

ELLEN HIDEMI FUKUDA'S CV

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PROFESSIONAL AFFILIATIONS / POSITIONS

Apr/2019 – present Associate Professor
Graduate School of Informatics, Kyoto University (Japan)
Oct/2013 – Mar/2019 Assistant Professor
Graduate School of Informatics, Kyoto University (Japan)
Aug/2011 – Sep/2013 Visiting Researcher
Graduate School of Informatics, Kyoto University (Japan)
Mar/2011 – Sep/2013 Postdoctoral Researcher
Institute of Mathematics, Statistics and Computer Science,
University of Campinas (Brazil)
Supervisor: Prof. Roberto Andreani

EDUCATION

Mar/2007 – Feb/2011 Ph.D. in Applied Mathematics
Institute of Mathematics and Statistics, University of São Paulo (Brazil)
Thesis: *Topics in differentiable exact penalties*
Supervisor: Prof. Paulo J. S. Silva
Mar/2005 – Feb/2007 M.Sc. in Computer Science
Institute of Mathematics and Statistics, University of São Paulo (Brazil)
Thesis: *Volume algorithm and nondifferentiable optimization*
Supervisor: Prof. Paulo J. S. Silva
Mar/2001 – Feb/2005 B.Sc. in Computer Science
Institute of Mathematics and Statistics, University of São Paulo (Brazil)
Monograph: *Information retrieval using computational linear algebra*
Supervisor: Prof. Paulo J. S. Silva

COMPLEMENTARY EDUCATION

Apr/2010 – Sep/2010 Special research student
Graduate School of Informatics, Kyoto University (Japan)
Supervisor: Prof. Masao Fukushima
Jan/2008 – Feb/2008 Summer course in Functional Analysis
National Institute for Pure and Applied Mathematics (Brazil)

RESEARCH INTERESTS

Nonlinear programming, conic optimization, vector and multiobjective optimization, semidefinite optimization, applications in wireless communications, etc.

PUBLICATIONS

REFEREED JOURNAL ARTICLES

1. A. G. Gebrie and E. H. Fukuda. Adaptive generalized conditional gradient method for multi-objective optimization. *Submitted*, 2024.
2. K. Chen, E. H. Fukuda and H. Sato. Nonlinear conjugate gradient method for vector optimization on Riemannian manifolds with retraction and vector transport. *Applied Mathematics and Computation*, 486:129001, 2025.
3. A. Hori, D. Tsuyuguchi and E. H. Fukuda. A method for multi-leader-multi-follower games by smoothing the followers' response function. To appear in *Journal of Optimization Theory and Applications*, 2024.
4. K. Chen, E. H. Fukuda and N. Yamashita. A proximal gradient method with Bregman distance in multi-objective optimization. To appear in *Pacific Journal of Optimization*, 2023.
5. E. H. Fukuda and K. Okabe. A second-order sequential optimality condition for nonlinear second-order cone programming problems. *Submitted*, 2023.
6. K. Habara, E. H. Fukuda and N. Yamashita. Convergence analysis and acceleration of smoothing methods for solving extensive-form games. *Submitted*, 2023.
7. H. Oliveira, M. Kaneko, L. Boukhatem and E. H. Fukuda. Deep reinforcement learning-aided optimization of multi-interface allocation for short-packet communications. *IEEE Transactions on Cognitive Communications and Networking*, 9(3):738–753, 2023.
8. Y. Nishimura, E. H. Fukuda and N. Yamashita. Monotonicity for multiobjective accelerated proximal gradient methods. *Journal of the Operations Research Society of Japan*, 67(1):1–17, 2023.
9. H. Tanabe, E. H. Fukuda and N. Yamashita. A globally convergent fast iterative shrinkage-thresholding algorithm with a new momentum factor for single and multi-objective convex optimization. *Submitted*, 2022.
10. K. Okabe, Y. Yamakawa and E. H. Fukuda. A revised sequential quadratic semidefinite programming method for nonlinear semidefinite optimization. *Journal of Industrial and Management Optimization*, 19(10):7777–7794, 2023.
11. H. Tanabe, E. H. Fukuda and N. Yamashita. An accelerated proximal gradient method for multiobjective optimization. *Computational Optimization and Applications*, 86:421–455, 2023.
12. Y. Yamakawa, T. Ikegami, E. H. Fukuda and N. Yamashita. An equivalent nonlinear optimization model with triangular low-rank factorization for semidefinite programs. *Optimization Methods and Software*, 38(6):1296–1310, 2023.
13. H. Tanabe, E. H. Fukuda and N. Yamashita. Convergence rates analysis of multiobjective proximal gradient method. *Optimization Letters*, 17:333–350, 2023.
14. H. Tanabe, E. H. Fukuda and N. Yamashita. New merit functions for multiobjective optimization and their properties. To appear in *Optimization*, 2023.
15. R. Andreani, E. H. Fukuda, G. Haeser, H. Ramírez, D. O. Santos, P. J. S. Silva and T. P. Silveira. Erratum to: new constraint qualifications and optimality conditions for second order cone programs. *Set-Valued and Variational Analysis*, 30:329–333, 2022.

16. E. H. Fukuda, L. M. Mito and G. Haeser. On the weak second-order optimality condition for nonlinear semidefinite and second-order cone programming. *Set-Valued and Variational Analysis*, 31(15), 2022.
17. E. H. Fukuda, L. M. Graña Drummond and A. M. Masuda. A conjugate directions-type procedure for quadratic multiobjective optimization. *Optimization*, 71(2):419–437, 2022.
18. T. H. L. Dinh, M. Kaneko, E. H. Fukuda and L. Boukhatem. Energy efficient resource allocation optimization in fog radio access networks with outdated channel knowledge. *IEEE Transactions on Green Communications and Networking*, 5(1):146–159, 2021.
19. R. Andreani, E. H. Fukuda, G. Haeser, D. O. Santos and L. D. Secchin. On the use of Jordan algebras for improving global convergence of an augmented Lagrangian method in nonlinear semidefinite programming. *Computational Optimization and Applications*, 79:633–648, 2021.
20. R. Andreani, E. H. Fukuda, G. Haeser, D. O. Santos and L. D. Secchin. Optimality conditions for nonlinear second-order cone programming and symmetric cone programming. *Journal of Optimization Theory and Applications*, 200:1–33, 2024.
21. L. Amichi, M. Kaneko, E. H. Fukuda, N. El Rachkidy and A. Guitton. Joint allocation strategies of power and spreading factors with imperfect orthogonality in LoRa networks. *IEEE Transactions on Communications*, 68(6):3750–3765, 2020.
22. K. Mita, E. H. Fukuda and N. Yamashita. Nonmonotone line searches for unconstrained multiobjective optimization problems. *Journal of Global Optimization*, 75(1):63–90, 2019.
23. E. H. Fukuda, L. M. Graña Drummond and F. M. P. Raupp. A barrier-type method for multiobjective optimization. *Optimization*, 69(11):2471–2487, 2020.
24. H. Tanabe, E. H. Fukuda and N. Yamashita. Proximal gradient methods for multiobjective optimization and their applications. *Computational Optimization and Applications*, 72(2):339–361, 2019.
25. B. F. Lourenço, E. H. Fukuda and M. Fukushima. Optimality conditions for problems over symmetric cones and a simple augmented Lagrangian method. *Mathematics of Operations Research*, 43(4):1233–1251, 2018.
26. E. H. Fukuda and B. F. Lourenço. Exact augmented Lagrangian functions for nonlinear semidefinite programming. *Computational Optimization and Applications*, 71(2):457–482, 2018.
27. B. F. Lourenço, E. H. Fukuda and M. Fukushima. Optimality conditions for nonlinear semidefinite programming via squared slack variables. *Mathematical Programming*, 168(1-2):177–200, 2018.
28. E. H. Fukuda and M. Fukushima. A note on the squared slack variables technique for nonlinear optimization. *Journal of the Operations Research Society of Japan*, 60(3):262–270, 2017.
29. E. H. Fukuda and M. Fukushima. The use of squared slack variables in nonlinear second-order cone programming. *Journal of Optimization Theory and Applications*, 170(2):394–418, 2016.
30. E. H. Fukuda, L. M. Graña Drummond and F. M. P. Raupp. An external penalty-type method for multicriteria. *TOP*, 24(2):493–513, 2016.
31. E. H. Fukuda and L. M. Graña Drummond. A survey on multiobjective descent methods. *Pesquisa Operacional*, 34(3):585–620, 2014.
32. E. H. Fukuda and L. M. Graña Drummond. Inexact projected gradient method for vector optimization. *Computational Optimization and Applications*, 54(3):473–493, 2013.

33. R. Andreani, E. H. Fukuda and P. J. S. Silva. A Gauss-Newton approach for solving constrained optimization problems using differentiable exact penalties. *Journal of Optimization Theory and Applications*, 156(2):417–449, 2013.
34. E. H. Fukuda, P. J. S. Silva and M. Fukushima. Differentiable exact penalty functions for nonlinear second-order cone programs. *SIAM Journal on Optimization*, 22(4):1607–1633, 2012.
35. E. H. Fukuda and L. M. Graña Drummond. On the convergence analysis of the projected gradient method for vector optimization. *Optimization*, 60(8-9):1009–1021, 2011.

SPECIAL ISSUES

1. E. H. Fukuda. About the special issue (in Japanese). Special issue on “32nd RAMP Symposium”, *Operations Research Society of Japan*, to appear, 2021.
2. E. H. Fukuda. Descent methods for multiobjective optimization: extending single-objective optimization methods (in Japanese). *Systems, Control and Information*, vol. 62, pp. 352–357, September 2018.
3. E. H. Fukuda. Multiobjective optimization: basis of descent methods (in Japanese). Special issue on “29th RAMP Symposium”, *Operations Research Society of Japan*, vol. 63, pp. 146–152, March 2018.
4. E. H. Fukuda and M. Fukushima. Second-order cone programming and a method using squared slack variables (in Japanese). Special issue on “Theory on second-order cone programming”, *Operations Research Society of Japan*, vol. 59, pp. 707–715, December 2014.

CONFERENCE PROCEEDINGS

1. E. H. Fukuda, B. F. Lourenço and M. Fukushima. A survey on second-order conditions for nonlinear symmetric cone programming via squared slack variables. *RIMS Kôkyûroku*, vol. 2108, Kyoto, Japan, April 2019.
2. E. H. Fukuda. Descent methods in multiobjective optimization (in Japanese). *Proceedings of the 29th RAMP Symposium*, vol. 29, pp. 115–124, Tsukuba, Japan, October 2017.
3. K. Mita, E. H. Fukuda and N. Yamashita. On using nonmonotone line search techniques in steepest descent methods for multiobjective optimization (in Japanese). *Proceedings of the 61st Annual Conference of the Institute of Systems, Control and Information Engineers*, Kyoto, Japan, May 2017.
4. I. Isonishi, E. H. Fukuda and N. Yamashita. A new DC method for BMI-constrained optimization (in Japanese). *Proceedings of the 61st Annual Conference of the Institute of Systems, Control and Information Engineers*, Kyoto, Japan, May 2017.
5. E. H. Fukuda and B. F. Lourenço. Constructing a continuously differentiable exact augmented Lagrangian function for nonlinear semidefinite programming. *RIMS Kôkyûroku*, vol. 2027, pp. 150–157, Kyoto, Japan, April 2017.
6. D. Tsuyuguchi, E. H. Fukuda, M. Hu and M. Fukushima. Reformulating multi-leader-follower games with smoothing method (in Japanese). *RIMS Kôkyûroku*, vol. 1981, pp. 149–157, Kyoto, Japan, January 2016.

7. E. H. Fukuda, B. F. Lourenço and M. Fukushima. A note on nonlinear semidefinite programming and the squared slack variables technique. *RIMS Kôkyûroku*, vol. 1981, pp. 143–148, Kyoto, Japan, January 2016.

CONFERENCE PRESENTATIONS

Talks in international conferences: 19 / Talks in domestic conferences: 20

The list below does not include the presentations given by my co-authors.

1. E. H. Fukuda and K. Okabe. On sequential optimality conditions for second-order cone optimization (in Japanese). *RIMS Workshop: Advances in Mathematical Optimization and Its Surroundings*, Kyoto, Japan, 2024/08/27 (contributed talk).
2. E. H. Fukuda and K. Okabe. Approximate Karush-Kuhn-Tucker 2 conditions for nonlinear second-order cone optimization problems. *25th International Symposium on Mathematical Programming*, Montréal, Canada, 2024/07/22 (contributed talk).
3. E. H. Fukuda. Recent trends in descent methods for multiobjective optimization problems. *The Third Pacific Optimisation Conference*, Sunway City, Malaysia, 2023/12/11 (plenary/invited talk).
4. E. H. Fukuda. Recent developments on multiobjective fast iterative shrinkage-thresholding algorithms. *10th International Congress on Industrial and Applied Mathematics*, Tokyo, Japan, 2023/08/21 (organized/invited talk).
5. E. H. Fukuda, H. Tanabe, N. Yamashita. New momentum factor for FISTA and its convergence properties (in Japanese). *19th Japan Society for Industrial and Applied Mathematics – Joint Meeting*, Okayama, Japan, 2023/03/10 (contributed talk).
6. E. H. Fukuda. Recent developments in multiobjective descent methods (in Japanese). *66th Annual Conference of the Institute of Systems, Control and Information Engineers*, Kyoto, Japan, 2022/05/19 (invited talk).
7. E. H. Fukuda, T. Tanaka and N. Yamashita. A new uncertainty model for positive-valued parameters with applications. *22nd Conference of the International Federation of Operational Research Societies*, Seoul, South Korea (online), 2021/08/24 (invited talk).
8. R. Andreani, E. H. Fukuda, G. Haeser, D. O. Santos and L. D. Secchin. Sequential optimality conditions: extensions for nonlinear semidefinite and nonlinear second-order cone programming problems (in Japanese). *RIMS Workshop: Theory, Algorithms and Applications of Mathematical Optimization*, Kyoto, Japan (online), 2020/08/24 (contributed talk).
9. E. H. Fukuda, K. Mita and N. Yamashita. A hybrid-type nonmonotone line search for multiobjective optimization. *International Conference on Optimization: Techniques and Applications 2019*, Hakodate, Japan, 2019/08/29 (invited talk).
10. E. H. Fukuda, K. Mita and N. Yamashita. On using nonmonotone line searches in multiobjective descent methods. *30th European Conference on Operational Research*, Dublin, Ireland, 2019/06/25 (organized/contributed talk).
11. E. H. Fukuda, I. Isonishi and N. Yamashita. A new DC method for nonlinear conic optimization with applications to problems with BMI constraints. *International Workshop on Control and Optimization*, Kyoto, Japan, 2018/11/07 (invited talk).

12. E. H. Fukuda, B. F. Lourenço and M. Fukushima. Second-order conditions for nonlinear symmetric conic programming problems (in Japanese). *RIMS Workshop: New Trends of Numerical Optimization in Advanced Information-Oriented Society*, Kyoto, Japan, 2018/08/07 (contributed talk).
13. E. H. Fukuda, B. F. Lourenço and M. Fukushima. Nonlinear symmetric cone problems: optimality conditions and an augmented Lagrangian method. *XII Brazilian Workshop on Continuous Optimization*, Foz do Iguaçu, Brazil, 2018/07/24 (contributed talk).
14. E. H. Fukuda, I. Isonishi and N. Yamashita. Solving nonlinear conic programming problems with a new DC approach. *23rd International Symposium on Mathematical Programming*, Bordeaux, France, 2018/07/04 (contributed talk).
15. E. H. Fukuda. Descent methods for multiobjective optimization (in Japanese). *The 29th RAMP Symposium*, Tsukuba, Japan, 2017/10/13 (invited talk).
16. E. H. Fukuda and B. F. Lourenço. On the construction of exact augmented Lagrangian functions for nonlinear semidefinite optimization. *SIAM Conference on Optimization*, Vancouver, Canada, 2017/05/24 (organized/invited talk).
17. E. H. Fukuda and B. F. Lourenço. Constructing exact augmented Lagrangian functions for nonlinear semidefinite programming problems (in Japanese). *RIMS Workshop: The State-of-the-Art Optimization Technique and Future Development*, Kyoto, Japan, 2016/08/26 (contributed talk).
18. E. H. Fukuda, B. F. Lourenço and M. Fukushima. Second-order conditions for nonlinear semidefinite optimization problems via slack variables approach. *The Fifth International Conference on Continuous Optimization*, Tokyo, Japan, 2016/08/08 (invited talk).
19. E. H. Fukuda. Exact penalty methods for optimization problems (in Japanese). *Workshop on Optimization: Foundations and Frontiers*, Yokohama, Japan, 2016/03/19 (invited talk).
20. E. H. Fukuda. Research on nonlinear programming, nonlinear second-order cone programming and multiobjective optimization (in Japanese). *Kansai Region Meeting from Operations Research Society of Japan – Memorial Lecture*, Osaka, Japan, 2016/03/05 (invited talk).
21. E. H. Fukuda, B. F. Lourenço and M. Fukushima. Reformulating nonlinear semidefinite programming problems with squared slack variables (in Japanese). *Operations Research Society of Japan – Fall Conference*, Fukuoka, Japan, 2015/09/11 (contributed talk).
22. E. H. Fukuda, B. F. Lourenço and M. Fukushima. Nonlinear semidefinite programming problems and the squared slack variables technique (in Japanese). *RIMS Workshop: Optimization for New Generations – Modeling and Computation*, Kyoto, Japan, 2015/09/01 (contributed talk).
23. E. H. Fukuda, B. F. Lourenço and M. Fukushima. Studies on squared slack variables for nonlinear second-order cone and semidefinite programming. *22nd International Symposium on Mathematical Programming*, Pittsburgh, United States, 2015/07/14 (contributed talk).
24. E. H. Fukuda and M. Fukushima. On the use of squared slack variables in nonlinear programming and nonlinear second-order cone programming. *9th International Conference on Optimization: Techniques and Applications*, Taipei, Taiwan, 2013/12/13 (contributed talk).
25. E. H. Fukuda and M. Fukushima. Using squared slack in nonlinear second-order cone programming (in Japanese). *OR Meeting for Young Researchers*, Kyoto, Japan, 2013/11/07 (invited talk).

26. E. H. Fukuda and M. Fukushima. Slack variables in nonlinear second-order cone programming problems (in Japanese). *RIMS Workshop: Optimization – Theory and Applications*, Kyoto, Japan, 2013/08/30 (contributed talk).
27. E. H. Fukuda and M. Fukushima. Slack variables in nonlinear second-order cone programming. *The Fourth International Conference on Continuous Optimization*, Lisbon, Portugal, 2013/07/30 (invited talk).
28. E. H. Fukuda and M. Fukushima. Slack variables in nonlinear second-order cone programming problems (in Japanese). *Optimization: Modeling and Algorithms 2013*, Tokyo, Japan, 2013/03/11 (contributed talk).
29. E. H. Fukuda, M. Fukushima and P. J. S. Silva. Solving nonlinear second-order cone programs via exact penalty functions. *5th International Conference on Optimization and Control with Applications*, Beijing, China, 2012/12/07 (invited talk).
30. E. H. Fukuda, M. Fukushima and P. J. S. Silva. Differentiable exact penalty functions for nonlinear second-order cone programs. *21st International Symposium on Mathematical Programming*, Berlin, Germany, 2012/08/21 (contributed talk).
31. E. H. Fukuda, M. Fukushima and P. J. S. Silva. Differentiable exact penalty functions for nonlinear second-order cone programs. *RIMS Workshop: The Bridge Between Theory and Application in Optimization Method*, Kyoto, Japan, 2012/07/23 (contributed talk).
32. E. H. Fukuda. Semismooth reformulation for nonlinear second-order cone programming (in Portuguese). *28th Brazilian Colloquium of Mathematics*, Rio de Janeiro, Brazil, 2011/07/26 (invited talk).
33. E. H. Fukuda, R. Andreani and P. J. S. Silva. A Gauss-Newton-type method for constrained optimization using exact penalties. *SIAM Conference on Optimization 2011*, Darmstadt, Germany, 2011/05/19 (invited talk).
34. E. H. Fukuda, R. Andreani and P. J. S. Silva. A Gauss-Newton approach for solving constrained optimization via exact penalty functions. *20th International Symposium on Mathematical Programming*, Chicago, United States, 2009/08/28 (contributed talk).
35. E. H. Fukuda and L. M. Graña Drummond. Inexact projected gradient method for vector optimization (in Portuguese). *27th Brazilian Colloquium of Mathematics*, Rio de Janeiro, Brazil, 2009/07/28 (invited talk).
36. E. H. Fukuda, R. Andreani and P. J. S. Silva. A Gauss-Newton-type method for differentiable exact penalties. *VIII Brazilian Workshop on Continuous Optimization*, Mambucaba, Brazil, 2009/07/13 (contributed talk).
37. E. H. Fukuda and P. J. S. Silva. Volume algorithm and nondifferentiable optimization (in Portuguese). *XXX National Congress of Computational and Applied Mathematics*, Florianópolis, Brazil, 2007/09/03 (invited talk).
38. E. H. Fukuda and P. J. S. Silva. Solving linear integer programs by Lagrangian dual approach: subgradient methods and volume algorithm (in Portuguese). *XXIX National Congress of Computational and Applied Mathematics*, Campinas, Brazil, 2006/09/20 (contributed talk).
39. E. H. Fukuda and P. J. S. Silva. Information retrieval using computational linear algebra (in Portuguese). *13th International Symposium of Undergraduate Research*, São Carlos, Brazil, 2005/11/09 (contributed poster).

AWARDS / HONORS

- 2024 *14th Research Award*, for an outstanding research in Operations Research, Operations Research Society of Japan.
- 2024 *16th Tachibana Award* for an outstanding female researcher (researcher category), Kyoto University.
- 2015 *5th Research Encourage Award*, for a promising young researcher in Operations Research, Operations Research Society of Japan.
- 2012 *Best Ph.D. Thesis 2011* in Applied Mathematics at University of São Paulo, University of São Paulo.
- 2007 *Odelar Leite Linhares Prize*, for the best master thesis of the year in Brazil, Brazilian Society of Computational and Applied Mathematics.
- 2006 *2nd Place in XI ACM South American Programming Contest*, São Paulo regional, ACM International Collegiate Programming Contest.

SUPERVISED STUDENTS' AWARDS

- 2023 K. Okabe, *Student Thesis Award 2023*, Operations Research Society of Japan.
- 2020 H. Tanabe, *Student Thesis Award 2020*, Operations Research Society of Japan.
- 2020 H. Tanabe, *14th ICT Innovation's Excellent Research Award*, Kyoto University.
- 2019 K. Mita, *Student Thesis Award 2019*, Operations Research Society of Japan.
- 2018 I. Isonishi, *Excellent Student Presentation Award at SSOR2018 Kansai Region*, Operations Research Society of Japan.
- 2018 H. Tanabe, finalist of *Young Author's Award in SICE Annual Conference 2018*, Society of Instrument and Control Engineers.

GRANTS / FELLOWSHIPS / SCHOLARSHIPS

As the principal investigator:

- Apr/2019 – Mar/2025 Grants-in-Aid for Scientific Research (C)
Japan Society for the Promotion of Science
- Apr/2019 – Mar/2020 Open Collaborative Research Program (with M. Kaneko)
National Institute of Informatics
- Apr/2018 – Mar/2019 Promoted Research Activity Funds
The Kyoto University Foundation
- Apr/2018 – Mar/2019 Open Collaborative Research Program (with M. Kaneko)
National Institute of Informatics
- Apr/2014 – Mar/2018 Grants-in-Aid for Scientific Research, Young Scientists (B)
Japan Society for the Promotion of Science
- Oct/2013 – Mar/2014 Research Funds for Young Scientists (Start-Up)
Kyoto University
- Apr/2011 – Sep/2013 Postdoctoral fellowship
The State of São Paulo Research Foundation
- Apr/2012 – Mar/2013 Research internships abroad
The State of São Paulo Research Foundation

Sep/2007 – Feb/2011 Ph.D. student scholarship
The State of São Paulo Research Foundation

Mar/2007 – Aug/2007 Ph.D. student scholarship
Coordination for the Improvement of Higher Education Personnel

Mar/2005 – Feb/2007 M.Sc. student scholarship
Coordination for the Improvement of Higher Education Personnel

Aug/2004 – Jan/2005 Undergraduate research scholarship
National Council for Scientific and Technological Development

As a collaborator:

Oct/2022 – Sep/2026 Fund for the Promotion of Joint International Research
(Fostering Joint International Research (B)) (with M. Kaneko and K. Fujii)
Japan Society for the Promotion of Science

Feb/2019 – Jan/2022 Chamada CNPq Universal (Brazil) (with B. F. Svaiter et al.)
National Council for Scientific and Technological Development

Apr/2016 – Mar/2019 Grants-in-Aid for Scientific Research (C) (with A. F. Cruz et al.)
Japan Society for the Promotion of Science

TEACHING EXPERIENCES

1. Teaching in Graduate School of Informatics, Kyoto University.

2024 ILAS seminar (operations research)

2019 – 2024 Operations research, advanced (continuous optimization)

2019 – 2024 Logical systems (boolean algebra, digital circuits)

2015, 2021 ELCAS Basic course for high school students (optimization with Python)

2014 – 2020 Seminar on applied mathematics and physics
(continuous and discrete optimization, sparse modeling, machine learning, etc)

2015 – 2019 Applied mathematics and physics laboratory (continuous optimization)

2013 – 2014 Applied mathematics and physics laboratory (linear programming)

2017 Physics experiments (quantum mechanics)

2014 Exercise on numerical analysis (continuous optimization)

2. Teaching Assistance in Institute of Mathematics and Statistics, University of São Paulo.

2004, 2008 Linear programming

2003, 2006 Numerical linear algebra

SUPERVISION OF STUDENTS (CONCLUDED)

Ph.D. thesis:

1. H. Tanabe. Composite multi-objective optimization: theory and algorithms. September 2022.

Master thesis:

1. H. Li. A strong second-order sequential optimality condition for nonlinear optimization. September 2024.
2. K. Ito. A projected gradient method for vector optimization with symmetric cone and its application to experiment design. March 2024.

3. Y. Nishimura. Multi-objective accelerated proximal gradient methods with restart techniques. March 2024.
4. K. Okabe. A second-order sequential optimality condition for nonlinear second-order cone programming problems. March 2023.
5. K. Habara. Convergence analysis and acceleration of the smoothing methods for solving extensive-form games. March 2023.
6. A. Kawakami. Augmented Lagrangian method for worst-case conditional value-at-risk optimization (in Japanese). September 2022.
7. K. Chen. A proximal gradient method with Bregman distance in multi-objective optimization. March 2022.
8. A. Hifu. A new quasi-Newton method for unconstrained multiobjective optimization problems. March 2022.
9. T. Tanaka. An uncertainty model for positive-valued parameters with application to robust optimization. March 2021.
10. Y. Mitsunari. A globally convergent Levenberg-Marquardt method for degenerate optimization with equality and inequality constraints. March 2021.
11. R. Bando. On the use of differentiable exact penalty functions for nonlinear semidefinite programming. March 2020.
12. K. Horiguchi. A new sequential quadratic programming method for constrained multiobjective optimization problems. March 2020.
13. H. Tanabe. Merit functions for multiobjective optimization and convergence rates analysis of multiobjective proximal gradient methods. September 2019.
14. K. Mita. Nonmonotone techniques for descent multiobjective methods. March 2019.
15. I. Isonishi. An efficient DC method for nonlinear conic optimization. March 2019.
16. A. Kobayashi. Differentiable exact augmented Lagrangian functions for nonlinear second-order cone programs. March 2018.
17. T. Iizuka. A stabilized SQP-type method for nonlinear second-order cone programming problems. March 2017.
18. T. Ikegami. An equivalent nonlinear optimization model with triangular low-rank factorization for semidefinite programs. March 2017.
19. D. Tsuyuguchi. The use of smoothing methods in multi-leader-follower games. March 2016.
20. M. Morishita. A descent method for robust multiobjective optimization in the presence of implementation errors. March 2016.
21. T. Nishimura. Differentiable exact penalty functions for nonlinear optimization with easy constraints. March 2015.

Undergraduate thesis:

1. S. Bono. Formulation of second-order assignment problems with mixed integer linear programming with semidefinite constraints (in Japanese). March 2024.

2. S. Harada. Stabilization through vector optimization and feedback control (in Japanese). March 2024.
3. K. Matsuoka. A multiobjective proximal gradient method with step lengths given by proximal mappings (in Japanese). March 2024.
4. C. Ogawa. On bilevel optimization problems with multiobjective lower-level problems (in Japanese). March 2023.
5. Y. Kawabata. Improvement on descent methods for robust multiobjective optimization in the presence of implementation errors (in Japanese). March 2023.
6. K. Yamamoto. ADMM method for worst-case conditional value-at-risk optimization and its effective implementation (in Japanese). March 2023.
7. Y. Nishimura. Monotone accelerated proximal gradient methods for multiobjective optimization problems (in Japanese). March 2022.
8. K. Habara. Numerical methods for vector-valued support vector machines with mutual support vectors (in Japanese). March 2021.
9. K. Okabe. Improvement of the stabilized sequential quadratic semidefinite programming method for nonlinear programming problems (in Japanese). March 2021.
10. A. Kawakami. Augmented Lagrangian method for conditional value-at-risk optimization (in Japanese). March 2020.
11. S. Lkhagvadorj. A new weighted multiobjective Nash equilibrium game and a related existence theory (in Japanese). March 2020.
12. A. Hifu. A new descent method for unconstrained multiobjective optimization (in Japanese). March 2020.
13. Y. Mitsunari. Levenberg-Marquardt method for nonlinear programming using penalty functions (in Japanese). March 2019.
14. W. Tanigawa. Beamforming methods for cloud radio access networks and models with uncertainties (in Japanese). March 2019.
15. H. Tanabe. Proximal gradient method for multiobjective optimization and applications in robust multicriteria optimization (in Japanese). March 2018.
16. R. Bando. Exact penalty functions for nonlinear semidefinite programming (in Japanese). March 2018.
17. I. Isonishi. A new DC method for BMI-constrained optimization problems and convergence results (in Japanese). March 2017.
18. K. Mita. Nonmonotone line search in multiobjective settings (in Japanese). March 2017.
19. K. Tani. General slack variables for nonlinear second-order cone programming (in Japanese). March 2017.
20. A. Kobayashi. General exact augmented Lagrangian functions for nonlinear second-order cone programming (in Japanese). March 2016.
21. T. Iizuka. Test problems and methods for nonlinear second-order cone programming problems (in Japanese). March 2015.
22. M. Morishita. Steepest descent method for multiobjective optimization and its effectiveness (in Japanese). March 2014.

SUPERVISION OF VISITING RESEARCHERS AND STUDENTS

1. A. G. Gebrie. Researcher, Debre Berhan University, Ethiopia. April 2023–September 2023.
2. O. Zekri. Master student, ENS Paris-Saclay, France. April 2023–July 2023.
3. D. S. Viana. Ph.D. student, University of São Paulo, Brazil. August 2018–January 2019.
4. R. P. Longhi. Ph.D. student, Federal University of Rio de Janeiro, Brazil. November 2017–November 2018.

EDITORIAL DUTIES

1. 2024 – present: Associate editor, Systems, Control and Information + Transactions of ISCIE
2. 2021 – present: Associate editor, Computational Optimization and Applications
3. 2015 – 2017 : Associate editor, Journal of the Operations Research Society of Japan
4. 2011 – present: Paper reviewer, for more than 20 different international journals

OTHER DUTIES

1. July 2024: Panelist, Nikkei STEAM Symposium (panel discussion with female researchers)
2. October 2019: Young leader (Kyoto University), STS Forum 16th Annual Meeting

WORKING COMMITTEES

In academic societies:

- 2023 – present Executive secretary, Operations Research Society of Japan, Kansai Region
- 2022 – present Faculty advisor, Kyoto University SIAM Student Chapter
- 2021 – present Steering committee, Operations Research Society of Japan, Kansai Region

In academic conferences:

- 2021 – 2022 10th IFAC Symposium on Robust Control Design – ROCOND 2022 (Kyoto)
- 2019 – 2020 RAMP Symposium 2020 (Kyoto)
- 2019 – 2020 Operations Research Society of Japan – Spring Conference 2019 (Nara)
- 2016 – 2017 Operations Research Society of Japan – Fall Conference 2017 (Osaka)

In Graduate School of Informatics, Kyoto University:

- 2024 Finance committee
- 2023–2024 Academic affairs committee (operations research group)
- 2023 Harassment prevention committee
- 2022–2023 Human research ethics committee
- 2022 Academic affairs (vice – undergraduate in applied mathematics and physics)
- 2020–2021 Public relations and evaluation committee
- 2020 Representative for experiments and exercises' classes (undergraduate)
- 2019 Academic affairs (undergraduate in applied mathematics and physics)
- 2019 Academic affairs (undergraduate in informatics and mathematical science)
- 2019 Harassment prevention committee
- 2018 Library committee
- 2016 Information security working group
- 2016 System operations working group
- 2015 Harassment prevention committee
- 2014 Public relations committee

SOCIAL ACTIVITIES

- 2021 Lecturer, ELCAS basic course for high school students
- 2021 President of the organizing committee, Kyoto University's extension lectures
- 2015 Lecturer, ELCAS basic course for high school students

PROFESSIONAL SOCIETIES

- 2024 – present The Institute of Systems, Control and Information Engineers (ISCIE)
- 2022 – present Japan Society for Industrial and Applied Mathematics (JSIAM)
- 2013 – present Mathematical Optimization Society (MOS)
- 2013 – present Operations Research Society of Japan (ORSJ)
- 2005 – present Society for Industrial and Applied Mathematics (SIAM)

LANGUAGES

- | | |
|------------|--|
| Portuguese | native |
| English | fluent |
| Japanese | native speaking/listening, advanced reading/writing |
| Spanish | intermediate listening/reading, basic speaking/writing |
| French | basic |