Kaneyoshi Hiratsuka

Email: hirekatsu0523@gmail.com | GitHub: https://github.com/Azuma413

Portfolio & Demos: https://azuma413.github.io/

(Please visit the portfolio for video demonstrations of the projects listed below)

EDUCATION

Kyoto University | Kyoto, Japan

Bachelor of Engineering, Department of Engineering Science (Expected Mar. 2026)

Affiliation: Biomechanics Laboratory

Incoming Master's Student: Graduate School of Informatics, Learning Machines Group (Apr. 2026~)

Relevant Coursework: Robotics, Control Engineering, Machine Learning

PUBLICATIONS & PRESENTATIONS

Multimodal Imitation Learning for Robotic Manipulators Using Acoustic Spatial Information (To be presented at **JSAI 2026**)

- Proposed a multimodal framework integrating visual data with acoustic spatial information extracted via sound source localization and separation from multiple microphone arrays.

Imitation Learning for Pick-and-Place Using Acoustic Environment Information (Presented at **RSJ 2025**)

- Proposed a novel method integrating audio signals into observations for tasks unsolvable with vision alone.
- Demonstrated a 57.4% increase in success rate on real-world, audio-dependent pick-and-place tasks using a 6-DoF manipulator.

Sound source tracking using deep reinforcement learning based on world model (Presented at **JSAI SIGAI 2024**)

- Developed an RL-based framework using DreamerV3 on a differential-drive robot to spatially localize sound sources.

PROFESSIONAL & RESEARCH EXPERIENCE

Matsuo Laboratory, The University of Tokyo | Research Intern

Apr. 2024~Dec. 2025

- **Video Generation World Models:** Developed Transformer-Diffusion models for autonomous driving simulators. Solved the "color shift" problem in long-term generation and optimized VQ-VAE codebook usage.
- **Award:** Won **Best Poster Award** at the internal research presentation.
- **VLA Models:** Contributed to foundational research on Vision-Language-Action models, focusing on closed-loop verification in CARLA.

ONIXION Inc. | Co-founder & CTO

Mar. 2025~Dec. 2025

- Leading the development of AI-driven DX solutions for the manufacturing sector.
- Architected an R&D project for a **CAD-generation LLM**, automating complex design processes using Python scripting and GRPO-based reinforcement learning.

SELECTED PROJECTS

Differentiable Bone Metabolism Simulator (Graduation Research)

- Developing a multi-physics differentiable simulator combining Finite Element Method (FEM) and reaction-diffusion systems using JAX.
- Focusing on solving inverse problems for patient data optimization (Patent pending).

NHK Robocon 2024 Software Lead

- Led the software team to build an autonomous mobile robot using ROS 2 and Behavior Trees.
- Implemented a real-time 3D perception system combining YOLO and depth sensors for precise object localization.

Sim2Real RL for Line-Following Robot

- Achieved zero-shot Sim2Real transfer of a vision-based RL policy (DrQ-v2) to a real Raspberry Pi-based robot.
- Developed a diverse course generation algorithm in simulation to enhance model robustness.

METI NEP Program Grant Recipient

- Developed "Automation of clothing measurement using imitation learning," validating commercial potential with a custom robotic prototype.

KUPAC (Kyoto University Physical AI Community)

- **Organizer:** Established a student community dedicated to Physical AI.
- Organized hands-on workshops on imitation learning (ACT) to foster technical skills among students.

TECHNICAL SKILLS

Machine Learning: Reinforcement Learning, Imitation Learning, Diffusion Models, VLA, JAX, PyTorch.

Robotics & Engineering: ROS 2, Unity, Unreal Engine, Raspberry Pi, Sony Spresense, Meta Quest, ESP32.

Other Sciences: Finite Element Method (FEM), Biomechanics.

Languages: Japanese (Native), English (TOEFL iBT 95).