SRIKANTA TIRTHAPURA
Dept. of Electrical and Computer Engg.
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RESEARCH INTERESTS and EXPERTISE

Algorithms for Big Data, Databases, Parallel and Distributed Computing, Streaming Algorithms, Machine Learning, Graph Analytics

EDUCATION

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

ACADEMIC POSITIONS

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

OTHER 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	2009 – Summer 2010, for about 15 months
Bell Labs, Murray Hill, NJ	Summer Intern	May 1999 – Aug 1999

HONORS AND AWARDS

- 2017, Named Kingland Professor of Data Analytics at Iowa State University
- 2016, co-authored paper in Euro-Par 2016 invited to a special issue of the journal "Concurrency and Computation: Practice and Experience", for best papers from the conference
- 2015, 2014, 2013, Patent Recipient Recognition, Iowa State University College of Engg.
- 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
- 2014, 2013, IBM Faculty Awards
- 2012, Warren B. Boast Undergraduate Teaching Award, Iowa State University Dept. of ECE

- 2009, co-authored paper in SIAM Conference on Data Mining invited to a special issue of the journal "Statistical Analysis and Data Mining" for best papers from the conference
- 2004, co-authored paper in IEEE IPDPS invited to a special journal issue of "Journal of Parallel and Distributed Computing", for best papers from the conference
- 2002, co-authored paper in ACM SPAA invited to a special journal issue of "Theory of Computing Systems", for best papers from the conference

OTHER DISTINCTIONS

- 2016, Invited as a distinguished visitor to IBM Research Lab, India
- 2009, Recognition of Service Award, The Association of Computing Machinery (ACM)
- 2009, General Chair of ACM Conference on Principles of Distributed Computing (PODC)
- 1992, 27th Rank (among more than 100,000 students) in the nationwide Joint Entrance Examination for admission to the Indian Institutes of Technology, India
- 1991, 2nd Rank in the Nationwide Science Talent Search Exam, India
- 1990-96, National Talent Search Scholarship, Govt. of India

PROFESSIONAL SOCIETIES

- Senior Member, IEEE
- Senior Member, ACM

LIST of PUBLICATIONS

ARTICLES IN PEER-REVIEWED JOURNALS

1. Anupam Sanghi, Raghav Sood, Dharmendra Singh, Jayant Haritsa, Srikanta Tirthapura, "**HYDRA: A Dynamic Big Data Regenerator**", *Proc. VLDB Endowment* (PVLDB) 11(12), 1974—1977 (2018)
2. Apurba Das, Srikanta Tirthapura "**A Change-Sensitive Algorithm for Maintaining Maximal Bicliques in a Dynamic Bipartite Graph**", *IEEE Transactions on Multiscale Computing Systems (TMSCS)* 4(3), 231--242, 2018
3. Natcha Simsiri, Kanat Tangwongsan, Srikanta Tirthapura, Kun-Lung Wu, "**Work-Efficient Parallel Union-Find**", *Concurrency and Computation: Practice and Experience*, 30(4), 2018
4. Arko Mukherjee, Srikanta Tirthapura, "**Enumerating Maximal Bicliques from a Large Graph Using MapReduce**", *IEEE Transactions on Services Computing* (TSC), 10(1): 775-784 (2017)
5. Arko Mukherjee, Pan Xu, Srikanta Tirthapura, "**Enumeration of Maximal Cliques from an Uncertain Graph**", *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 29(3): 543-555, 2017 (**special issue, best papers from ICDE 2015)**
6. 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**", *IEEE Systems Journal,* 11(2), 471-482, 2017 (special issue on Insider Threat)
7. Sneha A. Singh, Divesh Srivastava, and Srikanta Tirthapura, "**Estimating Quantiles from the Union of Historical and Streaming Data**", *Proc. of the VLDB Endowment* (PVLDB) 10(4): 433-444 (2016)

8. 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
9. 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
10. Andrew McGregor, A. Pavan, Srikanta Tirthapura and David Woodruff, "**Space-Efficient Estimation of Statistics over Sub-Sampled Streams**", *Algorithmica* 74(2), 787-811, 2016
11. Sneha Aman Singh and Srikanta Tirthapura, "**An Evaluation of Streaming Algorithms for Distinct Counting over a Sliding Window**", *Frontiers in ICT, section Big Data*, 2(23), 2015
12. Srikanta Tirthapura and David Woodruff, "**A General Method for Estimating Correlated Aggregates on a Data Stream**", *Algorithmica* 73(2): pages 235-260, 2015
13. 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
14. Sneha Singh and Srikanta Tirthapura, "**Monitoring Persistent Items in the Union of Distributed Streams**", *Journal of Parallel and Distributed Computing*, 74(11): pages 3115—3127, 2014
15. Pan Xu and Srikanta Tirthapura, "**Optimality of Clustering Properties of Space Filling Curves**", *ACM Transactions on Database System*, 39(2), article 10, 2014
16. 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
17. 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
18. 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)
19. 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
20. 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
21. 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
22. O. Wodo, S. Tirthapura, S. Chaudhary, B. Ganapathysubramanian: "**Computational characterization of bulk heterojunction nanomorphology**", *Journal of Applied Physics*,112, 064316 (2012)

23. 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

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

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

26. 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)**

27. 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

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

29. 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

30. 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)**

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

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

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

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

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

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

JOURNAL ARTICLES UNDER REVIEW

37. Apurba Das, Seyed-Vahid Sanei-Mehri, Srikanta Tirthapura, "**Shared Memory Parallel Maximal Clique Enumeration on Static and Dynamic Graphs**", submitted to ACM Transactions on Parallel Computing

38. Yu Zhang, Kanat Tangwongsan, Srikanta Tirthapura, "**Fast Streaming k-Means**", submitted to IEEE Transactions on Knowledge and Data Engineering

CONFERENCE PROCEEDINGS EDITED OR CO-EDITED

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

40. 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

41. Bibudh Lahiri, Srikanta Tirthapura, "**Stream Sampling**", a chapter in *Encyclopedia of Database Systems 2009*, pp 2838-2842, published by Springer, 2009, 2nd Edition in 2018

PEER-REVIEWED COMPETITIVE CONFERENCE PROCEEDINGS

42. Rajesh Jayaram, Gokarna Sharma, Srikanta Tirthapura, and David Woodruff, "Weighted Reservoir Sampling from Distributed Streams", to appear in the ACM Symposium on Principles of Database Systems **(PODS)** 2019

43. Trong Nguyen, Ming-Hung Shih, Divesh Srivastava, Srikanta Tirthapura and Bojian Xu, "Stratified Random Sampling over Streaming and Stored Data", accepted to *International Conference on Extending Database Technology* (**EDBT**), 2019

44. Seyed-Vahid Sanei-Mehri, Apurba Das, Srikanta Tirthapura, "**Enumerating Top-k Quasi-Cliques**", Proc. **IEEE Bigdata** pages 1107-1112, 2018

45. Ellango Jothimurugesan, Ashraf Tahmasbi, Phillip Gibbons, Srikanta Tirthapura, "**Variance-Reduced Stochastic Gradient Descent on Streaming Data**", Proc. *Thirty-second Conference on Neural Information Processing Systems* **(NeurIPS)** pages 9928-9937, 2018

46. Apurba Das, Seyed-Vahid Sanei-Mehri, Srikanta Tirthapura, "**Shared Memory Parallel Maximal Clique Enumeration**", *Proc. 25th IEEE International Conference on High Performance Computing, Data, and Analytics* **(HiPC),** pages 62-71, 2018

47. Vahid Sanei, A. Erdem Sariyuce, Srikanta Tirthapura, "**Butterfly Counting in Bipartite Networks**", Proc. *ACM International Conference on Knowledge Discovery and Data Mining* **(KDD),** pages 2150-2159, 2018

48. Trong Nguyen, Srikanta Tirthapura, "**Vector Embedding of a Graph and Applications**", *Second Workshop on the Intersection of Graph Algorithms and Machine Learning* **(GraML), IPDPS** workshops, 1175-1183, 2018

49. Yu Zhang, Srikanta Tirthapura, Graham Cormode, "**Learning Graphical Models from a Distributed Stream**", Proc. *IEEE International Conference on Data Engineering* **(ICDE)** 2018

50. Pan Xu, Cuong Nguyen, Srikanta Tirthapura, "**Onion Curve: A Space-Filling Curve with Near-optimal Clustering**", short paper in Proc. *IEEE International Conference on Data Engineering* (**ICDE**) 2018

51. Anupam Sanghi, Raghav Sood, Srikanta Tirthapura, Jayant Haritsa, "**Scalable Generation of Big Data Volumes**", Proc. 21st *International Conference on Extending Database Technology* (**EDBT**), pages 301-312, 2018

52. Yu Zhang, Kanat Tangwongsan, Srikanta Tirthapura, "**Streaming Algorithms for k-Means Clustering with Fast Queries**", Proc. *IEEE International Conference on Data Engineering* (**ICDE**), pages 449-460, 2017

53. 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

54. Yung-Yu Chung and Srikanta Tirthapura, "**Distinct Random Sampling from a Distributed Stream**", Proc. *IEEE International Parallel and Distributed Processing Symposium* (**IPDPS**) 2015

55. Arko Mukherjee, Pan Xu, and Srikanta Tirthapura, "**Mining Maximal Cliques from an Uncertain Graph**", Proc. *IEEE International Conference on Data Engineering* (**ICDE**) 2015
Invited to a special issue of the Journal IEEE Transactions on Knowledge and Data Engineering (TKDE) for the best papers from ICDE 2015

56. 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

57. Arko Mukherjee and Srikanta Tirthapura, "**Enumerating Maximal Bicliques from a Large Graph using MapReduce**", in Proc. *IEEE International Congress on BigData*, 2014

58. 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

59. 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

60. 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

61. 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

62. 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

63. 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

64. Srikanta Tirthapura and David Woodruff, "**Optimal Random Sampling from Distributed Streams Revisited**", Proc. *25th International Symposium on Distributed Computing* **(DISC)** 2011, pages 283—297

65. 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

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

67. Graham Cormode, Srikanta Tirthapura and Bojian Xu, "**Time-decayed Correlated Aggregates over Data Streams**", *Proc. 9th SIAM International Conference on Data Mining* **(SDM), 2009**, pages 269—280. **Invited to a special issue of the journal Statistical Analysis and Data Mining (SDM) dedicated to the best papers from SDM 2009**

68. Bibudh Lahiri and Srikanta Tirthapura, "**Computing Frequent Elements using Gossip**", *Proc. International Colloquium on Structural Information and Communication Complexity* **(SIROCCO), 2008,** pp. 119 – 130

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

70. 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

71. 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

72. 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

73. 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

74. 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**

75. 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

76. 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

77. 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

78. 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

79. Srikanta Tirthapura and Costas Busch, "**Concurrent Counting is Harder than Queuing**," *Proc. IEEE International Parallel and Distributed Processing Symposium* **(IPDPS) 2006**

80. Srikanta Tirthapura, "**Adaptive Counting Networks**," *Proc. IEEE International Conference on Distributed Computing Systems* **(ICDCS) 2005**, pp. 241–250

81. 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

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

83. 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

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

85. 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

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

87. 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

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

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

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

91. Maurice Herlihy and Srikanta Tirthapura, "**Self-Stabilizing Distributed Queuing**," *Proc. International Symposium on Distributed Computing* **(DISC) 2001**, pp. 209–223

92. Maurice Herlihy, Srikanta Tirthapura and Roger Wattenhofer, "**Competitive Concurrent Distributed Queuing,**" *Proc. ACM Symposium on Principles of Distributed Computing* **(PODC) 2001**, pp. 127–133

93. 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

94. 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

95. 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**

96. 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**

CONFERENCE PUBLICATIONS UNDER REVIEW

97. Rajesh Jayaram, Gokarna Sharma, Srikanta Tirthapura and David P. Woodruff, "**Weighted Reservoir Sampling from Distributed Streams**"

98. Seyed-Vahid Sanei Mehri, Yu Zhang, A. Erdem Sariyuce, Srikanta Tirthapura, "**FLEET: Butterfly Estimation from a Bipartite Graph Stream**"

99. Kanat Tangwongsan, Srikanta Tirthapura, "**Parallel Streaming Random Sampling**"

100. Trong Nguyen, Ming-Hung Shih, Sai Parvathaneni, Bojian Xu, Divesh Srivastava, Srikanta Tirthapura, "**Random Sampling for Approximating Group-By Queries**"

NON-REFEREED CONFERENCE PROCEEDINGS, BULLETINS, OR REPORTS

101. 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**" 11th US National Congress on Computational Mechanics, Minneapolis, July 2011

102. 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.

103. 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

PATENTS AND TECHNOLOGY TRANSFER

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

105. 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

106. 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

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

108. 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

109. 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

INVITED LECTURES and COURSES (EXCLUDING CONFERENCE TALKS)

1. May 2019, Tutorial on "**Subgraph Counting in Massive Graphs: Methods Behind the Madness**", tutorial at the World Wide Web Conference (formerly WWW)
2. May 2018, Tutorial on "**Algorithms for Massive Stream Processing**", **Midwest Big Data Summer School**, Iowa State University
3. March 2018, Invited talk on "**Parallel Streaming in Shared Memory**" at the Workshop on Data Summarization, University of Warwick
4. Dec 2017, A 5-day course on "**Parallel and Distributed Data Stream Mining**", at the **Indian Institute of Information Technology, Allahabad, India**. This course was conducted under the **GIAN program (Global Initiative of Academic Networks),** organized by the Govt. of India.
5. July 2017, Tutorial on "**Algorithms for Big Data and Stream Processing**", Midwest Big Data Summer School, Iowa State University
6. June 2017, "**Parallel and Distributed Stream Processing**", Shonan workshop on Processing Big Data Streams, Shonan Village, Japan.
7. Dec 2016, "**Algorithms for Random Sampling from Large Data Streams**", **distinguished lecture** at **IBM Research Lab**, Bangalore, India
8. 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,
9. Dec 2016, "**Algorithms for Random Sampling from Large Data Streams**", Indian Institute of Science, Bangalore, India
10. Oct 2014, "**Workshop on Streaming Graph Algorithms**", Sandia National Labs, New Mexico
11. July 2014, "**Optimality of Clustering by Space Filling Curves**", Sandia National Labs
12. Nov 2013, "**Software Tools for Big Data Analytics**", ISU College of Business
13. Nov 2013, "**Uncovering Patterns in Big Data**", IBM Corporation, Rochester
14. July 2013, "**Optimality of Clustering by Space Filling Curves**", Dept. of Computer Science, University of Warwick
15. May 2013, "**Neighborhood Sampling for Estimating Local Properties on a Graph Stream**", Workshop on Big Data Analytics, Cambridge, UK
16. Jan 2013, "**On Optimality of Clustering by Space Filling Curves**", Discrete Math Seminar, Mathematics Department, Iowa State University
17. Nov 2012, "**Computing on Distributed and Incomplete Data Streams**", IBM T.J. Watson Research Center, Yorktown Heights, NY

18. Nov 2012, "**On Optimality of Clustering by Space Filling Curves**", AT&T Labs Research, Florham Park, NJ
19. Jan 2012, "**Random Sampling on Distributed Streams**", Meeting on Large-Scale Distributed Computation, National Institute of Informatics (NII), Shonan, Japan
20. Aug 2011, "**Data Stream Computing: Platforms and Algorithms**", Indian Institute of Information Technology (IIIT) Bangalore, India
21. July 2011, "**Data Stream Computing: Platforms and Algorithms**", Indian Institute of Technology (IIT) Madras, Chennai, India
22. Oct 2010, "**Processing Asynchronous Data Streams**", DIMACS workshop on Network Data Streaming and Compressed Sensing, Rutgers University, New Jersey
23. Oct 2008, "**Distributed Coordination Data Structures**", Oracle Corporation
24. June 2007, "**Challenges in Processing Massive Data Streams**", York University, Canada
25. Dec 2006, "**Range-efficient Counting of Distinct Elements over Massive Data Streams**", IIT-Kanpur Workshop on Algorithms for Data Streams
26. Aug 2006, "**Challenges in Processing Massive Data Streams**", Ohio State University
27. Mar 2006, "**Sketching Massive Data Streams**", Atlantic Theory Seminar (Joint Seminar between Iowa State University and University of Nebraska at Lincoln)
28. 2005, "**Duplicate-Insensitive Computation of Aggregates on Data Streams**", IIT Bombay
29. 2005, "**Duplicate-Insensitive Computation of Aggregates on Data Streams**", IBM Research, New Delhi
30. 2005, "**Duplicate-Insensitive Computation of Aggregates on Data Streams**", Bell Labs, Bangalore
31. 2004, "**Analysis of Link Reversal Algorithms**", University of Illinois at Urbana-Champaign
32. 2003, "**Distributed Queuing and Applications**", Northeastern University, Boston, MA.
33. 2001, "**Ordered Multicast and Distributed Swap**", Indian Institute of Science, Bangalore, India

FUNDED GRANTS AND CONTRACTS

1. Srikanta Tirthapura (PI)
   Predicting Surgical Site Infections Using Surgery Data Analytics
   College of Engineering Seed Grant, Iowa State University
   $15,825, 2019 Spring

2. Srikanta Tirthapura (PI)
   SPX: Collaborative Research: Multicore to Wide Area Analytics on Streaming Data,
   National Science Foundation, 2017-2020
   $308,000 (Iowa State's Share). This is a collaborative project with Carnegie Mellon University
3. Srikanta Tirthapura (PI)
   Research Experience for Undergraduates (REU) Supplement to **III: Small: Real-time Detection of Structures from a Massive Graph Stream**
   National Science Foundation, **2017-2018,** $16,000
4. 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

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

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

7. Julie Dickerson (PI), Theodore Heindel, Carolyn Lawrence-Dill, Patrick Schnable
   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

8. 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), 2015 – 2019, $4,648,672

9. Srikanta Tirthapura (PI)
   Identifying Insider Threats Through Large-Scale Data Stream Mining
   Subaward Agreement from Virginia Tech Foundation (from **Northrop Grumman** Corporation)
   $41,092, Jan 2015 – Dec 2015

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

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

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

13. 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

14. Srikanta Tirthapura (PI)
    Online Detection of Anomalies in Distributed Streams
    NSF IUCRC Security and Software Engineering Research Center (S2ERC), Jan 2012, $23,148

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

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

17. 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

18. 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

19. 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

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

21. 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

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

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

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

25. 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

GRADUATE STUDENT SUPERVISION

PH.D. STUDENTS (COMPLETED)

1. **Shen Zhenhui, Ph.D., graduated April 2007**
Thesis: *Techniques for Building a Scalable and Reliable Publish-Subscribe System*
Current Employment: **Principal Architect at Akamai Technologies**
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*
Winner of a ***Research Excellence Award*** from Iowa State University
Currently an **Associate Professor and Department Chair at Eastern Washington University**

3. **Bibudh Lahiri, Ph.D., graduated Summer 2012** (co-advised with Yong Guan)
Thesis: *Detecting Exploit Patterns from Network Packet Streams*
Current Employment: **Principal Researcher, Artificial Intelligence, Accenture Labs**

4. **Arko Provo Mukherjee, Ph.D. graduated Spring 2015**
   Thesis: "Mining Dense Substructures from a Massive Graph"
   Received a ***Teaching Excellence* Award**, and a ***Research Excellence Award*** from ISU in Fall 2014
   Current employment: **Senior Software Engineer at Microsoft Corporation**

5. **Sneha Aman Singh, Ph.D. graduated Fall 2015**
   Thesis: "Techniques for Online Analysis of Large Distributed Data"
   Winner of an IBM Ph.D. Fellowship, 2013-2014 and 2014-2015
   and a Research Excellence Award from ISU in 2015
   Current employment: **Software Engineer at Microsoft Corporation**

6. **Yung-Yu Chung, Ph.D. graduated Fall 2016**
   Thesis: "Topics in Data Stream Sampling and Insider Threat Detection"
   Winner of a Teaching Excellence Award and a Research Excellence award from ISU
   Current Employment: **Senior Software Engineer ML/Data Mining at LinkedIn**

PH.D. STUDENTS (IN PROGRESS)

1. **Apurba Das,** Spring 2014 onwards (post prelims)
2. **Yu Zhang,** Spring 2015 onwards (post qualifiers)
3. **Minghung Shih,** Spring 2016 onwards (post qualifiers)
4. **Trong Nguyen,** Fall 2016 onwards (post qualifiers)
5. **Ashraf Tahmasbi,** Fall 2016 onwards (post qualifiers)
6. **Vahid Sanei,** Spring 2017 onwards (post qualifiers)
7. **Hooman Hashemi,** Spring 2018 onwards (joint with Goce Trajcevski)

SUPERVISION OF POST-DOCTORAL STAFF

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

M.S. STUDENTS (COMPLETED)

1. **Puviyarasan Pandian**, M.S., graduated Summer 2008
   Next Stop: Microsoft, North Carolina
2. **Michael Svendsen**, M.S. completed Summer 2012
   Thesis: Enumerating Maximal Cliques from a Large Graph
   Next Stop: Pearson Corporation
3. **Yung-Yu Chung**, M.S. completed Summer 2013
   Distinct Random Sampling from a Distributed Stream
   Next Stop: Ph.D. at Iowa State
4. **Minh Truong**, M.S. completed Spring 2016
   Project: Endiary — Unifying Task, Calendar and Your Everyday Activities
   Next Stop: Google
5. **Sindhusha Dhulipala,** M.S**.** completed Fall 2016
   Project: Implementation of Incremental Graph Connectivity Algorithm in a Streaming Environment
   Next Stop: Lockheed Martin

6. **Yesdaulet Izenov,** M.S. completed Spring 2018
   Thesis: "Reducing Labeling Complexity in Streaming Data Mining"
   Next Stop: PhD student at UC Merced

M.S. STUDENTS (In Progress)

1. **Sai Sree Parvathaneni**, 2018 onwards, expected completion Summer 2019

SUPERVISION OF UNDERGRADUATE RESEARCH AND INDEPENDENT STUDY

1. Anne Steenson (NSF REU), "Event Detection in a Data Stream", Spring 2018, **Apple Inc.**
2. Nischay Venkataram (NSF REU), "Event Detection in a Data Stream", Spring 2018
3. Jacob Hummel (NSF REU), "Processing Data Streams from Instagram", Spring 2013
4. Alison Spiess (NSF REU), "Extracting Dense Substructures from a Graph", Fall 2012
5. Matt Mayer (NSF REU), "Exploring Health Care Data", Fall 2012
6. Timothy Kalpin (NSF REU), "Analysis of Log Files", Spring and Fall 2012
7. Ryan Alley, Independent Study, "Web Cookie Tracker", Spring 2012
8. Ben Kallaus, Freshmen Honors Mentor Program, "Processing RSS Feeds", Spring 2012
9. Harsh Goel, Independent Study, "Sorting Using MapReduce", Spring 2011
10. Shishir Gupta, Fall 2010
11. Rob Lourens, NSF REU, Fall 2010
12. Tycho Anderson, research student (NSF REU), Fall 2007 – Summer 2009, "Sensor Coverage in Three Dimensions with Constraints", *Honorable mention in the CRA's Outstanding Undergraduate Researcher competition, 2007*, **graduate school at University of Wisconsin**
13. Emmanuel Owusu, research student (NSF REU), "Wireless Mesh Networking", Spring 2008 **graduate school at Carnegie Mellon University**
14. Patrick Mooney, research student (NSF REU), Fall 2006
15. Joseph Sloan, research student (NSF REU), Fall 2006 – Spring 2007, graduate school at University of Illinois, **now an Assistant Professor at University of Texas, Dallas**

SERVICE ON OTHER GRADUATE STUDENT COMMITTEES

Name	Graduation Year	Degree	Department
Payas Awadhutkar		Ph.D.	ECE
Benjamin Holland		Ph.D.	ECE
Tom Deering	2015	Ph.D.	ECE
Ahmed Tamrawi	2015	Ph.D.	ECE
Dmitry Galenko	2013	M.S.	Computer Sc.
Trevor Richardson	2016	Ph.D.	ME
Tanzil Rahman	2013	M.S.	Computer Sc.
Pan Xu	2012	Ph.D.	Industrial and Manufacturing
Cory Kleinheksel	2015	Ph.D.	ECE
Akshay Deepak	2013	Ph.D.	Computer Sc.

Aaron Sterling		Ph.D.	Computer Sc.
Sun Song	2012	Ph.D.	ECE
Shihuan Liu	2011	Ph.D.	ECE
Mohammad Fraiwan		Ph.D.	ECE
Ryan LaFortune	2009	Ph.D.	Computer Sc. Rensselaer Poly
Jason Stanek		Ph.D.	ECE
Yogy Namara		Ph.D.	ECE
Yanlin Peng		Ph.D.	ECE
Ben Jackson		Ph.D.	ECE
Souvik Ray		Ph.D.	ECE
Wei Ke		M.S.	ECE
Pang Ko		Ph.D.	ECE
Fengming Wang		M.S.	Computer Sc.
Ananth Kalyanaraman		Ph.D.	ECE
S. Ananthapadmanabhan		M.S.	ECE
Srikanth Komarina		M.S.	ECE
Rohit Gupta		Ph.D.	ECE
Jinghao Miao	2003	Ph.D.	ECE

TEACHING / EDUCATION ACTIVITIES

Teaching Evaluations: Over the last 10 years, **my mean student evaluations are more than 4.0/5.0 in 18 out of 21 courses, and more than 3.85/5.0 in all 21 courses**. Detailed evaluations are available upon request.

CURRICULUM DEVELOPMENT ACTIVITY FOR IOWA STATE UNIVERSITY

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 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, including the Big Data Software Stack, including Hadoop, Spark, and Streaming. Students who have taken the course have gone to become data scientists in the industry. 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. In many cases, I know of 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.

COURSES TAUGHT at IOWA STATE UNIVERSITY

- CprE 419: Software Tools for Large-Scale Data Analysis
- CprE 528: Probabilistic Methods in Computer Engineering
- CprE 426/526: Intro. To Parallel Algorithms and Programming
- CprE 310: Theoretical Foundations of Computer Engineering
- CprE 308: Operating Systems, Principles and Practice
- CprE 185: Problem Solving in Computer Engineering

OTHER TEACHING CONTRIBUTIONS

1. A 5-day course on "**Parallel and Distributed Data Stream Mining**", at the **Indian Institute of Information Technology, Allahabad, India,** 2017 December
2. Senior Design Advisor, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019. Each year, I advised a group of about six students on projects on topics including Data Privacy, Stream Computing, Healthcare Analytics, Big Data in Finance, and helped them interact with clients, and with problem solving
3. Mentored Students for the *Preparing Future Faculty* (PFF) program at Iowa State University, 2002, 2003

PROFESSIONAL SERVICE

EDITORIAL SERVICE FOR JOURNALS

1. Review Board of PVLDB, Proceedings of the Very Large Databases Endowment, 2017-2018, 2018-2019, 2015-2016, and 2013-2014
2. Associate Editor for Big Data, Frontiers in ICT, Oct 2014 –
3. Editor for ISRN Journal on Computational Mathematics (2011-2012)
4. Reviewer for the following journals: VLDB Journal, 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, ACM Transactions on Database Systems

GRANT REVIEW, INCLUDING PANELS

- Israel Science Foundation, 2019, Proposal Review
- National Science Foundation, 2019, Panel Member
- National Science Foundation, 2018, Ad Hoc Review
- National Science Foundation, 2016, Panel Member
- National Science Foundation, 2008, Panel Member
- National Science Foundation, 2003, Panel Member

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

TECHNICAL PROGRAM COMMITTEES OF THE FOLLOWING CONFERENCES

Conference Name	Year(s)
Intl. Conference on Scientific & Statistical Database Management (SSDBM)	2019
The Web Conference (formerly WWW)	2019
IEEE International Conference on Data Engineering (ICDE)	2019
Principles and Practice of Parallel Programming (PPoPP) – Extended Review Committee	2019
ACM International Conference on Information and Knowledge Management (CIKM)	2018, 2015, 2014
International Conference on Very Large Databases (VLDB)	2019, 2017, 2015, 2013
ACM Symposium on Principles of Database Systems (PODS)	2018
International Conference on Database Theory (ICDT)	2017
International Conference on High-Performance Computing (HiPC)	2018, 2016, 2006
High Performance Graph Data Management and Processing workshop (HPGDMP)	2016
International Conference on Parallel Processing (ICPP)	2016, 2013, 2012, 2007
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	2006, 2005
Workshop on Self-Stabilizing Systems (SSS)	2006, 2005
Conference on Principles of Distributed Systems (OPODIS)	2005
ACM Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC)	2005
International Conference on Applied Computing (AC)	2004

INSTITUTIONAL SERVICE

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", 2015-2016
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

COLLEGE-LEVEL SERVICE

1. Representative for ECE Department, and Member of College of Engineering Committee for Presidential High Impact Hiring Initiative, 2014-2015. I coordinated the faculty search 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. We were successful in hiring two candidates, one in the area of Big Data (Chinmay Hegde), and one in the area of Emerging Needs (Neil Gong)
2. Member of College of Engineering Committee for Presidential High Impact Hiring Initiative (Big Data) 2013-2014

DEPARTMENT-LEVEL SERVICE

1. Member, Graduate Committee and Research Committee, 2018 onwards
2. Chair, Software Systems Academic Area, 2018 onwards
3. ECE Department Faculty Search Committee, Spring 2018
4. Chair, Software Engineering Petition Committee, 2017 onwards
5. ECE Departmental Chair Search Committee, 2015-2016
6. Software Engineering Assessment Committee, 2011 - 2016

7. Software Engineering Curriculum Committee, 2011 -
8. Software Engineering Program Faculty, 2011 –
9. Graduate Committee, Software Systems Representative, 2013 – 2014
10. Chair, Software Systems Academic Area, 2013 - 2014
11. Infrastructure Planning and Development Committee, 2011- 2013
12. Peer Teaching Evaluation Committee, 2008, 2009, 2013
13. Strategic Planning and Execution Committee, 2008 – 2009
14. Freshmen Engineering Committee, 2007
15. Curriculum Committee, 2005 – 2007
16. Graduate Admissions Committee, 2004 – 2005, 2008
17. Election and Oversight Committee, 2004 – 2005
18. Promotion and Tenure Committee, 2003 – 2004
19. Judge for Senior Design Poster Competition, Fall 2003
20. Graduate Study and Research Committee, Summer 2003