# Complete Publication List

## Surender Baswana

## Refereed Journal Articles

There are 20 articles in journals with complete details as follows.

1. **Baswana, S.**, Bhanja, K., Pandey, A. (2023): Minimum+1 (s,t)-cuts and Dual Edge Sensitivity Oracle. In *ACM Transactions on Algorithms*, 19(4): 38:1-38:41.

2. **Baswana, S.**, Gupta, S., Knollmann, T. (2022) : Mincut Sensitivity Data Structures for the Insertion of an Edge. In *Algorithmica*, 84(9): 2702-2734.

3. **Baswana, S.**, Gupta, S., Tulsyan A. (2022) : Fault Tolerant Depth First Search in Undirected Graphs: Simple Yet Efficient. In *Algorithmica*, 84(7): 2028-2049.

4. **Baswana, S.**, Choudhary, K., Hussain, M., Roditty, L. (2020): Approximate Single-Source Fault Tolerant Shortest Path. In *ACM Transactions on Algorithms*, 16(4): 44:1-44:22.

5. **Baswana, S.**, Chakrabarti, P. P., Chandran, S., Kanoria, Y., Patange, U. (2019): Centralized Admissions for Engineering Colleges in India. In *INFORMS Journal of Applied Analytics*, 49(5): 338-354 (A special issue for **the finalists for the 2018 Daniel H. Wagner Prize** for Excellence in Operations Research Practice).

6. **Baswana, S.**, Chaudhury S. R., Choudhary, K., Khan, S. (2019): Dynamic DFS tree in undirected graphs: Breaking the $O(m)$ barrier. In *SIAM Journal on Computing*, 48(4), 1335-1363.

7. **Baswana, S.**, Choudhary, K., Roditty, L. (2019): An efficient strongly connected components algorithm in fault tolerant model. *Algorithmica* 81(3): 967-985.

8. **Baswana, S.**, Gupta, M., Sen, S. (2018): Fully dynamic maximal matching in $O(\log n)$ update time (corrected version). In *SIAM Journal on Computing*, 47(3), 617-650.
DOI: https://epubs.siam.org/doi/abs/10.1137/16M1106158.

9. **Baswana, S.**, Choudhary, K., Roditty, L. (2018): Fault tolerant reachability subgraph - Generic and optimal. In *SIAM Journal on Computing*, 47(1), 80-95.

10. **Baswana, S.**, Khan, S. (2016): Incremental algorithm for DFS tree in undirected graphs. In: *Algorithmica* 79(2), 466-483.

11. **Baswana, S.**, Khanna, N. (2013): Approximate shortest paths avoiding a failed vertex - Near optimal data structures for undirected unweighted graphs. In: *Algorithmica* 66(1), 18-50.

12. **Baswana, S.**, Khurana, S., Sarkar, S. (2012). Fully Dynamic Algorithms for Graph Spanners. In: *ACM Transactions on Algorithms* 8(4): 35:1-35:51.

13. **Baswana, S.**, Kavitha, T. (2010): Faster Algorithms for All-Pairs Approximate Shortest Paths in Undirected Graphs. In: *SIAM Journal on Computing* 39(7), 2865-2896.

14. **Baswana, S.**, Kavitha, T., Mehlhorn, K., Pettie, S. (2010): Additive Spanners and $(\alpha, \beta)$-Spanners. In: *ACM Transactions on Algorithms* 7(1): 5:1-5:26.

15. **Baswana, S.**, Goyal, V., Sen, S. (2009): All-Pairs Nearly 2-Approximate Shortest Paths in $O(n^2 \operatorname{polylog} n)$ time. In: *Theoretical Computer Science* 410(1), 84-93.

16. **Baswana, S.** (2008): Streaming algorithm for graph spanners - single pass and constant processing time per edge. In: *Information Processing Letters* 106(3), 110-114.

17. **Baswana, S.**, Sen, S. (2007): A Simple Linear Time Randomized Algorithm for Computing Sparse Spanners in Weighted Graphs. In: *Random Structures and Algorithms* 30(4), 532-563.

18. **Baswana, S.**, Hariharan, R., Sen, S. (2007): Improved Decremental Algorithms for Maintaining Transitive Closure and All-pairs Shortest Paths in Digraphs. In: *Journal of Algorithms* 62(2), 74-92.

19. **Baswana, S.**, Sen, S. (2006): Approximate Distance Oracles for Unweighted graphs in $O(n^2)$ time. In: *ACM Transactions on Algorithms* 2(4), 557-577.

20. **Baswana, S.**, Sen, S. (2002): Planar Graph Blocking for External Searching. In: *Algorithmica* 34, 298-308.

## Refereed Conference Proceedings

There are 33 articles in proceedings of peer reviewed conferences. Complete details of these articles are as follows.

1. **Baswana S.**, Bhanja, K. (2024): Vital edges for $(s,t)$-mincuts: Efficient Algorithms, Compact Structures, & Optimal Sensitivity Oracles. *Proc. 52nd International Colloquium on Automata, Languages, and Programming (ICALP)*, 17:1-17:20, 2024.

2. **Baswana, S.**, Pandey, A. (2022) : Sensitivity Oracles for All-Pairs Mincuts. *Proc. 33rd ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 581-609. 2022.

3. **Baswana S.**, Bhanja, K., Pandey, A. (2022): Minimum+1 $(s,t)$-cuts and Dual Edge Sensitivity Oracle. *Proc. 50th International Colloquium on Automata, Languages, and Programming (ICALP)*, 15:1-15:20, 2022.

4. **Baswana, S.**, Gupta, S., Knollmann, T. (2020): Mincut Sensitivity Data Structures for the Insertion of an Edge. Proceedings of 28th European Symposium on Algorithms, Pisa, Italy, September 2020, 12:1-12:14.

5. **Baswana, S.**, Gupta, S., Tulsyan, A. (2019): Fault Tolerant and Fully Dynamic DFS in Undirected Graphs: Simple yet Efficient. Proceedings of 44th International Symposium on Mathematical Foundations of Computer Science (MFCS), Aachen, Germany, August 2019, 65:1-65:16.

6. **Baswana, S.**, Chakrabarti, P. P., Chandran S., Kanoria, Y., Patange, U. (2019): Centralized Admissions for Engineering Colleges in India. Proceedings of 20th ACM conference on Economics and Computation (EC), Phoenix, USA, June 2019, 323-324.

7. **Baswana, S.**, Choudhary, K., Hussain, M., Roditty, L.(2018): Approximate Single Source Fault Tolerant Shortest Path. Proceedings of 29th ACM-SIAM Symposium on Discrete Algorithms (SODA), New Orleants, USA, January 2018, 1901-1915.

8. **Baswana, S.**, Goel, A., Khan, S. (2018): Incremental DFS algorithms: a theoretical and experimental study. Proceedings of 29th ACM-SIAM Symposium on Discrete Algorithms (SODA), New Orleans, USA, January 2018, 53-72.

9. **Baswana, S.**, Choudhary, K., Roditty, L. (2017): An efficient strongly connected components algorithm in fault tolerant model. Proceedings of 41st International Colloquium on Automata, Languages and Programming (ICALP), University of Warsaw, Polland, July 2014, 72:1-72:15.

10. **Baswana, S.**, Choudhary, K., Roditty, L.(2016): Fault tolerant subgraph for single source reachability - generic and optimal. Proceedings of 48th ACM Symposium on Theory of Computing (STOC), Cambridge, MA, USA, June 2016, 509-518.

11. **Baswana, S.**, Chaudhury, S., Choudhary, K., Khan, S. (2016): Dynamic DFS tree in undirected graphs: Breaking the $O(m)$ barrier. Proceedings of 27th ACM-SIAM Symposium on Discrete Algorithms (SODA), Arlington, VA, USA, January 2016, 730-739.

12. **Baswana, S.** (2016): Randomization for Efficient Dynamic Graph Algorithms. Proceedings of 2nd International Conference on Algorithms and Discrete Applied Mathematics (CALDAM), Thiruvananthapuram, India, February 2016, 1-13.

13. **Baswana, S.**, Choudhary, K., Roditty, L.(2015): Fault tolerant reachability for directed graphs. Proceedings of 29th International Symposium on Distributed Computing (DISC), Tokyo, Japan, October 2015, 528-543.

14. **Baswana, S.**, Choudhary, K. (2015): On dynamic DFS tree in directed graphs. Proceedings of 40th International Symposium on Mathematical Foundations of Computer Science (MFCS), Milan, Italy, August 2015, 102-114.

15. **Baswana, S.**, Khan, S. (2014): Incremental algorithm for maintaining DFS tree for undirected graph. Proceedings of 41st International Colloquium on Automata, Languages and Programming (ICALP), Copenhagen, Denmark, July 2014, 136-149.

16. Chouhan, R., Roy, S., **Baswana, S.** (2013): Pertinent path profiling: Tracking interactions among relevant statements. Proceedings of the 2013 IEEE/ACM International Symposium on Code Generation and Optimization, (CGO), Shenzhen, China, February 2013, 1-12.

17. **Baswana, S.**, Lath, U., Mehta, A. (2012): Single source distance oracle for planar digraphs avoiding any failed node or link. Proceedings of 23rd ACM-SIAM Symposium on Discrete Algorithms (SODA), Kyoto, Japan, January 2012, 223-232.

18. Anand, A., **Baswana, S.**, Gupta, M., Sen, S. (2011): Maintaining approximate maximum weighted matching in fully dynamic graphs. Proceedings of 32nd Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Hyderabad, India, December 2012, 257-266.

19. **Baswana, S.**, Gupta, M., Sen, S. (2011): Fully dynamic maximal matching in $O(\log n)$ update time. Proceedings of 52nd IEEE Symposium on Foundations of Computer Science (FOCS), Palm Springs, CA, USA, October 2011, 383-392.

20. Khanna, N., **Baswana, S.** (2010): Approximate shortest paths under single vertex failure - Optimal size data structures for unweighted graphs. Proceedings of 27th International Symposium on Theoretical Aspects of Computer Science (STACS), Nancy, France, March 2010, 513-524.

21. **Baswana, S.**, Biswas, S., Doerr, B., Friedrich, T., Kurur, P., Neumann, F. (2009): Computing Single Source Shortest Paths using Single-Objective Fitness Functions. Proceedings of 10th ACM Symposium on Foundations of Genetic Algorithms, Orlando, Florida, USA, January 2009, 59-66.

22. **Baswana, S.**, Gaur, A., Sen, S., Upadhyay, J. (2008): Distance oracles for unweighted graphs : breaking the quadratic barrier with constant additive error. Proceedings of 35th International Colloquium on Automata, Languages and Programming (ICALP), Reykjavik, Iceland, July 2008, 609-621.

23. **Baswana, S.**, Sarkar, S. (2008): Fully Dynamic Polylogarithmic Algorithms for Graph Spanners. Proceedings of 19th Symposium on Discrete Algorithms (SODA), San Francisco, California, USA, January 2008, 672-681.

24. **Baswana, S.**, Mehta, S., Powar, S. (2008): Implied Set Closure and Its Application to Memory Consistency Verification. Proceedings of 20th International Conference on Computer Aided Verification (CAV), Princeton, NJ, USA, July 2008, 94-106.

25. **Baswana, S.**, Kavitha, T. (2006): Faster Construction of Approximate Distance Oracles and All-Pairs Small Stretch Paths. Proceedings of 47th Symposium on Foundations of Computer Science (FOCS), Berkeley, California, USA, October 2006, 591-602.

26. **Baswana, S.**(2006): Dynamic Algorithms for Graph Spanners. Proceedings of 14th European Symposium on Algorithms (ESA), Zurich, Switzerland, September 2006, 76-87.

27. **Baswana, S.**, Kavitha, T., Mehlhorn, K., Pettie, S. (2005): New Constructions of $(\alpha, \beta)$-Spanners and Purely Additive Spanners. Proceedings of 16th Symposium on Discrete Algorithms (SODA), Vancouver, British Columbia, Canada, January 2005, 672-681.

28. **Baswana, S.**, Goyal, V., Sen, S. (2005): All-pairs nearly 2-approximate shortest paths in $O(n^2 polylog n)$ time. Proceedings of 22nd International Symposium on Theoretical Aspects of Computer Science (STACS), Springer-Verlag, Lecture Notes in Computer Science, Stuttgart, Germany, February 2005, 666-679.
This paper was **among the selected best papers** of the conference and was invited for publication in a special issue of the journal *Theory of Computing Systems*.

29. **Baswana, S.**, Sen, S. (2004): Approximate Distance Oracles for Unweighted graphs in $O(n^2 \log n)$ time. Proceedings of 15th Symposium on Discrete Algorithms (SODA), New Orleans, Louisiana, USA, January 2004, 264-273.
    This paper was **among the selected best papers** of the conference and was invited for publication in a special issue of the journal *ACM Transaction on Algorithms*.

30. **Baswana, S.**, Sen, S. (2003): A Simple Linear Time Algorithm for Computing $(2k-1)$-Spanners of size $O(kn^{1+1/k})$ in Weighted Graphs. Proceedings of 30th International Colloquium on Automata, Languages and Programming (ICALP), Eindhoven, The Netherlands, June 2003, 384-396.
    This paper was **among the selected best papers** of the conference and was invited for publication in a special issue of the journal *Theoretical Computer Science*.

31. **Baswana, S.**, Hariharan, R., Sen, S. (2003): Maintaining All-Pairs Approximate Shortest Paths Under Deletion of Edges. Proceedings of 14th Symposium on Discrete Algorithms (SODA), Baltimore, Maryland, USA, January 2003, 394-403.

32. **Baswana, S.**, Hariharan, R., Sen, S. (2002): Improved Decremental Algorithms for Maintaining Transitive Closure and All-pairs Shortest Paths in Digraphs. Procedings of 34th ACM Symposium on Theory of Computing (STOC), Montreal, Quebec, Canada, May 2002, 117-123.

33. **Baswana, S.**, Sen, S. (2000): Planar Graph Blocking for External Searching. Proceedings of 20th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), New Delhi, India, December 2000, 252-263.


## Book Chapters

There are 4 book chapters with details as follows.

- **Baswana, S.**, Sen, S. (2016): Randomized graph algorithms - Techniques and analysis. In: Handbook of Graph Algorithms and Applications, ISBN 9781584885979. Krishnaiyan Thulasiraman, Arun Kumar Somani, Sarma Vrudhula (Ed.), CRC Press.

- **Baswana, S.**, Gupta, M., Sen, S. (2015): Matching in Dynamic Graphs. In: Encyclopedia of Algorithms. Ming Yang Kao (Ed.), Springer, Online ISBN 9783642278488, DOI 10.1007/978-3-642-27848-8_10-2.

- **Baswana, S.**, Sen, S.(2004): Randomized graph data-structures for approximate shortest path problem. In: Handbook of Data Structures and Applications, ISBN 1584884355. Dinesh Mehta and Sartaj Sahni (Ed.), CRC Press.

- **Baswana, S.**, Sen, S. (2008): Simple Algorithms for Spanners in Weighted Graphs. In: Encyclopedia of Algorithms. Ming Yang Kao (Ed.), Springer, Online ISBN 9780387301624, DOI 10.1007/978-0-387-30162-4_10.