Sudeshna Kolay

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Dept. of Computer Science and Engineering
Indian Institute of Technology, Kharagpur
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Date Of Birth : 8 December, 1989
Gender : Female
Nationality : Indian

Research Interests : Theoretical Computer Science with focus on Parameterized Complexity, Algorithm Design, Computational Geometry, Graph Theory

Work Experience :

Jan 2017-Jan 2019 — Postodoctorate, Algorithms and Visualization Group
Eindhoven University of Technology, Netherlands.

Mar 2019-Oct 2019 — Postodoctorate, Department of Computer Science
Ben-Gurion University of the Negev, Israel.

Education :

PhD in Computer Science (May 17, 2017),
The Institute of Mathematical Sciences, India.
Thesis Title: *Parameterized Complexity of Graph Partitioning and Geometric Covering*

M. Sc. in Theoretical Computer Science,
The Institute of Mathematical Sciences, India.
Masters' Thesis (Survey): *PTASes For Problems On Planar Graphs*
July 2011-July 2013.

B. Sc. (Honours) in Mathematics and Computer Science,
Chennai Mathematical Institute, India.
July 2008-July 2011.

Publications

Refereed Journal Publications:

1. S. Kolay, F. Panolan, S. Saurabh: "Communication Complexity and Graph Families", *ACM Transactions on Computation Theory*, pp. 11(2): 11:1-11:28 (2019) (A preliminary version appeared in *Proc. 42nd International Symposium on Mathematical Foundations of Computer Science (MFCS) 2017*, pp. 13:1-13:13).

2. S. Kolay, R. Pandurangan, F. Panolan, V. Raman, P. Tale: "Harmonious coloring: Parameterized algorithms and upper bounds", *Theoretical Computer Science*, pp. 772: 132-142 (2019) (A preliminary version appeared in *Proc. 42nd International Workshop on Graph-Theoretic Concepts in Computer Science (WG) 2016*, pp. 245-256).

3. P. Ashok, F. V. Fomin, S. Kolay, S. Saurabh, M. Zehavi: "Exact Algorithms for Terrain Guarding", *ACM Transactions on Algorithms*, pp. 14(2): 25:1-25:20 (2018) (A preliminary version appeared in *Proc. 33rd International Symposium on Computational Geometry (SoCG) 2017*, pp. 11:1-11:15).

4. P. Ashok, A. Dudeja, S. Kolay, Saket Saurabh: "Exact and FPT Algorithms for Max-Conflict Free Coloring in Hypergraphs", *Siam Journal on Discrete Mathematics*, pp. 32(2): 1189-1208 (2018) (A preliminary version appeared in *Proc. 26th International Symposium on Algorithms and Computation (ISAAC) 2015*, pp. 271-282).

5. P. Ashok, S. Kolay, S. Saurabh: "Multivariate Complexity Analysis of Geometric Red Blue Set Cover", *Algorithmica*, pp. 79(3): 667-697 (2017) (A preliminary version appeared in *Proc. 12th Latin American Symposium on Theoretical Informatics (LATIN) 2016*, pp. 96-109).

6. S. Kolay, D. Lokshtanov, F. Panolan, S. Saurabh: "Quick but Odd Growth of Cacti", *Algorithmica*, pp. 79(1): 271-290 (2017) (A preliminary version appeared in *Proc. 10th International Symposium on Parameterized and Exact Computation (IPEC) 2015*, pp. 258-269).

7. P. Ashok, S. Kolay, S. M. Meesum, S. Saurabh: "Parameterized complexity of Strip Packing and Minimum Volume Packing", *Theoretical Computer Science 661, 2017*, pp. 56-64.

8. E. Ghosh, S. Kolay, M. Kumar, P. Misra, F. Panolan, A. Rai, M. S. Ramanujan : "Faster Parameterized Algorithms for Deletion to Split Graphs", *Algorithmica 71(4), 2015*, pp. 989-1006 (A preliminary version appeared in *Proc. 13th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT) 2012*, pp. 107-118).

9. G. K. Das, M. De, S. Kolay, S.C. Nandy, S. Sur-Kolay: "Approximation Algorithms for Maximum Independent Set of a Unit Disk Graph", *Information Processing Letters 115(3), 2015*, pp. 439-446.

In Peer-reviewed Conferences not covered above:

1. H. L. Bodlaender, S. Kolay, A. Pieterse: "Parameterized Complexity of Conflict-Free Graph Coloring", *Proc. Algorithms and Data Structures - 16th International Symposium (WADS) 2019*, pp. 168-180.

2. A. Agrawal, S. Kolay, J. Madathil, S. Saurabh: "Parameterized Complexity Classification of Deletion to List Matrix-Partition for Low-Order Matrices", *Proc. 30th International Symposium on Algorithms and Computation (ISAAC) 2019*, pp. 41:1-41:14.

3. A. Bishnu, A. Ghosh, S. Kolay, G. Mishra, S. Saurabh: "Parameterized Query complexity of some NP-hard problems", *Proc. 29th International Symposium on Algorithms and Computation (ISAAC) 2018*, pp. 25:1-25:12.

4. M.D. Berg, H. Bodlaender, S. Kisfaludi-Bak, S. Kolay: "An ETH-Tight Exact Algorithm for Euclidean TSP", *59th Annual IEEE Symposium on Foundations of Computer Science (FOCS) 2018*, pp. 450-461.

5. A. Ghosh, S. Kolay, G. Mishra: "FPT algorithms for embedding into low complexity graphic metrics", *Proc. 26th Annual European Symposium on Algorithms (ESA) 2018*, pp. 35:1-35:13.

6. J. D. Boissonnat, K. Dutta, A. Ghosh, S. Kolay: "Tight Kernels for Covering and Hitting: Point Hyperplane Cover and Polynomial Point Hitting Set", *Proc. 13th Latin American Symposium on Theoretical Informatics (LATIN) 2018*, pp. 187-200.

7. J. D. Boissonnat, K. Dutta, A. Ghosh, S. Kolay: "Kernelization of the Subset General Position Problem in Geometry", *Proc. 42nd International Symposium on Mathematical Foundations of Computer Science (MFCS) 2017*, pp. 25:1-25:13.

8. A. Agrawal, S. Kolay, S. Saurabh, R. Sharma: "Kernelizing Buttons and Scissors", *Proc. 28th Canadian Conference on Computational Geometry (CCCG) 2016*, pp. 279-286.

9. S. Kolay, F. Panolan, V. Raman, S. Saurabh: "Parameterized Algorithms on Perfect Graphs for Deletion to (r, ℓ)-graphs", *Proc. 41st International Symposium on Mathematical Foundations of Computer Science (MFCS) 2016*, pp. 75:1-75:13.

10. F. Fomin, S. Kolay, D. Lokshtanov, F. Panolan, S. Saurabh: "Subexponential Algorithms for rectilinear Steiner tree and arborescence problems", *Proc. 32nd International Symposium on Computational Geometry (SoCG) 2016*, pp. 39:1-39:15.

11. A. Agrawal, D. Lokshtanov, S. Kolay, S. Saurabh: "A faster FPT Algorithm and a smaller kernel for Block Graph Vertex Deletion", *Proc. 12th Latin American Symposium on Theoretical Informatics (LATIN) 2016*, pp. 1-13.

12. S. Kolay, F. Panolan: "Parameterized Algorithms for Deletion to (r, ℓ)-graphs", *Proc. 35th IARCS Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2015*, pp. 420-433.

13. P. Ashok, S. Kolay, N. Misra, S. Saurabh: "Unique Covering Problems with Geometric Sets", *Proc. 21th Annual International Computing and Combinatorics Conference (COCOON) 2015*, pp. 548-558.

14. S. Kolay, P. Misra, M. S. Ramanujan, S. Saurabh : "Parameterized Approximation via d-Skew Symmetric Multicut", *Proc. 39th International Symposium on Mathematical Foundations of Computer Science (MFCS) 2014*, pp. 457-468.

15. A. Giannopoulou, S. Kolay, S Saurabh : "New Lower Bound on Max-Cut of Hypergraphs with an application to r-Set Splitting", *Proc. 10th Latin American Symposium on Theoretical Informatics (LATIN) 2012*, pp. 408-419.

Symposia/Workshops Attended (Invitation only)

1. Keynote Talk at Workshop on Fixed Parameter Computation Geometry 2018, May 14-18, 2018
   at Lorentz Center, Leiden, Netherlands.

2. NII Shonan Meeting on Geometric Graphs: Theory and Applications, October 30 November 2, 2017
   at Shonan Village Center, Japan.

3. Invited Short Talk at 2nd ASLLA Symposium, Space Tessellation and Packing: Theory and Applications, September 19-22, 2017
   at Gangneung, Korea.

4. Workshop on Fixed Parameter Computational Geometry 2016, April 4-8, 2016
   at Lorentz Center, Leiden, Netherlands.

5. Workshop on Kernels, June 1-4, 2015
   at Sophus Lie Conference Center, Norway.

6. Workshop on Kernels, April 10-12, 2013
   at University of Warsaw, Poland.

7. Seminar on Bidimensional Structures: Algorithms, Combinatorics and Logic, March 17-22, 2013
   at Dagstuhl, Germany.

References

- Prof. Saket Saurabh (PhD Advisor)
  Institute of Mathematical Sciences, Chennai and Institute of Informatics, University of Bergen, Norway
  email: saket@imsc.res.in, saket.saurabh@uib.no
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- Prof. Dr. Mark de Berg (Postdoctoral Advisor)
  Eindhoven University of Technology, Netherlands
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