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Current Academic Employment

Professor, Department of Information Physics and Computing, The University of Tokyo, 2020-present
Visiting Professor, Department of Systems and Control Engineering, Tokyo Institute of Technology, 2020-present

Previous Academic Employment

Research Supervisor (Program Officer) (2012-2020), CREST (Core Research for Evolutional Science and Technology), JST (Japan Science and Technology Agency)
Professor (2005-2020), Department of Systems and Control Engineering, Tokyo Institute of Technology
Professor (1999 - 2005), Department of Electrical and Electronic Engineering, Kanazawa University
Associate Professor (1998 - 1999), Department of Electrical and Computer Engineering, Kanazawa University
Visiting Scientist (1994 - 1995), Department of Automatic Control Engineering, Technical University of Munich
Associate Professor (1992 - 1998), School of Information Science, Japan Advanced Institute of Science and Technology
Associate Professor (1991 - 1992), Department of Electrical and Computer Engineering, Kanazawa University
Lecturer (1988 - 1991), Department of Electrical and Computer Engineering, Kanazawa University
Research Associate (1985 - 1988), Department of Electrical and Computer Engineering, Kanazawa University

Education

Dr. Eng. Electrical Engineering, Waseda University 1987
M. Eng. Electrical Engineering, Waseda University 1984
B. Eng. Electrical Engineering, Waseda University 1982

Research Interests

Passivity-based Control in Robotics and Robust Control

Awards and Honors

IEEE CSS Distinguished Lecturer, IEEE Control Systems Society, 2017–2019
IEEE Fellow, 2016
IEEE CDC Plenary Lecturer, 54th IEEE Conference on Decision and Control (CDC), 2015
IEEE Transactions on Control Systems Technology (TCST) Outstanding Paper Award, 2008
SICE Fellow, 2013
SICE Outstanding Paper Award, 2015, 2009, 1997
SICE Young Author Award, 1985
ISCIE Outstanding Paper Award, 2000
10th Asian Control Conference (ASCC) Best Paper Award, 2015
Tokyo Tech Continuous Service Award, Tokyo Institute of Technology, 2015
SICE Distinguished Education Award, 2010
1st Best Teacher Award, Faculty of Engineering, Kanazawa University, 2004

Selected Professional Activities

Vice President, SICE, Feb. 2020
Vice President - Conference Activities, IEEE Control Systems Society, Jan 2011 - Dec 2013
Elected Member, Board of Governors, IEEE Control Systems Society, Jan 2009 - Dec 2011
Appointed Member, Board of Governors, IEEE Control Systems Society, Jan 2008 - Dec 2008
Head, SICE Technical Division on Control, 2012
Chair, SICE Technical Committee on Control Theory, 2006
Member, Board of Directors, SICE, Jan 2005 - Dec 2006.

Selected Editorships:

Editor, SICE Journal of Control, Measurement, and System Integration, Jan 2008 - Dec 2010
Associate Editor, IEEE Transactions on Control Systems Technology, Jan 2010 - Dec 2015
Associate Editor, IFAC Automatica, Jan 2005 - Dec 2010 (Outstanding Service Award)
Associate Editor, IEEE Transactions on Automatic Control, Jan 2005 - Dec 2008
Associate Editor, Asian Journal of Control, Jan 2005 - Dec 2008 (Appreciation Award)

Selected Conference Chairs and Committees:

Award Chair, IFAC Control Engineering Practice Paper Prize, IFAC, 2017-2020
General Chair, 2010 IEEE Multi-conference on Systems and Control, Sep 2010
Invited Session Chair, 2004 IEEE Conference on Control Applications, Sep 2004
International Session Chair, 31st SICE Annual Conference, Jul 1992
Program Committee Member, 1999 IEEE Conference on Control Applications, 1999
Program Committee Member, 35th IEEE Conference on Decision and Control, 1996
Program Committee Member, 34th IEEE Conference on Decision and Control, 1995

Ph.D. Advising

- (1) Keishi Hashimoto (Ph.D., co-advised, Kanazawa Univ.), YKK Corporation, Japan
- (2) Toru Namerikawa (Ph.D., co-advised, Kanazawa Univ.), Professor, Keio University, Japan
- (3) Hussein M. Jaddu (Ph.D., co-advised, JAIST), Associate Professor, Al-Quds University, Palestine
- (4) Hiromi Mochiyama (Ph.D., co-advised, JAIST), Professor, University of Tsukuba, Japan
- (5) Akira Maruyama (Ph.D., JAIST), Nachi Fujikoshi, Japan
- (6) Akihiro Kawabata (Ph.D., JAIST), Clarion, Japan
- (7) Ryoichi Suzuki (Ph.D., JAIST), Professor, Kanazawa Institute of Technology, Japan
- (8) Kenji Hirata (Ph.D., JAIST), Professor, University of Toyama, Japan
- (9) Natsuo Tanaka (Ph.D., JAIST), Japan Self-Defense Force, Japan
- (10) Jiyun Du (Ph.D., Kanazawa Univ.), PFU Systems Inc., Japan
- (11) Hiroyuki Naito (Ph.D., Kanazawa Univ.), UNITEC Corporation, Japan
- (12) Hiroyuki Kawai (Ph.D., Kanazawa Univ.), Professor, Kanazawa Institute of Technology, Japan
- (13) Yasunori Kawai (Ph.D., Kanazawa Univ.), Associate Professor, Ishikawa National Institute of Technology, Japan
- (14) Masakazu Mukai (Ph.D., Kanazawa Univ.), Associate Professor, Kogakuin University, Japan
- (15) Yasuhiro Uchiyama, (Ph.D., Kanazawa Univ.), IMV Corporation, Japan
- (16) Toshiyuki Murao (Ph.D., Tokyo Tech), Associate Professor, Kanazawa Institute of Technology, Japan
- (17) Tatsuya Ibuki (Ph.D., Tokyo Tech), Lecturer, Meiji University, Japan
- (18) Yutaka Iino (Ph.D., Tokyo Tech), Associate Professor, Waseda University, Japan
- (19) Yasuaki Wasa (Ph.D., Tokyo Tech), Lecturer, Waseda University, Japan
- (20) Junya Yamauchi (Ph.D., Tokyo Tech), Assistant Professor, The University of Tokyo, Japan
- (21) Riku Funada (Ph.D., Tokyo Tech), Postdoctoral Researcher, University of Texas at Austin, USA
- (22) Made Widhi Surya Atman (Ph.D., Tokyo Tech) Postdoctoral Researcher, Tampere University, Finland
- (23) Hiroshi Endo (Ph.D., Tokyo Tech) Fujitsu Laboratory, Japan
- (24) Aditya Wildan Farras (Ph.D. candidate, co-advised, Tokyo Tech)
- (25) Tatsuya Miyano (Ph.D. candidate, co-advised, Tokyo Tech)
- (26) Hayato Dan (Ph.D. candidate, co-advised, Tokyo Tech)
- (27) Shunya Yamashita (Ph.D. candidate, co-advised, Tokyo Tech)

Publications

Books

- [2] T. Hatanaka, N. Chopra, M. Fujita and M. W. Spong, Passivity-Based Control and Estimation in Networked Robotics, Communications and Control Engineering Series, Springer, 2015.
- [1] T. Sugie and M. Fujita, Introduction to Feedback Control (フィードバック制御入門), Corona Publishing Co.,Ltd., 1999 (in Japanese).

Book Chapters

- [21] T. Hatanaka, N. Chopra, J. Yamauchi and M. Fujita, “A Passivity-Based Approach to Human-Swarm Collaborations and Passivity Analysis of Human Operators,” Y. Wang and F. Zhang (Eds.), Trends in Control and Decision-Making for Human-Robot Collaboration Systems, Springer, pp. 325-355, 2017.
- [20] M. W. Spong and M. Fujita, “Control in Robotics,” T. Samad and A. M. Annaswamy (Eds.), The Impact of Control Technology, IEEE Control Systems Society, pp. 49-56, 2011.
- [19] H. Kawai, T. Murao and M. Fujita, “Passivity-based Visual Force Feedback Control for Eye-to-Hand Systems,” A. Lazinica and H. Kawai (Eds.), Robot Manipulators, New Achievements, IN-TECH, pp. 329-342, 2010.
- [18] T. Hatanaka, T. Yamada, M. Fujita, S. Morimoto and M. Okamoto, “Explicit Receding Horizon Control of Automobiles with Continuously Variable Transmissions,” L. Magni, D. M. Raimondo and F. Allgower (Eds.), Nonlinear Model Predictive Control Towards New Challenging Applications, Lecture Notes in Control and Information Sciences Series (LNCIS), Springer, Vol. 384, pp. 561-569, 2009.
- [17] M. Fujita, T. Murao, Y. Kawai and Y. Nakaso, “An Experimental Study of Stabilizing Receding Horizon Control of Visual Feedback System with Planar Manipulators,” R. Findeisen, F. Allgower and L. T. Biegler (Eds.), Assessment and Future Directions of Nonlinear Model Predictive Control, Lecture Notes in Control and Information Sciences Series (LNCIS), Springer, Vol. 358, pp. 573-580, 2007.
- [16] M. Fujita and T. Sugie, “Classical Control (古典制御),” Mechanical Engineering Handbook (機械工学便覧), Part 6, JSME, pp. 27-37, 2006 (in Japanese).
- [15] M. Fujita, “Geometric Method (幾何学的方法),” Mechanical Engineering Handbook (機械工学便覧), Part 6, JSME, pp. 11-13, 2006 (in Japanese).
- [14] H. Kawai, S. Izoe and M. Fujita, “A Passivity Approach to Vision-based Dynamic Control of Robots with Nonlinear Observer,” A. Bicchi, H. Christensen and D. Prattichizzo (Eds.), Control Problems in Robotics, Springer Tracts in Advanced Robotics (STAR), Springer, pp. 199-213, 2002.
- [13] M. Fujita, “Gain Scheduling (ゲインスケジューリング),” Handbook of Iron and Steel (鉄鋼便覧) (4th Ed.), ISIJ, No. 3, pp. 45-46, 2002 (in Japanese).
- [12] M. Fujita, “Robust Control (ロバスト制御),” H. Kobayashi, M. Fujita, et al. (Eds.), Practice of Robot Control (ロボット制御の実際), SICE, Corona Publishing Co.,Ltd., 1997 (in Japanese).
- [11] M. Fujita, “Magnetic Suspension Systems (磁気浮上系),” S. Hosoe and M. Araki (Eds.), Design of Control Systems - H_∞ Control and Its Applications- (制御系設計: H_∞ 制御とその応用), ISCIE, Asakura Publishing Co.,Ltd., 1994 (in Japanese).
- [10] M. Fujita, “Control Systems Design(4)-Robust Control- (制御系の設計(4)-ロバスト制御-),” F. Matsumura, M. Fujita, et al. (Eds.), Magnetic Suspension Technology -Magnetic Levitation Systems and Magnetic Bearings- (磁気浮上と磁気軸受), IEEJ TC on Magnetic Levitation, IEEJ, Corona Publishing Co.,Ltd., 1993 (in Japanese).
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- [7] M. Fujita, F. Matsumura and K. Uchida, “Experimental Evaluation of H_∞ Control for a Flexible Beam Magnetic Suspension System,” Robust Control, S. Hosoe (Eds.), Lecture Notes in Control and Information Sciences (LNCIS), Vol. 183, Springer, pp. 122-129, 1991.
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- [5] M. Fujita and K. Uchida, “ H_∞ State Feedback with Cheap Control,” Recent Advances in Mathematical Theory of Systems, Control, Networks and Signal Processing I, H. Kimura and S. Kodama (Eds.), Mita Press, pp. 275-280, 1991.
- [4] K. Uchida and M. Fujita, “ H_2 Optimality of the H_∞ Central Controller for Time Varying Systems,” Recent Advances in Mathematical Theory of Systems, Control, Networks and Signal Processing I, H. Kimura and S. Kodama (Eds.), Mita Press, pp. 147-152, 1991.
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- [1] F. Matsumura, M. Fujita, and C. Oida, “A Design of Robust Servo Controllers for an Unbalance Vibration in Magnetic Bearing Systems,” Magnetic Bearings, G. Schweitzer (Ed.), Springer, pp. 319-326, 1988.

Editing Volumes

- [7] M. Ikeda, S. Adachi, H. Kajiwara, T. Sugie and M. Fujita (Eds.), Systems and Control Engineering Series (システム制御工学シリーズ), Corona Publishing Co.,Ltd., 1999– (in Japanese).
- [6] M. Fujita (Ed.), “Design of Cooperative Distributed Energy Management System (分散協調型エネルギー管理システム構築),” Journal of SICE, Vol. 55, No. 7, 2016 (in Japanese).
- [5] S. Adachi and M. Fujita (Eds.), “Modeling and Simulation for Energy Management (エネルギーマネジメントのためのモデリングとシミュレーション),” Simulation, Journal of JSST (Japan Society for Simulation Technology), Vol. 32, No. 3, 2013 (in Japanese).
- [4] E. Shimemura and M. Fujita (Eds.), Proc. of the 10th Japanese-German Seminar on Nonlinear Problems in Dynamical Systems -Theory and Applications-, 2002.
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- [1] F. Matsumura, M. Fujita, et al. (Eds.), Magnetic Suspension Technology -Magnetic Levitation Systems and Magnetic Bearings- (磁気浮上と磁気軸受), IEEJ TC on Magnetic Levitation, IEEJ, Corona Publishing Co.,Ltd., 1993 (in Japanese).

Journal Articles

- [145] J. Yamauchi, T. Genchou, R. Funada, T. Hatanaka and M. Fujita, “Persistent Visual Coverage Control Ensuring Field of Views’ Overlap with Information Reliability and Energy Management (情報信頼度とエネルギー管理を考慮した視野重複を保証する持続的視覚被覆制御),” Trans. IEEJ, 2020 (in Japanese) (submitted).

- [144] T. Hatanaka, R. Funada and M. Fujita, “Visual Surveillance of Human Activities via Gradient-based Coverage Control on Matrix Manifolds,” *IEEE Transactions on Control Systems Technology*, Vol. 28, No. 5, pp. xxxx-xxxx, Sept. 2020 (to appear as Regular Paper).
- [143] T. Miyano, S. Yamashita, T. Hatanaka, K. Shibata, T. Jimbo and M. Fujita, “Continuous-time Optimization Dynamics in Imitation of ADMM Architecture and Passivity-Based Robustification against Delays,” *IEEE Transactions on Control of Network Systems*, Vol. 7, No. 3, pp. xxxx-xxxx, Aug. 2020 (to appear).
- [142] R. Funada, X. Cai, G. Notomista, M.W.S. Atman, J. Yamauchi, M. Fujita and M. Egerstedt, “Coordination of Robot Teams Across Long Distances: From Georgia Tech to Tokyo Tech and Back - An 11,000-km Multi-Robot Experiment,” *IEEE Control Systems Magazine*, Vol. 40, No. 4, pp. 53-79, Aug. 2020.
- [141] J. Yamauchi, Y. Harada, T. Hatanaka and M. Fujita, “Cooperative Pursuit Control based on Networked Visual Motion Observer in Three Dimensions (ネットワーク化視覚運動オブザーバに基づく3次元空間内での協調追尾制御),” *Trans. of SICE*, Vol. 56, No. 7, pp. 386-393, Jul. 2020 (in Japanese).
- [140] T. Ibuki, S. Wilson, J. Yamauchi, M. Fujita and M. Egerstedt, “Optimization Based Distributed Flocking Control for Multiple Rigid Bodies,” *IEEE Robotics and Automation Letters*, Vol. 5, No. 2, pp. 1891-1898, Apr. 2020.
- [139] S. Yamashita, T. Hatanaka, J. Yamauchi and M. Fujita, “Passivity-Based Generalization of Primal-Dual Dynamics for Non-Strictly Convex Cost Functions,” *Automatica*, Vol. 112, 108712, Feb. 2020.
- [138] J. Yamauchi, M. Doi, T. Ibuki, T. Hatanaka and M. Fujita, “Passivity-based Pose Synchronization under Disturbances in Three Dimensions (受動性に基づく3次元空間内での外乱を考慮した剛体運動同期制御),” *Trans. of SICE*, Vol. 55, No. 12, pp. 808-815, 2019 (in Japanese).
- [137] A.W. Farris, T. Hatanaka, T.W. Nguyen, R. Funada, J. Yamauchi and M. Fujita, “Distributed Dynamic Reference Governor for Constrained Semi-Autonomous Robotic Swarms with Communication Delays and Experimental Verification,” *SICE JCMSI*, Vol. 12, No. 6, pp. 237-245, 2019.
- [136] H. Endo, S. Suzuki, T. Shiraishi, T. Hatanaka, H. Fukuda and M. Fujita, “Development and Verifications of Data Center Air Conditioning Control Systems Integrating Just-In-Time Prediction Models (JIT 予測モデル融合型データセンタ空調制御システムの開発と検証),” *Trans. of SICE*, Vol. 55, No. 10, pp. 625-634, 2019 (in Japanese).
- [135] T. Miyano, S. Yamashita, T. Hatanaka, K. Shibata, T. Jimbo and M. Fujita, “Design of Continuous-Time ADMM and Passivity-Based Convergence Analysis (連続時間 ADMM の提案と受動性に基づく収束性解析),” *Trans. of SICE*, Vol. 55, No. 4, pp. 286-293, 2019 (in Japanese).
- [134] H. Endo, D. Ishikura, T. Hatanaka, H. Kodama, H. Fukuda and M. Fujita, “Real-time Optimization of Cooling Units in Data Center Utilizing Coordination Systems with ICT Equipment (ICT 機器連携システムを利用したデータセンタ空調機の実時間最適化),” *Trans. of SICE*, Vol. 55, No. 2, pp. 118-126, 2019 (in Japanese).
- [133] Y. Kushima, H. Kawai, T. Muraio, Y. Kawai, M. Kishitani, R. Suzuki and M. Fujita, “FES-assisted Cycling with Cadence Tracking Control for Rehabilitation of Hemiparesis (片麻痺患者のリハビリテーションに向けた FES によるペダリング運動の速度制御),” *Trans. IEEJ*, Vol. 138-C, No. 11, pp. 1391-1398, 2018 (in Japanese).
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- [129] J. Yamauchi, M.W.S. Atman, T. Hatanaka, M. Fujita, “Cooperative Control of Human-Robotic Network under Inter-Robot Communication Delay: A Passivity Approach (ロボット間の通信遅れを考慮した人間-ロボティックネットワークの協調制御：受動性アプローチ),” *Trans. of SICE*, Vol. 53, No. 12, pp. 663–670, 2017 (in Japanese).
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- [123] Y. Wasa, T. Hatanaka and M. Fujita, “Application of Irrational Decisions to Simple Experimentation to Guarantee Welfare Maximization,” *SICE JCMSI*, Vol. 7, No. 4, pp. 199–204, 2014.
- [122] T. Ibuki, T. Hatanaka and M. Fujita, “3-D Pose Synchronization: A Necessary and Sufficient Condition on Digraphs (3次元位置・姿勢協調制御-固定グラフ構造における必要十分条件の導出-),” *Trans. of SICE*, Vol. 50, No. 4, pp. 374–382, 2014 (in Japanese).
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