Takuya Kiyokawa

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https://takuya-ki.github.io

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Department of Systems Innovation, Graduate School of Engineering Science, The University of Osaka, 1-3 Machikaneyama, Toyonaka, Osaka, Japan

Takuya Kiyokawa

Curriculum Vitae

About me I am an Assistant Professor at the Harada Laboratory, Department of Systems Innovation, Graduate School of Engineering Science, The University of Osaka, Japan. I am researching manipulation robots equipped with physical embodiment and intelligence capable of robust and agile operations in the real world, to create the foundation for next-generation industries. My research interests include:

- Agile reconfigurable robots, Humanoids
- Working intelligent robots, Robotic manipulation
- Sequence/task/motion planning, Scheduling, Optimization, Machine learning
- Flexible manufacturing, Soft robotics

Professional experiences

Apr. 2023 - Present, Assist. Prof. at Harada Lab., UOsaka
Supervisor: Prof. Kensuke Harada

Oct. 2023 - Sept. 2024, Visiting Researcher, Institute of Robotics and Mechatronics, German Aerospace Center (DLR)
CAD-Informed Sequence and Motion Planning for Robotic Assembly
Supervisor: Dr. Maximo A. Roa and Dr. Korbinian Nottensteiner

Apr. 2021 - Mar. 2023, Proj. Assist. Prof. at Harada Lab., UOsaka
Supervisor: Prof. Kensuke Harada

Apr. 2022 - Mar. 2023, Proj. Assist. Prof. at Robot Learning Lab., NAIST
Supervisor: Prof. Takamitsu Matsubara

Apr. 2021 - Mar. 2022, Proj. Assist. Prof. at Human Robotics Lab., NAIST
Supervisor: Prof. Takahiro Wada and Prof. Jun Takamatsu

Jan. 2020 - Mar. 2021, Technical Assistant - NEDO
Robotic Sorter for Recyclable Aluminum/Plastic Materials towards Advanced Resource Circulation for

Oct. 2019 - June 2020, Research Intern - Microsoft Development, Applied Robotics Research, Tokyo, Japan
Interactive Learning-from-Observation
Supervisor: Dr. Katsushi Ikeuchi

Mar. - June 2019, Research Intern - Microsoft Research (MSR), Redmond, WA, US
Interactive Learning-from-Observation
Supervisor: Dr. Katsushi Ikeuchi

June 2018 - Mar. 2019, Creator - METI IPA Mitou Project 2018
Quickly Deployable Image Recognition AI
Project member: Takuya Kiyokawa and Keita Tomochika

Sept. - Dec. 2018, Research Intern - Microsoft Research Asia (MSRA) Beijing, China
Labanotation-Based Human Motion Recognition from Videos
Supervisor: Dr. Katsushi Ikeuchi and Dr. Wenjun Zeng

Apr. 2016 - Mar. 2018, Technical Assistant - ATOUN Inc.
Development of Power Assist Robot for Lift-up Motion

Aug. - Sept. 2016, Engineering Intern - YASKAWA Electric Corp.
Training on simulation and deployment of industrial robotic system

Aug. - Sept. 2014, Software Development Intern - Tokyo Electron Kyushu Limited
Software Development of Semiconductor Manufacturing Equipment

Invited Talks

Sept. 2026, Invited Talk - SICE SI Division, Technical Committee on Manipulation
Manipulation Autumn School 2026, "Integrated Planning for Long-Horizon and Contact-Rich Robotic Manipulation," Kanazawa University, Japan

Aug. 2026, Invited Talk - SISReC, UOsaka
"Is Manipulating Objects Harder Than Thinking?," The 12th Online Robot Science Cafe: "Robot Limbs: Exploring Dexterity in Grasping and Walking"

Sept. 2025, Invited Talk - Microsoft Research Asia - Tokyo, Japan
MSRA - Tokyo Talk Series, "Model-Informed Approach to Long-Horizon, Contact-Rich Manipulation for Industrial Robots"

Mar. 2024, Invited Talk - Agile Robots, Germany
"CAD-Based Robotic Assembly/Disassembly Planning"

Nov. 2023, Invited Talk - Technology Innovation Center, KUKA HQ, Germany
"CAD-Based Robotic Assembly/Disassembly Planning"

Nov. 2023, Invited Talk - High Performance Humanoids Technologies (H^2T), KIT, Germany
"CAD-Based Robotic Assembly/Disassembly Planning"

Nov. 2023, Invited Talk - Cognitive Systems, TUM, Germany
"CAD-Based Robotic Assembly/Disassembly Planning"

Talk - AIST

: The 22nd Recycling Technology Seminar”

hallenges of Automated Sorting Robots for Densely Packed

e”

Education

Apr. 2018 - Mar. 2021, Doctor of Engineering - NAIST
Thesis Supervisor: Prof. Tsukasa Ogasawara

Apr. 2016 - Mar. 2018, Master of Engineering - NAIST
Thesis Supervisor: Prof. Tsukasa Ogasawara

Apr. 2014 - Mar. 2016, Bachelor of Engineering - National Institute of Technology, Kumamoto College (NIT,K)
Thesis Supervisor: Prof. Hirofumi Ohtsuka

Educational Activities and Societal Contributions

Aug. 2023 - Present, Project Manager - Local Young Human Resource Discovery and Development Support Project, METI
AKATSUKI Project, Kumamoto, Japan

Oct. 2025 - present, Lecturer - UOsaka
”Intelligent Systems Science Laboratory B (Robot Arm)” for undergraduate students

Apr. 2025 - present, Lecturer - Harada Laboratory, UOsaka
”Training on ROS2 programming ” for undergraduate students

Apr. 2025 - present, Lecturer - Harada Laboratory, UOsaka
”Training on 3D CAD / 3D printer ” for undergraduate students

Aug. 2026, Lecturer - UOsaka
The 12th [At Home] The University of Osaka Robot Science Cafe: ”Robot Limbs: Exploring the Skill of ’Grasping’ and ’Walking’”

Apr. 2023 - July 2025, Lecturer - UOsaka
”Intelligent Systems Science Laboratory A (Feedback Control)” for undergraduate students

Apr. 2024 - Jul. 2024, Lecturer - UOsaka
”A Door to Academia (Intelligent Robotic System)” for undergraduate students

Dec. 2022 - Jun. 2023, Lecturer - UOsaka
”Information and Computer Exercises” for undergraduate students

May 2022 - Oct. 2022, Mentor - DELL Technologies
”The 2nd Small and Medium-sized Enterprises DX Acceleration Program”

Apr. 2021 - Jul. 2021, Lecturer - UOsaka
”A Door to Academia (Intelligent Robotic System)” for undergraduate students

Advised/mentored PhD students

- Tatsuya Sakuma (Ph.D. at NAIST in Sept. 2023, Panasonic HD)
- Alberto Bacchin (Ph.D. at UNIPD in Apr. 2025, tuttotek.it)
- Hao Chen (Ph.D. at UOsaka in Sept. 2025, UOsaka)
- Nadeen Elhadad (currently pursuing a Ph.D. at UOsaka)
- Haohui Pan (currently pursuing a Ph.D. at UOsaka)
- Tomoki Ishikura (currently pursuing a Ph.D. at UOsaka)

Professional societies

Members

- IEEE
- RSJ
- SICE
- JSME
- JSAI

Committee

- 2026 - present, Associate Editor, IEEE/RSJ IROS
- 2025 - present, Associate Editor, IEEE TASE
- 2025 - present, Associate Editor, IEEE CASE
- 2025 - present, Associate Editor, IEEE RA-L
- 2024 - present, Associate Editor, IEEE/SICE SII
- 2024 - 2025, Publicity Co-chair, IEEE/SICE SII
- 2023 - 2024, Journal Editing Committee Member - RSJ
- 2023 - 2024, General Affairs Secretary - SICE Kansai Chapter
- 2023, Associate Editor, IEEE ROBIO
- 2022 - 2024, Committee Member -Dept. Robotics Mechatronics, JSME

Activities in academic societies

Peer review

- Robot. Comput. -Integr. Manuf.
- iSpaRo
- Robot. Auton. Syst.
- IEEE T-ASE
- IEEE RA-L
- RSJ Advanced Robotics
- RSJ JRSJ
- ROBOMECH Journal
- IEEE ACCESS
- SICE
- Fuji Technology Press Ltd. JRM
- MDPI Sensors
- IEEE ICRA
- IEEE/RSJ IROS
- RSS
- IEEE/SICE SII
- IEEE RO-MAN
- IEEE Humanoids

Conference session and workshop chairs/organizers

- IEEE/SICE SII2027 (Special Session Organizer - Reconfigurable Robots)
- IEEE/RSJ IROS2026 (Workshop Organizer - Creativity in Assembly)
- IEEE/RSJ IROS2026 (Special Session Organizer - Reconfigurable Robots)
- RSJ2026 (Session Chair - Manipulation)
- IEEE RO-MAN2026 (Session Chair - Manipulation, Teleoperation & Handovers)
- IEEE ICMA2026 (Session Chair - Industrial,Manufacturing Process and Automation)
- IEEE/SICE SII2026 (Special Session Organizer - Reconfigurable Robots)
- IEEE/SICE SII2025 (Special Session Organizer - Reconfigurable Manipulation Robots, Workshop Organizer - Reconfigurable Manipulation Robots, Session Chair - Grasping and Manipulation, Session Chair - Video Presentation and Late Breaking Report)
- SICE SI2025 (Session Organizer - Resource Circulation Robotics)
- SICE SI2025 (Session Organizer - Reconfigurable Robots)
- JSME ROBOMECH2026 (Session Organizer - Reconfigurable Robots)
- JSME ROBOMECH2025, 2026 (Session Organizer - Resource Circulation Robotics)
- JSME ROBOMECH2023, 2024, 2025, 2026 (Session Organizer - Robotizing Manufacturing)
- IEEE CASE2021 (Session Chair - Deep Learning in Robotics and Automation)
- RSJ2021 (Session Chair - Robot Hand and Gripper, Session Chair - Manipulation)

Skills

Languages

- Japanese (native)
- English (TOEIC score 880, 2019)

OS

- Windows
- Unix/Linux

Programming

- C/C++/C#
- Python
- MATLAB/Simulink

Robotic Device

- KUKA LBR iiwa 14 R820
- Universal Robots UR3e/5e
- KAWADA Robotics HIRO-NX
- ROBOTIS OpenMANIPULATOR
- OnRobot RG2/6, VG10, VGC10
- Double Giken D-Hand 5ST
- YASKAWA MOTOMAN SDA5F
- DENSO COBOTTA
- UFACTORY uArm Swift Pro
- Robotiq 2F-85, 2F-140, Hand-E
- NITTA SOFTmatics
- Curious Robotics CR Hand

Vision Sensors

- Intel RealSense D435, D555
- Stereolabs ZED2
- Photoneo PhoXi 3D Scanner
- Microsoft Azure Kinect
- ASUS Xtion2

Software and Hardware

- Programming for robotics (ROS2, Isaac Sim, Pybullet etc.)
- 3D CAD design (Fusion 360, PythonOCC, etc.)
- 3D printer (Prusa, Agilista, Markforged, etc.)
- Motion capture system (Optitrack Motive, Perception Neuron, etc.)
- Embedded system (Raspberry Pi, Arduino, M5Stack, etc.)

Open-source Software, Refer to GitHub (https://github.com/takuya-ki)

Publications

Journals

1. Tomoki Ishikura, Genichiro Matsuda, Takuya Kiyokawa, and Kensuke Harada, **"Industrial-Grade Robust Robot Vision for Screw Detection and Removal under Uneven Conditions,"** *Advanced Robotics*, 2026 (accepted).

2. Zhengtao Hu, Ruishuang Liu, Mocong Qiu, Hao Chen, Takuya Kiyokawa, Weiwei Wan, Jiangjun Yuan, and Kensuke Harada, **"Planning 6D Grasps for Two-Finger Grippers considering Edge and Corner Contacts,"** *IEEE/ASME Transactions on Mechatronics (TMECH)*, 2026 (accepted).

3. Vitor Hideyo Isume, Takuya Kiyokawa, Natsuki Yamanobe, Yukiyasu Domae, Weiwei Wan, and Kensuke Harada, **"Prompt2Craft: Generating Functional Craft Assemblies with LLMs,"** *IEEE Robotics and Automation Letters (RA-L)*, 2026 (accepted). (presented at IROS2026)

4. Radwa Ali, Takuya Kiyokawa, Zhengtao Hu, Weiwei Wan, and Kensuke Harada, **"3D layout planning for robotic workcells with task-aware motion optimization: Generalization and real implementation,"** *Robotics and Computer-Integrated Manufacturing*, vol. 101, pp. 103310, 2026.

5. Hao Chen, Takuya Kiyokawa,Weiwei Wan, and Kensuke Harada, **"Generalizable task-oriented object grasping through LLM-guided ontology and similarity-based planning,"** *Robotics and Autonomous Systems*, pp. 105442, 2026.

6. Hiroki Hanai, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada, **"Robotic Paper Wrapping by Learning Force Control,"** *IEEE Access*, vol. 14, pp. 16596-16604, 2026.

7. Takuya Kiyokawa, Kensuke Harada, Weiwei Wan, Tomoki Ishikura, Naoya Miyaji, and Genichiro Matsuda, **"Many-Objective-Optimized Semi-Automated Robotic Disassembly Sequences,"** *Robotics and Autonomous Systems*, vol. 197, pp. 105301, 2025.

8. Gen Sako, Takuya Kiyokawa, Kensuke Harada, Tomoki Ishikura, Naoya Miyaji, and Genichiro Matsuda, **"Affordance-Guided Dual-Armed Disassembly Teleoperation for Mating Parts,"** *E-book of EcoDesign*, 2025.

9. Hao Chen, Takuya Kiyokawa, Zhengtao Hu, Weiwei Wan, and Kensuke Harada, **"A Multilevel Similarity Approach for Single-View Object Grasping: Matching, Planning, and Fine-Tuning,"** *IEEE Transactions on Robotics*, vol. 41, pp. 500-519, 2025. (presented at ICRA2026)

10. Takuya Kiyokawa, Naoki Shirakura, Hiroki Katayama, Keita Tomochika, and Jun Takamatsu, **"Efficiently Collecting Training Dataset for 2D Object Detection by Online Visual Feedback,"** *Journal of Robotics and Mechatronics*, vol. 37, no. 2, pp. 270-283, 2025.

11. Kazuki Higashi, Keisuke Koyama, Fanny Ficuciello, Ryuta Ozawa, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada, **"Synergy Hand using Fluid Network: Realization of Various Grasping / Manipulation Styles,"** *IEEE Access*, vol. 12, pp. 164966-164978, 2024.

12. Zhenting Wang, Takuya Kiyokawa, Natsuki Yamanobe, Weiwei Wan, and Kensuke Harada, **"Assembly Task Allocation for Human-Robot Collaboration Considering Stability and Assembly Complexity,"** *IEEE Access*, vol. 12, pp. 159821–159832, 2024.

13. Vitor Isume, Takuya Kiyokawa, Natsuki Yamanobe, Yukiyasu Domae, Weiwei Wan, and Kensuke Harada: **"Component Selection for Craft Assembly Tasks,"** *IEEE Robotics and Automation Letters (RA-L)*, vol. 9, no. 9, pp. 8122–8129, 2024. (presented at ICRA2025)

14. Takuya Kiyokawa, Jun Takamatsu, and Shigeki Koyanaka: **"Challenges for Future Robotic Sorters of Mixed Industrial Waste: A Survey,"** *IEEE Transactions on Automation Science and Engineering*, vol. 21, no. 1, pp. 1023–1040, 2024.

15. Kazuki Higashi, Keisuke Koyama, Ryuta Ozawa, Kazuyuki Nagata, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada, **"Torque-sensing Soft Bellows Actuator for Multi-fingered Hands Taking Bellow's Buckling into Consideration,"** *IEEE Access*, vol. 11, pp. 129258–129268, 2023.

16. Zhenting Wang, Takuya Kiyokawa, Issei Sera, Natsuki Yamanobe, Weiwei Wan, and Kensuke Harada, **"Error Correction in Robotic Assembly Planning from Graphical Instruction Manuals,"** *IEEE Access*, vol. 11, pp. 107276–107286, 2023.

17. Sho Kobayashi, Weiwei Wan, Takuya Kiyokawa, Keisuke Koyama, and Kensuke Harada: **"Obtaining an Objects 3D Model Using Dual-Arm Robotic Manipulation and Stationary Depth Sensing,"** *IEEE Transactions on Automation Science and Engineering*, vol. 20, no. 3, pp. 2075–2087, 2023.

18. Takuya Kiyokawa, Naoki Shirakura, Zhenting Wang, Natsuki Yamanobe, Ixchel G. Ramirez-Alpizar, Weiwei Wan, and Kensuke Harada, **"Difficulty and Complexity Definitions for Assembly Task Allocation and Assignment in Human-Robot Collaborations: A Review,"** *Robotics and Computer-Integrated Manufacturing*, vol. 84, 2023.

19. Tatsuya Sakuma, Takuya Kiyokawa, Takamitsu Matsubara, Jun Takamatsu, Takahiro Wada, and Tsukasa Ogasawara, **"Jamming Gripper-Inspired Soft-Jig for Perceptive Parts-Fixing,"** *IEEE Access*, vol. 11, pp. 62187–62199, 2023.

20. Yuan Gao, Shogo Matsuoka, Weiwei Wan, Takuya Kiyokawa, Keisuke Koyama, and Kensuke Harada: **"In-Hand Pose Estimation Using Hand-Mounted RGB Cameras and Visuotactile Sensors,"** *IEEE Access*, vol. 11, pp. 17218-17232, 2023.

21. Kota Takata Takuya Kiyokawa, Natsuki Yamanobe, Ixchel G. Remirez-Alpizar, Weiwei Wan, and Kensuke Harada: **"Graph-Based Framework on Bimanual Manipulation Planning from Cooking Recipe,"** *MDPI Robotics*, vol. 11, no. 6, p. 123, 2022.

22. Enrique Coronado, Takuya Kiyokawa, Gustavo A. Garcia Ricardez, Ixchel G. Ramirez-Alpizar, Gentiane Venture, and Natsuki Yamanobe: **"Evaluating quality in Human-Robot Interaction: A Systematic Search and Classification of Performance and Human-centered Factors, Measures and Metrics towards an Industry 5.0,"** *Journal of Manufacturing Systems*, vol. 63, pp. 392–410, 2022.

23. Hao Chen, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada: **"Category-Association Based Similarity Matching for Novel Object Pick-and-Place Task,"** *IEEE Robotics and Automation Letters (RA-L)*, vol. 7, no. 2, pp. 2961–2968, 2022. (presented at ICRA2022)

24. Takuya Kiyokawa, Hiroki Katayama, Yuya Tatsuta, Jun Takamatsu, and Tsukasa Ogasawara, **"Robotic Waste Sorter with Agile Manipulation and Quickly Trainable Detector,"** *IEEE Access*, vol. 9, pp. 124616–124631, 2021.

25. Naoki Shirakura, Takuya Kiyokawa, Hikaru Kumamoto, Jun Takamatsu, and Tsukasa Ogasawara, **"Collection of Marine Debris by Jointly Using UAV-UUV with GUI for Simple Operation,"** *IEEE ACCESS*, vol. 9, pp. 67432–67443, 2021.

26. Kento Tariki, Takuya Kiyokawa, Tomoki Nagatani, Jun Takamatsu, and Tsukasa Ogasawara, **"Generating Complex Assembly Sequences from 3D CAD Models Considering Insertion Relations,"** *Advanced Robotics*, vol. 35, no. 6, pp. 337–348, 2021.

27. Takuya Kiyokawa, Keita Tomochika, Jun Takamatsu, and Tsukasa Ogasawara, **"Efficient Collection and Automatic Annotation of Real-world Object Images by Taking Advantage of Post-diminished Multiple Visual Markers,"** *Advanced Robotics*, vol. 33, no. 24, pp. 1264–1280, 2019.

28. Yuto Tsuchiya, Takuya Kiyokawa, Gustavo Alfonso Garcia Ricardez, Jun Takamatsu, and Tsukasa Ogasawara, **"Pouring from Deformable Containers Using Dual-Arm Manipulation and Tactile Sensing,"** *International Journal of Robotic Computing (IJRC)*, vol. 1, no. 2, pp. 123–143, 2019. (presented at IRC2019)

29. Takuya Kiyokawa, Keita Tomochika, Jun Takamatsu, and Tsukasa Ogasawara, **"Fully Automated Annotation with Noise-Masked Visual Markers for Deep-Learning-Based Object Detection,"** *IEEE Robotics and Automation Letters (RA-L)*, vol. 4, no. 2, pp. 1972–1977, 2019. (presented at ICRA2019)

International conferences

1. Masaki Tsutsumi, Takuya Kiyokawa, Gen Sako, and Kensuke Harada: **"Affordance-Guided Enveloping Grasp Demonstration Toward Non-destructive Disassembly of Pinch-Infeasible Mating Parts,"** in *Proceedings of IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, Kitakyushu, Japan, August 2026.

2. Takuya Kiyokawa, Zhengtao Hu, Weiwei Wan, and Kensuke Harada: **"Soft Regrasping Tool Inspired by Jamming Gripper,"** in *Proceedings of IEEE International Conference on Mechatronics and Automation (ICMA)*, Changchun, Jilin, China, August 2026.

3. Hao Chen, Takuya Kiyokawa, Zhengtao Hu, Weiwei Wan, and Kensuke Harada: **"A Multi-Level Similarity Approach for Single-View Object Grasping: Matching, Planning, and Fine-Tuning,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Vienna, Austria, June 2026.

4. Takuya Kiyokawa, Ryunosuke Takebayashi, and Kensuke Harada: **"Shell-Type Soft Jig for Holding Objects during Disassembly,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Vienna, Austria, June 2026.

5. Kento Yamada, Prashant Kumar, Yukiyasu Domae, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada: **"Depth Estimation for Picking Transparent Objects Using a Polarization Camera,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 908-915, Cancun, Mexico, January, 2026.

6. Takuya Kiyokawa, Tomoki Ishikura, Shingo Hamada, Genichiro Matsuda, and Kensuke Harada: **"Hierarchical Planning and Scheduling for Reconfigurable Multi-Robot Disassembly Systems under Structural Constraints,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 233-238, Cancun, Mexico, January, 2026.

7. Haohui Pan, Takuya Kiyokawa, Tomoki Ishikura, Shingo Hamada, Genichiro Matsuda, and Kensuke Harada: **"Modular Vacuum-Based Fixturing System for Adaptive Disassembly Workspace Integration,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 219-226, Cancun, Mexico, January, 2026.

8. Gen Sako, Takuya Kiyokawa, Kensuke Harada, Tomoki Ishikura, Naoya Miyaji, and Genichiro Matsuda: **"Affordance-Guided Dual-Armed Disassembly Teleoperation for Mating Parts,"** in *E-book of EcoDesign*, Tokyo, Japan, November 2025.

9. Radwa Ali, Zhengtao Hu, Takuya Kiyokawa, Weiwei Wan, Tatsushi Nishi, and Kensuke Harada: **"Task and Grasp Constrained 3D Robotic Work-Cell Layout Planning,"** in *Proceedings of IEEE International Conference on Automation Science and Engineering (CASE)*, pp. 2355-2362, Los Angels, US, August 2025 (**IEEE RAS Japan Joint Chapter Young Award**).

10. Ryunosuke Takebayashi, Vitor Hideyo Isume, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada: **"Cooking Task Planning using LLM and Verified by Graph Network,"** in *Proceedings of IEEE International Conference on Automation Science and Engineering (CASE)*, pp. 735-742, Los Angels, US, August 2025.

11. Vitor Isume, Takuya Kiyokawa, Natsuki Yamanobe, Yukiyasu Domae, Weiwei Wan, and Kensuke Harada: **"Component Selection for Craft Assembly Tasks,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, US, May 2025.

12. Chen Hao, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada: **"Adaptive Grasping of Moving Objects in Dense Clutter via Global-to-Local Detection and Static-to-Dynamic Planning,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, pp. 14059-14065, Atlanta, US, May 2025.

13. Hiroshi Tanaka, Masato Tsuru, Takuya Kiyokawa, and Kensuke Harada: **"Adaptive Grasping of Moving Objects in Dense Clutter via Global-to-Local Detection and Static-to-Dynamic Planning,"** in *Proceedings of International Conference on Artificial Life and Robotics (ICAROB)*, vol. 30, pp. 440-444, Oita, Japan, February 2025.

14. Chenxi Wang, Zhenting Wang, Takuya Kiyokawa, Weiwei Wan, Natsuki Yamanobe, and Kensuke Harada: **"Vision-based Robotic Assembly from Novel Graphical Instructions,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 1221–1228, Munich, Germany, January 2025.

15. Takuya Kiyokawa, Eiki Nagata, Yoshihisa Tsurumine, Yuhwan Kwon, and Takamitsu Matsubara: **"Self-Supervised Learning of Grasping Arbitrary Objects On-the-Move,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 965–972, Munich, Germany, January 2025 (**SICE International Young Authors Award (SIYA)**).

16. Takuya Kiyokawa, Hiroki Katayama, Jun Takamatsu and Kensuke Harada: **"Active Vapor-Based Robotic Wiper,"** in *Proceedings of IEEE International Conference on Robotic Computing (IRC)*, pp. 245–248, Tokyo, Japan, December 2024.

17. Takuya Kiyokawa, Mahiro Muta, Weiwei Wan and Kensuke Harada: **"Task-Difficulty-Aware Efficient Object Arrangement by Taking Advantage of Tossing Motions,"** in *Proceedings of IEEE International Conference on Robotic Computing (IRC)*, pp. 170–173, Tokyo, Japan, December 2024.

18. Alberto Bacchin, Leonardo Barcellona, Matteo Terreran, Stefano Ghidoni, Emanuele Menegatti, Takuya Kiyokawa: **"WasteGAN: Data Augmentation for Robotic Waste Sorting through Generative Adversarial Networks,"** in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 5080–5087, Abu Dhabi, UAE, October 2024.

19. Takuya Kiyokawa, Ismael Rodriguez, Korbinian Nottensteiner, Peter Lehner, Thomas Eiband, Maximo A. Roa, Kensuke Harada: **"CAD-Informed Uncertainty-Aware Sequence and Motion Planning for Robotic Assembly,"** in *Proceedings of IEEE International Conference on Automation Science and Engineering (CASE)*, pp. 418–425, Bari, Italy, August 2024.

20. Shusei Nagato, Tomohiro Motoda, Takao Nishi, Petit Damien, Takuya Kiyokawa, Weiwei Wan, Kensuke Harada: **"Probabilistic Slide-Support Manipulation Planning in Clutter,"** in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 1016–1022, Detroit, US, October 2023.

21. Kazuki Iwao, Takao Nishi, Takuya Kiyokawa, Damien Petit, Weiwei Wan, Kensuke Harada: **"Planning Dense Object Packing by Pushing Objects,"** in *Proceedings of IEEE International Conference on Automation Science and Engineering (CASE)*, Auckland, New Zealand, August, 2023.

22. Kota Takata, Takuya Kiyokawa, Ixchel G Ramirez-Alpizar, Natsuki Yamanobe, Weiwei Wan, Kensuke Harada: **"Efficient Task/Motion Planning for a Dual-arm Robot from Language Instructions and Cooking Images,"** in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 12058–12065, Kyoto, Japan, October 2022.

23. Tatsuya Sakuma, Takuya Kiyokawa, Jun Takamatsu, Takahiro Wada, and Tsukasa Ogasawara: **"Soft-Jig: A Flexible Sensing Jig for Simultaneously Fixing and Estimating Orientation of Assembly Parts,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, pp. 10945–10950, May 2022.

24. Hao Chen, Takuya Kiyokawa, Weiwei Wan, and Kensuke Harada: **"Category-Association Based Similarity Matching for Novel Object Pick-and-Place Task,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia (PA), USA, May 2022 (**IEEE RAS Japan Joint Chapter Young Award**).

25. Takuya Kiyokawa, Tatsuya Sakuma, Jun Takamatsu, and Tsukasa Ogasawara: **"Soft-Jig-Driven Assembly Operations,"** in *Proceedings of IEEE International Conference. on Robotics and Automation (ICRA)*, pp. 3466–3472, Online, June 2021 (**IEEE RAS Japan Joint Chapter Young Award**).

26. Takuya Kiyokawa, Jun Takamatsu, and Tsukasa Ogasawara: **"Assembly Sequences Based on Multiple Criteria Against Products with Deformable Parts,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, pp. 975–981, Online, June 2021.

27. Naoki Wake, Riku Arakawa, Iori Yanokura, Takuya Kiyokawa, Kazuhiro Sasabuchi, Jun Takamatsu, and Katsushi Ikeuchi: **"A Learning-from-Observation Framework: One-Shot Robot Teaching for Grasp-Manipulation-Release Household Operations,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 461–466, Online, January 2021.

28. Hiroki Katayama, Takuya Kiyokawa, Jun Takamatsu, and Tsukasa Ogasawara: **"Azimuth Angle Estimation Based on Sound Wave Reflection for Mirrors and Transparent Objects,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 40–45, Online, January 2021.

29. Naoki Shirakura, Takuya Kiyokawa, Hikaru Kumamoto, Jun Takamatsu, and Tsukasa Ogasawara: **"Semi-automatic Collection of Marine Debris by Collaborating UAV and UUV,"** in *Proceedings of IEEE International Conference on Robotic Computing (IRC)*, pp. 412–413, Online, November 2020.

30. Kento Tariki, Takuya Kiyokawa, Gustavo Alfonso Garcia Ricardez, Jun Takamatsu, and Tsukasa Ogasawara: **"3D Model-Based Assembly Sequence Optimization Using Insertionable Properties of Parts,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 1400–1405, Honolulu, Hawaii, USA, January, 2020.

31. Kento Tariki, Takuya Kiyokawa, Tomoki Nagatani, Jun Takamatsu, and Tsukasa Ogasawara: **"3D Model-Based Non-interference Assembly Sequence Generation for Products with a Large Number of Parts,"** in *Proceedings of IEEE International Conference on Cybernetics and Intelligent Systems and IEEE International Conference on Robotics, Automation and Mechatoronics (CIS-RAM)*, pp. 142–147, Bangkok, Thailand, November 2019.

32. Takuya Kiyokawa, Keita Tomochika, Jun Takamatsu, and Tsukasa Ogasawara: **"Fully Automated Annotation with Noise-Masked Visual Markers for Deep-Learning-Based Object Detection,"** in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, pp. 1972–1977, Montreal, Canada, May 2019.

33. Yuto Tsuchiya, Takuya Kiyokawa, Gustavo Alfonso Garcia Ricardez, Jun Takamatsu, and Tsukasa Ogasawara: **"Pouring from Deformable Containers Using Dual-Arm Manipulation and Tactile Sensing,"** in *Proceedings of IEEE International Conference on Robotic Computing (IRC)*, pp. 357–362, Naples, Italy, February 2019.

34. Takuya Kiyokawa, Ming Ding, Gustavo Alfonso Garcia Ricardez, Jun Takamatsu, and Tsukasa Ogasawara: **"Generation of a Tactile-Based Pouring Motion Using Fingertip Force Sensors,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 669–674, Paris, France, January 2019.

35. Takuya Kiyokawa, Kosei Nojiri, Hirofumi Ohtsuka, and Yoji Okayama, **"Estimation of Kinematics Parameters dependent on Pronation Supination for Modeling Forearm Skeletal System Based on CT Images,"** in *Proceedings of IEEE/SICE International Symposium on System Integration (SII)*, pp. 422–427, Nagoya, Japan, December 2015.

36. Kosei Nojiri, Takuya Kiyokawa, and Yoji Okayama, **"Forearm Skeleton Modeling for Pro-/supination Movement Using CT Image Measurement,"** in *Proceedings of IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*, pp. 860–865, Busan, Korea, July 2015.

Grants and Research Projects

Aug. 2026 - Nov. 2030, Moonshot R&D Program (Moonshot Goal 3), Japan Science and Technology Agency (JST)
"Integrated R&D of Humanoids Enabling Work in Difficult Environments"

Oct. 2026 - Sept. 2027, Research Grant (Grant A), NAGAMORI Foundation
"Body Optimization of Modular Manipulation Robots Inspired by the Arrangement of Muscles and Joints in Living Organisms"

Apr. 2026 - Mar. 2027, The Research Grant, The Okawa Foundation for Information and Telecommunications
"Proof of Concept of Microfactory with Intelligent Space and Modular Robots"

Apr. 2025 - Mar. 2028, Grant-in-Aid for Early-Career Scientists, Japan Society for the Promotion of Science (JSPS)
"Acquisition of Self-Reconfiguration Behavior Patterns of Working Intelligent Robots with Flexible Bodies"

Apr. 2025 - Mar. 2026, Collaborative Program for Fostering Next-Generation Researchers: Interdisciplinary Fusion Research Project through the Cooperation of Three Professions, The University of Osaka
"Design and Implementation of Self-Reconfigurable Intelligent Robots Based on an Evolutionary Biology Perspective"

Apr. 2023 - Mar. 2028, New Energy and Industrial Technology Development Organization (NEDO), Project P23002, Subcontracted from Panasonic Holdings, Principal Investigator
"Sequence and Motion Generation for Robotic Disassembly Tasks"

Apr. 2020 - Mar. 2025, New Energy and Industrial Technology Development Organization (NEDO), Project P20012, Subcontracted from AIST, Principal Investigator
"Innovative Plastic Resource Recycling Process Technology Development"

Aug. 2024, Suzuki Foundation, Grants for Overseas Training
For participation at **IEEE International Conference on Automation Science and Engineering 2024 (CASE2024)**

Oct. 2023 - Mar. 2024, Long-Term Overseas Research Support, The Telecommunications Advancement Foundations
Research Stay at German Aerospace Center (DLR)

Oct. 2023 - Mar. 2024, Overseas Dispatch Program for Young Researchers, Multidisciplinary Research Laboratory System for Future Developments, Graduate School of Engineering Science, The University of Osaka
Research Stay at German Aerospace Center (DLR)

Oct. 2023 - Mar. 2024, Overseas Research Support Program for Young Researchers from Global Affairs, The University of Osaka
Research Stay at German Aerospace Center (DLR)

Apr. 2021 - Mar. 2022, Research Grant for Young Researcher from NAIST Foundation

Research member: Takuya Kiyokawa, Jun Takamatsu, and Kensuke Harada
"Agile Reconfigurable Robotic Assembly System"

Apr. 2019, The NEC C&C Foundation, Grants for Researchers Attending International Conferences

For participation at **IEEE International Conference on Robotics and Automation 2019 (ICRA2019)**

Honors and Awards

Sept. 2026, Young Investigation Excellence Award - The Robotics Society of Japan (RSJ)
Takuya Kiyokawa, **"Integrated Planning for Non-Destructive Disassembly Based on Disassemblability Derived Solely from Design Models"**

Jun. 2026, Best Pitch Presentation Award - Circular Robotics: Designing Sustainable Autonomy for a Finite World (ICRA 2026 Workshop)
Takuya Kiyokawa, **"Towards Design for Robotics: Disassemblability-Driven Non-Destructive Disassembly of Home Appliances"**

Jan. 2026, Best Presentation Award - The Society of Instrument and Control Engineers (SICE)
Takuya Kiyokawa, Takuya Iwamoto, Yuto Noguchi, Nobukazu Takeda, and Kensuke Harada, **"Path Planning to Minimize Joint Loads for Heavy Object Manipulation in Complex Environments"**

Jan. 2026, Best Presentation Award - The Society of Instrument and Control Engineers (SICE)
Takuya Kiyokawa, Tomoki Ishikura, Shingo Hamada, Genichiro Matsuda, and Kensuke Harada, **"Component Influence Estimation via Robotic Disassembly Planning"**

Aug. 2025, Peter Luh Memorial Best Paper Award for Young Researcher - Finalist, IEEE Robotics and Automation Society
Takuya Kiyokawa, **"Cooking Task Planning using LLM and Verified by Graph Network"**

Feb. 2025, Funai Information Technology Award for Young Researchers, The Funai Foundation
Takuya Kiyokawa, **"Study on Manipulation Planning by Intelligent Robots Using Design Information"**

Jan. 2025, SICE International Young Authors Award (SIYA), SICE
Takuya Kiyokawa, **"Self-Supervised Learning of Grasping Arbitrary Objects On-the-Move"**

Sept. 2024, Σ Global Engineering Science Award, The University of Osaka
Takuya Kiyokawa, **"CAD-Informed Uncertainty-Aware Sequence and Motion Planning for Robotic Assembly"**

Mar. 2022, Telecommunication System Technology Student Award
Takuya Kiyokawa, Keita Tomochika, Jun Takamatsu, and Tsukasa Ogasawara, **"Fully Automated Annotation With Noise-Masked Visual Markers for Deep-Learning-Based Object Detection,"** IEEE Robotics and Automation Letters, 2019

June 2021, IEEE RAS Japan Joint Chapter Young Award
Takuya Kiyokawa, Tatsuya Sakuma, Jun Takamatsu, and Tsukasa Ogasawara, **"Soft-Jig-Driven Assembly Operations"**, IEEE ICRA2021

Nov. 2019, Special Award, Technical Academy Research Presentation in IIFES 2019
Takuya Kiyokawa, Jun Takamatsu, and Tsukasa Ogasawara, **"A Technology to Quickly Collect Dataset Using a Robot for Object Detection AI"**

May 2019, Certified as Super Creator by IPA and METI of Japan, MITOU program 2018
Takuya Kiyokawa and Keita Tomochika, **"A Framework for Quickly Deploying Image Recognition AI"**
Selected as one of only 327 certified Super Creators in Japan from 2000 to 2019

Patents

1. Takuya Kiyokawa, Kensuke Harada, Tomoki Ishikura, and Naoya Miyaji, **"Disassembly information generation method,"** Japan, Patent Application No. 2024-067571, 18.04.2024 (filing date).
2. Keita Tomochika, Takuya Kiyokawa, Tsukasa Ogasawara, Jun Takamatsu, and Ming Ding, **"Learning dataset creation method and device,"** United States, Patent No. US11276194, 28.03.2019 (filing date).
3. Keita Tomochika, Takuya Kiyokawa, Tsukasa Ogasawara, Jun Takamatsu, and Ming Ding, **"Learning dataset creation method and device,"** China, Publication No. CN111937034, 28.03.2019 (filing date).
4. Keita Tomochika, Takuya Kiyokawa, Tsukasa Ogasawara, Jun Takamatsu, and Ming Ding, **"Learning dataset creation method and device,"** Japan, Patent No. JP7083189, 28.03.2019 (filing date).
5. Keita Tomochika, Takuya Kiyokawa, Tsukasa Ogasawara, Jun Takamatsu, and Ming Ding, **"Learning data set creation method, and object recognition and position and orientation estimation method,"** Japan, Patent No. JP6474179, 27.07.2018 (filing date).

International Exhibitions and Workshops

Sept. 27, 2026, Organizing Workshop at IEEE IROS026 (Pittsburgh, PA, USA)
"Creativity in Assembly"

June 1, 2026, Presentation at Workshop in IEEE ICRA2026 (Vienna, Austria)
"Circular Robotics: Designing Sustainable Autonomy for a Finite World"
Takuya Kiyokawa: "Towards Design-for-Robotics: Disassemblability-Driven Non-Destructive Disassembly of Home Appliances" (pitch + poster)

Oct. 21–23, 2025, Late Breaking Results Poster Session at IEEE IROS2025 (Hangzhou, China)
Tatsuki Nishimura, Weiwei Wan, Takuya Kiyokawa, and Kensuke Harada: **"Learning Mobile Robot Pushing for Unwanted Object Removal in Dense Clutter"** (poster)

Jan. 21, 2025, Organizing Workshop at IEEE/SICE SII2025 (Munich, Germany)
"Reconfigurable Manipulation Robots"

June 14, 2024, Late Breaking Results Poster Session at IEEE ICRA2024 (Yokohama, Japan)
Takuya Kiyokawa, Ismael Rodriguez, Korbinian Nottensteiner, Peter Lehner, Thomas Eiband, Maximo A. Roa, and Kensuke Harada: **"CAD-Informed Uncertainty-Aware Robotic Assembly Sequences"** (poster)

June 14–18, 2021, IEEE RAS "Rehabilitation and Assistive Technologies based on Soft Robotics" (SofTech-Rehab) (Online)
Participates selected based on the evaluation of their Curriculum Vitae and a motivational letter (Certificate)

Jan. 7–10, 2020, Consumer Electronics Show (LAS VEGAS, US)
"Make AI Smarter, Quickly Sort Items" (poster presentation and demonstration)

Articles

Dec. 2021, TechXplore, "A soft jig that could enhance the performance of general-purpose assembly robots"
https://techxplore.com/news/2021-12-soft-jig-general-purpose-robots.html