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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**, J. Oh, J. Yamada, I. Posner, Y. Zhu: "Vision-Language-Action Models for Robotics: A Review Towards Real-World Applications", *under review*, 2025
2. L. Wu, H. Jia, **K. Kawaharazuka**, H. Ishida, K. Okada: "Dexterous Grasp Dataset Augmentation based on Grasp Synthesis with Fingertip Workspace Cloud and Contact-Aware Sampling", *Advanced Robotics (**AR**)*, pp. 1-18, 2025
3. **K. Kawaharazuka**, T. Hattori, K. Yoneda, K. Okada: "PIMBS: Efficient Body Schema Learning for Musculoskeletal Humanoids with Physics-Informed Neural Networks", *IEEE Robotics and Automation Letters (**RAL**)*, vol. 10, no. 7, pp. 7611-7618, 2025, (**presented at ICRA2026**)
4. S. Nakashima, **K. Kawaharazuka**, Y. Nagamatsu, K. Shinjo, A. Miki, Y. Asano, Y. Kakiuchi, K. Okada, M. Inaba: "Liquid Metal Sloshing for High-load Active Self-healing System: An Application to Tendon-driven Legged Robot", *Advanced Intelligent Systems (**AISY**)*, pp. 2500040, 2025
5. H. Kozuka, M. Zhao, A. Tang, T. Nishio, I. Yanokura, **K. Kawaharazuka**, J. Sugihara, K. Sugihara, K. Okada, M. Inaba: "GenAerialNav: Obstacle Avoidance in Real Flight for Generalized Multirotors by Reinforcement Learning with Variable Acc-Properties in Dynamics", *Advanced Robotics (**AR**)*, pp. 1-16, 2025
6. S. Inoue, **K. Kawaharazuka**, T. Suzuki, S. Yuzaki, K. Okada, M. Inaba: "Overcoming Physical Limitations Utilizing the Surrounding Environment with a Wire-Driven Multipurpose Robot", *Advanced Robotics Research (**ADRR**)*, vol. 1, no. 1, pp. 202400021, 2025
7. **K. Kawaharazuka**, T. Matsushima, A. Gambardella, J. Guo, C. Paxton, A. Zeng: "Real-World Robot Applications of Foundation Models: A Review", *Advanced Robotics (**AR**)*, vol. 38, no. 18, pp. 1232-1254, 2024, **Advanced Robotics Best Survey Paper Award**, (**The first two authors contributed equally to this work**)
8. N. Kanazawa, **K. Kawaharazuka**, Y. Obinata, K. Okada, M. Inaba: "Real-world cooking robot system from recipes based on food state recognition using foundation models and PDDL", *Advanced Robotics (**AR**)*, vol. 38, no. 18, pp. 1318-1334, 2024
9. **K. Kawaharazuka**, Y. Obinata, N. Kanazawa, N. Tsukamoto, K. Okada, M. Inaba: "Reflex-Based Open-Vocabulary Navigation without Prior Knowledge Using Omnidirectional Camera and Multiple Vision-Language Models", *Advanced Robotics (**AR**)*, vol. 38, no. 18, pp. 1307-1317, 2024
10. S. Wakabayashi, **K. Kawaharazuka**, K. Okada, M. Inaba: "Behavioral Learning of Dish Rinsing and Scrubbing based on Interruptive Direct Teaching Considering Assistance Rate", *Advanced Robotics (**AR**)*, vol. 38, no. 15, pp. 1052-1065, 2024
11. **K. Kawaharazuka**, K. Okada, M. Inaba: "GeMuCo: Generalized Multisensory Correlational Model for Body Schema Learning", *IEEE Robotics and Automation Magazine (**RAM**)*, vol. 32, no. 2, pp. 80-98, 2024, (**presented at ICRA2025**)
12. **K. Kawaharazuka**, Y. Obinata, N. Kanazawa, K. Okada, M. Inaba: "Robotic Environmental State Recognition with Pre-Trained Vision-Language Models and Black-Box Optimization", *Advanced Robotics (**AR**)*, vol. 38, no. 18, pp. 1255-1264, 2024
13. **K. Kawaharazuka**, N. Kanazawa, Y. Obinata, K. Okada, M. Inaba: "Continuous Object State Recognition for Cooking Robots Using Pre-Trained Vision-Language Models and Black-box Optimization", *IEEE Robotics and Automation Letters (**RAL**)*, vol. 9, no. 5, pp. 4059-4066, 2024, (**presented at Humanoids2024**)

14. T. Suzuki, M. Bando, **K. Kawaharazuka**, K. Okada, M. Inaba: "SAQIEL: Ultra-Light and Safe Manipulator with Passive 3D Wire Alignment Mechanism", *IEEE Robotics and Automation Letters (**RAL**)*, vol. 9, no. 4, pp. 3720-3727, 2024, (**presented at IROS2024**)
15. **K. Kawaharazuka**, S. Yoshimura, T. Suzuki, K. Okada, M. Inaba: "Design Optimization of Wire Arrangement With Variable Relay Points in Numerical Simulation for Tendon-Driven Robots", *IEEE Robotics and Automation Letters (**RAL**)*, vol. 9, no. 2, pp. 1388-1395, 2024, (**presented at IROS2024**)
16. **K. Kawaharazuka**, K. Okada, M. Inaba: "Deep Predictive Model Learning with Parametric Bias: Handling Modeling Difficulties and Temporal Model Changes", *IEEE Robotics and Automation Magazine (**RAM**)*, vol. 31, no. 4, pp. 81-99, 2023, (**presented at ICRA2023**)
17. **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**)
18. 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
19. **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
20. **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
21. **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**)
22. **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**)
23. **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**)
24. 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**)
25. **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**)
26. **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**)

27. **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**)

28. **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**)

29. **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**)

30. **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**)

31. **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**)

32. **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**)

33. **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**, S. Sawaguchi, A. Iwata, K. Yoneda, T. Suzuki, K. Okada: "MEVITA: Open-Source Bipedal Robot Assembled from E-Commerce Components via Sheet Metal Welding", *Humanoids2025*, 2025, (**The first two authors contributed equally to this work**)

2. T. Suzuki, **K. Kawaharazuka**, K. Okada: "A Universal Wire Testing Machine for Enhancing the Performance of Wire-Driven Robots", *Humanoids2025*, 2025

3. T. Hattori, **K. Kawaharazuka**, K. Okada: "Design and Development of a Remotely Wire-Driven Walking Robot", *Humanoids2025*, 2025

4. **K. Kawaharazuka**, S. Inoue, Y. Sahara, K. Yoneda, T. Suzuki, K. Okada: "Design Optimization of Three-Dimensional Wire Arrangement Considering Wire Crossings for Tendon-driven Robots", *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2025**)*, 2025

5. K. Yoneda, **K. Kawaharazuka**, T. Suzuki, T. Hattori, K. Okada: "KLEIYN : A Quadruped Robot with an Active Waist for Both Locomotion and Wall Climbing", *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2025**)*, 2025

6. S. Inoue, **K. Kawaharazuka**, K. Yoneda, S. Yuzaki, Y. Sahara, T. Suzuki, K. Okada: "An RGB-D Camera-Based Multi-Small Flying Anchors Control for Wire-Driven Robots Connecting to the Environment", *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2025**)*, 2025

7. S. Yoshimura, **K. Kawaharazuka**, K. Okada: "M3D-skin: Multi-material 3D-printed Tactile Sensor with Hierarchical Infill Structures for Pressure Sensing", *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2025**)*, 2025

8. R. Watanabe, T. Miki, F. Shi, Y. Kadokawa, F. Bjelonic, **K. Kawaharazuka**, A. Cramariuc, M. Hutter: "Learning Quiet Walking for a Small Home Robot", *2025 IEEE International Conference on Robotics and Automation (**ICRA2025**)*, 2025

9. S. Kim, N. Kanazawa, S. Hasegawa, **K. Kawaharazuka**, K. Okada: "Front Hair Styling Robot System Using Path Planning for Root-Centric Strand Adjustment", *2025 IEEE/SICE International Symposium on System Integration (**SII2025**)*, 2025, **Best Student Paper Finalist**

10. **K. Kawaharazuka**, S. Inoue, T. Suzuki, S. Yuzaki, S. Sawaguchi, K. Okada, M. Inaba: "MEVIUS: A Quadruped Robot Easily Constructed through E-Commerce with Sheet Metal Welding and Machining", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 631-636, 2024

11. **K. Kawaharazuka**, Y. Obinata, N. Kanazawa, K. Okada, M. Inaba: "Robotic State Recognition with Image-to-Text Retrieval Task of Pre-Trained Vision-Language Model and Black-Box Optimization", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 934-940, 2024

12. S. Inoue, **K. Kawaharazuka**, T. Suzuki, S. Yuzaki, Y. Ribayashi, Y. Sahara, K. Okada: "CubiXMusashi: Fusion of Wire-Driven CubiX and Musculoskeletal Humanoid Musashi toward Unlimited Performance", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 274-279, 2024, **Mike Stillman Award**

13. Y. Iwata, S. Hasegawa, **K. Kawaharazuka**, K. Okada, M. Inaba: "Integrative Wrapping System for a Dual-Arm Humanoid Robot", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 84-90, 2024, **Kanako Miura Award**

14. Y. Obinata, H. Jia, **K. Kawaharazuka**, N. Kanazawa, K. Okada: "Remote Life Support Robot Interface System for Global Task Planning and Local Action Expansion Using Foundation Models", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 738-743, 2024

15. S. Sawaguchi, T. Suzuki, A. Miki, **K. Kawaharazuka**, S. Yuzaki, S. Yoshimura, Y. Ribayashi, K. Okada, M. Inaba: "Vlimb: A Wire-Driven Wearable Robot for Bodily Extension, Balancing Powerfulness and Reachability", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 851-857, 2024

16. Y. Ribayashi, Y. Sahara, S. Sawaguchi, K. Miyama, A. Miki, **K. Kawaharazuka**, K. Okada, M. Inaba: "Fundamental Three-Dimensional Configuration of Wire-Wound Muscle-Tendon Complex Drive", *2024 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2024**)*, pp. 980-987, 2024

17. **K. Kawaharazuka**, K. Okada, M. Inaba: "Robot Design Optimization with Rotational and Prismatic Joints Using Black-Box Multi-Objective Optimization", *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2024**)*, pp. 4571-4577, 2024

18. S. Inoue, **K. Kawaharazuka**, T. Suzuki, S. Yuzaki, K. Okada, M. Inaba: "CubiX: Portable Wire-Driven Parallel Robot Connecting to and Utilizing the Environment", *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2024**)*, pp. 1296-1301, 2024, **SICE International Young Authors Award (SIYA-IROS2024)**, **IEEE RAS Japan Joint Chapter Young Award (2024)**

19. S. Yoshimura, A. Miki, K. Miyama, Y. Sahara, **K. Kawaharazuka**, K. Okada, M. Inaba: "Patterned Structure Muscle : Arbitrary Shaped Wire-Driven Artificial Muscle Utilizing Anisotropic Flexible Structure for Musculoskeletal Robots", *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2024**)*, pp. 13930-13937, 2024, **SICE International Young Authors Award (SIYA-IROS2024)**, **IEEE RAS Japan Joint Chapter Young Award (2024)**

20. Y. Sahara, A. Miki, Y. Ribayashi, S. Yoshimura, **K. Kawaharazuka**, K. Okada, M. Inaba: "Construction of Musculoskeletal Simulation for Shoulder Complex with Ligaments and Its Validation via Model Predictive Control", *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2024**)*, pp. 327-333, 2024

21. **K. Kawaharazuka**, K. Okada, M. Inaba: "Robotic Constrained Imitation Learning for the Peg Transfer Task in Fundamentals of Laparoscopic Surgery", *2024 IEEE International Conference on Robotics and Automation (**ICRA2024**)*, pp. 606-612, 2024

22. **K. Kawaharazuka**, K. Okada, M. Inaba: "Adaptive Whole-body Robotic Tool-use Learning on Low-rigidity Plastic-made Humanoids Using Vision and Tactile Sensors", *2024 IEEE International Conference on Robotics and Automation (**ICRA2024**)*, pp. 583-589, 2024

23. A. Tang, T. Hiraoka, N. Hiraoka, F. Shi, **K. Kawaharazuka**, K. Kojima, K. Okada, M. Inaba: "HumanMimic: Learning Natural Locomotion and Transitions for Humanoid Robot via Wasserstein Adversarial Imitation", *2024 IEEE International Conference on Robotics and Automation (**ICRA2024**)*, pp. 13107-13114, 2024

24. K. Shirai, C. C. Beltran-Hernandez, M. Hamaya, A. Hashimoto, S. Tanaka, **K. Kawaharazuka**, K. Tanaka, Y. Ushiku, S. Mori: "Vision-Language Interpreter for Robot Task Planning", *2024 IEEE International Conference on Robotics and Automation (**ICRA2024**)*, pp. 2051-2058, 2024

25. Open X-Embodiment Collaboration: "Open X-Embodiment: Robotic Learning Datasets and RT-X Models", *2024 IEEE International Conference on Robotics and Automation (**ICRA2024**)*, pp. 6892-6903, 2024, **Best Conference Paper Award**, **Finalists of Best Paper Award in Robot Manipulation**

26. S. Inoue, **K. Kawaharazuka**, K. Okada, M. Inaba: "Body Design and Gait Generation of Chair-Type Asymmetrical Tripedal Low-rigidity Robot", *2024 IEEE International Conference on Soft Robotics (**ROBOSOFT2024**)*, pp. 593-600, 2024

27. A. Miki, Y. Sahara, K. Miyama, Y. Ribayashi, **K. Kawaharazuka**, S. Hasegawa, K. Okada, M. Inaba: "Designing Fluid-Exuding Cartilage for Biomimetic Robots Mimicking Human Joint Lubrication Function", *2024 IEEE International Conference on Soft Robotics (**ROBOSOFT2024**)*, pp. 452-459, 2024

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

29. **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", *2023 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2023**)*, pp. 452-457, 2023

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

31. 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", *2023 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2023**)*, pp. 758-764, 2023

32. 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", *2023 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2023**)*, pp. 679-685, 2023

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

34. 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", *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2023**)*, pp. 10374-10381, 2023

35. 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", *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)**

36. 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", *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2023**)*, pp. 6624-6630, 2023, **SICE International Young Authors Award (SIYA-IROS2023)**

37. 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", *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2023**)*, pp. 6631-6638, 2023

38. A. Ichikura, **K. Kawaharazuka**, Y. Obinata, K. Okada, M. Inaba: "A Method for Selecting Scenes and Emotion-Based Descriptions for a Robot's Diary", *32nd IEEE International Conference on Robot and Human Interactive Communication (**ROMAN2023**)*, pp. 1683-1688, 2023

39. 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", *18th International Conference on Intelligent Autonomous Systems (**IAS2023**)*, pp. 109-122, 2023

40. L. Wu, **K. Kawaharazuka**, S. Hasegawa, K. Okada, M. Inaba: "Workspace-Based Precision Grasp Pose Generator for Multi-Fingered Robotic Hands", *18th International Conference on Intelligent Autonomous Systems (**IAS2023**)*, pp. 379-392, 2023

41. 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", *18th International Conference on Intelligent Autonomous Systems (**IAS2023**)*, pp. 547-560, 2023

42. 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", *18th International Conference on Intelligent Autonomous Systems (**IAS2023**)*, pp. 399-412, 2023

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

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

45. **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", *2022 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2022**)*, pp. 413-419, 2022, **Best Interactive Paper Award Finalist**

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

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

48. 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", *2022 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2022**)*, pp. 314-321, 2022, (**Top 7 Best Oral Paper Presentation**)

49. 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", *2022 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2022**)*, pp. 780-785, 2022

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

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

52. **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", *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2022**)*, pp. 5809-5816, 2022

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

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55. 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", *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2022**)*, pp. 5017-5024, 2022, **SICE International Young Authors Award (SIYA-IROS2022)**

56. **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", *2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2021**)*, pp. 8381-8387, 2021

57. **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", *2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2021**)*, pp. 3204-3210, 2021

58. **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", *2020 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2020**)*, pp. 349-355, 2021

59. **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", *2020 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2020**)*, pp. 83-89, 2021

60. 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", *2020 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2020**)*, pp. 17-24, 2021, **Best Oral Paper Award**, **Finalists of Mike Stilman Paper Award**

61. 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", *2021 IEEE International Conference on Robotics and Automation (**ICRA2021**)*, pp. 1184-1190, 2021

62. 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", *2021 IEEE International Conference on Robotics and Automation (**ICRA2021**)*, pp. 7033-7038, 2021

63. **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", *2021 IEEE International Conference on Soft Robotics (**ROBOSOFT2021**)*, pp. 126-133, 2021

64. **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", *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2020**)*, pp. 3585-3590, 2020

65. **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", *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2020**)*, pp. 3598-3603, 2020

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

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69. 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", *2020 IEEE International Conference on Robotics and Automation (**ICRA2020**)*, pp. 172-178, 2020

70. **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", *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2019**)*, pp. 7294-7301, 2019

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75. 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", *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2019**)*, pp. 5123-5130, 2019

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79. **K. Kawaharazuka**, T. Ogawa, J. Tamura, C. Nabeshima: "Dynamic Manipulation of Flexible Objects with Torque Sequence Using a Deep Neural Network", *2019 IEEE International Conference on Robotics and Automation (**ICRA2019**)*, pp. 2139-2145, 2019

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81. **K. Kawaharazuka**, S. Makino, M. Kawamura, Y. Asano, K. Okada, M. Inaba: "A Method of Joint Angle Estimation Using Only Relative Changes in Muscle Lengths for Tendon-driven Humanoids with Complex Musculoskeletal Structures", *2018 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2018**)*, pp. 1128-1135, 2018

82. T. Makabe, **K. Kawaharazuka**, K. Tsuzuki, K. Wada, S. Makino, M. Kawamura, A. Fujii, M. Onitsuka, Y. Asano, K. Okada, K. Kawasaki, M. Inaba: "Development of Movable Binocular High-Resolution Eye-Camera Unit for Humanoid and the Evaluation of Looking Around Fixation Control and Object Recognition", *2018 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2018**)*, pp. 840-845, 2018

83. **K. Kawaharazuka**, S. Makino, M. Kawamura, A. Fujii, Y. Asano, K. Okada, M. Inaba: "Online Self-body Image Acquisition Considering Changes in Muscle Routes Caused by Softness of Body Tissue for Tendon-driven Musculoskeletal Humanoids", *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2018**)*, pp. 1711-1717, 2018

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85. A. Fujii, S. Nakashima, M. Kawamura, **K. Kawaharazuka**, S. Makino, Y. Asano, K. Okada, M. Inaba: "Development and Functional Evaluation of a Deformable Membrane Capsule for an Open Ball Glenohumeral Joint", *2018 IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (**BIOROB2018**)*, pp. 853-858, 2018

86. **K. Kawaharazuka**, S. Makino, M. Kawamura, Y. Asano, Y. Kakiuchi, K. Okada, M. Inaba: "Human Mimetic Forearm Design with Radioulnar Joint using Miniature Bone-muscle Modules and its Applications", *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2017**)*, pp. 4956-4962, 2017, **IEEE RAS Japan Joint Chapter Young Award (2017)**

87. S. Makino, **K. Kawaharazuka**, M. Kawamura, Y. Asano, K. Okada, M. Inaba: "High-power, flexible, robust hand: Development of musculoskeletal hand using machined springs and realization of self-weight supporting motion with humanoid", *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS2017**)*, pp. 1187-1192, 2017

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