

Yuichi HIROI, Ph.D. | 廣井 裕一

Senior Research Scientist, Cluster Metaverse Lab

FORECAST Gotanda WEST 5F, 8-9-5, Nishigotanda, Shinagawa, Tokyo, 141-0031, Japan

🌐 [yhiroi.github.io](https://github.com/yhiroi)

✉ y.hiroi@cluster.mu

📖 scholar.google.com/citations?user=_ICkxzkAAAAJ

📍 Tokyo, Japan



RESEARCH INTERESTS

Mixed / Augmented Reality (MR/AR), Optical See-Through Head-Mounted Displays (OST-HMDs), Realistic Visual Appearance Reproduction, Vision Augmentation, Metaverse Interaction

WORK EXPERIENCE

Jul. 2023 – Present 📍 Tokyo, Japan	Senior Research Scientist Cluster Metaverse Lab, Cluster Inc.	🔍 AR Displays Personalized VR/AR Interaction
Jul. 2023 – Present 📍 Tokyo, Japan	Visiting Researcher The University of Tokyo, Jun Rekimoto Lab.	🔍 AR Displays Vision Augmentation
Apr. 2022 – Jun. 2023 📍 Tokyo, Japan	JSPS Research Fellow (PD) The University of Tokyo (Advisor : Jun Rekimoto)	🔍 AR Displays Vision Augmentation
Jun. 2021 – Jun. 2023 📍 Kyoto, Japan	Non-full-time Researcher Sony Computer Science Laboratories Kyoto	🔍 AR Displays Neural Rendering
Dec. 2022 – Jan. 2023 Nov. 2019 – Jan. 2020 📍 Otago, New Zealand	Visiting Researcher University of Otago (Advisor : Tobias Langlotz)	🔍 AR Displays Vision Augmentation
Apr. 2020 – Mar. 2022 📍 Tokyo, Japan	JSPS Research Fellow (DC2) Tokyo Institute of Technology (Advisor : Yuta Itoh)	🔍 AR Displays Vision Augmentation
Jan. 2019 – Mar. 2020 📍 Yokohama, Japan	Project Researcher Keio University (Advisor : Maki Sugimoto)	🔍 Collective Visual Sensing
Apr. 2017 – Dec. 2018 📍 Yokosuka, Japan	Full-time Researcher NTT Service Evolution Laboratory	🔍 Object Tracking Conditioned Image Generation
Apr. 2017 – Sep. 2017 📍 Tokyo, Japan	System Engineer (Short-term Contract) NTT DATA Corporation	🔍 Mobile Application Development

EDUCATION

Apr. 2019- Mar. 2022 📍 Tokyo, Japan	Ph. D. of Engineering Tokyo Institute of Technology (Supervisor : Yuta Itoh) Title: "Realistic Appearance Reproduction by Optical See-Through Head-Mounted Display based on Light Measurement and Modulation"
Apr. 2015 - Mar. 2017 📍 Yokohama, Japan	M.S. of Engineering Keio University (Supervisor : Maki Sugimoto)

GRANTS

Oct. 2025 – Mar. 2029 (active)	(PI) JST PRESTO “Symbiotic AI Fundamentals” Project: “Infrastructure for Human-AI Collaborative Community Building in the Metaverse”	40.0 M JPY
Apr. 2025 – Mar. 2028 (active)	(PI) JSPS Grant-in-Aid for Scientific Research (B) 25K03173 Project: “Visual Augmentation through Integration of Event-Based Ocular Aberration Measurement and Retinal Projection”	7.7 M JPY
Apr. 2025 – Mar. 2028 (active)	(Co-PI) JSPS Grant-in-Aid for Scientific Research (B) 25K00145 Project: “Tactile Display Using Photo-acoustic Effects Generated by Laser-Induced Cavitation” (PI: Takefumi Hiraki)	3.2 M JPY
Feb. 2024 – Mar. 2027 (active)	(Co-PI) JST ASPIRE for Rising Scientists JPMJAP2327 Project: “Seamless Reality: A Technological Foundation for Merging Cyber-Physical Spaces through Real-World-Oriented Avatars” (PI: Yuta Itoh)	30.6 M JPY
Sep. 2024 – Mar. 2027 (active)	(Co-PI) JSPS KAKENHI for the Promotion of Joint International Research 24KK00187 Project: “Unobtrusive Augmented Reality Visual Guidance with Visual Modality Modulation” (PI: Yuta Itoh)	6.5 M JPY
Apr. 2023 – Mar. 2025	(PI) JSPS KAKENHI for Early-Career Scientists 23K16920 Project: “Spatial Calibration of Head-Mounted Displays Based on Implicit Function Representation of Light Fields Using Deep Learning”	3.5 M JPY
Apr. 2022 – Mar. 2025	(PI) JSPS KAKENHI for JSPS Research Fellow (PD) 22J01340 Project: “Low-latency Vision Augmentation Integrating High-Speed Human and Environmental Measurements with Field-of-View Prediction”	3.4 M JPY
Apr. 2020 – Mar. 2022	(PI) JSPS KAKENHI for JSPS Research Fellow (DC2) 20J14971 Project: “Visual Appearance Reproduction by Optical See-Through Head-Mounted Displays based on Measurement and Modulation of Lights”	1.9 M JPY
Apr. 2019 – Mar. 2020	Tokyo Tech TSUBAME Scholarship for Doctoral Students	0.5 M JPY

AWARDS

International

Oct. 2025	Best Paper Award, IEEE ISEMV 2025 H. Tsutsui, T. Hiraki, Y. Hiroi , S. Hasegawa, “Community Analysis of Social Virtual Reality Based on Large-Scale Log Data”
Aug. 2024	1st Place in SIGGRAPH 2024 Student Research Competition for Undergraduate Work S. Hattori, Y. Hiroi , T. Hiraki, “Measurement of the Imperceptible Threshold for Color Vibration Pairs Selected by using MacAdam Ellipse”
Mar. 2024	Best Paper Honorable Mention, IEEE VR 2024 H. Aoki, T. Tochimoto, Y. Hiroi , Y. Itoh, “Towards Co-operative Beaming Displays: Dual Steering Projectors for Extended Projection Volume and Head Orientation Range”
Mar. 2023	Best Poster Honorable Mention, Augmented Humans 2023 Y. Koike, Y. Hiroi , Y. Itoh, J. Rekimoto. 2023. “Brain-Computer Interface using Directional Auditory Perception”
Mar. 2017	Best Paper 3rd Place, Augmented Human 2017 Y. Hiroi , Y. Itoh, T. Hamasaki, M. Sugimoto, “AdaptiVisor: Assisting Eye Adaptation via Occlusive Optical See-Through Head-Mounted Displays”

Domestic

May. 2025	拡張体験デザイン協会 (DAXX) Good Experience Design Award 2025 R. Kurai, H. Yanagawa, Y. Hiroi , T. Hiraki, "MetaGadget: An Accessible Framework for IoT Integration into Commercial Metaverse Platforms"
Mar. 2025	インタラクティブ発表賞（PC推薦）, インタラクション 2025 沈有方, 土佐凜斗, 畑田裕二, 廣井裕一 , 平木剛史, 苗村健, "HMDユーザの探索行動支援に向けた目立たない両眼相補的色振動による視線誘導", 情報処理学会 インタラクション2025, 2025年
Dec. 2024	特集テーマセッション賞（ソーシャル・インタラクション）, HCGシンポジウム 2024 花島諒, 平木剛史, 浦川智弘, 倉井龍太郎, 廣井裕一 , 大山潤爾, "メタバース社会のコミュニケーションにおける感情表現の大規模調査：ソーシャルVRのエモート分析から", 電子情報通信学会 HCGシンポジウム, 2024年
Jun. 2023	2022年 日本の光学研究を代表する成果に選定, 日本光学会 Y. Hiroi , K. Someya, Y. Itoh, "Neural Distortion Fields for Spatial Calibration of Wide Field-of-View Near-Eye Displays", OSA Optics Express, 2022.
Mar. 2019	SIG-MR賞, 日本VR学会複合現実感研究会 浜崎崎, 伊藤勇太, 廣井裕一 , 岩井大輔, 杉本麻樹, "光学透過型ヘッドマウントディスプレイを組み合わせた高ダイナミックレンジなプロジェクションマッピング", 第57回 複合現実感研究会 (SIG-MR), 2019年
Feb. 2014	CG-ARTS賞, 画像情報教育振興協会 廣井裕一 , CG-ARTS主催のエキスパート認定試験で優秀な成績を収める (CGエンジニアエキスパート、画像処理エンジニアエキスパート)

TEACHING EXPERIENCE

Oct. 2025 - Mar. 2026	Lecturer on "Contents Development" (0ATW217) University of Tsukuba Delivered a hands-on workshop on video production with Adobe After Effects, complemented by lectures on the underlying principles of digital image processing, color science, and computer graphics for MEng.
Apr. 2020 - Jul. 2020 Apr. 2019 - Jul. 2019	Teaching Assistant on "Augmented Reality" (CSC.T439) Tokyo Institute of Technology Implemented code, created teaching materials and supported the class for MEng/Ph.D. students to develop applications with full-scratch implementation of AR markers using Processing, OpenGL and OpenCV.
Sep. 2015 - Mar. 2016	Teaching Assistant on "Experiments in Information Engineering II" Keio University Implemented code, created teaching materials and supported the class for Bachelor 3 rd students to develop 3D AR applications with Unity and PlayStation Move Controller.

SKILLS

Technical	Very Experienced: Python, PyTorch, MATLAB, C++, C#, Microsoft Office, Adobe Aftereffects, Adobe Animate, Experienced: Unity, C, Java, JAX, TensorFlow, Processing, Arduino, Optics Design for Head-Mounted Displays and Projectors, WebRTC, Adobe Illustrator, Adobe Photoshop, Adobe InDesign, Blender, Git, Basics: Network Communication (WebRTC), JavaScript, Motion Capture, Raspberry Pi, Robot Operation System (ROS)
Language	Japanese: Native, English: Advanced / CEFR C1 (EIKEN English Proficiency Test Grade 1, Mar 2025) Chinese: Pre-Intermediate / CEFR A2 (HSK Level 3, Jul 2024) Korean: Basic / CEFR A1 (TOPIK Level 1, Dec 2025) French, Russian & Arabic : Beginner

PATENTS

US Patent				
Registered	2022	Y. Ishii, K. Hidaka, Y. Tonomura, T. Tokunaga, Y. Hiroi , "Object tracking device, object tracking method, and object tracking program", Nippon Telegraph and Telephone Corp, 2022-07-26.	US11398049	
		Y. Hiroi , Y. Ishii, T. Tokunaga, Y. Tonomura, K. Hidaka, "Object tracker, object tracking method, and computer program", Nippon Telegraph and Telephone Corp, 2022-02-22	US11257224	
Pending	2023	C. W. Ooi, Y. Hiroi, Y. Itoh, "An Occlusion-Capable Optical See-Through Head-Mounted Display", The University of Tokyo, 2023-03-10	US63/489,502	
Japanese Patent				
Registered	2021	Y. Hiroi , Y. Ishii, T. Tokunaga, Y. Tonomura, K. Hidaka, "Object tracker, object tracking method, and computer program", Nippon Telegraph and Telephone Corp, 2021-03-10	No. 6850741	
	2020	Y. Ishii, K. Hidaka, Y. Tonomura, T. Tokunaga, Y. Hiroi , "Object tracking device, object tracking method, and object tracking program", Nippon Telegraph and Telephone Corp, 2020-11-11.	No. 6793151	
Pending	2024	Y. Hiroi , T. Hiraki, "Information Processing Equipment, Information Processing Methods, and Programs", Cluster Inc., 2024-03-12	Appl. No. 2024-037967	

SERVICE

Editorial Service		
Journal Editor	2025-	Journal Editor Committee, Virtual Reality Society of Japan (VRSJ)
Guest Editor	2025	Special Issue on "AI and VR", Journal of VRSJ
Conference Organization	2026	Workshop Organizer - "4 th Workshop on Seamless Reality : AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (WSR)", IEEE VR 2026
	2025	Program Chair, APMAR 2025 Workshop Organizer - "2 nd & 3 rd Workshop on Seamless Reality : AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (WSR)", IEEE VR 2025 / ISMAR 2025
	2024	Workshop Organizer - "1 st Workshop on Seamless Reality : AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (WSR)", IEEE VR 2024
Program Committees (PC)	2026	IEEE VR
	2025	IEEE VR, IEEE ISMAR, ICAT-EGVE
	2024	IEEE ISMAR, ICAT-EGVE, APMAR
Journal Reviewer		
International	2025	IEEE TVCG x1, OPTICA Optics Express x4, OPTICA Optics Letters x1, OPTICA Applied Optics x1
	2024	IEEE TVCG x2, Elsevier Displays x1
	2023	OPTICA Applied Optics x1
	2021	OPTICA Optics Express x1
Domestic	2023	Journal of the Virtual Reality Society of Japan (VRSJ) x1

Conference Reviewer	2025	IEEE VR x9 (PC), IEEE ISMAR x9 (PC)
	2024	IEEE ISMAR x5 (PC), ICAT-EGVE x3 (PC), ACM VRST x3, IEEE VR x2, ACM CHI x1, ACM SUI x1, APMAR x1 (PC), SIGGRAPH Asia E-Tech x1
	2023	IEEE ISMAR x3, IEEE VR x1, ACM SUI x1
Academic Society Memberships	Committee -	Domestic: 2023- VRSJ Special Interests Group of Mixed Reality (SIG-MR)
	Member -	International: IEEE, ACM Domestic: VRSJ
Others	2025	Session Chair, IEEE VR / IMID / APMAR
	2024	Session Chair, IEEE VR
	2022	Session Chair, ACM VRST

PUBLICATIONS AND PRESENTATION LIST

International Journals & Magazines (Peer-Reviewed)		(under review) Michikuni Eguchi, Madoka Ito, Tomohiro Hayase, Yuichi Hiroi and Takefumi Hiraki, "Cluster Haptic Texture Database: Haptic Texture Database with Variety in Velocity and Direction of Sliding Contacts", Nature Scientific Data.
	2026	1. (to appear) Ryutaro Kurai, Takefumi Hiraki, Yuichi Hiroi , Yutaro Hirao, Monica Perusquia-Hernandez, Hideaki Uchiyama, Kiyoshi Kiyokawa, "MetaProxy: Bridging Agents and Environments in Commercial Metaverse Platforms through Remote Intermediary Monitoring", IEICE Special Session of Human Communication VII, 2026.
	2025	2. Yuichi Hiroi , Yuji Hatada, Takefumi Hiraki, "Cross-Reality Lifestyle: Integrating Physical and Virtual Lives through Multi-Platform Metaverse", IEEE Pervasive Computing, Early Access, 2025.
		3. Ryutaro Kurai, Hikari Yanagawa, Yuichi Hiroi , Takefumi Hiraki, "MetaGadget: An Accessible Framework for IoT Integration into Commercial Metaverse Platforms", IEEE Pervasive Computing, Early Access, 2025.
		4. Ryutaro Kurai, Takefumi Hiraki, Yuichi Hiroi , Yutaro Hirao, Monica Perusquia-Hernandez, Hideaki Uchiyama, Kiyoshi Kiyokawa, "MagicCraft: Natural Language-Driven Generation of Dynamic and Interactive 3D Objects for Commercial Metaverse Platforms", IEEE Access. vol. 13, pp. 132459-132474, 2025.
		5. Rinto Tosa, Shingo Hattori, Yuichi Hiroi , Yuta Itoh, Takefumi Hiraki, "ChromaGazer: Unobtrusive Visual Modulation using Imperceptible Color Vibration for Visual Guidance", IEEE Transaction on Visualization and Computer Graphics (TVCG), vol. 31, no. 5, pp. 3450-3458, 2025 (Also presented at IEEE VR 2025).
		6. Ryutaro Kurai, Takefumi Hiraki, Yuichi Hiroi , Yutaro Hirao, Monica Perusquia-Hernandez, Hideki Uchiyama and Kiyoshi Kiyokawa, "MagicItem: Dynamic Behavior Design of Virtual Objects with Large Language Models in a Commercial Metaverse Platform," IEEE Access, vol. 13, pp. 19132-19143, 2025.
	2024	7. Rina Nagano, Takehiro Kinoshita, Shingo Hattori, Yuichi Hiroi , Yuta Itoh, Takefumi Hiraki, "HaptoFloater: A Low-latency Visuo-Haptic Mid-Air Display by Embedding Imperceptible Color-Vibration Signals", IEEE Transaction on Visualization and Computer Graphics (TVCG), vol. 30, no. 11, pp. 7463-7472, 2024 (Also presented at IEEE ISMAR 2024)
		8. Hiroto Aoki, Takumi Tochimoto, Yuichi Hiroi , Yuta Itoh, "Towards Co-operative Beaming Displays: Dual Steering Projectors for Extended Projection Volume and Head Orientation Range," IEEE Transaction on Visualization and Computer Graphics (TVCG), vol. 30, no. 5, pp. 2309-2318, 2024 (Also presented at IEEE VR 2024)
		9. Yuichi Hiroi , Takefumi Hiraki, Yuta Itoh, "StainedSweeper: Compact, Variable-Intensity Light-Attenuation Display with Sweeping Tunable Retarders", IEEE Transaction on Visualization and Computer Graphics (TVCG), vol. 30, no. 5, pp. 2682-2692, 2024 (Also presented at IEEE VR 2024)
	2023	10. Yuichi Hiroi , Akira Watanabe, Yuri Mikawa, Yuta Itoh, "Low-Latency Beaming Display: Implementation of Wearable, 133μs Motion-to-Photon Latency Near-eye Display", IEEE Transaction on Visualization and Computer Graphics (TVCG), vol. 29, no. 11, pp. 4761-4771, 2023 (Also presented at IEEE ISMAR 2023)
	2022	11. Yuichi Hiroi , Kiyosato Someya, Yuta Itoh, "Neural Distortion Fields for Spatial Calibration of Wide Field-of-View Near-Eye Displays", Optics Express, Vol. 30, Issue 22, pp. 40628-340644, 2022.
	2021	12. Yuichi Hiroi , Takumi Kaminokado, Shunsuke Ono, Yuta Itoh, "Focal Surface Occlusion", Optics Express, Vol. 29, Issue 22, pp. 36581-36597, 2021.

- 2020 13. Takumi Kaminokado, Yuichi Hiroi, Yuta Itoh, "StainedView: Variable-Intensity Light Attenuation Display with Cascaded Spatial Color Filtering for Improved Color Fidelity," IEEE Transactions on Visualization and Computer Graphics (TVCG) 26(6): pp. 3576-3856, 2020 (Also presented at IEEE ISMAR 2020)
- 2018 14. Takumi Hamasaki, Yuta Itoh, **Yuichi Hiroi**, Daisuke Iwai, Maki Sugimoto, "HySAR: Hybrid Material Rendering by an Optical See-Through Head-Mounted Display with Spatial Augmented Reality Projection". IEEE Transaction on Visualization and Computer Graphics (TVCG) 24(4): pp. 1457-1466, 2018 (Also presented at IEEE VR 2018).
- 2026 1. **(to appear) Yuichi Hiroi**, Yuki Imai, Hikari Yanagawa, Takefumi Hiraki, "Large-scale, Longitudinal Field Study of AI-agent-User Interactions in Commercial Metaverse", In Proceeding of IEEE International. Conference on Artificial. Intelligence and eXtended and. Virtual Reality (AlxVR 2026), Osaka, Japan, 11 pages, Jan 26-28, 2026.
- 2025 2. Masahiro Nara, Ryusuke Miyazaki, **Yuichi Hiroi**, Takefumi Hiraki, Yuta Itoh, Shio Miyafuji, "Saccadance: Saccade-Aware Pattern Embedding for Gaze Guidance on High-Speed Displays", In Proceedings of International Conference of Virtual Reality Software Technology (VRST 2025), Montreal, Canada, 11 pages, Nov. 11-14, 2025.
3. Hiroto Tsutsui, Takefumi Hiraki, **Yuichi Hiroi** and Shoichi Hasegawa, "Community Analysis of Social Virtual Reality Based on Large-Scale Log Data", 2nd IEEE International Symposium on Emerging Metaverse (ISEMV 2025), Honolulu, USA, 9 pages, Oct. 19-20, 2025.
4. Masanori Ibara, **Yuichi Hiroi**, Takushi Kamegai and Takefumi Hiraki. "Implementation and Application of Multi-Format 3D Data Integration in a Cross-Device Commercial Metaverse Platform", Proceedings of the 2nd IEEE International Symposium on Emerging Metaverse (ISEMV 2025), Honolulu, USA, Oct. 19-20, 10 pages, 2025.
5. Masanori Ibara, **Yuichi Hiroi**, Takushi Kamegai, Yusuke Masubuchi, Kazuki Matsutani, Megumi Zaizen, Junya Morita, and Takefumi Hiraki, "Weather Synchronization in Digital Twin Environments for Shared VR Experience Using Commercial Metaverse Platforms," Proceedings of the 2nd IEEE International Symposium on Emerging Metaverse (ISEMV 2025), Honolulu, USA, Oct. 19-20, 4 pages, 2025.
6. Takekazu Kitagishi, Chun Wei Ooi, **Yuichi Hiroi**, Jun Rekimoto. "Pinching Visuo-haptic Display: Investigating Cross-Modal Effects of Visual Textures on Electrostatic Cloth Tactile Sensations", 27th ACM International Conference on Multimodal Interaction (ICMI 2025), Canberra, Australia, Oct. 13-17, 2025.
7. Hikari Yanagawa, **Yuichi Hiroi**, Satomi Tokida, Yuji Hatada, Takefumi Hiraki, "Navigation Pixie: Implementation and Empirical Study Toward On-demand Navigation Agents in Commercial Metaverse", In Proceedings of International Symposium on Mixed and Augmented Reality (ISMAR 2025), Daejeon, Korea, Oct. 8-12, 2025.
8. Youfang Shen, Rinto Tosa, Yuji Hatada, **Yuichi Hiroi**, Takefumi Hiraki, Takeshi Naemura, "ChromaGazer-HMD: Visual Modulation using Unobtrusive Color Vibration for Gaze Guidance with Head-Mounted Displays", Augmented Humans 25, Abu-dabi, UAE, 2025.
9. Yuta Itoh, Tomoya Nakamura, **Yuichi Hiroi**, Kaan Aksit, "Slim Light-Receiving Glasses for Wide Head Orientation-Capable Beaming Displays using Diffractive Waveguide", In Proceedings of IEEE International Conference of Virtual Reality 2025 (IEEE VR 2025), pp. 351-358, Saint-Malo, France, Mar. 8-12, 2025.
- 2024 10. **Yuichi Hiroi**, Takefumi Hiraki, Yuta Itoh, "FactoredSweeper: Optical See-Through Display Integrating Light Attenuation and Addition with Single Spatial Light Modulator", In Proceedings of International Symposium on Mixed and Augmented Reality (ISMAR 2024), pp. 61-70, Seattle, USA, Oct. 21-25, 2024.
- 2023 11. Hiroto Aoki, **Yuichi Hiroi**, Yuta Itoh, Jun Rekimoto, "Retinal Homing Display: Head-Tracking Auto-stereoscopic Retinal Projection Display", In Proceedings of International Conference of Virtual Reality Software Technology (VRST 2023), 13:1-13:10, Christchurch, New Zealand, 2023
12. Takekazu Kitagishi, **Yuichi Hiroi**, Yuna Watanabe, Yuta Itoh, Jun Rekimoto, "Tel textile: End-to-end Remote Transmission of Fabric Tactile Sensation", In Proceedings of the ACM Symposium on User Interface Software and Technology 2023 (UIST 2023), 67:1-67:10, San Francisco, USA, 2023.
13. Chun Wei Ooi, **Yuichi Hiroi**, Yuta Itoh, "A Compact Photochromic Occlusion Capable See-through Display with Holographic Lenses", In Proceedings of IEEE International Conference of Virtual Reality 2023 (IEEE VR 2023), pp. 237-242, Shanghai, China, 2023.
- 2022 14. **Yuichi Hiroi**, Yuta Itoh, Jun Rekimoto, "NeARportation: A Remote Real-time Neural Rendering Framework", In Proceedings of International Conference of Virtual Reality Software Technology (VRST 2022), 23:1-23:5, Tsukuba, Japan, 2022.
15. Zhang Zhibin, **Yuichi Hiroi**, Yuta Itoh, "Towards Spatial Airflow Interaction: Schlieren Imaging for Augmented Reality", In Proceedings of International Symposium on Mixed and Augmented Reality (ISMAR 2022), pp. 215-223, Singapore, Singapore, 2022.

**International
Conference
Proceedings
(Peer-Reviewed)**

- 2021 16. Takumi Tochimoto, **Yuichi Hiroi**, Yuta Itoh, "CircadianVisor: Image Presentation With an Optical See-Through Display in Consideration of Circadian Illuminance", In Proceedings of the Augmented Humans International Conference (AHs 2021), pp. 66-76, 2021.
- 2020 17. **Yuichi Hiroi**, Takumi Kaminokado, Atsushi Mori, Yuta Itoh, "DehazeGlasses: Optical Dehazing with an Occlusion Capable See-Through Display," In Proceedings of the Augmented Humans International Conference (AHs 2020), 3:1-3:11, Virtual, 2020.
- 2017 18. **Yuichi Hiroi**, Yuta Itoh, Takumi Hamasaki, Maki Sugimoto, "AdaptiVisor: Assisting Eye Adaptation via Occlusive Optical See-Through Head-Mounted Displays," The 8th Augmented Human International Conference (AH 2017), 9:1-9:9, Silicon Valley, USA, Mar. 16-18, 2017.

**International
Conference
Workshop
Proceedings
(Peer-Reviewed)**

- 2025 1. Ryutaro Kurai, Yuji Hatada, **Yuichi Hiroi**, Takefumi Hiraki, "MagicPen: Interactive Sketch-to-3D Generation in Commercial Metaverse Platforms", 3rd Workshop on Seamless Reality: AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (3rd WSR workshop, ISMAR-Adjunct), 2025.
2. Atsuya Matsumoto, Hikari Yanagawa, **Yuichi Hiroi**, Yuji Hatada, Takuji Narumi, Takefumi Hiraki, "Dynamic Gimmick Leaning for Navigation Agents in Social VR Through User-Agent Dialogue", 3rd Workshop on Seamless Reality: AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (3rd WSR workshop, ISMAR-Adjunct), 2025.
3. Jonas Weigand, **Yuichi Hiroi**, Yuta Itoh, "BeamStellar: Low-Latency, 6-DoF Head Tracking for Beaming Displays with Spatio-Temporal LED Encoding", 2nd Workshop on Seamless Reality: AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (2nd WSR workshop, IEEEVR-Adjunct), 2025.
4. Yusuke Masubuchi, Takefumi Hiraki, **Yuichi Hiroi**, Masanori Ibara, Kazuki Matsutani, Megumi Zaizen, Junya Morita, "Development of Digital Twin Environment through Integration of Commercial Metaverse Platform and IoT Sensors of Smart Building", 2nd Workshop on Seamless Reality: AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (2nd WSR workshop, IEEEVR-Adjunct), 2025.
- 2024 5. Ryutaro Kurai, Takefumi Hiraki, **Yuichi Hiroi**, Yutaro Hirao, Monica Perusquia-Hernandez, Hideki Uchiyama and Kiyoshi Kiyokawa, "Design and Implementation of Agent APIs for Large-scale Social VR Platforms", 1st Workshop on Seamless Reality: AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (1st WSR workshop, IEEEVR-Adjunct), 2024.
- 2020 6. **Yuichi Hiroi**, Takumi Kaminokado, Atsushi Mori, Yuta Itoh, "DehazeGlasses: Optical Dehazing with an Occlusion Capable See-Through Display", 9th IEEE International Workshop on Computational Cameras and Displays (CCD, CVPR-Adjunct, 2020).

**International
Conference
Poster
(Peer-Reviewed)**

- 2025 1. Michikuni Eguchi, Takekazu Kitagishi, **Yuichi Hiroi**, Takefumi Hiraki, "Tactile Data Recording System for Clothing with Motion-Controlled Robotic Sliding", SIGGRAPH Asia 2025, Hong-Kong, Dec. 15-18, 2025.
2. Chun Wei Ooi, **Yuichi Hiroi**, Takefumi Hiraki, Yuta Itoh, "RAPHO: A Rapid Occluding Photochromic Based Occlusion-Capable Display", ISMAR 2025, Daejeon, Korea, Oct. 8-12, 2025.
3. Michikuni Eguchi, **Yuichi Hiroi**, Tomohiro Hayase, Takefumi Hiraki, "Cluster Haptic Texture Database: Haptic Texture Database with Controlled Sliding-Contact Interactions", IEEE World Haptics Conference 2025 Work-in-Progress, Suwon, Korea, Jul. 7-11, 2025.
4. Ryutaro Kurai, Takefumi Hiraki, **Yuichi Hiroi**, Yutaro Hirao, Monica Perusquia-Hernandez, Hideaki Uchiyama, Kiyoshi Kiyokawa, "An implementation of MagicCraft: Generating Interactive 3D Objects and Their Behaviors from Text for Commercial Metaverse Platforms", IEEE VR 2025 Adjunct, pp. 1284-1285, Saint-Malo, France, Mar. 8-12, 2025.
- 2024 5. Yuta Itoh, Tomoya Nakamura, **Yuichi Hiroi**, Kaan Akşit, "Towards Mobile Beaming Displays with Thin Holographic Waveguides", IEEE ISMAR Adjunct 2024, pp. 475-476, Seattle, USA, Oct. 21-25, 2024.
6. Shingo Hattori, **Yuichi Hiroi**, Takefumi Hiraki, "Measurement of the Imperceptible Threshold for Color Vibration Pairs Selected by using MacAdam Ellipse", Proc. ACM SIGGRAPH 2024 Posters, pp. 68:1-2, Denver, CO, USA, Jul. 28-Aug. 1, 2024.
- 2023 7. Takumi Tochimoto, **Yuichi Hiroi**, Yuta Itoh, "Dual Beaming Display for Extended Head Orientation and Projection Volume," IEEE ISMAR Adjunct 2023, Sydney, Australia, Oct. 16-20, 2023.
8. Yuto Koike, **Yuichi Hiroi**, Yuta Itoh, and Jun Rekimoto. 2023. Brain-Computer Interface using Directional Auditory Perception. In Proceedings of the Augmented Humans International Conference 2023 (AHs '23). Glasgow, UK, pp.342-345, 2023.
- 2021 9. Mayu Kaneko, **Yuichi Hiroi**, Yuta Itoh, "Focus-Aware Retinal Projection-based Near-Eye Display", IEEE ISMAR Adjunct 2021, Bari, Italy/Virtual, Oct. 04-09, 2021.

	2020	10.	Xuan Zhang, Jonathan Lundgren, Yoya Mesaki, Yuichi Hiroi , Yuta Itoh, "Stencil Marker: Designing Partially Transparent Markers for Stacking Augmented Reality Objects", IEEE ISMAR Adjunct 2020, Recife, Brazil/Virtual, Nov. 09-13, 2020.
	2019	11.	Kiyosato Someya, Yuichi Hiroi, Makoto Yamada, Yuta Itoh, "OSTNet: Calibration Method for Optical See-Through Head-Mounted Displays via Non-Parametric Distortion Map Generation," IEEE ISMAR Adjunct 2019, Beijing, China, pp 259-260, Oct. 14-18, 2019.
	2017	12.	Yuichi Hiroi, Yuta Itoh, Takumi Hamasaki, Daisuke Iwai, Maki Sugimoto, "HySAR: Hybrid Material Rendering by an Optical See-Through Head-Mounted Display with Spatial Augmented Reality", IEEE VR Adjunct 2017, Los Angeles, CA, USA, pp. 211-212, Mar. 18-22, 2017.
	2016	13.	Takashi Kikuchi, Yuichi Hiroi , Ross T. Smith, Bruce H. Thomas, Maki Sugimoto, "MARCut: Markerbased Laser Cutting for Personal Fabrication on Existing Objects", In Proceedings of 9th International Conference on Tangible, Embedded, and Embodied Interaction (TEI 2016), Eindhoven, Netherlands, pp.468-474, Feb. 14-17, 2016.
	2015	14.	Yuichi Hiroi , Kei Obata, Katsuhiro Suzuki, Naoto Ienaga, Maki Sugimoto, Hideo Saito, Tadashi Takamaru, "Remote Welding Robot Manipulation using Multi-View Images", Proceedings of 2015 IEEE ISMAR Adjunct 2015, Fukuoka, Japan, Sep. 29- Oct. 3, 2015
International Technology Demonstration (Peer-Reviewed)	2024	1.	Ryutaro Kurai, Yuichi Hiroi , Takefumi Hiraki, "MetaGadget: IoT Framework for Event-Triggered Integration of User-Developed Devices into Commercial Metaverse Platforms", IEEE ISMAR Adjunct 2024, pp. 632-633, Seattle, USA, Oct. 21-25, 2024.
	2023	2.	Takekazu Kitagishi, Yuichi Hiroi , Yuna Watanabe, Yuta Itoh, Jun Rekimoto, "Telexile: End-to-end Remote Transmission of Fabric Tactile Sensation", User Interface Software and Technology 2023 (UIST 2023), San Francisco, USA, Oct.29 - Nov.1, 2023.
	2016	3.	Yuta Itoh, Yuichi Hiroi , Jiu Otsuka, Maki Sugimoto, Jason Orlosky, Kiyoshi Kiyokawa, Gudrun Klinker, "Laplacian Vision: Augmenting Motion Prediction via Optical See-Through Head-Mounted Displays and Projectors", SIGGRAPH 2016 Emerging Technologies.
International Invited Talk	2025	1.	Yuichi Hiroi , "Toward Designing Augmented Reality Head-Mounted Displays for Reducing Physical, Visual, and Cognitive Load", The 32 nd International Display Workshops (IDW 2025), Hiroshima, Japan, Dec. 4, 2025.
		2.	Yuichi Hiroi , "Lightweight Yet Expressive: Reconciling AR-HMD Design Constraints via Beaming Displays and Miniaturized Occlusion", The 25 th International Meeting on Information Display, (IMID 2025), Busan, Korea, Aug. 20, 2025.
	2024	3.	Yuichi Hiroi , "Metaverse as Digital Living Spaces : Expanding Human Experience", XR in Enterprise and Society of Japan, SIGGRAPH Asia 2024 Birds of a Feather, Tokyo, Japan, Dec. 5, 2024.
Japanese Invited Talk	2025	1.	柳川光理, 廣井裕一 , "商用メタバース空間におけるAIアバター導入の実践", XR Kaigi 2025, 2025年12月3日
		2.	柳川光理, 廣井裕一 , 小倉邦彦, "プレイヤーの好奇心が導くチュートリアル：メタバースが描き出すAIエージェントによる新しいゲームの姿", Computer Entertainment Developers Conference (CEDEC) 2025, 2025年7月24日
	2024	3.	廣井裕一 , " (特別講演) メタバースが切り拓くサイバーフィジカル融合：空間と人間の新たな連携", 第33回レーザディスプレイ技術研究会 (LDT), 2024年11月25日
		4.	廣井裕一 , 近藤亮史, 岩崎謙汰, 五十川麻理子, 北原格, 岩井大輔, 内山英昭, 武富貴史, 藤本雄一郎, "現実はどこまでスカウターに近づけたのか", 第29回バーチャルリアリティ学会大会, 複合現実感研究会オーガナイズドセッション, 2024年9月12日.
		5.	廣井裕一 , " Low-latency Beaming Display: 133 μ 秒の遅延で映像を提示する投影型接眼ディスプレイ", 第23回 情報科学技術フォーラム (FIT2024) トップコンファレンスセッション, 2024年 9月6日.
		6.	廣井裕一 , "視覚の自在な変調を目指した光学スースルーHMDの高性能化", Future Humanity - 身体と感覚が紡ぐ未来シナリオ, 博報堂 University of Creativity, 2024年 2月17日
Japanese Tutorial and Review	2025	1.	廣井裕一 , "5分で分かる!? 有名論文ナメ読み「Pinlight Displays : Wide Field of View Augmented Reality Eyeglasses using Defocused Point Light Sources」, 情報処理,情報処理学会, Vol. 66, No. 5, 2025年
	2024	2.	廣井裕一 , 染矢清里, 伊藤勇太, "深層光線場表現による収差推定：深層光線場表現に基づく広視野角HMDの空間較正", 機関誌「光学」2023年10月号, 日本光学会, 2023年

Japanese
Technology
Demonstration

2025	1.	倉井龍太郎, 畑田裕二, 廣井裕一 , 平木剛史, "メタバース環境における手書きスケッチの3次元オブジェクト変換システム", 第30回日本バーチャルリアリティ学会大会, 2025年
2024	2.	沈有方, 土佐凜斗, 畑田裕二, 廣井裕一 , 平木剛史, 苗村健, "HMDユーザの探索行動支援に向けた目立たない両眼相補的色振動による視線誘導", インタラクシオン2025, 2025年
	3.	廣井裕一 , 平木剛史, 伊藤勇太, "StainedSweeper: Compact, Variable-Intensity Light-Attenuation Display with Sweeping Tunable Retarders", 深奥質感シンポジウム, 2024年
2015	4.	小林亮介, 菊地高史, 黄士豪, 越山諒太, 嶋崎嵐, 谷直人, 廣井裕一 , 中村文彦, Jeajun Lee, "dARuma", 第23回 国際学生対抗バーチャルリアリティコンテスト(IVRC2015) 決勝大会, 2015年
	5.	小林亮介, 菊地高史, 黄士豪, 越山諒太, 嶋崎嵐, 谷直人, 廣井裕一 , 中村文彦, Jeajun Lee, "dARuma", 第23回 国際学生対抗バーチャルリアリティコンテスト(IVRC2015), プロトタイプ審査, 2015年

Japanese
Publications
(without
Peer-Review)

2025	1.	江口満国, 北岸毅一, 廣井裕一 , 平木剛史, "衣服触覚特性の定量評価に向けた触覚データ収録システム", 第30回日本バーチャルリアリティ学会大会, 2025年
	2.	横井総太郎, 時田聡実, 廣井裕一 , 平木剛史, "メタバース空間における実世界ブランディング効果を促進するKPI設計支援インタフェースの開発と評価", 第30回日本バーチャルリアリティ学会大会, 2025年
	3.	松本篤弥, 柳川光理, 廣井裕一 , 畑田裕二, 鳴海拓志, 平木剛史, "対話・行動ログを活用したソーシャルVR案内エージェントのギミック学習手法", 第30回日本バーチャルリアリティ学会大会, 2025年
	4.	時田聡実, 廣井裕一 , 上杉雅, 下野敦士, 鈴木晴之, 安部彰馬, 平木剛史, "メタバース空間でのユーザ行動データの定量分析を通じた実世界ブランディング効果誘発要因の探索", 第30回日本バーチャルリアリティ学会大会, 2025年
	5.	奈良雅大, 宮崎竜輔, 廣井裕一 , 平木剛史, 伊藤勇太, 宮藤詩緒, "高速ディスプレイによる視線誘導パターン埋め込み手法", 第30回日本バーチャルリアリティ学会大会, 2025年
	6.	倉井龍太郎, 畑田裕二, 廣井裕一 , 平木剛史, "メタバース環境における手書きスケッチの3次元オブジェクト変換システム", 第30回日本バーチャルリアリティ学会大会, 2025年
2024	7.	花島諒, 平木剛史, 浦川智弘, 倉井龍太郎, 廣井裕一 , 大山潤爾, "メタバース社会のコミュニケーションにおける感情表現の大規模調査: ソーシャルVRのエモット分析から", 電子情報通信学会 HCGシンポジウム, 2024年
2023	8.	堀部咲歩, 中村裕美, 廣井裕一 , Émilie Fable, 義平真規, 厩本純一, "食品の三次元外観アーカイブ構築に向けた撮影システムの検討", 電子情報通信学会 メディアエクスペリエンス・バーチャル環境基礎研究会 (MVE), 2023年
2020	9.	廣井裕一 , 伊藤勇太, "光線の計測と変調に基づく光学シースルー頭部搭載型ディスプレイによる視覚的質感再現", 第25回日本バーチャルリアリティ学会大会, 2020年
2019	10.	浜崎巧, 伊藤勇太, 廣井裕一 , 岩井大輔, 杉本麻樹, "光学透過型ヘッドマウントディスプレイを組み合わせた高ダイナミックレンジなプロジェクションマッピング", 第57回 複合現実感研究会 (SIG-MR), 2019年
2018	11.	廣井裕一 , 石井陽子, 徳永徹郎, 外村喜秀, 日高浩太, "パーティクルフィルタと深層学習識別器の統合による物体検出と追跡", 2018年電子情報通信学会総合大会, 2018年
2016	12.	岩崎萌子, 廣井裕一 , 伊藤勇太, 杉浦裕太, 杉本麻樹, "ディープラーニングを用いたマンガにおける人物の表情識別", 情報処理学会 エンタテインメントコンピューティング(EC) 研究会, 2016年
	13.	小荷田樹之, 廣井裕一 , 小木哲朗, "多言語表示に自動対応するデジタルサイネージシステムの開発", 第78回情報処理学会全国大会, 2016年
2015	14.	廣井裕一 , 小畑圭, 鈴木克洋, 家永直人, 杉本麻樹, 斎藤英雄, 高丸正, 拡張現実感技術を用いた遠隔溶接ロボット操作インタフェースの開発, 第19回クラウドネットワークロボット研究会, 2015年

REFERENCES

Jun Rekimoto

Professor, The University of Tokyo
7-3-1, Hongo, Bunkyo-ku, Tokyo, Japan, 113-8654
rekimoto@acm.org

Maki Sugimoto

Professor, Keio University
3-14-1, Hiyoshi, Yokohama, Kanagawa, Japan
223-8522
sugimoto@ics.keio.ac.jp

Yuta Itoh

Associate Professor, Institute of Science Tokyo
4259 Nagatsuta-cho, Midori-ku, Yokohama, Kanagawa,
226-8501, Japan
ito@comp.isct.ac.jp

Daisuke Iwai

Professor, Osaka University
1-3, Machikaneyama, Toyonaka, Osaka, Japan
560-8531
daisuke.iwai@sys.es.osaka-u.ac.jp