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Yuichi **HIROI**, Ph.D. | 廣井 裕一

Senior Research Scientist, Cluster Metaverse Lab

FORECAST Gotanda WEST 10F, 8-9-5, Nishigotanda, Shinagawa, Tokyo, 141-0031, Japan

lamer-e.tv/projects/ | scholar.google.com/citations?user=_ICkxzkAAAAJ

y.hiroi@cluster.mu | Tokyo, Japan

Research Interests

Augmented Reality (AR), Optical See-Through Head-Mounted Displays (OST-HMDs), Realistic Visual Appearance Reproduction, Vision Measurement and Vision Augmentation

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. 2019 – 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

Feb. 2024 – **Mar. 2027** **(active)**
(Co-PI) JST ASPIRE for Rising Scientists JPMJAP2327 — 30.6 M JPY
Project: "Seamless Reality: A Technological Foundation for Merging Cyber-Physical Spaces through Real-World-Oriented Avatars"

Sep. 2024 – **Mar. 2027** **(active)**
(Co-PI) JSPS KAKENHI for the Promotion of Joint International Research 24KK00187 — 6.5 M JPY
Project: "Unobtrusive Augmented Reality Visual Guidance with Visual Modality Modulation"

Apr. 2023 – **Mar. 2026** **(active)**
(PI) JSPS KAKENHI for Early-Career Scientists 23K16920 — 3.5 M JPY
Project: "Spatial Calibration of Head-Mounted Displays Based on Implicit Function Representation of Light Fields Using Deep Learning"

Apr. 2022 – **Mar. 2025** **(active)**
(PI) JSPS KAKENHI for JSPS Research Fellow (PD) 22J01340 — 3.4 M JPY
Project: "Low-latency Vision Augmentation Integrating High-Speed Human and Environmental Measurements with Field-of-View Prediction"

Apr. 2019 – Mar. 2022
(PI) JSPS KAKENHI for JSPS Research Fellow (DC2) 20J14971 — 1.9 M JPY
Project: "Visual Appearance Reproduction by Optical See-Through Head-Mounted Displays based on Measurement and Modulation of Lights"

AWARDS

Aug. 2024
1st Place in SIGGRAPH 2024 Student Research Competition for Undergrad 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"

Jun. 2023
Japan's Leading Optics Research in 2022 (Top 30), Optical Society of Japan
Y. Hiroi, K. Someya, Y. Itoh, "Neural Distortion Fields for Spatial Calibration of Wide Field-of-View Near-Eye Displays"

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. 2019
SIG-MR Award, Virtual Reality Society Japan (VRSJ)
T. Hamasaki, Y. Itoh, **Y. Hiroi**, D. Iwai, M. Sugimoto, "HySAR: Hybrid Material Rendering by an Optical See-Through Head-Mounted Display with Spatial Augmented Reality Projection"

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"

Feb. 2014
Japan Computer Graphics Arts Society (CG-ARTS) Award
Y. Hiroi, Excellent grades in the Expert Certification Test organized by CG-ARTS (CG Engineer Experts & Image Processing Engineer Experts)

TEACHING EXPERIENCE

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 3rd 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** (CEFR B2, TOEIC 800, Jan 2019), Chinese (CEFR B1, HSK3)

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. 6850751
	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

Conference Organizing Committees	2024	**Workshop Organizer** - "1st Workshop on Seamless Reality : AR Technologies for Seamless Perception and Cognition between Cyber and Physical Spaces (WSR)", IEEE VR 2024
Program Committees	2025	IEEE VR
	2024	IEEE ISMAR, ICAT-EGVE, APMAR
Journal Reviewer		
International	2024	IEEE Transactions on Visualization and Computer Graphics
	2023	OPTICA Applied Optics
	2021	OPTICA Optics Express
Domestic	2023	Journal of the Virtual Reality Society of Japan (VRSJ)

Conference Reviewer

2024 IEEE VR, IEEE ISMAR, ACM VRST, ACM SUI, SIGGRAPH Asia E-Tech, ICAT-EGVE, APMAR

2023 IEEE VR, IEEE ISMAR, ACM CHI, ACM SUI

Academic Society Committee & Memberships

Committee

Domestic: VRSJ Special Interests Group of Mixed Reality (SIG-MR)

Member

International: IEEE, ACM **Domestic**: VRSJ

Others

2024 Session Chair, IEEE VR

2022 Session Chair, ACM VRST

PUBLICATIONS AND PRESENTATION LIST

International Journals (Peer-Reviewed)

(under review) 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.

(under review) Tomohiro Hayase, Sacha Braun, Hikari Yanagawa, Itsuki Orito, **Yuichi Hiroi**, "PanoTree: Automated Photospot Explorer in Virtual Reality Scenes," IEEE Transaction on Visualization and Computer Graphics (TVCG).

2024 1. 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), 2024 (Also present at IEEE ISMAR 2024)

2. 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), 2024 (Also presented at IEEE VR 2024)

3. **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), 2024 (Also presented at IEEE VR 2024)

2023 **4.** **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), 2023 (Also presented at IEEE ISMAR 2023)

2022 **5.** **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 **6.** **Yuichi Hiroi**, Takumi Kaminokado, Shunsuke Ono, Yuta Itoh, "Focal Surface Occlusion", Optics Express, Vol. 29, Issue 22, pp. 36581–36597, 2021.

2020 7. 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 26(6): pp. 3576-3856, 2020 (Also presented at IEEE ISMAR 2020)

2018 8. 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 24(4): pp. 1457-1466, 2018 (Also presented at IEEE VR 2018).

International Conference Proceedings (Peer-Reviewed)

2024 **1.** **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), Seattle, USA, 2024 .

2023 2. 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), Christchurch, New Zealand, 2023

3. Takekazu Kitagishi, **Yuichi Hiroi**, Yuna Watanabe, Yuta Itoh, Jun Rekimoto, "Telextile: End-to-end Remote Transmission of Fabric Tactile Sensation", In Proceedings of the ACM Symposium on User Interface Software and Technology 2023 (UIST 2023), San Francisco, USA, 2023.

4. 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), Shanghai, China, 2023.

2022 **5.** **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.

6. 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.

2021 7. 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). 11 pages, 2021.

2020 **8.** **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), 11 pages, 2020,

2017 **9.** **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)

2024 1. 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 **2.** **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)

2024 1. Yuta Itoh, Tomoya Nakamura, **Yuichi Hiroi**, Kaan Akşit, “Towards Mobile Beaming Displays with Thin Holographic Waveguides”, IEEE ISMAR Adjunct 2024, Seattle, USA, Oct. 21-25, 2024 (to appear)

2. Shingo Hattori, **Yuichi Hiroi**, Takefumi Hiraki, “Measurement of the Imperceptible Threshold for Color Vibration Pairs Selected by using MacAdam Ellipse”, SIGGRAPH’24 Poster, Denver, CO, USA, Jul. 28-Aug. 1, 2024.

3. 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

2023 4. 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 5. 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 6. 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 7. 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 **8.** **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 9. Takashi Kikuchi, **Yuichi Hiroi**, Ross T. Smith, Bruce H. Thomas, Maki Sugimoto, “MARCut: Marker-based 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 **10.** **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, Seattle, USA, Oct. 21-25, 2024

2023 2. Takekazu Kitagishi, **Yuichi Hiroi**, Yuna Watanabe, Yuta Itoh, Jun Rekimoto, “Telextile: 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.

Japanese Invited Talk

2024
1. **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.

2. **廣井裕一**，” Low-latency Beaming Display: 133μ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.

3. **廣井裕一**，”視覚の自在な変調を目指した光学シースルー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 Commentary / Review Article

2023
1. **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 (Peer-Reviewed)

2015
1. 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, 日本科学未来館, 2015年

2. 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)

2024
1. 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

2023
2. 堀部咲歩，中村裕美，**廣井裕一**，Émilie Fable，義平真規，暦本純一，”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
3. **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
4. 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
5. **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
6. 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

7. 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
8. **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

Project Associate Professor, The University of Tokyo
7-3-1, Hongo, Bunkyo-ku, Tokyo, Japan, 113-8654
yuta.itoh@iii.u-tokyo.ac.jp

Daisuke Iwai

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