

Yuni Iwamasa

Department of Mathematics,
Graduate School of Science,
Kobe University,
Kobe, 657-8501, Japan.

Email: iwamasa@math.kobe-u.ac.jp
Homepage: <https://yuniwamasa.github.io/>

Personal

Born on December 26, 1991.

Japanese Citizen.

Research Interest

Combinatorial Optimization

Discrete Structure

Discrete Mathematics

Education

Ph.D of Information Science and Technology from Graduate School of Information Science and Technology, The University of Tokyo, March 2019.

Dissertation Title: *Discrete Convexity in Valued Constraint Satisfaction Problems: An Approach by Quadratic M-Convexity*

Supervisor: Professor Hiroshi Hirai

Master of Information Science and Technology from Graduate School of Information Science and Technology, The University of Tokyo, March 2016.

Bachelor of Engineering from Faculty of Engineering, The University of Tokyo, March 2014.

Academic Appointments

Associate Professor at Kobe University, October 2025 – present.

Assistant Professor at Kyoto University, March 2020 – September 2025.

Research Fellow of the Japan Society for the Promotion of Science (PD), April 2019 – February 2020.

Research Fellow of the Japan Society for the Promotion of Science (DC1), April 2016 – March 2019.

Publications

Journal Articles

- [J19] Takehiro Ito, [Yuni Iwamasa](#), Yasuaki Kobayashi, Yu Nakahata, Yota Otachi, Masahiro Takahashi, and Kunihiro Wasa. Independent set reconfiguration on directed graphs. *SIAM Journal on Discrete Mathematics*, to appear.
- [J18] Soichiro Fujii, [Yuni Iwamasa](#), Kei Kimura, Yuta Nozaki, and Akira Suzuki. Homotopy types of Hom complexes of graph homomorphisms whose codomains are cycles. *Journal of Applied and Computational Topology*, 9:21, 2025.

- [J17] Takehiro Ito, [Yuni Iwamasa](#), Yusuke Kobayashi, Shun-ichi Maezawa, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Reconfiguration of colorings in triangulations of the sphere. *Journal of Computational Geometry*, 16(1):253–294, 2025.
- [J16] Takehiro Ito, [Yuni Iwamasa](#), Naonori Kakimura, Naoyuki Kamiyama, Yusuke Kobayashi, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Reforming an envy-free matching. *Algorithmica*, 87:594–620, 2025.
- [J15] Takehiro Ito, [Yuni Iwamasa](#), Naonori Kakimura, Yusuke Kobayashi, Shun-ichi Maezawa, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Rerouting planar curves and disjoint paths. *ACM Transactions on Algorithms*, 21(2):20:1–20:37, 2025.
- [J14] Hiroshi Hirai, [Yuni Iwamasa](#), Taihei Oki, and Tasuku Soma. Algebraic combinatorial optimization on the degree of determinants of noncommutative symbolic matrices. *Mathematical Programming, Series A*, 213:941–984, 2025.
- [J13] [Yuni Iwamasa](#). Characterizations of the set of integer points in an integral bisubmodular polyhedron. *Discrete Mathematics*, 347(4):113855, 2024.
- [J12] [Yuni Iwamasa](#). A combinatorial algorithm for computing the entire sequence of the maximum degree of minors of a generic partitioned polynomial matrix with 2×2 submatrices. *Mathematical Programming, Series A*, 204:27–79, 2024.
- [J11] Takehiro Ito, [Yuni Iwamasa](#), Yasuaki Kobayashi, Yu Nakahata, Yota Otachi, and Kunihiro Wasa. Reconfiguring (non-spanning) arborescences. *Theoretical Computer Science*, 943:131–141, 2023.
- [J10] Takehiro Ito, [Yuni Iwamasa](#), Naonori Kakimura, Naoyuki Kamiyama, Yusuke Kobayashi, Shun-ichi Maezawa, Yuta Nozaki, Yoshio Okamoto, Kenta Ozeki. Monotone edge flips to an orientation of maximum edge-connectivity à la Nash-Williams. *ACM Transactions on Algorithms*, 19(1):6:1–6:22, 2023.
- [J9] Hiroshi Hirai and [Yuni Iwamasa](#). Reconstructing phylogenetic trees from multipartite quartet systems. *Algorithmica*, 84:1875–1896, 2022.
- [J8] Hiroshi Hirai and [Yuni Iwamasa](#). A combinatorial algorithm for computing the rank of a generic partitioned matrix with 2×2 submatrices. *Mathematical Programming, Series A*, 195:1–37, 2022.
- [J7] [Yuni Iwamasa](#) and Kenjiro Takazawa. Optimal matroid bases with intersection constraints: valuated matroids, M-convex functions, and their applications. *Mathematical Programming, Series A*, 194:229–256, 2022.
- [J6] Hiroshi Hirai, [Yuni Iwamasa](#), Kazuo Murota, and Stanislav Žitný. A tractable class of binary VCSPs via M-convex intersection. *ACM Transactions on Algorithms*, 15(3):44:1–44:41, 2019.
- [J5] [Yuni Iwamasa](#), Kazuo Murota, and Stanislav Žitný. Discrete convexity in joint winner property. *Discrete Optimization*, 28:78–88, 2018.
- [J4] [Yuni Iwamasa](#). The quadratic M-convexity testing problem. *Discrete Applied Mathematics*, 238:106–114, 2018.
- [J3] [Yuni Iwamasa](#). On a general framework for network representability in discrete optimization. *Journal of Combinatorial Optimization*, 36(3):678–708, 2018.
- [J2] Hiroshi Hirai and [Yuni Iwamasa](#). On k -submodular relaxation. *SIAM Journal on Discrete Mathematics*, 30(3):1726–1736, 2016.
- [J1] [Yuni Iwamasa](#) and Naoki Masuda. Networks maximizing the consensus time of voter models. *Physical Review E*, 90, 012816, 2014.

Proceedings

- [C20] [Yuni Iwamasa](#), Tomoki Matsuda, Shunya Morihira, and Hanna Sumita. A general framework for finding diverse solutions via network flow and its applications. In *Proceedings of the 36th International Symposium on Algorithms and Computation (ISAAC 2025)*, to appear.
- [C19] [Yuni Iwamasa](#), Taihei Oki, and Tasuku Soma. Algorithmic aspects of semistability of quiver representations. In *Proceedings of the 52nd EATCS International Colloquium on Automata, Languages and Programming (ICALP 2025)*, LIPIcs 334, pp.99:1–99:18, 2025.
- [C18] Tesshu Hanaka, [Yuni Iwamasa](#), Yasuaki Kobayashi, Yuto Okada, and Rin Saito. Basis sequence reconfiguration in the union of matroids. In *Proceedings of the 35th International Symposium on Algorithms and Computation (ISAAC 2024)*, LIPIcs 322, pp.38:1–38:16, 2024.
- [C17] [Yuni Iwamasa](#), Yusuke Kobayashi, and Kenjiro Takazawa. Finding a maximum restricted t -matching via Boolean edge-CSP. In *Proceedings of the 32nd Annual European Symposium on Algorithms (ESA 2024)*, LIPIcs 308, pp.75:1–75:15, 2024.
- [C16] Takehiro Ito, [Yuni Iwamasa](#), Naonori Kakimura, Yusuke Kobayashi, Shun-ichi Maezawa, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Rerouting planar curves and disjoint paths. In *Proceedings of the 50th EATCS International Colloquium on Automata, Languages and Programming (ICALP 2023)*, LIPIcs 261, pp.81:1–81:19, 2023.
- [C15] Takehiro Ito, [Yuni Iwamasa](#), Naoyuki Kamiyama, Yasuaki Kobayashi, Yusuke Kobayashi, Shun-ichi Maezawa, and Akira Suzuki. Reconfiguration of time-respecting arborescences. In *Proceedings of the 18th Algorithms and Data Structures Symposium (WADS 2023)*, LNCS 14079, pp.521–532, 2023.
- [C14] Takehiro Ito, [Yuni Iwamasa](#), Yusuke Kobayashi, Shun-ichi Maezawa, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Reconfiguration of colorings in triangulations of the sphere. In *Proceedings of the 39th International Symposium on Computational Geometry (SoCG 2023)*, LIPIcs 258, pp.43:1–43:16, 2023.
- [C13] Soichiro Fujii, [Yuni Iwamasa](#), Kei Kimura, and Akira Suzuki. Algorithms for coloring reconfiguration under recolorability digraphs. In *Proceedings of the 33rd International Symposium on Algorithms and Computation (ISAAC 2022)*, LIPIcs 248, pp.4:1–4:19, 2022.
- [C12] Takehiro Ito, [Yuni Iwamasa](#), Yasuaki Kobayashi, Yu Nakahata, Yota Otachi, Masahiro Takahashi, and Kunihiro Wasa. Independent set reconfiguration on directed graphs. In *Proceedings of the 47th International Symposium on Mathematical Foundations of Computer Science (MFCS 2022)*, LIPIcs 241, pp.58:1–58:15, 2022.
- [C11] Takehiro Ito, [Yuni Iwamasa](#), Naonori Kakimura, Naoyuki Kamiyama, Yusuke Kobayashi, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Reforming an envy-free matching. In *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI 2022)*, pp.5084–5091, 2022.
- [C10] Takehiro Ito, [Yuni Iwamasa](#), Naonori Kakimura, Naoyuki Kamiyama, Yusuke Kobayashi, Shun-ichi Maezawa, Yuta Nozaki, Yoshio Okamoto, and Kenta Ozeki. Monotone edge flips to an orientation of maximum edge-connectivity à la Nash-Williams. In *Proceedings of the 2022 ACM-SIAM Symposium on Discrete Algorithms (SODA 2022)*, pp.1342–1355, 2022.
- [C9] Takehiro Ito, [Yuni Iwamasa](#), Yasuaki Kobayashi, Yu Nakahata, Yota Otachi, and Kunihiro Wasa. Reconfiguring directed trees in a digraph. In *Proceedings of the 27th International Computing and Combinatorics Conference (COCOON 2021)*, LNCS 13025, pp.343–354, 2021.
- [C8] Soichiro Fujii, [Yuni Iwamasa](#), and Kei Kimura. Quantaloidal approach to constraint satisfaction. In *Proceedings of the 4th International Conference on Applied Category Theory (ACT 2021)*, EPTCS 372, pp.289–305, 2022.

- [C7] Yuni Iwamasa. A combinatorial algorithm for computing the degree of the determinant of a generic partitioned polynomial matrix with 2×2 submatrices. In *Proceedings of the 22nd Conference on Integer Programming and Combinatorial Optimization (IPCO 2021)*, LNCS 12707, pp.119–133, 2021.
- [C6] Yuni Iwamasa and Kenjiro Takazawa. Optimal matroid bases with intersection constraints: valuated matroids, M-convex functions, and their applications. In *Proceedings of the 16th Annual Conference on Theory and Applications of Models of Computation (TAMC 2020)*, LNCS 12337, pp.156–167, 2020.
- [C5] Hiroshi Hirai and Yuni Iwamasa. A combinatorial algorithm for computing the rank of a generic partitioned matrix with 2×2 submatrices. In *Proceedings of the 21st Conference on Integer Programming and Combinatorial Optimization (IPCO 2020)*, LNCS 12125, pp.196–208, 2020.
- [C4] Hiroshi Hirai and Yuni Iwamasa. Reconstructing phylogenetic tree from multipartite quartet system. In *Proceedings of the 29th International Symposium on Algorithms and Computation (ISAAC 2018)*, LIPIcs 123, pp.57:1–57:13, 2018.
- [C3] Hiroshi Hirai, Yuni Iwamasa, Kazuo Murota, and Stanislav Žitný. Beyond JWP: A tractable class of binary VCSPs via M-convex intersection. In *Proceedings of the 35th International Symposium on Theoretical Aspects of Computer Science (STACS 2018)*, LIPIcs 96, pp.39:1–39:14, 2018.
- [C2] Yuni Iwamasa. On a general framework for network representability in discrete optimization. In *Proceedings of the 4th International Symposium on Combinatorial Optimization (ISCO 2016)*, LNCS 9849, pp.369–380, 2016.
- [C1] Atsushi Miyauchi, Yuni Iwamasa, Takuro Fukunaga, and Naonori Kakimura. Threshold influence model for allocating advertising budgets. In *Proceedings of the 32nd International Conference on Machine Learning (ICML 2015)*, pp.1395–1404, 2015.