Keita Higuchi, Ph.D.

Personal Information

Title: Researcher
Affiliation: Preferred Networks
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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
Accessibility
    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

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

Project Lecturer at Institute of Industrial Science, The University of Tokyo
    Oct. 2019 to present – Leading HCI research projects
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 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, 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, Chieko Asakawa, BBeep: A Sonic Collision Avoidance System for Blind Travellers and Nearby Pedestrians, CHI2019
8. Rie Kamikubo, Naoya Kato, Keita Higuchi, Ryo Yonetani, Yoichi Sato, Support Strategies for Remote Guides in Assisting People with Visual Impairments for Effective Indoor Navigation, to appear in CHI 2020, April 2020.

Other Academic Publications

Conference Proceedings (with Presentation)

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, Keita Higuchi, EyeSound: Single-Modal Mobile Navigation Using Directionally Annotated Music, The 3rd International conference on Augmented Human (AH 2012).
4. Keita Higuchi, 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, Jun Rekimoto, Flying Head: A Head-Synchronization Mechanism for Flying Telepresence, The 23rd h IEEE International Conference on Artificial Reality and Telexistence (ICAT 2013).
6. Katsuya Fujii, Keita Higuchi, 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, Jun Rekimoto, HoverBall : Augmented Sports with a Flying Ball, The 5th International conference on Augmented Human (AH 2014).
8. Keita Higuchi, Michihiko Ueno, 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, 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, Yoichi Sato, Exploring the Role of Tunnel Vision Simulation in the Design Cycle of Accessible Interfaces, Web4All 2018.

Journals

1. Katsuya Fujii, Keita Higuchi, 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, 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, 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, Yoichi Sato, Shigeo Morishima: Dynamic Object Scanning: Object-Based Elastic Timeline for Quickly Browsing First-Person Videos, Extended Abstract on CHI 2018 Late Breaking Work and 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).

Awards and Grants (Selected)

- 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 Comities
- Associate Chair, CHI 2020
- Associate Chair, TEI 2017 Work in Progress
- TPC member, IEEE VR (Conference) 2019
- TPC member, ACM Multimedia 2016, 2018
- TPC member, IEEE Symposium on Multimedia 2016

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

Computer Skills

Programming Languages: C++, Python, Javascript, R, Ruby, Java
Platform/Libraries: OpenFrameWorks, OpenCV, Kinect SDK, OpenGL, Unity3D, Android SDK, ARToolkit, jQuery