Yusuke Kobayashi

Research Institute for Mathematical Sciences,
Kyoto University,
Kyoto 606-8502, Japan.

Email: yusuke@kurims.kyoto-u.ac.jp
Web: http://www.kurims.kyoto-u.ac.jp/~yusuke/

Personal

Born on August 2, 1982.

Japanese Citizen.

Research Interests

Graph algorithm, discrete structure, combinatorial optimization, and graph theory.

Education

Bachelor of Engineering from Faculty of Engineering, University of Tokyo, March 2005.

Master of Information Science and Technology from Graduate School of Information Science and Technology, University of Tokyo, March 2007.

Ph.D in Information Science and Technology from Graduate School of Information Science and Technology, University of Tokyo, March 2010.

Dissertation Title: *Algorithms for Finding Disjoint Paths: Acceleration and Extension*

Adviser: Professor Kazuo Murota

Academic Appointments

Research Fellow of the Japan Society for the Promotion of Science (DC1), April 2007–March 2010.

Assistant Professor at University of Tokyo, April 2010–March 2015.

Associate Professor at University of Tsukuba, April 2015–March 2018.

Associate Professor at Kyoto University, April 2018–present.

Publications

Journal Articles

1. Y. Kobayashi, K. Murota, and K. Tanaka: Operations on M-convex functions on jump systems, *SIAM Journal on Discrete Mathematics*, 21 (2007), pp. 107–129.
2. Y. Kobayashi and K. Murota: Induction of M-convex functions by linking systems, *Discrete Applied Mathematics*, 155 (2007), pp. 1471–1480.

3. Y. Kobayashi and K. Takazawa: Even factors, jump systems, and discrete convexity, *Journal of Combinatorial Theory, Series B*, 99 (2009), pp. 139–161.

4. Y. Kobayashi: Induced disjoint paths problem in a planar digraph, *Discrete Applied Mathematics*, 157 (2009), pp. 3231–3238.

5. S. Iwata and Y. Kobayashi: An algorithm for minimum cost arc-connectivity orientations, *Algorithmica*, 56 (2010), pp. 437–447.

6. Y. Kobayashi: A simple algorithm for finding a maximum triangle-free 2-matching in subcubic graphs, *Discrete Optimization*, 7 (2010), pp. 197–202.

7. Y. Kobayashi and C. Sommer: On shortest disjoint paths in planar graphs, *Discrete Optimization*, 7 (2010), pp. 234–245.

8. K. Kawarabayashi and Y. Kobayashi: Algorithms for finding an induced cycle in planar graphs, *Combinatorica*, 30 (2010), pp. 715–734.

9. K. Kawarabayashi and Y. Kobayashi: An improved algorithm for the half-disjoint paths problem, *SIAM Journal on Discrete Mathematics*, 25 (2011), pp. 1322–1330.

10. S. Imahori, Y. Miyamoto, H. Hashimoto, Y. Kobayashi, M. Sasaki, and M. Yagiura: The complexity of the node capacitated in-tree packing problem, *Networks*, 59 (2012), pp. 13–21.

11. K. Kawarabayashi, Y. Kobayashi, and B. Reed: The disjoint paths problem in quadratic time, *Journal of Combinatorial Theory, Series B*, 102 (2012), pp. 424–435.

12. K. Bérczi and Y. Kobayashi: An algorithm for $(n-3)$-connectivity augmentation problem: jump system approach, *Journal of Combinatorial Theory, Series B*, 102 (2012), pp. 565–587.

13. K. Kawarabayashi and Y. Kobayashi: A linear time algorithm for the induced disjoint paths problem in planar graphs, *Journal of Computer and System Sciences*, 78 (2012), pp. 670–680.

14. K. Kawarabayashi and Y. Kobayashi: An immersion of a square in 4-edge-connected graphs, *Progress in Informatics*, 9 (2012), pp. 35–36.

15. Y. Yoshida and Y. Kobayashi: Testing the (s,t)-disconnectivity of graphs and digraphs, *Theoretical Computer Science*, 434 (2012), pp. 98–113.

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17. Y. Kobayashi and Y. Yoshida: Algorithms for finding a maximum non-k-linked graph, *SIAM Journal on Discrete Mathematics*, 26 (2012), pp. 591–604.

18. Y. Kobayashi, J. Szabó, and K. Takazawa: A proof of Cunningham's conjecture on restricted subgraphs and jump systems, *Journal of Combinatorial Theory, Series B*, 102 (2012), pp. 948–966.

19. K. Kawarabayashi and Y. Kobayashi: Fixed-parameter tractability for the subset feedback set problem and the S-cycle packing problem, *Journal of Combinatorial Theory, Series B*, 102 (2012), pp. 1020–1034.

20. Y. Kobayashi, K. Murota, and R. Weismantel: Cone superadditivity of discrete convex functions, *Mathematical Programming, Series A*, 135 (2012), pp. 25–44.

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27. Y. Kobayashi: The complexity of minimizing the difference of two $\mathrm{M}^\natural$-convex set functions, *Operations Research Letters*, 43 (2015), pp. 573–574.

28. K. Ishihara and Y. Kobayashi: Routing algorithms under mutual interference constraints, *Journal of the Operations Research Society of Japan*, 58 (2015), pp. 209–222.

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32. K. Bérczi, T. Király, and Y. Kobayashi: Covering intersecting bi-set families under matroid constraints, *SIAM Journal on Discrete Mathematics*, 30 (2016), pp. 1758–1774.

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34. Y. Kobayashi and S. Toyooka: Finding a shortest non-zero path in group-labeled graphs via permanent computation, *Algorithmica*, 77 (2017), pp. 1128–1142.

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37. K. Bérczi and Y. Kobayashi: An algorithm for identifying cycle-plus-triangles graphs, *Discrete Applied Mathematics*, 226 (2017), pp. 10–16.

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39. H. Nishiyama, Y. Kobayashi, Y. Yamauchi, S. Kijima, and M. Yamashita: The parity Hamiltonian cycle problem, *Discrete Mathematics*, 341 (2018), pp. 606–626.

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41. K. Kawarabayashi and Y. Kobayashi: All-or-nothing multicommodity flow problem with bounded fractionality in planar graphs, *SIAM Journal on Computing*, 47 (2018), pp. 1483–1504.

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60. Y. Kobayashi, Y. Okamoto, Y. Otachi, and Y. Uno: Linear-time recognition of double-threshold graphs, *Algorithmica*, 84 (2022), pp. 1163–1181.

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71. T. Hatanaka, F. Hommelsheim, T. Ito, Y. Kobayashi, M. Mühlenthaler, and A. Suzuki: Fixed-parameter algorithms for graph constraint logic, *Theoretical Computer Science*, 959 (2023), 113863.

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Refereed Conference Proceedings

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2. Y. Kobayashi and K. Kawarabayashi: Algorithms for finding an induced cycle in planar graphs and bounded genus graphs, *Proceedings of the 20th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2009)*, 2009, pp. 1146–1155.

3. S. Imahori, Y. Miyamoto, H. Hashimoto, Y. Kobayashi, M. Sasaki, and M. Yagiura: The complexity of the node capacitated in-tree packing problem, *Proceedings of the International Network Optimization Conference 2009*, 2009.

4. Y. Kobayashi and C. Sommer: On shortest disjoint paths in planar graphs, *Proceedings of the 20th International Symposium on Algorithms and Computation (ISAAC 2009), LNCS 5878*, 2009, pp. 293–302.

5. K. Kawarabayashi and Y. Kobayashi: The edge disjoint paths problem in Eulerian graphs and 4-edge-connected graphs, *Proceedings of the 21st Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2010)*, 2010, pp. 345–353.

6. K. Kawarabayashi and Y. Kobayashi: An $O(\log n)$-approximation algorithm for the disjoint paths problem in Eulerian planar graphs and 4-edge-connected planar graphs, *Proceedings of the 13th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2010), LNCS 6302*, 2010, pp. 274–286.

7. K. Kawarabayashi and Y. Kobayashi: Improved algorithm for the half-disjoint paths problem, *Proceedings of the 13th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2010), LNCS 6302*, 2010, pp. 287–297.

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9. K. Kawarabayashi and Y. Kobayashi: Breaking $O(n^{1/2})$-approximation algorithms for the edge-disjoint paths problem with congestion two, *Proceedings of the 43rd ACM Symposium on Theory of Computing (STOC 2011)*, 2011, pp. 81–88.

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