

Tsuneo Yoshikawa

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Personal Data

Professor Emeritus, Kyoto University

Visiting Senior Researcher

Research Organization of Science and Engineering

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Education

Bachelor of Engineering: March 1964

Department of Precision Machinery, Faculty of Engineering, Kyoto University

Master of Engineering: March 1966

Department of Precision Machinery, Graduate School of Engineering,
Kyoto University

Doctor of Engineering: September 1969 (degree awarded)

Graduate Student in Doctor Course (April 1966-March 1969)

Department of Applied Mathematics and Physics, Graduate School of
Engineering, Kyoto University

Work History

Assistant Professor (April 1969 - May 1970)

Department of Applied Mathematics and Physics, Faculty of Engineering,
Kyoto University

Associate Professor (June 1970 — July 1986)

Automation Research Laboratory, Faculty of Engineering, Kyoto University

Professor (July 1986 — May 1989)

Automation Research Laboratory, Faculty of Engineering, Kyoto University

Professor (June 1989 — May 1991)

Department of Applied Systems Science, Faculty of Engineering,

Kyoto University

Professor (May 1991 – March 1994)

Department of Mechanical Engineering, Faculty of Engineering,
Kyoto University

Professor (April 1994–March 2005)

Department of Mechanical Engineering, Graduate School of Engineering,
Kyoto University

Professor Emeritus (April 2005)

Kyoto University

Professor (April 2005–March 2012)

Department of Human and Computer Intelligence, College of Information
Science and Engineering, Ritsumeikan University

Concurrent Appointments

NRC Postdoctoral Resident Research Associate (December 1973–September 1975, and
May 1977–June 1977)

Marshall Space Flight Center, NASA, USA

Associate Professor (January 1982 – March 1987)

Institute of Space and Astronautical Science

Professor (April 1987 – March 1988)

Institute of Space and Astronautical Science

Awards and Honors

1. Best Paper Award (August 1975)

Society of Instruments and Control Engineers

“Minimal-Order Optimal Filters for Linear Discrete-Time Systems,” Tsuneo
Yoshikawa, Trans. Society of Instrument and Control Engineers, vol.9, no.5,
pp. 588-594 (in Japanese), (1973).

2. Sawaragi Memorial Best Paper Award (May 1982)

Japan Automatic Control Society

“Decentralized Control of Moving Vehicles on loop Line,” Tsuneo Yoshikawa,
Hitoshi Oka, Tomio Yoshikawa, and Hideo Hanafusa, Systems and Control,
vol.24, no.10, pp.690-698 (in Japanese), 1980

3. Best Paper Award (July 1985)

Society of Instruments and Control Engineers

“Analysis of redundancy of Articulated Manipulators and its Application to Tasks
with Priority,” H. Hanafusa, T. Yoshikawa and Y. Nakamura, Trans. Society of

- Instrument and Control Engineers, Vol. 19, pp. 421-426 (in Japanese), 1983.
4. Sawaragi Memorial Best Paper Award (May 1991)
Society of Systems, Control and Information Engineers
Tsuneo Yoshikawa, Toshiharu Sugie, and Junichi Imura: Digital Robust Control of Nonlinear Mechanical Systems, Transactions of the Institute of Systems, Control and Information Engineers, vol.3, no.9, pp.298-309 (in Japanese) (1990)
 5. Best Paper Award (July 1991)
Society of Instruments and Control Engineers
“Maneuverability of Master-Slave Telemanipulation Systems,” Yasuyoshi Yokokohji and Tsuneo Yoshikawa, Trans. Society of Instrument and Control Engineers, vol.26, no.5, pp.572-579 (in Japanese), (1990)
 6. Best Paper Award, Takeda Award (July 1994)
Society of Instruments and Control Engineers
“Internal Stability and L2 Gain of Nonlinear Systems – Derivation of Bounded Real Condition -,” Junichi Imura, Toshiharu Sugie, and Tsuneo Yoshikawa, Trans. Society of Instrument and Control Engineers, vol.29, no.6, pp.659-667 (in Japanese) (1993)
 7. Best Paper Award (November 1996)
JDSMC, ASME
Tsuneo Yoshikawa, Yasuyoshi Yokokohji, Tomoharu Matsumoto, and Xin-Zhi Zheng: Display of Feel for the Manipulation of Dynamic Virtual Objects, ASME J. Dynamic Systems, Measurement, and Control, Vol. 117, No. 4, pp. 554-558 (1995)
 8. Best Conference Paper Award (April 1997)
ICRA, IEEE
Tsuneo Yoshikawa, Akihiro Nagura: A Touch and Force Display System for Haptic Interface, Proceedings 1997 IEEE International Conference on Robotics and Automation, Vol.3, pp.3018-3024(1997)
 9. Best Paper Award & Sunahara Memorial Award (May 1998)
Society of Systems, Control and Information Engineers
Tsuneo Yoshikawa, Jun-ichi Imura, and Ryuji Haruna: Identification and Control of Nonlinear Dynamic Systems by Hybrid Neural Networks, Transactions of the Institute of Systems, Control and Information Engineers, vol.9, no.3, pp.127-136 (in Japanese) (1996)
 10. Achievement Award (June 1998)
Division of Robotics and Mechatronics, Japan Society of Mechanical Engineers
For seminal contributions in developing the basic concept and index measure of manipulability, control methods for robot hand manipulation, and dynamic control algorithms for robot manipulators.
 11. IEEE Fellow (January 2000)

For contributions to the analysis and control of robotic mechanisms

12. Outstanding Paper Award (September 2000)

The Virtual Reality Society of Japan

Yasuyoshi Yokokohji, Yoshihiko Sugawara, and Tsuneo Yoshikawa: Accurate Image Overlay on Head-Mounted Displays Using Vision and Accelerometers, Transactions of the Virtual Reality Society of Japan, vol.4, no.4 pp.589-598 (in Japanese) (1999)

13. JSME Fellow (March 2002)

Japan Society of Mechanical Engineers

14. Outstanding Paper Award (March 2005)

Fanuc FA Robot Foundation

Jun Ueda and Tsuneo Yoshikawa: Robust Arm Configuration of Manipulator Mounted on Flexible Base, Journal of the Robotics Society of Japan, vol.20, no.5, pp.537-542 (in Japanese) (2002)

15. RSJ honorary member (March 2012)

Robotics Society of Japan

16. Education Award (April 2021)

Japan Society of Mechanical Engineers

Book: T. Yoshikawa: Foundations of Robot Control, Corona Publishing Co. Ltd. (1988) (in Japanese)

The book has gone through more than 30 editions and contributed significantly in educating engineers and researchers in the field of robotics and mechatronics.

Professional Activities (selected)

Domestic

1. Director (March 1984-March 1986)

In Charge of Projects, Robotics Society of Japan

2. Conference Chair (November 28 – 30, 1985)

The Third Conference of Robotics Society of Japan, Osaka

3. Director (March 1991-March 1993)

In Charge of journal, Robotics Society of Japan

4. Vice President (March 2001-March 2003)

Robotics Society of Japan

5. President (March 2003-March 2005)

Robotics Society of Japan

6. Auditor (March 2006-March 2008)

Robotics Society of Japan

7. Director (May 1989-May 1991)

In Charge of journal, The Institute of Systems, Control and Information Engineers

8. Branch Director (February 1999 - February 2000)

Kansai Branch, Society of Instrument and Control Engineers

9. Director (April 2002-March 2004)

In Charge of Projects, The Institute of Systems, Control and Information Engineers

International

1. Conference Chair (October 28 - 30, 1993)

Third International Symposium on Experimental Robotics (ISER), Kyoto, Japan

2. Conference Program Vice-Chair (July 11 - 18, 1994)

Japan-U.S.A. Symposium on Flexible Automation, Kobe, Japan

3. Technical Editor (May 1990 – May 1993)

IEEE Trans. On Robotics and Automation

4. Conference Program Vice-Chair (April 22 -28, 1996)

IEEE International Conference of Robotics and Automation, (ICRA 1996),
Minneapolis, Minnesota, USA

5. Program Co-Chair (April 19 – 21 2001)

32nd International Symposium on Robotics (ISR 2001), Seoul. Korea

Publications

Books (English and Japanese)

[1] 菅井齊喜, 得丸英勝, 花房秀郎, 吉川恒夫, 和田力 : 制御工学, コロナ社 (1979)

Y. Sugai, H. Tokumaru, H. Hanafusa, T. Yoshikawa, and T. Wada: "Control Engineering," Corona Publishing Co. Ltd. (in Japanese) (1979)

[2] 吉川恒夫(訳): ロボット・マニピュレータ (R.P. Paul 著, MIT Press), コロナ社 (1984)

R.P. Paul (Author), T. Yoshikawa (Translator): "Robot Manipulator," Corona Publishing Co. Ltd. (in Japanese) (1984)

[3]. 吉川恒夫, ロボット制御基礎論, コロナ社 (1988)

T. Yoshikawa: "Foundations of Robot Control," Corona Publishing Co. Ltd. (in Japanese) (1988)

[4]. Tsuneo Yoshikawa: "Foundations of Robotics, Analysis and Control" MIT Press (1990)

[5]. 吉川恒夫, 井村順一 : 現代制御論, コロナ社 (2014) (現代制御論, 昭晃堂 (1994)と同

内容)

T. Yoshikawa and Jyun-ichi Imura: "Modern Control Theory," Corona Publishing Co. Ltd. (in Japanese) (2014) (Originally published from Shokodo in 1994)

[6]. 吉川恒夫：古典制御論，コロナ社（2014）（古典制御論，昭晃堂（2004）と同内容）

T. Yoshikawa: "Classical Control Theory," Corona Publishing Co. Ltd. (in Japanese) (2014) (Originally published from Shokodo in 2004)

Refereed Journal Papers

English Journal Papers

[1] Yoshikazu Sawaragi and Tsuneo Yoshikawa: Performance Bounds for Discrete-Time Stochastic Optimal Control Problems, *Int. J. Control*, vol.10, no.5, pp.481-500 (1969)

[2] Yoshikazu Sawaragi and Tsuneo Yoshikawa: Discrete-Time Markovian Decision Processes with Incomplete State Observation, *The Annals of Mathematical Statistics*, vol.41, no.1, pp.78-86 (1970)

[3] Tsuneo Yoshikawa: An Example of Stochastic Multistage Games with Noisy State Observation, *IEEE Trans. on Automatic Control*, vol.AC-15, no.4, pp.455-458 (1970)

[4] Tsuneo Yoshikawa: On Discrete-Time Kalman Filter in Singular Case and a Kind of Pseudo-Inverse of a Matrix, *Int. J. Control*, vol.15, no.6, pp.1157-1163 (1972)

[5] Tsuneo Yoshikawa: Minimal-Order Optimal Filters for Discrete-Time Linear Stochastic Systems, *Int. J. Control*, vol.21, no.1, pp.1-19 (1975)

[6] Tsuneo Yoshikawa, Hiroaki Kobayashi: Observability of Decentralized Discrete-Time Control Systems, *Int. J. Control*, vol.22, no.1, pp.83-95 (1975)

[7] Tsuneo Yoshikawa and S.P. Bhattacharyya: Partial Uniqueness: Observability and Input Identifiability, *IEEE Trans. on Automatic Control*, vol.AC-20, no.5, pp.713-714 (1975)

[8] Tsuneo Yoshikawa: Dynamic Programming Approach to Decentralized Stochastic Control Problems, *IEEE Trans. on Automatic Control*, vol.AC-20, no.6, pp.796-797 (1975)

[9] Tsuneo Yoshikawa: Steering Law for Roof Type Configuration Control Moment Gyro System, *Automatica*, vol.13, no.4, pp.359-368 (1977)

[10] Hiroaki Kobayashi, Hideo Hanafusa, and Tsuneo Yoshikawa: Controllability Under Decentralized Information Structure, *IEEE Trans. on Automatic Control*, vol.AC-23, no.2, pp.182-188 (1978)

[11] Tsuneo Yoshikawa: Decomposition of Dynamic Team Decision Problems, *IEEE Trans. on Automatic Control*, vol.AC-23, no.4, pp.627-632 (1978)

[12] Tsuneo Yoshikawa and Hiroaki Kobayashi: Separation of Estimation and Control

for Decentralized Stochastic Control Systems, *Automatica*, vol.14, no.6, pp.623-628 (1978)

[13] Tsuneo Yoshikawa and Toshiharu Sugie: Inverse Systems for Reproducing Linear Functions of Inputs, *Automatica*, vol.17, no.5, pp.763-769 (1981)

[14] Tsuneo Yoshikawa: Condition for Existence of Solutions of Linear Equations with Arbitrary Vectors and Its Relation to Controllability, *IEEE Trans. on Automatic Control*, vol.AC-26, no.3, pp.728-730 (1981)

[15] Hiroaki Kobayashi and Tsuneo Yoshikawa: Graph-Theoretic Approach to Controllability and Localizability of Decentralized Control Systems, *IEEE Trans. on Automatic Control*, vol.AC-27, no.5, pp.1096-1108 (1982)

[16] Tsuneo Yoshikawa: Dynamic Manipulability of Robot Manipulators, *Journal of Robotic Systems*, vol.2, no.1, pp.113-124. (1985)

[17] Tsuneo Yoshikawa: Manipulability of Robotic Mechanisms, *The international Journal of Robotics Research*, vol.4, pp.3-9. (1985)

[18] Tsuneo Yoshikawa and Toshiharu Sugie: Analysis and Synthesis of Tracking Systems Considering Sensor Dynamics, *Int. J. Control*, vol.41, no.4, pp.961-971 (1985)

[19] Toshiharu Sugie and Tsuneo Yoshikawa: General Solutions of Robust Tracking Problem in Two-Degree-of-Freedom Control System, *IEEE Trans. on Automatic Control*, vol.AC-31, no.6, pp.552-554 (1986)

[20] Tsuneo Yoshikawa, Toshiharu Sugie and Hideo Hanafusa: Synthesis of Robust Tracking Systems with Specified Transfer Matrices, *Int. J. Control*, vol.43, no.4, pp.1201-1214 (1986)

[21] Tsuneo Yoshikawa and Toshiharu Sugie: Filtered Inverse Systems, *Int. J. Control*, vol.43, no.6, pp.1661-1671 (1986)

[22] Yoshihiko Nakamura, Hideo Hanafusa, and Tsuneo Yoshikawa: Task-Priority Based Redundancy Control of Robot Manipulators, *Int. J. Robotics Research*, vol.6, no.2, pp.3-15 (1987)

[23] Tsuneo Yoshikawa: Dynamic Hybrid Position/Force Control of Robot Manipulators -- Description of Hand Constraints and Calculation of Joint Driving Force, *IEEE Journal of Robotics and Automation*, vol. RA-3, no.5, pp.386-392 (1987)

[24] Tsuneo Yoshikawa, Toshiharu Sugie, and Masaki Tanaka: Dynamic Hybrid Position/Force Control of Robot Manipulators ---Controller Design and Experiment, *IEEE Journal of Robotics and Automation*, vol. RA-4, no.6, pp.699-705 (1988)

[25] Yoshihiko Nakamura, Kiyoshi Nagai, and Tsuneo Yoshikawa: Dynamics and Stability in Coordination of Multiple Robotics Mechanisms, *Int. J. Robotics Research*, vol.8, no.2, pp.44-61 (1989)

[26] Tsuneo Yoshikawa, and Shigeo Kiriya: Four-Joint Redundant Wrist Mechanism and Its Control, *ASME Journal of Dynamic Systems, Measurement, and Control*,

vol.111, pp.200-204 (1989)

[27] Tsuneo Yoshikawa and Kiyoshi Nagai: Manipulating and Grasping Forces in Manipulation by Multifingered Robot Hands, IEEE Trans. on Robotics and Automation, Vol.7, No.1, pp.67-77 (1991)

[28] Tsuneo Yoshikawa, Yoshihiko Nakamura, and Yasuyoshi Yokokohji: Application of DSP to Real Time Computation for Dynamic Control of Robot Manipulators, ADVANCED ROBOTICS, Vol.5, No.3, pp.275-291 (1991)

[29] Tsuneo Yoshikawa, and Akio Sudou: Dynamic Hybrid Position/Force Control of Robot Manipulators ---On-Line Estimation of Unknown Constraint, IEEE Trans. on Robotics and Automation, Vol.9, No.2, pp.220-226 (1993)

[30] Tsuneo Yoshikawa, and Xin-Zhi Zheng: Coordinated Dynamic Hybrid Position/Force Control for Multiple Robot Manipulators Handling One Constrained Object, International Journal of Robotics Research, MIT Press, Vol.12, No.3, pp.219-230 (1993)

[31] Yasuyoshi Yokokohji, and Tsuneo Yoshikawa: Design Guide of Master Arms Considering Operator Dynamics, ASME Journal of Dynamic Systems, Measurement, and Control, Vol.115, pp.253-260 (1993)

[32] Yasuyoshi Yokokohji, Takeshi Toyoshima, and Tsuneo Yoshikawa: Efficient Computational Algorithms for Trajectory Control of Free-Flying Space Robots with Multiple Arms, IEEE Transaction on Robotics and Automation, Vol.9, No.5, pp.571-580 (1993)

[33] Jun-ichi Imura, Toshiharu Sugie and Tsuneo Yoshikawa: Global Robust Stabilization of Nonlinear Cascaded systems, IEEE Transaction on Automatic Control, Vol.39, No.5, pp.1084-1089 (1994)

[34] Yasuyoshi Yokokohji and Tsuneo Yoshikawa: Bilateral Control of Master-Slave Manipulators for Ideal Kinesthetic Coupling-Formulation and Experiment-, IEEE Transaction on Robotics and Automaton, Vol.10, No.5, pp.605-620 (1994)

[35] Jun-ichi Imura, Toshiharu Sugie and Tsuneo Yoshikawa: Adaptive Robust Control of Robot Manipulators-Theory and Experiment-, IEEE Transaction on Robotics and Automation, Vol.10, No.5, pp.705-710 (1994)

[36] Jun-ichi Imura, Toshiharu Sugie, Yasuyoshi Yokokohji, and Tsuneo Yoshikawa: Robust Control of Robot Manipulators Based on Joint Torque Sensor Information, The International Journal of Robotics Research, Vol.13, No.5, pp.434-442 (1994)

[37] Jun-ichi Imura, Hiroshi Maeda, Toshiharu Sugie, Tsuneo Yoshikawa: Robust Stabilization of Nonlinear Systems by H_{∞} State Feedback, System & Control Letters, Vol.24, pp.103-114 (1995)

[38] Minoru Yamamoto, Haruo Mori, Tsuneo Yoshikawa: Operating Characteristics of an Externally Pressurized Gas Lubricated Piston Ring, Trans. ASME Journal of

Tribology, Vol. 117, No. 3, pp. 534-539 (1995)

[39] Tsuneo Yoshikawa, Yasuyoshi Yokokohji, Tomoharu Matsumoto, and Xin-Zhi Zheng: Display of Feel for the Manipulation of Dynamic Virtual Objects, ASME J. Dynamic Systems, Measurement, and Control, Vol. 117, No. 4, pp. 554-558 (1995)

[40] Jun-ichi Imura and Tsuneo Yoshikawa: Characterization of Some Gain Conditions via the Hamilton-Jacobi Inequality, System & Control Letters, Vol.28, pp.263-271 (1996)

[41] Tsuneo Yoshikawa, Kensuke Harada, and Atsushi Matsumoto: Hybrid Position/Force Control of Flexible-Macro/Rigid-Micro Manipulator Systems, IEEE Trans. on Robotics and Automation, Vol.12, No.4, pp.633-639 (1996)

[42] Jun-ichi Imura, Toshiharu Sugie, and Tsuneo Yoshikawa: A Hamilton-Jacobi Inequality Approach to the Strict H_{∞} Control Problem of Nonlinear Systems, Automatica, vol.32, no.4, pp.645-650 (1996)

[43] Tsuneo Yoshikawa and Koh Hosoda: Modeling of Flexible Manipulators using virtual rigid links and passive joints, The International J. of Robotics Research, vol.15, no.3, pp.290-299 (1996)

[44] Jun-ichi Imura and Tsuneo Yoshikawa: Parametrization of All Stabilizing Controllers of Nonlinear Systems, Systems & Control Letters, Vol.29, pp.207-213 (1997)

[45] Tsuneo Yoshikawa, Xin-Zhi Zheng, and Toshiki Moriguchi: Display of the Operating Feel of Dynamic Virtual Objects with Frictional Surfaces The International Journal of Robotics Research, Vol.16, No.5, pp.589-600 (1997)

[46] Jun-ich Imura, Toshiharu Sugie, and Tsuneo Yoshikawa: Characterization of the Strict Bounded Real Condition of Nonlinear Systems IEEE Trans. on Automatic Control, Vol.42, No.10, pp.1459-1464 (1997)

[47] Masamitsu Kurisu and Tsuneo Yoshikawa: Tracking Control for an Object in Pushing Operation, Journal of Robotic Systems, Vol.14, No.10, pp.729-736 (1997)

[48] Tsuneo Yoshikawa: Virtual Truss Model for Characterization of Internal Forces for Multiple Finger Grasps, IEEE Transaction on Robotics and Automation, Vol.15, No.5, pp.941-947 (1999)

[49] Tsuneo Yoshikawa: Passive and Active Closures by Constraining Mechanisms, Transactions of the ASME Journal of Dynamic Systems, Measurement, and Control, Vol.121, pp.418-424 (1999)

[50] Xin-Zhi Zheng, Ryo Nakashima, and Tsuneo Yoshikawa: On Dynamic Control of Finger Sliding and Object Motion in Manipulation with Multifingered Hands, IEEE Transaction on Robotics and Automation, Vol.16, No.5, pp.469-481 (2000)

[51] Tsuneo Yoshikawa and Akihiro Nagura: A Touch and Force Display System for Haptic Interface, Presence, Vol.10, No.2, pp.225-235 (2001)

- [52] Masayuki Kawai and Tsuneo Yoshikawa: Stable Haptic Display Based on Coupling Impedance for Internal and External Forces, Transactions on Control, Automation and Systems Engineering, Vol.4, No.1, pp.2-8 (2002)
- [53] Keigo Kobayashi and Tsuneo Yoshikawa: Controllability of Under-Actuated Planar Manipulators with One Unactuated Joint , The International Journal of Robotics Research, Vol.21, No.5-6, pp.555-561 (2002)
- [54] Jun Ueda, Akihiko Imagi, Hitoshi Tamayama, and Tsuneo Yoshikawa: Track Following Control for Large Capacity Flexible Disk Drives -- Disturbance Observer Design using Two Position Sensors --, Journal of Robotics and Mechatronics, vol.15, no.4 (2003)
- [55] Yasuyoshi Yokokohji, Yukihiro Iida, and Tsuneo Yoshikawa: "Toy Problem" as the Benchmark Test for Teleoperation Systems, Advanced Robotics, Vol.17, No.3, pp.253-273 (2003)
- [56] Jun Ueda, Ryoji Negi, and Tsuneo Yoshikawa: Acquisition of a Page Turning Skill of a Multifingered Hand Using Reinforcement Learning, Advanced Robotics, vol.18, no.1, pp.101-114 (2004)
- [57] Masayuki Kawai and Tsuneo Yoshikawa: Haptic Display With an Interface Device Capable of Continuous-Time Impedance Display Within a Sampling Period, IEEE/ASME Transactions on Mechatronics, vol.9, no.1, pp.58-64 (2004)
- [58] Jun Ueda and Tsuneo Yoshikawa: Mode-Shape Compensator for Improving Robustness of Manipulator Mounted on Flexible Base, IEEE Transaction on Robotics and Automation, Vol.20, No.2, pp.256-268 (2004)
- [59] Jun Ueda and Tsuneo Yoshikawa: Force-Reflecting Bilateral Teleoperation With Time Delay by Signal Filtering, IEEE Transaction on Robotics and Automation, Vol.20, No.3, pp.613-619, June (2004)
- [60] Takashi Imaida, Yasuyoshi Yokokohji, Toshitsugu Doi, Mitsushige Oda, and Tsuneo Yoshikawa: Ground-Space Bilateral Teleoperation of ETS-VII Robot Arm by Direct Bilateral Coupling Under 7-s Time Delay Condition, IEEE Transaction on Robotics and Automation, Vol.20, No.3, pp.499-511 (2004)
- [61] Jun Ueda and Tsuneo Yoshikawa: Robust Arm Configuration of Manipulator Mounted on Flexible Base, IEEE Transaction on Robotics, Vol.20, No.4, pp.781-789 (2004)
- [62] Ryo Kikuuwe and Tsuneo Yoshikawa: Recognizing Object Surface Properties Using Impedance Perception, Robotica, vol.23, no. 3, pp.387-396 (2005)
- [63] Ryo Kikuuwe and Tsuneo Yoshikawa: Robot Perception of Impedance, Journal of Robotic Systems, vol.22, no.5, pp.231-247 (2005)
- [64] Koichiro Hayashi, Yasuyoshi Yokokohji, and Tsuneo Yoshikawa: Tele-Existence Vision Systems with Image Stabilization for Rescue Robots, Journal of Robotics and

Mechatronics, vol.17, no.2, pp.181-188 (2005)

[65] Tetsuyou Watanabe and Tsuneo Yoshikawa: Grasping Optimization using a Required External Force Set, IEEE Transactions on Automation Science and Engineering, vol.4, no.1, pp.52-66 (January 2007)

[66] Masanao Koeda, Toshitatsu Ito and Tsuneo Yoshikawa: Shuffle Turning in Humanoid Robots through Load Distribution Control of the Soles, Robotica, vol.29, issue 7, pp.1017-1024 (2011)

Japanese Journal Papers

[1] 榎木義一, 吉川恒夫: 不確実なパラメータを含む系の準最適制御, 制御工学, 11 巻 12 号, 657-668 頁 (1967)

Yoshikazu Sawaragi and Tsuneo Yoshikawa: Suboptimal Control of Systems with Unknown Parameters, Control Engineering, vol.11, no.12, pp.657-668 (in Japanese) (1967)

[2] 榎木義一, 吉川恒夫: 計算時間遅れを考慮した適応制御過程, 計測自動制御学会論文集, 3 巻 4 号, 309-315 頁 (1967)

Yoshikazu Sawaragi and Tsuneo Yoshikawa: On Adaptive Control Processes with Computing Time Delay, Trans. Society of Instrument and Control Engineers, vol.3, no.4, pp.309-315 (in Japanese) (1967)

[3] 榎木義一, 吉川恒夫, 伊東弘一: デジタル制御系における評価関数とサンプリング周期について, 制御工学, 13 巻 2 号, 94-102 頁 (1969)

Yoshikazu Sawaragi, Tsuneo Yoshikawa, Koh-ichi Ito: On the Relation between Performance Indexes and Sampling Periods of Digital Control Systems, Control Engineering, vol.13, no.2, pp.94-102 (in Japanese) (1969)

[4] 榎木義一, 吉川恒夫: ある種の未知特性をもつ系の統計的最適制御, 計測自動制御学会論文集, 5 巻 1 号, 40-48 頁 (1969)

Yoshikazu Sawaragi and Tsuneo Yoshikawa: Stochastic Optimal Control of Systems with Some Type of Unknown Properties, Trans. Society of Instrument and Control Engineers, vol.5, no.1, pp.40-48 (in Japanese) (1969)

[5] 吉川恒夫: ある種の疑似逆行列と離散時間型カルマン・フィルタ, システムと制御, 15 巻 8 号, 696-701 頁 (1971)

Tsuneo Yoshikawa: A Kind of Pseudo-Inverse of a Matrix and Discrete-Time Kalman Filter, Systems and Control, vol.15, no.8, pp.606-701 (in Japanese) (1971)

[6] 吉川恒夫: 観測雑音の共分散行列が正則でない場合の線形離散時間系に対する低次元最適フィルタ, 計測自動制御学会論文集, 7 巻 6 号, 544-548 頁 (1971)

Tsuneo Yoshikawa: On Low Order Optimal Filters for Linear Discrete-Time Systems with Measurement Noise Whose Covariance Matrix is Singular, Trans. Society of Instrument and Control Engineers, vol.7, no.6, pp.544-548 (in Japanese) (1971)

- [7] 吉川恒夫：離散時間型確率系の最適制御，システムと制御，16 巻 1 号，19-24 頁 (1972)
Tsuneo Yoshikawa: Optimal Control of Discrete-Time Stochastic Systems, Systems and Control, vol.16, no.1, pp.19-24 (in Japanese) (1972)
- [8] 榎木義一，明石一，吉川恒夫，今井弘之，藤重 悟：適応制御プロセスにおける観測の最適化について，システムと制御，17 巻 6 号，387-396 頁 (1973)
Yoshikazu Sawaragi, Hajime Akashi, Tsuneo Yoshikawa, Hiroyuki Imai, and Satoru Fujishige: On Optimal Observation Strategy in Adaptive Control Process, Systems and Control, vol.17, no.6, pp.387-396 (in Japanese) (1973)
- [9] 吉川恒夫：線形離散時間系に対する最小次元最適フィルタ，計測自動制御学会論文集，9 巻 5 号，588-594 頁 (1973)
Tsuneo Yoshikawa: Minimal-Order Optimal Filters for Linear Discrete-Time Systems, Trans. Society of Instrument and Control Engineers, vol.9, no.5, pp.588-594 (in Japanese) (1973)
- [10] 吉川恒夫：情報構造，電気学会誌，93 巻 7 号，613-616 頁 (1973)
Tsuneo Yoshikawa: Information Structure, Journal of the Institute of Electrical Engineers of Japan, vol.93, no.7, pp.613-616 (in Japanese) (1973)
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