Takeshi Hatanaka

Professor
Department of Systems and Control Engineering
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Academic Employment
Professor, School of Engineering, Institute of Science Tokyo, Oct. 2024–present
Professor, School of Engineering, Tokyo Tech, Apr. 2024–Sep. 2024
Associate Professor, School of Engineering, Tokyo Tech, Apr. 2020–Mar. 2024
Associate Professor, Graduate School of Engineering, Osaka University, Apr. 2018–Mar. 2020
Visiting Associate Professor, School of Engineering, Tokyo Tech, Apr. 2018–Mar. 2020
Associate Professor, School of Engineering, Tokyo Tech, Apr. 2016–Mar. 2018
Faculty Sabbatical, Harvard University (Host: Prof. Na Li), USA, Jun. 2016–Jan. 2017.
Associate Professor, Mechanical and Control Engineering, Tokyo Institute of Technology, Jan. 2015–Mar. 2016
Assistant Professor, Mechanical and Control Engineering, Tokyo Institute of Technology, Apr. 2007–Dec. 2014
A Research Fellow of the Japan Society for the Promotion of Science, Apr. 2006–Mar. 2007

Education
Ph.D. Informatics, Applied Mathematics and Physics, Kyoto University, Mar. 2007
M. Informatics, Applied Mathematics and Physics, Kyoto University, Mar. 2004
B. Eng., Informatics and Mathematical Science, Kyoto University, Mar. 2002

Research Interests
Cyber-Physical-Social Systems, Cyber-Physical-Human Systems, Networked Robotics

Teaching (present)

2021- フィードバック制御

2020- 研究プロジェクト

2020- Optimal Control

2020- Cyber-Physical Innovation

Teaching (past)

2021-2025 デジタル創造基礎

2021-2025 異分野融合研究企画集中演習（超スマート社会卓越教育院）

2020, 2025 科学・技術の創造プロセス【工学院】

2022-2023 科学・技術の最前線 c

2020-2021 システムモデリング

2018, 2019 数学解析演習 (大阪大学)

2019 マチカネゼミ (大阪大学)

2017 Optimal Control

2017 Control of Network Systems

2016 システム制御ラボ研修

2015, 2017 システムモデリング

2016, 2017 5 類リテラシ

2016 システム創造設計

2015 創造設計第一

2015 システム制御特論

2007–2015 制御システム工学ラボ研修

2007–2010, 2012–2014 情報処理及び演習

2008–2011 創造設計第二

招待講義

[9] T. Hatanaka, "Passivity-based Robot Control and Convex Optimization," PhD Activity, University of Seville, Spain, online, May 25, 2021.
[8] 畑中, "マルチエージェントとロボットネットワークの制御," システムイノベーションセンター「システム構築のための制御講座」, online, July 4, 2020.
[7] 畑中, "ネットワークシステムと受動性," IMI コロキウム, 九州大学, May 8, 2019.
[6] 畑中, "ネットワークと受動性" 情報数理学セミナー, 大阪大学, Oct. 11, 2018.
[5] T. Hatanaka, "Automatic Control," NTUST Summer Program, National Taiwan University of Science and Technology, Taipei, Taiwan, Aug. 7, 8, 2017.
[4] 畑中, "分散最適化," SICE 第 3 回制御部門マルチシンポジウム, ワークショップ「マルチエージェントシステムの制御—IoT/CPS 時代の制御理論」, 名古屋市, 愛知, Mar. 10, 2016.
[3] 畑中, "ロボティックネットワークの協調制御," 情報デザイン先端技術, 工学院大学, Sep., 29th, 2015.
[2] 畑中, "システム制御におけるゲーム理論の動向," ワークインプログレスセミナー, Nov., 26th, 2013.
[1] 畑中, "環境のための分散協調制御の基礎," 予測・分散・協調の制御：環境への貢献を目指して, SICE セミナー「実践的な制御系設計」, 東京, 3rd, Dec., pp. 25-35, 2009.

MOOC

[1] 畑中, "スマートロボティクス (Robot Zoo Sky)," 超スマート社会への招待, 東京工業大学, `https://www.edx.org/course/introduction-to-the-super-smart-society?index=undefined`.

Service (present)

2026- Vice-chair of IEEE CSS TC on Control and Optimization in Food and Agriculture

2025- Deputy Editor-in-Chief of Annual Reviews in Control

2024- Senior Editor of IEEE Transactions on Control Systems Technology

2024- Associate Editor of Mechatronics

2023- Associate Editor of Advanced Robotics

2026 Co-general Chair of 6th IFAC CPHS

2026 Program Chair of Distributed Autonomous Robotic Systems 2026

2024-2026 IPC Technical Member of IFAC World Conference 2026

2026 計測自動制御学会制御部門制御理論部会主査

2020- IFAC TC Member of TC 9.2 Social Effects of Automation and Control Systems

2012- IFAC TC Member of TC 1.5 Networked Systems

Service (past)

2025 Program Committee Member of 64th IEEE Conference on Decision and Control

2025 計測自動制御学会制御部門制御理論部会副主査

2024 Editorial Board Member of Annual Reviews in Control

2024 第 15 回横幹コンファレンス プログラム委員長

2012-2022(except 2014, 2017, 2020) TPC Member of IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)

2013-2023 Member of Conference Editorial Board of IEEE CSS

2023 Secretary of 22nd IFAC World Congress

2021-2022 IPC Member of IEEE Conference on Control Technology and Applications

2017-2022 Associate Editor of IEEE Transactions on Control Systems Technology

2022 SICE MSCS プログラム委員長

2016-2022 IPC Member of Indian Control Conference (ICC)

2020 IPC Member of IFAC Workshop on Cyber-Physical and Human Systems

2020 Local Arrangement Co-chair of 16th International Conference on Control & Automation

2020 第 63 回自動制御連合講演会実行委員

2020 Registration Co-chair of IFAC Workshop on Cyber-Physical and Human Systems

2019-2020 SICE 学会賞委員会委員

2019-2020 SICE Cyber-Physical & Human Systems 調査研究会 主査

2017(2)-2020(1) Associate Editor of SICE Journal of Control, Measurement, and System Integration

2018-2019 IEEE Control Systems Society Japan Chapter Secretary

2018-2019 SICE 制御理論部会委員

2018-2019 IoT 時代に向けたイベントベースト制御調査研究会委員

2018-2019 超スマート社会実現のためのシステム制御技術調査研究会委員

2019 Head of Editorial Board for SICE Annual Conference

2018 Associate Editor for SICE Annual Conference

2018 IPC Member of IFAC Conference on Cyber-Physical and Human Systems

2017-2018 SICE 会誌編集委員

2014, 2018 再生可能エネルギー国際会議組織委員 (分科会 10)

2017, 2018 IPC Member of IEEE Conference on Control Technology and Applications

2015(3)-2018(2) SICE 和文論文集編集委員会 Associate Editor

2017 IEEE Control Systems Society Japan Chapter Treasurer

2015-2017 SICE 都市インフラシステム構築と制御調査研究委員会委員

2015, 2017 TPC Member of International Symposium on Swarm Behavior and Bio-Inspired Robotics 2015

2015(3)-2017(3) Advanced Robotics Best Paper Award 選考委員会委員

2015-2016 SICE ネットワーク上の制御と信号処理調査研究委員会委員

2016 Member of National Organizing Committee of 6th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)

2016 Associate Editor for IEEE International Conference on Control & Automation (ICCA) 2016

2015 Publication Chair for Workshop on System and Control Perspectives for Smart City

2015 第 58 回自動制御連合講演会プログラム委員会委員

2014, 2012 TPC Member of International Conference on Control, Automation, Robotics and Vision (ICARCV)

2012-2013 電子情報通信学会高信頼制御通信時限研究専門委員会委員

2012-2013 SICE 社会基盤システムにおける分散意思決定のためのシステム制御調査研究会委員

2011-2012 SICE 制御理論部会委員

2010-2011 SICE エネルギー・環境システム制御技術調査研究会副幹事

Dissertation

PhD Thesis: Analysis and Control of Systems with State and Input Constraints, Kyoto Univ., 2007
`http://www.fl.ctrl.titech.ac.jp/~hatanaka/d_thesis.pdf`
(平成 19 年度手島記念研究賞博士論文賞)

Master Thesis: Reference Management Using State Observers and Preview Control, Kyoto Univ., 2004
`http://www.fl.ctrl.titech.ac.jp/~hatanaka/m_thesis.pdf`

Research Awards

[22] 令和 7 年東京科学大学教育賞優秀賞
[21] 2025 年度計測自動制御学会論文賞
[20] 2025 年度システム制御情報学会論文賞
[19] 2023 年度計測自動制御学会制御部門パイオニア技術賞
[18] 2023 年度計測自動制御学会論文賞
[17] Finalist of IFAC 2023 Application Paper Prize, 2023
[16] 2021 年度計測自動制御学会論文賞
[15] IFAC Workshop on Cyber Physical & Human Systems, Best Research Paper Award
[14] 2020 年度計測自動制御学会論文賞・武田賞
[13] IEEE Senior Member Grade
[12] 2019 年度計測自動制御学会 CPD ポイント高得点者表彰
[11] 2018 年度計測自動制御学会制御部門大会賞
[10] 2017 年度計測自動制御学会制御部門研究賞（木村賞）
[9] 2016 年度計測自動制御学会学会賞（著述賞）
[8] 2015 年度計測自動制御学会論文賞
[7] Asian Control Conference Best Paper Prize Award, 2015.
[6] 計測自動制御学会制御部門パイオニア賞, 2014.
[5] Best Presentation of Session Award of 2012 ACC (ThA01 Cooperative Control).
[4] Best Presentation of Session Award of 2011 ACC (ThC14 Cooperative Control VI)
[3] 2009 年度計測自動制御学会論文賞
[2] 平成 19 年度手島記念研究賞博士論文賞
[1] 2005 年度計測自動制御学会学術奨励賞

Publications

被論文引用 2870 (h-index:27, h10-index:67)

Books

[6] 畑中，舩田，“ネットワークシステムの分散協調制御,” コロナ社, 2026.
[5] 伊吹, 山内, 畑中，瀬戸, “機械学習のための関数解析入門 実践：学習から制御まで,” 内田老鶴圃, 2023.
[4] 瀬戸, 伊吹, 畑中, “機械学習のための関数解析入門,” 内田老鶴圃, 2021.
[3] T. Hatanaka, Y. Wasa and K. Uchida (eds.), “Economically-enabled Energy Management: Interplay between Control Engineering and Economics,” Springer Nature, April, 2020.
[2] 東, 永原, 石井, 林, 桜間, 畑中, “マルチエージェント制御,” コロナ社, 2015. **(2016 年度計測自動制御学会著述賞)**
[1] T. Hatanaka, N. Chopra, M. Fujita and M. W. Spong, *Passivity Based Control and Estimation in Networked Robotics*, Communications and Control Engineering Series, Springer-Verlag, 2015. **(More than 20,000 Chapter Downloads)**

Book Chapters

[2] 畑中，“5. 制御,” 数理工学の世界, 日本評論社, pp. 118–145, 2019.
[1] 畑中, “21.4 センサネットワーク,” ロボット制御学ハンドブック, 近代科学社, 2017.

Invited Article

[17] 舩田, 山内, 畑中, “制御バリア関数に基づく制約付きマルチロボット制御,” システム/制御/情報, vol. 69, no. 2, pp. 41–46, 2025.
[16] 山本, 畑中, 新妻, “IFAC WC 2023 でのイベント,” 特集：IFAC World Congress 2023 in Yokohama, 計測と制御, vol. 63, no. 7, pp. 417–420, 2024.
[15] 山内, 畑中, “人とロボットの協調：システム制御の観点から,” 日本ロボット学会誌, vol. 42, no. 2, pp. 99–104, 2024.
[14] 阪口, 李, 川嶋, 遠藤, 畑中, 林, “社会的距離とモビリティ・ロボティクス・IoT,” 計測と制御，特集号「特集：ポストコロナ未来社会への科学技術」，Vol. 60, No. 9, pp. 647–654, 2021.
[13] 山内, 畑中, 藤田, “剛体運動の受動性と視覚フィードバック制御,” システム/制御/情報，特集号「受動性に基づくロボット制御」，Vol. 64, No. 12, pp. 465–470, 2020.
[12] 井上，畑中, “エネルギー管理のためのサイバーフィジカルシステムの系統的設計,” 計測と制御, Vol. 58, No. 8, pp. 612–617, 2019.
[11] 畑中，永原, “総論: Society 5.0 のためのシステム制御技術,” 計測と制御, Vol. 58, No. 8, pp. 579–582, 2019.
[10] T. Hatanaka, N. Chopra, J. Yamauchi, M. Doi, Y. Kawai and M. Fujita, “A Passivity-Based System Design of Semi-autonomous Cooperative Robotic Swarm,” ASME DSC Magazine, Vol. 5, No. 2, pp. 14–18, 2017.
[9] 畑中, “システム制御の役割って何だろう,” 巻頭言, Azbil Technical Review, pp. 1, 2017.
[8] 畑中, JST 研究開発戦略センター 2015 年研究開発俯瞰報告書 (システム科学分野), 2015.
[7] 畑中, “制御実験の授業を作ってみて,” 計測と制御, Vol. 53, No. 3, pp. 159–164, 2015.
[6] 畑中, “マルチエージェントシステムの制御-VI 分散最適化,” システム/制御/情報, 連載講座「マルチエージェント制御」, No. 3, pp. 125–132, 2014.
[5] 畑中, 藤田, “システム科学技術のための分散協調最適化とポテンシャルゲーム,” 計測と制御, Vol. 50, No. 1, pp. pp. 49–54, 2012.
[4] 畑中, システム制御情報学会誌国際会議報告 (2009 ACC), システム/制御/情報,Vol. 53, No. 10, 2009.
[3] 飯野, 畑中, 藤田, “センサネットワークと制御理論,” 計測と制御, Vol. 47, No. 8, pp.649–656, 2008.
[2] 畑中, 鷹羽, “不確かな拘束システムに対する確率的出力許容集合の構成,” システム/制御/情報,Vol. 51, No. 11, pp. 499–505, 2007.
[1] 向井, 畑中, 藤田, “ハイブリッドシステムの制御-IV モデル予測制御,” システム/制御/情報,Vol. 51, No. 11, pp.512–519, 2007.

Journal Article

[100] T. Miyano, Y. Ito, D. Inoue, and T. Hatanaka, “Practical Consensus Among Heterogeneous Decision-Makers: Experimental and Theoretical Analyses,” IEEE Transactions on Computational Social Systems, to appear, 2026.

[99] D. Hijikata, M. Suenaga, Z. Lu, K. Uto, and T. Hatanaka, "Hierarchical Coverage Scheduling and Control over Geographically Dispersed Farmlands with Multi-Drone Systems," Asian Journal of Control, to appear, 2026.
[98] K. Oishi, Y. Toyomoto, T. Oshima, and T. Hatanaka, "A Benchmark on Multi-USV Control for Aquatic Environmental Monitoring," Control Systems Benchmarks II, J. M. Maestre and C. Ocampo-Martinez (eds.), Advances in Industrial Control series, Springer Nature, 2026.
[97] Y. Toyomoto, T. Oshima, S. Otsuki, K. Nakashima, and T. Hatanaka, "Dynamic Modeling and Hierarchical Control for Cooperative Tugboat Operations," IFAC Journal of Mechatronics, vol. 116, 103481, 2026.
[96] T. Miyano, Y. Ito, D. Inoue, and T. Hatanaka, "Stability Analysis of Mixed Logit Dynamics with Conformity Biases and Committed Minority," IFAC Journal of Systems and Control, vol. 34, 100343, 2025.
[95] Y. Toyomoto, K. Oishi, T. Oshima, and T. Hatanaka, "Combined Linear and Circular Path Generation for Aquatic Environmental Monitoring with Multiple USVs," Advanced Robotics, vol. 39, no. 16, pp. 1000–1013, 2025.
[94] J.M. Maestre, F.L. Rodriguez, P. Chanfreut, and T. Hatanaka, "On Feedback Design for Systems with Agents in the Loop," Special section on: Safety, Robustness, and Effectiveness in Human-Machine Teaming, IEEE Control Systems Letters, vol. 9, pp. 2273–2278, 2025.
[93] S. Otsuki, M. Taya, K. Nakashima, and T. Hatanaka, "Hierarchical Control of Multiple Tugboats with Constraint-driven Model Following Control," SICE Journal of Control, Measurement, and System Integration, vol. 18, no. 1, 2521907, 2025.
[92] Y. Toyomoto, T. Oshima, K. Oishi, J.M. Maestre, and T. Hatanaka, "Constraint-driven Multi-USV Coverage Path Generation for Aquatic Environmental Monitoring," IEEE Transactions on Control Systems Technology, vol. 33, no. 6, pp. 2037–2051, 2025.
[91] T. Tanaka, S. Nakayama, Y. Wasa, K. Hirata, and T. Hatanaka, "A Continuous-Time Primal-Dual Algorithm with Convergence Speed Guarantee Utilizing Constraint-based Control," SICE Journal of Control, Measurement, and System Integration, vol. 18, no. 1, 2485496, 2025. **(2025 年度計測自動制御学会論文賞)**
[90] Y. Okada, H. Sugawara, H. Soya, and T. Hatanaka, "Feasibility-aware Hierarchical Task Assignment for Equipment Inspection Robots with Heterogeneous Work Efficiency," Advanced Robotics, vol. 39, no. 2, pp. 114–126, 2025.
[89] M. Li, K. Laib, T. Hatanaka, and I. Lestas, "Convergence Rate Bounds for the Mirror Descent Method: IQCs, the Popov Criterion and Bregman Divergence," Automatica, vol. 171, 111973, 2025.
[88] S. Otsuki, N. Hatta, M. Hanif, R. Funada, K. Nakashima, and T. Hatanaka, "Hierarchical Vessel Safe Operation in A Port through CBF, MPC and RRT-like Spatiotemporal Path Planning," Nonlinear and Constrained Control - Applications, Synergies, Challenges and Opportunities, E. Garone, I.V. Kolmanovsky, and T.W. Nguyen (eds), Springer Nature, pp. 407–441, 2025.
[87] A.D. Carenero, T. Tanaka, M. Li, T. Hatanaka, Y. Wasa, K. Hirata, Y. Ushifusa, and T. Ida, "ZEH-oriented Linear Programming for the Sizing Problem of Photovoltaic Panels and Batteries," IEEE Access, vol. 12, pp. 80429–80441, 2024.
[86] T. Tanaka, A.D. Carnerero, M. Li, Y. Wasa, K. Hirata, and T. Hatanaka, "Game-theoretic Modeling and Analysis of Strategic Investments for PV and Shared Battery," SICE Journal of Control, Measurement, and System Integration, vol. 17, no. 1, pp. 222–232, 2024.
[85] Z. Lu, M. Hanif, T. Shimizu, and T. Hatanaka, "Angle-aware Coverage with Camera Rotational Motion Control," SICE Journal of Control, Measurement, and System Integration, vol. 17, no. 1, pp. 211–221, 2024.
[84] M. Li, T. Tanaka, A.D. Carnerero, Y. Wasa, K. Hirata, Y. Fujisaki, Y. Ushifusa, and T. Hatanaka, "Stochastic Optimal Investment Strategy for Net-Zero Energy Houses," Special Issue on Integration and Control of Grid-Scale Battery Energy Storage Systems: Challenges and Opportunities, IET Renewable Power Generation, 1–12, 2024.

[83] M. Hanif, T. Shimizu, Z. Lu, M. Suenaga, and T. Hatanaka, “Efficient Angle-Aware Coverage Control for Large-Scale Map Reconstruction,” SICE Journal of Control, Measurement, and System Integration, vol. 17, no. 1, pp. 144–155, 2024.
[82] 岡田, 菅原, 征矢, 畑中, “設備自動点検システム構築に向けた異種ロボット群のタスク割り当て効率化,” 計測自動制御学会論文集, vol. 60, no. 2, pp. 82–92, 2024.
[81] T. Hatanaka, T. Mochizuki, T. Sumino, J.M. Maestre, and N. Chopra, “Human Modeling and Passivity Analysis for Semi-autonomous Multi-robot Navigation in Three Dimensions,” IEEE Open Journal of Control Systems, Special section on Modeling, Control, and Learning Approaches for Human-Robot Interaction Systems, vol. 3, pp. 45–57, 2024.
[80] 伊吹，山内，畑中, “Passivity Shortage に基づく離散時間 3 次元位置姿勢同期制御,” 計測自動制御学会論文集, vol. 59, no. 12, pp. 505–516, 2023.
[79] 柴, 種村, 千田, 畑中, 東，“半自律協調誘導制御のための人間動作の線形時不変性解析,” システム制御情報学会論文誌, vol. 36, no. 10, pp. 349–356, 2023. **(2025 年度システム制御情報学会論文賞)**
[78] S. Yamashita, K. Irifune, T. Hatanaka, Y. Wasa, K. Hirata, and K. Uchida, “Passivity-based Analysis and Design for Population Dynamics with Conformity Biases,” Automatica, vol. 158, 111300, 2023.
[77] T. Ibuki, S. Nakano, S. Shigaki, and T. Hatanaka, “Sampled Visual Feedback Pose Estimation and Regulation Based on Camera Frame Rates,” SICE Journal of Control, Measurement, and System Integration, Vol. 16, No. 1, pp. 297–309, 2023.
[76] J. G. Martin, M. Hanif, T. Hatanaka, J.M. Maestre, and E.F. Camacho, “Predictive Receding-Horizon Multi-Robot Task Allocation Applied to the Mapping of Direct Normal Irradiance in a Thermosolar Power Plant,” Solar Energy, Vol. 263, 111911, 2023.
[75] T. Hatanaka, J. Yamauchi, M. Fujita, and H. Handa, “Contemporary Issues and Advances in Human-Robot Collaborations,” Cyber-Physical-Human Systems: Fundamentals and Applications, A. Annaswamy, P.P. Khargonekar, F. Lamnabhi-Lagarrigue, and S.K. Spurgeon (eds.), IEEE Press Series on Technology Management, Innovation, and Leadership, IEEE-Wiley, pp. 365–400, 2023.
[74] J. Yamauchi, M. Saito, M. Omainska, T. Hatanaka, and M. Fujita, “Cooperative Visual Pursuit Control with Learning of Target Motion via Distributed Gaussian Processes under Varying Visibility,” SICE Journal of Control, Measurement, and System Integration, Vol. 15, No. 2, pp. 228-240, 2023.
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[72] 中山, 種村, 千田, 東, 畑中, “人間とビークル群の協調制御系における制御性能を考慮したデータ駆動型グラフ構造探索,” 第 9 回制御部門マルチシンポジウム特集号, 計測自動制御学会論文集, Vol. 59, No. 3, pp. 103–109, 2023.
[71] Z. Lu, S. Yamashita, J. Yamauchi, and T. Hatanaka, “Distributed Online Assignment of Charging Stations in Persistent Coverage Control Tasks Based on LP Relaxation and ADMM,” SICE Journal of Control, Measurement, and System Integration, vol. 15, no. 2, pp. 191–200, 2022.
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