

Keita Higuchi, Ph.D.



Personal Information

HCI Researcher and Craft Beer Brewer

Current Title 1: Researcher, Preferred Networks inc.

Current Title 2: Co-Founder, Jokun Brewing Lab

Date of birth: 1st March 1988

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Research Interests

Human-Computer Interaction

Human Augmentation; Applications of Computer Vision and Machine Learning for Supporting Professional Works (e.g., Surgery); Human-Drone Interaction; Telepresence; Video Browsing and Coding Tools.

HCI for Machine Learning

Interactive 3D Object and Material Annotation, Interactive Data Augmentation, Interactive Hyperparameter Tuning.

Craft Beer Brewing

Researching Hop Usages in India Pale Ale. Use of Japanese Ingredients for Novel Craft Beer Styles (e.g., Sake Hazy IPA).

Accessibility and Health Care

Blind Navigation Systems; Collision Avoidance Systems for Blind Travelers and Nearby Pedestrians; Assistive Technologies for Children with Asperger Spectrum Disorder; Tunnel Vision Simulation for Rapid Prototyping of Web Development, Food Pairing and Diet Recommendation.

Education

Ph.D. in Information Studies at Graduate School of Interdisciplinary Information Studies, The University of Tokyo

Apr. 2012 to Jul. 2015 – Adviser: Prof. Jun Rekimoto

Thesis Title: Human Body Mapping and Augmentation for Immersive Telepresence Systems

Master degree in Art and Science at Graduate School of Interdisciplinary Information Studies, The University of Tokyo

Apr. 2010 to Mar. 2012 – Adviser: Prof. Jun Rekimoto

Bachelor degree in Information Engineering at College of Engineering, Kanazawa Institute of Technology

Apr. 2006 to Mar. 2010 – Department of Information and Computer Science (Adviser: Prof. Ryuichiro Hara)

Work Experience

Co-Founder, Jokun Brewing Lab inc.

Oct. 2019 to **present** – Spearheaded overall business operations, developments of craft beer recipes, Managements of restaurants, and planning craft beer events with other companies.

Researcher, Preferred Networks inc.

Oct. 2019 to **present** – Leading HCI research projects about HCI for machine learning, applying the research results to real-world products of the company, and supporting industrial solution projects based on HCI knowledges.

Project Lecturer at Institute of Industrial Science, The University of Tokyo

Nov. 2018 to Sep. 2019 – Leading research projects and mentoring students for academic publications in JST CREST and SICORP projects (PI: Yoichi Sato)

Visiting Scholar at Robotics Institute, Carnegie Mellon University

Oct. 2017 to Sep. 2018 – Working on research projects for online machine learning in interactive systems and blind navigation systems for avoiding collisions between blind travelers and pedestrians (hosts: Kris Kitani and Chieko Asakawa)

Project Research Associate at Institute of Industrial Science, The University of Tokyo

Aug. 2015 to Nov. 2018 – Leading research projects and mentoring students for publications in JST CREST (PI: Yoichi Sato)

Research Internship Student at Microsoft Research Redmond

Jun. 2013 to Sep. 2013 and Jun. 2014 to Aug 2015 – Working on research projects for building immersive telepresence systems
(Mentors: Zhengyou Zhang, Philip A Chou, Zicheng Liu, Yinpeng Chen)

Research Fellow at Japan Society for the Promotion of Science (JSPS DC1)

Apr. 2012 to Mar. 2015 – Leading research projects for investigating human embodiments in immersive systems

Lead Creator at IPA Mitoh Program

Jan. 2011 to Sep. 2011 – Development of Video Capturing Platform using Flying Drones

Research Assistant at Adaptive Intelligence Team, RIKEN BSI

Oct. 2011 to Mar. 2011 – Development of Substitute Reality Systems (PI: Naotaka Fujii)

Developer at R&D, Morpho Inc.

May 2010 to Mar. 2012 – Working on computer vision and image processing projects for consumer products

Major Conference and Journal Publications

1. Keita Higuchi, Yinpeng Chen, Philip A. Chou, Zhengyou Zhang, and Zicheng Liu. ImmerseBoard: Immersive Telepresence Experience using a Digital Whiteboard. CHI2015.
2. Keita Higuchi, Ryo Yonetani, and Yoichi Sato. Can Eye Help You?: Effects of Visualizing Eye Fixations on Remote Collaboration Scenarios for Physical Tasks. CHI2016.
3. Keita Higuchi, Ryo Yonetani, and Yoichi Sato. EgoScanning: Quickly Scanning First-Person Videos with Egocentric Elastic Timelines. CHI2017.
4. Keita Higuchi, Soichiro Matsuda, Rie Kamikubo, Takuya Enomoto, Yusuke Sugano, Jun'ichi Yamamoto, and Yoichi Sato, Visualizing Gaze Direction to Support Video Coding of Social Attention for Children with Autism Spectrum Disorder, IUI2018.
5. Yuki Sugita, Keita Higuchi, Ryo Yonetani, Rie Kamikubo, and Yoichi Sato, Browsing Group First-Person Videos with 3D Visualization, ISS2018.
6. Irshad Abibouraguimane, Kakeru Hagihara, Keita Higuchi, Yuta Itoh, and Yoichi Sato, Tetsu Hayashida, and Maki Sugimoto. CoSummary: Adaptive Fast-Forwarding for Surgical Videos by Detecting Collaborative Scenes Using Hand Regions and Gaze Positions, IUI2019.
7. Seita Kayukawa, Keita Higuchi, João Guerreiro, Shigeo Morishima, Yoichi Sato, Kris Kitani, and Chieko Asakawa, BBeep: A Sonic Collision Avoidance System for Blind Travellers and Nearby Pedestrians, CHI2019
8. Rie Kamikubo, Naoya Kato, Keita Higuchi, Ryo Yonetani, and Yoichi Sato, Support Strategies for Remote Guides in Assisting People with Visual Impairments for Effective Indoor Navigation, CHI 2020.
9. Keita Higuchi, Hiroki Tsuchida, Eshed Ohn-Bar, Yoichi Sato, and Kris Kitani, Learning Context-dependent Personal Preferences for Adaptive Recommendation, ACM Transactions on Interactive Intelligent Systems (TiiS), 10 (3), 1-26
10. Keita Higuchi, Shotaro Sano, and Takeo Igarashi, Interactive hyperparameter optimization with paintable timelines, DIS2021.
11. Kotaro Oomori, Wataru Kawabe, Fabrice Matulic, Takeo Igarashi, and Keita Higuch, Interactive 3D Annotation of Objects in Moving Videos from Sparse Multi-view Frames, Proceedings of the ACM on Human-Computer Interaction, 7 (ISS2023), 309-326.
12. Wataru Kawabe, Taisuke Hashimoto, Fabrice Matulic, Takeo Igarashi, and Keita Higuch, Interactive Material Annotation on 3D Scanned Models leveraging Color-Material Correlation, SIGGRAPH ASIA 2024 Technical Communication.

Other Academic Publications

Conference Proceedings

1. Keita Higuchi, Tetsuro Shimada and Jun Rekimoto, Flying Sports Assistant: External Visual Imagery Representation for Sports Training, The 2nd International conference on Augmented Human (AH 2011).
2. Keita Higuchi, Yoshio Ishiguro and Jun Rekimoto, Flying Eyes: Free-Space Content Creation Using Autonomous Aerial Vehicles, CHI 2011, Extended Abstract (alt.chi).
3. Shingo Yamano, Takamitsu Hamajo, Shunsuke Takahashi, and Keita Higuchi, EyeSound: Single-Modal Mobile Navigation Using Directionally Annotated Music, The 3rd International conference on Augmented Human (AH 2012).
4. Keita Higuchi, and Jun Rekimoto Flying Head: A Head Motion Synchronization Mechanism for Unmanned Aerial Vehicle Control, CHI 2013 Extended Abstracts (alt.chi).

5. Keita Higuchi, Katsuya Fujii, and Jun Rekimoto, Flying Head: A Head-Synchronization Mechanism for Flying Telepresence, The 23rd IEEE International Conference on Artificial Reality and Telexistence (ICAT 2013).
6. Katsuya Fujii, Keita Higuchi, and Jun Rekimoto, Endless Flyer: A Continuous Flying Drone with Automatic Battery Replacement, The 10th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2013).
7. Kei Nitta, Keita Higuchi, and Jun Rekimoto, HoverBall : Augmented Sports with a Flying Ball, The 5th International conference on Augmented Human (AH 2014).
8. Keita Higuchi, Michihiko Ueno, and Jun Rekimoto, Scarecrow: Avatar Representation using Biological Information Feedback, The 2014 IEEE International Conference on Cyber, Physical and Social Computing (CPSCoM 2014).
9. Kei Nitta, Keita Higuchi, Yuichi Tadokoro, and Jun Rekimoto. 2015. Shepherd pass: ability tuning for augmented sports using ball-shaped quadcopter. IACE '15.
10. Hiroshi Kera, Ryo Yonetani, Keita Higuchi, and Yoichi Sato, Discovering Objects of Joint Attention via First-Person Sensing, CVPR Workshop on EGOV2016.
11. Yifei Huang, Minjie Cai, Hiroshi Kera, Ryo Yonetani, Keita Higuchi, and Yoichi Sato, Temporal Localization and Spatial Segmentation of Joint Attention in Multiple First-Person Video, CVPR Workshop on EPIC2017.
12. Kakeru Hagihara, Keichiro Taniguchi, Irshad Abibouraguimane, Yuta Itoh, Keita Higuchi, Jiu Otsuka, Maki Sugimoto, and Yoichi Sato, Object-wise 3D Gaze Mapping in Physical Workspace, AH 2018.
13. Rie Kamikubo, Keita Higuchi, Ryo Yonetani, Hideki Koike, and Yoichi Sato, Exploring the Role of Tunnel Vision Simulation in the Design Cycle of Accessible Interfaces, Web4All 2018.
14. Seita Kayukawa, Keita Higuchi, Ryo Yonetani, Maanori Nakamura, Yoichi Sato, and Shigeo Morishima: Dynamic Object Scanning: Object-Based Elastic Timeline for Quickly Browsing First-Person Videos, Extended Abstract on CHI 2018 Late Breaking Work.
15. Taichi Nishimura, Katsuhiko Ishiguro, Keita Higuchi, and Masaaki Kotera, Multimodal dish pairing: Predicting side dishes to serve with a main dish, CEA++ 2022 (ACM Multimedia 2022 Workshop).
16. Sara Ozeki, Masaaki Kotera, Katsuhiko Ishiguro, Taichi Nishimura, and Keita Higuchi, Recipe Recommendation for Balancing Ingredient Preference and Daily Nutrients, CEA++ 2022 (ACM Multimedia 2022 Workshop).
17. Seita Kayukawa, Keita Higuchi, Shigeo Morishima, and Ken Sakurada. 3DMovieMap: an Interactive Route Viewer for Multi-Level Buildings, Extended Abstract on CHI 2023 Late Breaking Work.
18. Keita Higuchi, Taiyo Mizuhashi, Fabrice Matulic, and Takeo Igarashi, Interactive Generation of Image Variations for Copy-Paste Data Augmentation, Extended Abstract on CHI 2023 Late Breaking Work.
19. Daichi Saito, Masashi Shibata, Yunzhuo Wang, Takeo Igarashi, and Keita Higuchi, GHOJA: Human-in-the-Loop Joint Pose Optimization based on Geometric Constraint and Human Common-sense, Extended Abstract on CHI 2024 Late Breaking Work.

Journals

1. Katsuya Fujii, Keita Higuchi, and Jun Rekimoto, Endless Flyer: A Continuous Flying Drone with Automatic Battery Replacement, Journal of the Information Processing Society of Japan, Vol.55, No.8, (2014. 8). (in Japanese)
2. Keita Higuchi, and Jun Rekimoto, A Flying Telepresence Platform to Augment Moving Sensation, Transaction of The Virtual Reality Society of Japan, Vol.19, No.3, (2014. 9). (in Japanese)

Demonstrations, Posters, and Workshop Proposal

1. Keita Higuchi, and Jun Rekimoto Flying Head: Head-synchronized Unmanned Aerial Vehicle Control for Flying Telepresence, Siggraph Asia 2012 Emerging Technologies.
2. Rie Kamikubo, Keita Higuchi, Ryo Yonetani, Hideki Koike, and Yoichi Sato. 2017. Rapid Prototyping of Accessible Interfaces With Gaze-Contingent Tunnel Vision Simulation. In Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '17).
3. Keita Higuchi, Ryo Yonetani, and Yoichi Sato. 2017. Egoscanning: quickly scanning first-person videos with egocentric elastic timelines. In SIGGRAPH Asia 2017 Emerging Technologies.
4. Seita Kayukawa, Keita Higuchi, Ryo Yonetani, Maanori Nakamura, and Yoichi Sato, Shigeo Morishima: Dynamic Object

Scanning: Object-Based Elastic Timeline for Quickly Browsing First-Person Videos, Extended Abstract on CHI 2018 Demonstration

5. Keita Higuchi, Eunice Sari, Taku Hachisu, Adi Tedjasaputra, Masa Ogata, Masitah Ghazali, Hiromi Nakamura, Ellen Yi Luen Do, Jun Kato, Saki Sakaguchi, Takeshi Nishida, Kohei Matsumura, Daisuke Sakamoto, and Yoshifumi Kitamura. 2017. Asian CHI Symposium: Emerging HCI Research Collection. In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA 2017).
6. Keita Higuchi, Shunichi Kasahara, Kei Nitta, and Yohei Yanase, Generating Spherical Hyperlapse Videos via Recursive Intelligent Sampling for StratoJump, ISS2018 Demonstration.
7. Kotaro Oomori, Wataru Kawabe, Fabrice Matulic, Takeo Igarashi, and Keita Higuchi, Interactive 3D Annotation of Objects in Moving Videos from Sparse Multi-view Frames, ISS2023 Demonstration.

Awards and Grants (Selected)

- Best Paper Award at CEA++ 2022
- JSPS Interaction Best Paper Award 2019.
- JSPS Interaction Demo Award 2017, 2024.
- Research Award in AIP network laboratory 2016
- Siggraph Asia 2012 Emerging Technologies Prize
- Outstanding Master Thesis Award, Graduate School of Interdisciplinary Information Studies, The University of Tokyo
- University President Award 2009, Kanazawa Institute of technology
- 2010, Exploratory IT Human Resources Project (The MITOH Program), 2,073,600 Yen
- 2012 to 2015, Grant-in-Aid for JSPS Fellows Number 24-10424 (KAKENHI), 900,000 Yen / Year
- 2016, AIP Challenge, JST CREST, 1,000,000 Yen
- 2017, AIP Challenge, JST CREST, 1,000,000 Yen
- 2018, AIP Challenge PRISM Acceleration Support JPMJCR18ZG, 3,000,000 Yen

Academic Services

Technical Program Committees and Organizer

- Associate Chair, CHI 2020
- Associate Chair, TEI 2017 Work in Progress
- TPC member, Augmented Humans 2022
- TPC member, IEEE VR (Conference) 2019
- TPC member, ACM Multimedia 2016, 2018
- TPC member, IEEE Symposium on Multimedia 2016
- Student Volunteer Chair, ISS 2018

Reviewers

- IEEE Transactions on Circuits and Systems for Video Technology
- IEEE Pervasive Computing
- IEEE CG&A
- CHI 2016, 2017, 2019, 2021
- UIST 2015, 2017
- etc.

Technical Skills

Programming Languages: Python, C++, Javascript, R, Ruby, Java

Platform/Libraries: Pytorch, OpenFrameWorks, OpenCV, Kinect SDK, OpenGL, Unity3D, Android SDK, ARToolkit, jQuery

Expertise: Craft beer brewing (Especially India Pale Ale), Spice curry research.