

Hayato Saiki

PHD STUDENT @ UNIVERSITY of Tsukuba

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SportsXR | Human Computer Interaction | AR/VR | Computer Vision | Robotics

Education

University of Tsukuba

Ph.D. in Human Informatics

Ibaraki, Japan

Apr. 2024 - Now

- JSPS Research Fellowship for Young Scientists (DC2) (Advisor: Prof. Kenji Suzuki)
- Research Fellow, Harvard University, John A. Paulson School of Engineering and Applied Sciences (Host: Prof. Hanspeter Pfister)

University of Tsukuba

M.S. in Engineering

Ibaraki, Japan

Apr. 2022 - Mar. 2024

- Special Encouragement Student (Advisor: Prof. Kenji Suzuki)

University of Tsukuba

B.S. in Engineering

Ibaraki, Japan

Apr. 2020 - Mar. 2022

National Institute of Technology, Suzuka College

Associate Degree in Electrical and Electronic Engineering

Mie, Japan

Apr. 2015 - Mar. 2020

Publications

International

- P1. **Hayato Saiki**, Chunggi Lee, Hikari Takahashi, Tica Lin, Kaori Tachibana, Hidetada Kishi, Yasuhiro Suzuki, Hanspeter Pfister, Kenji Suzuki, **“BRIDGE: Borderless Reconfiguration for Inclusive and Diverse Gameplay Experience via Embodiment Transformation”**, *ACM Conference on Human Factors in Computing Systems*, 2026 (CHI 2026, Overall acceptance rate: 25.3%).
- P2. Chunggi Lee*, **Hayato Saiki***, Tica Lin, Eiji Ikeda, Kenji Suzuki, Chen Zhu-Tian, Hanspeter Pfister, **“ViSTAR: Virtual Skill Training with Augmented Reality with 3D Avatars and LLM coaching agent”**, *ACM Conference on Human Factors in Computing Systems*, 2026 (CHI 2026, Overall acceptance rate: 25.3%).
- P3. **Hayato Saiki**, Masakazu Hirokawa, Modar Hassan, Kenji Suzuki, **“A Large-Scale Mixed Reality Stadium for Training Coordinated Tactical Plays in Basketball”**, *Frontier in Virtual Reality*, 2025 (Accepted for publication)
- P4. **Hayato Saiki**, Kiyohiro Konno, Kosuke Naruse, Shimizu, Seiji Ono, Kenji Suzuki, **“Cognitive Load and Motor Adjustment Under Virtual Defensive Pressure in Mixed Reality Sports Training”**, *13th International Conference on Sport Sciences Research and Technology Support*, 2025
- P5. Kazuma Takaishi, **Hayato Saiki**, Masakazu Hirokawa, Modar Hassan, Kenji Suzuki, **“A Sleeve Device using Electrical Impedance for Coaching Jump Shots in Basketball,”** *IEEE International Conference on Systems, Man, and Cybernetics*, 2023.

Preprint, Workshop, POSTER, DOMESTIC

- D1. **Designing Inclusive Future Augmented Realities**, *The Association of Computing Machinery CHI conference*, 2024
- D2. **Hayato Saiki**, Masakazu Hirokawa, Modar Hassan, Kenji Suzuki, **“A Large-Space Mixed Reality Stadium to Support Tactical Training in Basketball,”** *The 1st Sports Informatics Research Presentation Symposium, Information Processing Society of Japan*, 2024. (**The Outstanding Presentation Award**)
- D3. Yuki Tago, **Hayato Saiki**, Chihiro Ikuta, **“Particle Swarm Optimization Team Discovery”**, *RISP International Workshop on Nonlinear Circuits, Communications and Signal Processing*,
- D4. Kenta Tanaka, Mika Oki, **Hayato Saiki**, Kenji Suzuki, **“Interaction Analysis of Children with Neurodevelopmental Disorders in a Team-based Game Using Large-Scale Floor Projection,”** *The 1st Sports Informatics Research Presentation Symposium, Information Processing Society of Japan*, 2024.
- D5. **Hayato Saiki**, Masakazu Hirokawa, Modar Hassan, Kenji Suzuki, **“A Large-Space Mixed Reality Environment to Support the Improvement of Basketball Passing Skills,”** *Proceedings of the 27th Annual Conference of the Virtual Reality Society of Japan*, 2022.

Demo Video

- D1. **ViSTAR video**, CHI2026: <https://youtu.be/plykQOvpJEc>
- D2. **BRIDGE video**, CHI2026: <https://youtu.be/6l75kgxwF-Q>

Professional Experience

Harvard University (SEAS)

RESEARCH Fellow (Host: Prof. Hanspeter Pfister)

Boston, USA

Feb 2025 - Now

- Conducted research in Human–Computer Interaction (HCI) focusing on **AI-driven XR systems for sports training**.
- Developed methods that combine **Large Language Models (LLMs) with Random Forest classifiers** to enhance personalized feedback for athletes.
- Implemented computer vision pipelines to track players, the ball, and court geometry, enabling **3D reconstructions of basketball games and simulation under different embodiments**.
- Designed and evaluated a **reinforcement learning–based balancing system across heterogeneous modalities** (PC and AR environments) to ensure consistent training experiences.

National Agriculture and Food Research Organization (NARO)

Part-time Researcher & DEVELOPER

Ibaraki, Japan

Jun 2022 - May 2023

- Developed an **AI-driven model for vehicle route optimization**, leveraging reinforcement learning techniques to improve autonomous path planning.
- Built and validated a **simulation environment for evaluating vehicle driving performance** across various scenarios.

Honors & Awards

Academic

- 2025 **JSPS Research Fellowship for Young Scientists**, JSPS Research Fellowship for Young Scientists (DC2)
| Highly competitive doctoral fellowship providing a monthly stipend and an annual research grant of ¥800,000
- 2025 **Japan Public-Private Partnership Student Study Abroad Program**, Ministry of Education, Culture, Sports, Science and Technology
| Highly competitive government-funded scholarship providing a preparation grant and monthly stipend
- 2025 **Support for Pioneering Research Initiated by the Next Generation (SPRING)**, Japan Science and Technology Agency (JST)
| Highly competitive doctoral fellowship providing a monthly stipend and an annual research grant of ¥500,000
- 2024 **The Outstanding Presentation Award**, The 1st Sports Informatics Research Symposium
- 2022 **Special Encouragement Student Program**, University of Tsukuba
| Full tuition exemption, monthly stipend

Athletics

- 2019 **Second Place (Captain)**, National Technical College Basketball Tournament
- 2019 **Champion (Captain)**, Tokai Technical College Basketball Tournament, advanced to National Competition
| 2015, 2018
- 2015 **Selected Player (U15)**, Mie Prefecture Elite Training Team
| One of only 15 players selected in Mie Prefecture; trained together with members of the Japan National Team
- 2014 **Champion & Outstanding Player Award**, Mie Prefecture Junior High School Basketball Tournament
- 2012 **Champion**, Mie Prefecture Qualifier, National Mini-Basketball Tournament, advanced to National Competition

Skills

Computer Languages

C/C++, C#, Python, Javascript, R, D3.js, ThreeJS, React, HTML, CSS

Design Tools

Unity 3D, Figma, AdobeXD, Sketch, Miro, Tableau, Premiere