Kento Kawaharazuka

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Personal

Date of Birth: 18/07/1994

Research Interests: Humanoid, Biomimetics, Machine Learning

Education

Project Assistant Professor in Dept. of Mechano-Informatics, The University of University, Japan, JSK Robotics Laboratory, 2022-

Ph.D. in Dept. of Mechano-Informatics, The University of University, Japan, with Prof. Masayuki Inaba (JSK Robotics Laboratory), 2019-2022

M.S. in Dept. of Mechano-Informatics, Graduate School of Information Science and Technology, The University of Tokyo, Japan, 2017-2019

B.S. in Dept. of Mechano-Informatics, Faculty of Engineering, The University of Tokyo, Japan, 2013-2017

Experience

Internship at Preferred Networks, Robotics Engineer, Japan, 2018-2020

Internship at Works Applications Co. Ltd., Software Engineer, Japan, 2016

Internship at Future Standard, Software Engineer, Japan, 2016

Internship at HIOKI, E.E. CORPORATION, Software Engineer, Japan, 2015

Skills

Software Skills

Advanced: C, C++, Python, Machine Learning, Algorithms

Intermediate: Ruby, Lisp, Statistics

Basic: Java, JavaScript, Android, Haskell

Hardware Skills

Intermediate: 3D CAD, 3D Printer

Basic: Electorinics, Machining

Publications

Journal Articles (Peer Reviewed)

1. **K. Kawaharazuka**, K. Okada, M. Inaba: "Deep Predictive Model Learning with Parametric Bias: Handling Modeling Difficulties and Temporal Model Changes (in press)", *IEEE Robotics and Automation Magazine (RAM)*, 2023, (**presented at ICRA2023**)

2. **K. Kawaharazuka**, N. Kanazawa, K. Okada, M. Inaba: "Self-Supervised Learning of Visual Servoing for Low-Rigidity Robots Considering Temporal Body Changes", *IEEE Robotics and Automation Letters (RAL)*, vol. 7, no. 3, pp. 7881-7887, 2022, **SICE International Young Authors Award (SIYA-IROS2022)**, (**presented at IROS2022**)

3. Y. Omura, **K. Kawaharazuka**, Y. Nagamatsu, Y. Koga, M. Nishiura, Y. Toshimitsu, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Human-mimetic binaural ear design and sound source direction estimation for task realization of musculoskeletal humanoids", *Robomech Journal*, vol. 9, no. 17, pp. 1-15, 2022

4. **K. Kawaharazuka**, A. Miki, M. Bando, K. Okada, M. Inaba: "Dynamic Cloth Manipulation Considering Variable Stiffness and Material Change Using Deep Predictive Model With Parametric Bias", *Frontiers in Neurorobotics*, vol. 16, pp. 1-16, 2022

5. **K. Kawaharazuka**, M. Nishiura, Y. Toshimitsu, Y. Omura, Y. Koga, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Robust Continuous Motion Strategy Against Muscle Rupture using Online Learning of Redundant Intersensory Networks for Musculoskeletal Humanoids", *Robotics and Autonomous Systems (RAS)*, vol. 152, pp. 1-14, 2022

6. **K. Kawaharazuka**, A. Miki, Y. Toshimitsu, K. Okada, M. Inaba: "Adaptive Body Schema Learning System Considering Additional Muscles for Musculoskeletal Humanoids", *IEEE Robotics and Automation Letters (RAL)*, vol. 7, no. 2, pp. 3459-3466, 2022, (**presented at ICRA2022**)

7. **K. Kawaharazuka**, K. Okada, M. Inaba: "Adaptive Robotic Tool-Tip Control Learning Considering Online Changes in Grasping State", *IEEE Robotics and Automation Letters (RAL)*, vol. 6, no. 3, pp. 5992-5999, 2021, (**presented at IROS2021**)

8. **K. Kawaharazuka**, Y. Kawamura, K. Okada, M. Inaba: "Imitation Learning with Additional Constraints on Motion Style using Parametric Bias", *IEEE Robotics and Automation Letters (RAL)*, vol. 6, no. 3, pp. 5897-5904, 2021, (**presented at IROS2021**)

9. Y. Koga, **K. Kawaharazuka**, Y, Toshimitsu, M. Nishiura, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Self-Body Image Acquisition and Posture Generation with Redundancy using Musculoskeletal Humanoid Shoulder Complex for Object Manipulation", *IEEE Robotics and Automation Letters (RAL)*, vol. 6, no. 4, pp. 6686-6692, 2021, (**presented at IROS2021**)

10. **K. Kawaharazuka**, M. Nishiura, Y. Koga, Y. Omura, Y. Toshimitsu, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Automatic Grouping of Redundant Sensors and Actuators Using Functional and Spatial Connections: Application to Muscle Grouping for Musculoskeletal Humanoids", *IEEE Robotics and Automation Letters (RAL)*, vol. 6, no. 2, pp. 1981-1988, 2021, (**presented at ICRA2021**)

11. **K. Kawaharazuka**, K. Tsuzuki, Y. Koga, Y. Omura, T. Makabe, K. Shinjo, M. Onitsuka, Y. Nagamatsu, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Toward Autonomous Driving by Musculoskeletal Humanoids: Study of Developed Hardware and Learning-Based Software", *IEEE Robotics and Automation Magazine (RAM)*, vol. 27, no. 3, pp. 84-96, 2020, (**presented at ICRA2021**)

12. **K. Kawaharazuka**, K. Tsuzuki, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Object Recognition, Dynamic Contact Simulation, Detection, and Control of the Flexible Musculoskeletal Hand Using a Recurrent Neural Network With Parametric Bias", *IEEE Robotics and Automation Letters (RAL)*, vol. 5, no. 3, pp. 4580-4587, 2020, (**presented at IROS2020**)

13. **K. Kawaharazuka**, N. Hiraoka, K. Tsuzuki, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Estimation and Control of Motor Core Temperature with Online Learning of Thermal Model Parameters: Application to Musculoskeletal Humanoids", *IEEE Robotics and Automation Letters (RAL)*, vol. 5, no. 3, pp. 4273-4280, 2020, (**presented at IROS2020**)

14. **K. Kawaharazuka**, K. Tsuzuki, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Musculoskeletal AutoEncoder: A Unified Online Acquisition Method of Intersensory Networks for State Estimation, Control, and Simulation of Musculoskeletal Humanoids", *IEEE Robotics and Automation Letters (RAL)*, vol. 5, no. 2, pp. 2411-2418, 2020, (**presented at ICRA2020**)

15. **K. Kawaharazuka**, S. Makino, M. Kawamura, S. Nakashima, Y. Asano, K. Okada, M. Inaba: "Human Mimetic Forearm and Hand Design with a Radioulnar Joint and Flexible Machined Spring Finger for Human Skillful Motions", *Journal of Robotics and Mechatronics (JRM)*, vol. 32, no. 2, pp. 445-458, 2020, (**The first two authors contributed equally to this work**)

16. **K. Kawaharazuka**, K. Tsuzuki, S. Makino, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Long-time Self-body Image Acquisition and its Application to the Control of Musculoskeletal Structures", *IEEE Robotics and Automation Letters (RAL)*, vol. 4, no. 3, pp. 2965-2972, 2019, (**presented at IROS2019**)

17. **K. Kawaharazuka**, S. Makino, M. Kawamura, Y. Asano, K. Okada, M. Inaba: "Online Learning of Joint-Muscle Mapping using Vision in Tendon-driven Musculoskeletal Humanoids", *IEEE Robotics and Automation Letters (RAL)*, vol. 3, no. 2, pp. 772-779, 2018, (**presented at ICRA2018**)

18. **K. Kawaharazuka**, M. Kawamura, S. Makino, Y. Asano, K. Okada, M. Inaba: "Antagonist Inhibition Control in Redundant Tendon-driven Structures Based on Human Reciprocal Innervation for Wide Range Limb Motion of Musculoskeletal Humanoids", *IEEE Robotics and Automation Letters (RAL)*, vol. 2, no. 4, pp. 2119-2126, 2017, (**presented at IROS2017**)

International Conference Proceedings (Peer Reviewed)

1. **K. Kawaharazuka**, Y. Obinata, N. Kanazawa, K. Okada, M. Inaba: "Robotic Applications of Pre-Trained Vision-Language Models to Various Recognition Behaviors", *Proceedings of the 2023 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2023)*, pp. 458-465, 2023

2. **K. Kawaharazuka**, N. Kanazawa, Y. Obinata, K. Okada, M. Inaba: "Daily Assistive View Control Learning of Low-Cost Low-Rigidity Robot via Large-Scale Vision-Language Model", *Proceedings of the 2023 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2023)*, pp. 452-457, 2023

3. S. Yoshimura, S. Yuzaki, **K. Kawaharazuka**, K. Okada, M. Inaba: "Optimization of Muscle Arrangement Extraction from Human Waist Structure for Biomimetic Humanoid Implementation", *Proceedings of the 2023 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2023)*, pp. 583-590, 2023

4. Y. Ribayashi, K. Miyama, A. Miki, **K. Kawaharazuka**, K. Okada, M. Inaba: "Development of a Wire-Wound Muscle-Tendon Complex Drive and Its Application to a Two-Dimensional Robot Configuration", *Proceedings of the 2023 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2023)*, pp. 758-764, 2023

5. S. Yuzaki, A. Miki, M. Bando, S. Yoshimura, T. Suzuki, **K. Kawaharazuka**, K. Okada, M. Inaba: "Fusion of Body and Environment with Movable Carabiners for Wire-Driven Robots Toward Expansion of Physical Capabilities", *Proceedings of the 2023 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2023)*, pp. 679-685, 2023

6. **K. Kawaharazuka**, T. Makabe, K. Okada, M. Inaba: "Daily Assistive Modular Robot Design Based on Multi-Objective Black-Box Optimization", *Proceedings of the 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023)*, pp. 9970-9977, 2023

7. Y. Matsuura, **K. Kawaharazuka**, N. Hiraoka, K. Kojima, K. Okada, M. Inaba: "Development of a Whole-Body Work Imitation Learning System by a Biped and Bi-Armed Humanoid", *Proceedings of the 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023)*, pp. 10374-10381, 2023

8. Y. Obinata, **K. Kawaharazuka**, N. Kanazawa, N. Yamaguchi, N. Tsukamoto, I. Yanokura, S. Kitagawa, K. Shinjo, K. Okada, M. Inaba: "Semantic Scene Difference Detection in Daily Life Patroling by Mobile Robots Using Pre-Trained Large-Scale Vision-Language Model", *Proceedings of the 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023)*, pp. 3228-3233, 2023, **IEEE RAS Japan Joint Chapter Young Award (2023), SICE International Young Authors Award (SIYA-IROS2023)**

9. K. Miyama, **K. Kawaharazuka**, K. Okada, M. Inaba: "Development of a Five-Fingerd Biomimetic Soft Robotic Hand by 3D Printing the Skin and Skeleton As One Unit", *Proceedings of the 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023)*, pp. 6624-6630, 2023, **SICE International Young Authors Award (SIYA-IROS2023)**

10. S. Yoshimura, T. Suzuki, M. Bando, S. Yuzaki, **K. Kawaharazuka**, K. Okada, M. Inaba: "Design Method of a Kangaroo Robot with High Power Legs and an Articulated Soft Tail", *Proceedings of the 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023)*, pp. 6631-6638, 2023

11. A. Ichikura, **K. Kawaharazuka**, Y. Obinata, K. Okada, M. Inaba: "A Method for Selecting Scenes and Emotion-Based Descriptions for a Robot's Diary (in press)", *Proceedings of the 32nd IEEE International Conference on Robot and Human Interactive Communication (ROMAN2023)*, 2023

12. A. Miki, **K. Kawaharazuka**, M. Bando, K. Okada, K. Kawasaki, M. Inaba: "System Architecture and Real-World Task Realization of Musculoskeletal Wheeled Robot Musashi-W with Various Hardware Components (in press)", *Proceedings of the 18th International Conference on Intellignet Autonomous Systems (IAS2023)*, 2023

13. L. Wu, **K. Kawaharazuka**, S. Hasegawa, K. Okada, M. Inaba: "Workspace-Based Precision Grasp Pose Generator for Multi-Fingered Robotic Hands (in press)", *Proceedings of the 18th International Conference on Intellignet Autonomous Systems (IAS2023)*, 2023

14. N. Kanazawa, **K. Kawaharazuka**, Y. Obinata, K. Okada, M. Inaba: "Recognition of Heat-Induced Food State Changes by Time-Series Use of Vision-Language Model for Cooking Robot (in press)", *Proceedings of the 18th International Conference on Intellignet Autonomous Systems (IAS2023)*, 2023

15. A. Ichikura, **K. Kawaharazuka**, Y. Obinata,, K. Shinjo, K. Okada, M. Inaba: "Automatic Diary Generation System Including Information on Joint Experiences between Humans and Robots (in press)", *Proceedings of the 18th International Conference on Intellignet Autonomous Systems (IAS2023)*, 2023

16. **K. Kawaharazuka**, Y. Obinata, N. Kanazawa, K. Okada, M. Inaba: "VQA-based Robotic State Recognition Optimized with Genetic Algorithm", *Proceedings of the 2023 IEEE International Conference on Robotics and Automation (ICRA2023)*, pp. 8306-8311, 2023

17. H. Sato, **K. Kawaharazuka**, T. Makabe, K. Okada, M. Inaba: "Online Estimation of Self-Body Deflection with Various Sensor Data Based on Directional Statistics", *Proceedings of the 2023 IEEE/SICE International Symposium on System Integration (SII2023)*, pp. 1-8, 2023

18. **K. Kawaharazuka**, A. Miki, M. Bando, T. Suzuki, Y. Ribayashi, Y. Toshimitsu, Y. Nagamatsu, K. Okada, M. Inaba: "Hardware Design and Learning-Based Software Architecture of Musculoskeletal Wheeled Robot Musashi-W for Real-World Applications", *Proceedings of the 2022 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2022)*, pp. 413-419, 2022, **Best Interactive Paper Award Finalist**

19. **K. Kawaharazuka**, T. Suzuki, K. Okada, M. Inaba: "Continuous Jumping of a Parallel Wire-Driven Monopedal Robot RAMIEL Using Reinforcement Learning", *Proceedings of the 2022 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2022)*, pp. 759-764, 2022

20. **K. Kawaharazuka**, N. Kanazawa, K. Okada, M. Inaba: "Learning-Based Wiping Behavior of Low-Rigidity Robots Considering Various Surface Materials and Task Definitions", *Proceedings of the 2022 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2022)*, pp. 919-924, 2022

21. Y. Ribayashi, **K. Kawaharazuka**, Y. Toshimitsu, D. Kusuyama, A. Miki, K. Shinjo, M. Bando, T. Suzuki, Y. Kojio, K. Okada, M. Inaba: "Design of Robot Foot with Outer Edge Measurement Structure and Chair Rotation Motion by Friction Control", *Proceedings of the 2022 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2022)*, pp. 314-321, 2022, (**Top 7 Best Oral Paper Presentation**)

22. K. Miyama, S. Hasegawa, **K. Kawaharazuka**, N. Yamaguchi, K. Okada, M. Inaba: "Design of a Five-Fingered Hand with Full-Fingered Tactile Sensors Using Conductive Filaments and Its Application to Bending after Insertion Motion", *Proceedings of the 2022 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2022)*, pp. 780-785, 2022

23. **K. Kawaharazuka**, K. Okada, M. Inaba: "Realization of Seated Walk by a Musculoskeletal Humanoid with Buttock-Contact Sensors From Human Constrained Teaching", *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)*, pp. 5774-5780, 2022

24. **K. Kawaharazuka**, K. Okada, M. Inaba: "Online Learning Feedback Control Considering Hysteresis for Musculoskeletal Structures", *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)*, pp. 5767-5773, 2022

25. **K. Kawaharazuka**, Y. Ribayashi, A. Miki, Y. Toshimitsu, T. Suzuki, K. Okada, M. Inaba: "Learning of Balance Controller Considering Changes in Body State for Musculoskeletal Humanoids", *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)*, pp. 5809-5816, 2022

26. Y. Toshimitsu, **K. Kawaharazuka**, A. Miki, K. Okada, M. Inaba: "DIJE: Dense Image Jacobian Estimation for Robust Robotic Self-Recognition and Visual Servoing", *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)*, pp. 2219-2226, 2022

27. Y. Ribayashi, **K. Kawaharazuka**, Y. Toshimitsu, D. Kusuyama, A. Miki, K. Shinjo, M. Bando, T. Suzuki, Y. Kojio, K. Okada, M. Inaba: "Imitation Behavior of the Outer Edge of the Foot by Humanoids Using a Simplified Contact State Representation", *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)*, pp. 4243-4249, 2022

28. T. Suzuki, Y. Toshimitsu, Y. Nagamatsu, **K. Kawaharazuka**, A. Miki, Y. Ribayashi, M. Bando, K. Kojima, Y. Kakiuchi, K. Okada, M. Inaba: "RAMIEL: A Parallel-Wire Driven Monopedal Robot for High and Continuous Jumping", *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)*, pp. 5017-5024, 2022, **SICE International Young Authors Award (SIYA-IROS2022)**

29. **K. Kawaharazuka**, K. Shinjo, Y. Kawamura, K. Okada, M. Inaba: "Environmentally Adaptive Control Including Variance Minimization Using Stochastic Predictive Network with Parametric Bias: Application to Mobile Robots", *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2021)*, pp. 8381-8387, 2021

30. **K. Kawaharazuka**, Y. Toshimitsu, M. Nishiura, Y. Koga, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Design Optimization of Musculoskeletal Humanoids with Maximization of Redundancy to Compensate for Muscle Rupture", *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2021)*, pp. 3204-3210, 2021

31. **K. Kawaharazuka**, N. Hiraoka, Y. Koga, M. Nishiura, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Online Learning of Danger Avoidance for Complex Structures of Musculoskeletal Humanoids and Its Applications", *Proceedings of the 2020 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2020)*, pp. 349-355, 2021

32. **K. Kawaharazuka**, Y. Koga, M. Nishiura, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Motion Modification Method of Musculoskeletal Humanoids by Human Teaching Using Muscle-Based Compensation Control", *Proceedings of the 2020 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2020)*, pp. 83-89, 2021

33. M. Onitsuka, M. Nishiura, **K. Kawaharazuka**, K. Tsuzuki, Y. Toshimitsu, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Development of Musculoskeletal Legs with Planar Interskeletal Structures to Realize Human Comparable Moving Function", *Proceedings of the 2020 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2020)*, pp. 17-24, 2021, **Best Oral Paper Award, Finalists of Mike Stilman Paper Award**

34. Y. Toshimitsu, **K. Kawaharazuka**, M. Nishiura, Y. Koga, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Biomimetic Operational Space Control for Musculoskeletal Humanoid Optimizing across Muscle Activation and Joint Nullspace", *Proceedings of the 2021 IEEE International Conference on Robotics and Automation (ICRA2021)*, pp. 1184-1190, 2021

35. S. Nakashima, **K. Kawaharazuka**, M. Nishiura, Y. Asano, Y. Kakiuchi, K. Okada, K. Kawasaki, M. Inaba: "Restoring Force Design of Active Self-Healing Tension Transmission System and Application to Tendon-Driven Legged Robot", *Proceedings of the 2021 IEEE International Conference on Robotics and Automation (ICRA2021)*, pp. 7033-7038, 2021

36. **K. Kawaharazuka**, M. Nishiura, S. Nakashima, Y. Toshimitsu, Y. Omura, Y. Koga, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Stability Recognition with Active Vibration for Bracing Behaviors and Motion Extensions Using Environment in Musculoskeletal Humanoids", *Proceedings of the 2021 IEEE International Conference on Soft Robotics (ROBOSOFT2021)*, pp. 126-133, 2021

37. **K. Kawaharazuka**, Y. Koga, K. Tsuzuki, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Exceeding the Maximum Speed Limit of the Joint Angle for the Redundant Tendon-driven Structures of Musculoskeletal Humanoids", *Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2020)*, pp. 3585-3590, 2020

38. **K. Kawaharazuka**, Y. Koga, K. Tsuzuki, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Applications of Stretch Reflex for the Upper Limb of Musculoskeletal Humanoids: Protective Behavior, Postural Stability, and Active Induction", *Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2020)*, pp. 3598-3603, 2020

39. **K. Kawaharazuka**, T. Ogawa, C. Nabeshima: "Tool Shape Optimization through Backpropagation of Neural Network", *Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2020)*, pp. 8387-8393, 2020

40. Y. Toshimitsu, **K. Kawaharazuka**, K. Tsuzuki, M. Onitsuka M. Nishiura, Y. Koga, Y. Omura, M. Tomita, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Biomimetic Control Scheme for Musculoskeletal Humanoids Based on Motor Directional Tuning in the Brain", *Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2020)*, pp. 7784-7791, 2020

41. **K. Kawaharazuka**, K. Tsuzuki, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Stable Tool-Use with Flexible Musculoskeletal Hands by Learning the Predictive Model of Sensor State Transition", *Proceedings of the 2020 IEEE International Conference on Robotics and Automation (ICRA2020)*, pp. 4572-4578, 2020

42. T. Nishio, M. Zhao, F. Shi, T. Anzai, **K. Kawaharazuka**, K. Okada, M. Inaba: "Stable Control in Climbing and Descending Flight under Upper Walls using Ceiling Effect Model based on Aerodynamics", *Proceedings of the 2020 IEEE International Conference on Robotics and Automation (ICRA2020)*, pp. 172-178, 2020

43. **K. Kawaharazuka**, S. Makino, K. Tsuzuki, M. Onitsuka, Y. Nagamatsu, K. Shinjo, T. Makabe, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Component Modularized Design of Musculoskeletal Humanoid Platform Musashi to Investigate Learning Control Systems", *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2019)*, pp. 7294-7301, 2019

44. **K. Kawaharazuka**, K. Tsuzuki, S. Makino, M. Onitsuka, K. Shinjo, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Task-specific Self-body Controller Acquisition by Musculoskeletal Humanoids: Application to Pedal Control in Autonomous Driving", *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2019)*, pp. 813-818, 2019

45. **K. Kawaharazuka**, T. Ogawa, C. Nabeshima: "Dynamic Task Control Method of a Flexible Manipulator Using a Deep Recurrent Neural Network", *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2019)*, pp. 7689-7695, 2019

46. K. Shinjo, **K. Kawaharazuka**, Y. Asano, S. Nakashima, S. Makino, M. Onitsuka, K. Tsuzuki, K. Okada, K. Kawasaki, M. Inaba: "Foot with a Core-shell Structural Six-axis Force Sensor for Pedal Depressing and Recovering from Foot Slipping during Pedal Pushing Toward Autonomous Driving by Humanoids", *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2019)*, pp. 3049-3054, 2019

47. S. Nakashima, T. Shirai, **K. Kawaharazuka**, Y. Asano Y. Kakiuchi, K. Okada, M. Inaba: "An Approach of Facilitated Investigation of Active Self-healing Tension Transmission System Oriented for Legged Robots", *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2019)*, pp. 2567-2572, 2019, **SICE International Young Authors Award (SIYA-IROS2019)**

48. T. Makabe, T. Shirai, Y. Nagamatsu, **K. Kawaharazuka**, S. Fumihito, K. Okada, M. Inaba: "Development of Joint Module with Two-Speed Gear Transmission and Joint Lock Mechanism during Driving for Task Adaptable Robot", *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2019)*, pp. 5123-5130, 2019

49. **K. Kawaharazuka**, K. Tsuzuki, M. Onitsuka, Y. Koga, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Reflex-based Motion Strategy of Musculoskeletal Humanoids under Environmental Contact Using Muscle Relaxation Control", *Proceedings of the 2019 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2019)*, pp. 114-119, 2019

50. Y. Koga, **K. Kawaharazuka**, M. Onitsuka, T. Makabe, K. Tsuzuki, Y. Omura, Y. Asano, K. Okada, M. Inaba: "Modification of Muscle Antagonistic Relations and Hand Trajectory on the Dynamic Motion of Musculoskeletal Humanoid", *Proceedings of the 2019 IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS2019)*, pp. 632-637, 2019

51. Y. Asano, S. Nakashima, I. Yanokura, M. Onitsuka, **K. Kawaharazuka**, K. Tsuzuki, Y. Koga, Y. Omura, K. Okada, M. Inaba: "Ankle-Hip-Stepping Stabilizer on Tendon-Driven Humanoid Kengoro by Integration of Muscle-Joint-Work Space Controllers for Knee-Stretched Humanoid Balance", *Proceedings of the 2019 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2019**)*, pp. 397-402, 2019

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