/2	**3.86**	**0.98**
S 2014	CprE 528	Probabilistic Methods in Computer Engg.	N	0	**4.67**	**0.67**
S 2014	CprE 419X	Software Tools for Large-Scale Data Analysis	Y	1/2	**4.27**	**0.65**
S 2013	CprE 419X	Software Tools for Large-Scale Data Analysis	Y	1/2	**4.18**	**0.88**
F 2012	CprE 308	Operating Systems: Principles and Practice	Y	1/2	**4.39**	**1.03**
S 2012	CprE 310	Theoretical Foundations of Computer Engg.	N	1/2	**3.97**	**1**

S 2012	CprE 528	Probabilistic Methods in Computer Engg.	N	0	**4.83**	**0.41**
F 2011	CprE 308	Operating Systems: Principles and Practice	Y	1	**4.53**	**0.62**
S 2011	CprE 528	Probabilistic Methods in Computer Engg.	N	0	**4.58**	**0.51**
F 2010	CprE 308	Operating Systems: Principles and Practice	Y	1	**4.5**	**0.78**
S 2008	CprE 310	Theoretical Foundations of Computer Engg.	N	1	**4.71**	**0.46**
F 2008	CprE 426	Intro. to Parallel Algorithms and Programming	Y	1	**3.89**	**1.27**
F 2008	CprE 526	Intro. to Parallel Algorithms and Programming	Y	1	**4.13**	**0.99**
F 2008	CprE 528	Probabilistic Methods in Computer Engg.	N	0	**4.75**	**0.46**

B. Curriculum Development Activity for ISU

New Courses

I have developed three new courses since I came to Iowa State University.

1. **CprE 419: Software Tools for Large-Scale Data Analysis.**
   This is a senior level undergraduate course that I developed in 2013 for computer engineering and software engineering majors. This lab-intensive course trains students in the fundamentals of using and designing software tools for large-scale data analysis. Students who have taken the course have gone to become data scientists in the industry. I have taught this course multiple times, during the Spring semesters of 2013, 2014, 2015, and 2016.

   This course was highlighted in the Software Engineering Student Town Hall Meeting in Spring 2015, where the student response was "the teaching style of the instructor received significant praise, and the class subject was hailed as very interesting".

2. **CprE 528: Probabilistic Methods in Computer Engineering**
   This graduate level course that I developed in 2004 introduces the student to the basics of probabilistic analysis and randomized algorithms, and their application to a range of problems in computer engineering. I have taught this course more than five times. In some cases, I know that students who have taken this course have been able to apply the techniques learnt here in their own research.

3. **CprE 594: Algorithms for the Internet**
   This graduate level course that I developed in 2002 and 2003 focused on various algorithmic challenges relevant to the internet, including web search, network routing, and data mining. I developed and taught this course once, in Spring 2003.

Undergraduate Course Improvement/Updates

1. Developed new course material for CprE 308: Operating Systems, Principles and Practice on Cloud Computing and Virtualization, 2010-2011. I have added labs to this course on scheduling, shell programming, threads and synchronization, in 2005-2007.

2. Added programming assignments to CprE 310: Theoretical Foundations of Computer Engineering to complement theoretical material on Graphs and Counting, in 2008.

C. Service as Major Professor on Graduate Student Committees

Graduated Ph.D. students

1. **Shen Zhenhui, Ph.D., graduated April 2007**
   Thesis: *Techniques for Building a Scalable and Reliable Publish-Subscribe System*

Current Employment: **Principal Software Engineer at Akamai Technologies**
(a principal engineer is one of the highest levels in the engineering hierarchy at the company)
Winner of a ***Research Excellence Award*** from Iowa State University

2. **Bojian Xu, Ph.D., graduated Fall 2009.**
   Thesis: *A Study of Time-decayed Aggregation of Distributed Streaming Data*
   Currently an **Associate Professor at Eastern Washington University**
   Winner of a ***Research Excellence Award*** from Iowa State University
   Completed an internship at AT&T Research.
   Nominated for a Karas dissertation fellowship by Department of ECE (every two years, there is one nominee from Electrical and Computer Engineering)

3. **Bibudh Lahiri, Ph.D., graduated Summer 2012** (co-advised with Yong Guan)
   Thesis: *Detecting Exploit Patterns from Network Packet Streams*
   Current Employment: **Data Scientist at Impetus Technologies**
   Completed an internship at Siemens Research

4. **Arko Provo Mukherjee, Ph.D. graduated Spring 2015**
   Thesis: "Mining Dense Substructures from a Massive Graph"
   Current employment: **engineer in the Operating Systems software group at Microsoft Corporation.** He received the ***Teaching Excellence*** **Award** from ISU in 2012, and a ***Research Excellence Award*** in Fall 2014

5. **Sneha Aman Singh, Ph.D. graduated Fall 2015**
   Winner of an IBM Ph.D. Fellowship, 2013-2014 and 2014-2015
   and a Research Excellence Award from ISU in 2015
   Internships at Technicolor Labs, Paris, Summer 2013, and IBM Rochester, Summer 2014
   First Employment after graduation: Interdigital Inc.
   Thesis: "Techniques for Online Analysis of Large Distributed Data"

6. **Yung-Yu Chung, Ph.D. graduate Fall 2016**
   Winner of a Teaching Excellence Award from ISU in 2015
   and a Research Excellence award from ISU in 2016
   Thesis: "Topics in Data Stream Sampling and Insider Threat Detection"
   First employment after graduation: Data Scientist at LinkedIn, Inc.

Ph.D, students(in progress)

1. **Apurba Das,** Spring 2014 onwards
2. **Yu Zhang,** Spring 2015 onwards
3. **Trong Nguyen,** Fall 2016 onwards
4. **Ashraf Tahmasbi,** Fall 2016 onwards
5. **Vahid Sanei,** Spring 2016 onwards
6. **Minghung Shih,** Spring 2016 onwards

M.S. Students (completed)

1. **Puviyarasan Pandian**, M.S., graduated Summer 2008
   Current Employment: Microsoft, North Carolina

2. **Michael Svendsen**, M.S. completed Summer 2012
   Thesis: Enumerating Maximal Cliques from a Large Graph

Current Employment: Pearson Corporation

3. **Yung-Yu Chung**, M.S. completed Summer 2013
   Distinct Random Sampling from a Distributed Stream
   Current Employment: LinkedIn (Microsoft)

4. **Minh Truong**, M.S. completed Spring 2016
   Project: Endiary — Unifying Task, Calendar and Your Everyday Activities
   Current Employment: Google Inc.

5. **Sindhusha Dhulipala,** completed Fall 2016
   Project: Implementation of an Incremental Graph Connectivity Algorithm in a Streaming Environment
   Current Employment: Lockheed Martin

M.S. Students (in progress)

1. **Yesdaulet Izenov,** expected completion Fall 2017
2. **Cuong Nguyen,** expected completion Spring 2018

D. Service on other Graduate Student Committees

Name	Graduation Year	Degree	Department	Role on Committee
Tom Deering	2015	Ph.D.	ECE	Member
Ahmed Tamrawi	2015	Ph.D.	ECE	Member
Dmitry Galenko	2013	M.S.	Computer Sc.	Member
Trevor Richardson	2016	Ph.D.	ME	Member
Tanzil Rahman	2013	M.S.	Computer Sc.	Member
Pan Xu	2012	Ph.D.	IMSE	Member
Cory Kleinheksel	2015	Ph.D.	ECE	Member
Akshay Deepak	2013	Ph.D.	Computer Sc.	Member
Aaron Sterling		Ph.D.	Computer Sc.	Member
Sun Song	2012	Ph.D.	ECE	Member
Shihuan Liu	2011	Ph.D.	ECE	Member
Mohammad Fraiwan		Ph.D.	ECE	Member
Ryan LaFortune	2009	Ph.D.	Computer Sc. Rensselaer Poly	Member
Jason Stanek		Ph.D.	ECE	Member
Yogy Namara		Ph.D.	ECE	Member
Yanlin Peng		Ph.D.	ECE	Member
Ben Jackson		Ph.D.	ECE	Member
Souvik Ray		Ph.D.	ECE	Member
Wei Ke		M.S.	ECE	Member
Pang Ko		Ph.D.	ECE	Member
Fengming Wang		M.S.	Computer Sc.	Member
Ananth Kalyanaraman		Ph.D.	ECE	Member
S. Ananthapadmanabhan		M.S.	ECE	Member
Srikanth Komarina		M.S.	ECE	Member

Rohit Gupta		Ph.D.	ECE	Member
Jinghao Miao	2003	Ph.D.	ECE	Member

E. Supervision of Post-Doctoral Students and Professional Staff

Pan Xu, Jan 2013 – June 2013, "Analysis of Space Filling Curves"

F. Supervision of Undergraduate Research and Independent Study

1. Jacob Hummel (NSF REU), "Processing Data Streams from Instagram", Spring 2013
2. Alison Spiess (NSF REU), "Extracting Dense Substructures from a Graph", Fall 2012
3. Matt Mayer (NSF REU), "Exploring Health Care Data", Fall 2012
4. Timothy Kalpin (NSF REU), "Analysis of Log Files", Spring and Fall 2012
5. Ryan Alley, Independent Study, "Web Cookie Tracker", Spring 2012
6. Ben Kallaus, Freshmen Honors Mentor Program, "Processing RSS Feeds", Spring 2012
7. Harsh Goel, Independent Study, "Sorting Using MapReduce", Spring 2011
8. Shishir Gupta, Fall 2010
9. Rob Lourens, NSF REU, Fall 2010
10. Tycho Anderson, research student (NSF REU), Fall 2007 – Summer 2009, "Sensor Coverage in Three Dimensions with Constraints", Author of a research paper on Sensor Coverage in three dimensions with constraints. *Honorable mention in the Computing Research Association's Outstanding Undergraduate Researcher competition, 2008*
    Went on to **graduate school at University of Wisconsin at Madison**
11. Emmanuel Owusu, research student (NSF REU), "Wireless Mesh Networking", Spring 2008
    Went on to **graduate school at Carnegie Mellon University**
12. Patrick Mooney, research student (NSF REU), Fall 2006
13. Joseph Sloan, research student (NSF REU), Fall 2006 – Spring 2007
    Finished a Ph.D. at University of Illinois, Urbana-Champaign
    now an Assistant Professor at University of Texas, Dallas

G. Non-ISU Instruction (e.g. Short Courses, Workshops, Training)
None.

H. Other Teaching Contributions
1. Senior Design Advisor, 2016, "Unity Point Health, Healthcare Analytics", advising a group of six students, with client Unity Point Health
2. Senior Design Advisor, 2015, "Unity Point Health, Healthcare Analytics", advising a group of six students, with client Unity Point Health
3. Senior Design Advisor, 2013-2014, "Sensitive Data Project"
4. Advised Senior Design Team 2012-2013, "Stream Computing", 2012-2013
5. Advisor, final year senior design project, Spring – Fall 2005
6. Advisor, Microsoft Embedded Challenge Competition, Spring 2005
7. Mentor for Anantharaman Kalyanaraman for the *Preparing Future Faculty* (PFF) program at Iowa State University, 2003
8. Mentor for Carl Lebsack for the *Preparing Future Faculty* (PFF) program at Iowa State University, 2002

IV. EXTENSION/PROFESSIONAL PRACTICE ACTIVITIES

A. Editorial Service for Journals

1. Review Board of PVLDB, Proceedings of the Very Large Databases Endowment, 2017-2018
2. Associate Editor for Big Data, Frontiers in ICT (Information and Communications Technology), Oct 2014 –
3. Review Board of PVLDB, Proceedings of the Very Large Databases Endowment, 2015-2016
4. Review Board of PVLDB, Proceedings of the Very Large Databases Endowment, 2013-2014
5. Editor for ISRN Journal on Computational Mathematics (2011-2012)
6. Reviewer for the Following Journals
    - Journal of Parallel and Distributed Computing
    - SIAM Journal on Computing
    - ACM Transactions on Information Systems
    - ACM Transactions on Algorithms
    - Algorithmica
    - ACM Transactions on Knowledge Discovery in Data
    - Distributed Computing
    - IEEE/ACM Transactions on Networking
    - IEEE Transactions on Knowledge and Data Engineering
    - Journal of Computer and System Sciences
    - ACM Transactions on Computer Systems
    - Journal of the ACM
    - SIAM Journal on Discrete Mathematics and Applications
    - Journal of Aerospace Computing, Information, and Communication
    - Theoretical Computer Science
    - Theory of Computing Systems
    - Journal of Parallel and Distributed Computing
    - ACM Transactions on Database Systems

B. Offices Held in Professional Societies

- Senior Member of the Association for Computing Machinery (ACM), 2010 onwards (member, 2002-2010)
- Senior Member of the IEEE, 2014 onwards (member 2002-2014)

C. Grant Review Panels

- National Science Foundation, 2016, Panel Member
- National Science Foundation, 2008, Panel Member
- National Science Foundation, 2003, Panel Member

D. International Conference Organization

1. General Chair for the ACM Symposium on Principles of Distributed Computing (PODC) 2009. PODC is the premier conference in the area of Distributed Algorithms.
2. Treasurer for ACM Symposium on Principles of Distributed Computing (PODC) 2008.
3. Workshops Chair for ACM Symposium on Principles of Distributed Computing (PODC) 2007.
4. Publications Chair for the International Conference on Distributed Computing and Networking (ICDCN) 2006

E. Conference Session Chair

1. IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2015
2. ACM Symposium on Principles of Database Systems (PODS) 2012

3. ACM Symposium on Principles of Distributed Computing (PODC) 2007
4. IEEE International Conference on Distributed Computing Systems (ICDCS) 2007
5. IEEE International Conference on Distributed Computing Systems (ICDCS) 2007

F. Technical Program Committees of the following Conferences

Conference Name	Year(s)
ACM Symposium on Principles of Database Systems (PODS)	2018
International Conference on Database Theory (ICDT)	2017
International Conference on High-Performance Computing (HiPC)	2016, 2006
High Performance Graph Data Management and Processing workshop (HPGDMP)	2016
International Conference on Parallel Processing (ICPP)	2016, 2013, 2012, 2007
ACM International Conference on Information and Knowledge Management (CIKM)	2015, 2014
IEEE International Parallel & Distributed Processing Symposium (IPDPS)	2015, 2010, 2007
International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM)	2015
International Conference on Big Data Analytics (BDA)	2014, 2013, 2012
Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)	2014, 2012, 2011, 2009
International Workshop on Big Dynamic Distributed Data (BD3)	2013
International Workshop on Quality of Service (IWQoS)	2013, 2012, 2011
International Conference on Distributed Computing and Networking (ICDCN)	2011, 2009, 2008, 2006
International Conference on Distributed Computing in Sensor Systems (DCOSS)	2011, 2008
International Conference on Software Systems, (ASPIRE)	2011
International Conference on Advanced Data Mining and Applications (ADMA)	2011
Colloquium on Structural Information and Communication Complexity	2009
ACS/IEEE International Conf. on Computer Systems and Applications (AICCSA)	2008
International Workshop on Distributed Event Processing, Systems and Applications (DEPSA)	2007
IEEE Wireless Com, Symposium on Wireless Sensor Networks (WSN)	2006, 2005
Workshop on Self-Stabilizing Systems (SSS)	2006, 2005
International Conference on Principles of Distributed Systems (OPODIS)	2005
ACM Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC)	2005
IADIS International Conference on Applied Computing (AC)	2004

V. INSTITUTIONAL SERVICE ACTIVITIES

A. University-Level Service

1. Member of the Data Science Academic Coordinating Committee, which was formed to explore data science and data analytics curricular issues at Iowa State University, Spring 2016 onwards.
2. Member of the Data-Driven Science Initiative (DDSI) Steering Committee whose charge is to "help shape its charge and organize community activities that help build internal and external visibility at ISU in data driven science", 2015 fall onwards.
3. ECE representative in the steering group for the Master in Business Analytics, Spring and Fall 2014
4. College of Engineering Representative for High-Performance Computing Education initiative by LAS, 2014

B. College-Level Service

1. Representative for ECE Department, and Member of College of Engineering Committee for Presidential High Impact Hiring Initiative, Fall 2014 and Spring 2015.

   In this role I coordinated the search process for the department of Electrical and Computer Engineering in four areas – Big Data, Translational Health, Emerging Needs, and Chaired Positions, working with other faculty within the ECE department and members of the college of engineering faculty search committee. The ECE department had a substantial interest in each of these areas. We were successful in hiring one candidate in the area of Big Data (Chinmay Hegde), and one candidate in the area of Emerging Needs (Neil Gong).

2. Member of College of Engineering Committee for Presidential High Impact Hiring Initiative (Big Data) Fall 2013 and Spring 2014

C. Department-Level Service

1. Member of the ECpE Departmental Chair Search Committee, 2015-2016
2. Software Engineering Assessment Committee, 2011 - 2016
3. Software Engineering Curriculum Committee, 2011 -
4. Software Engineering Program Faculty, 2011 –
5. Graduate Committee, Software Systems Representative, 2013 – 2014
6. Chair of Software Systems Academic Area, 2013 - 2014
7. Infrastructure Planning and Development Committee (IPDC), 2011- 2013
8. Peer Teaching Evaluation Committee, 2008, 2009, 2013
9. Departmental Strategic Planning and Execution Committee, 2008 – 2009
10. Freshmen Engineering Committee, 2007
11. Curriculum Committee, 2005 – 2007
12. Graduate Admissions Committee, 2004 – 2005, 2008
13. Senior Design Advisor, 2006, 2014
14. Election and Oversight Committee, 2004 – 2005
15. Departmental Promotion and Tenure Committee, 2003 – 2004
16. Judge for Senior Design Poster Competition, Fall 2003
17. Graduate Study and Research Committee, Summer 2003