

ARATA HORIE

512 (5F), CCR Bldg., 4-6-1 KOMABA MEGURO-KU, TOKYO 153-8505, JAPAN

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EDUCATION

The University of Tokyo Ph.D. in Engeneering Department of Advanced Interdisciplinary Studies Advisor: Dr. Masahiko Inami	Tokyo, Japan <i>April 2019 - March 2022</i>
Tohoku University M.S. in Information Science Department of Applied information science Advisor: Dr. Masashi Konyo	Sendai, Japan <i>April 2017 - March 2019</i>
Tokyo University of Science B.S. in Mechanical Engineering Department of Mechanical Engineering Advisor: Dr. Hiroshi Mizoguchi	Tokyo, Japan <i>April 2013 - March 2017</i>

WORK EXPERIENCE

commissure Inc. <i>CTO</i>	Tokyo, Japan <i>January 2023 - present</i>
Keio University Graduate School of Media Design, Embodied Media Project <i>Project Assistant Professor</i>	Tokyo, Japan <i>April 2023 - present</i>
The University of Tokyo, Research Center for Advanced Science and Technology, Information Somatics Lab <i>Project Assistant Professor</i>	Tokyo, Japan <i>April 2022 - March 2023</i>
Information Somatics Lab, The University of Tokyo <i>Research Assistant / JSPS Research Fellow DC2, Advisor: Masahiko Inami</i>	Tokyo, Japan <i>April 2019 - March 2022</i>
exiii <i>Haptic Research Internship</i>	Tokyo, Japan <i>April 2019 - September 2019</i>
Human-Robot Informatics Lab, Tohoku University <i>Research Assistant, Advisor: Masashi Konyo</i>	Sendai, Japan <i>April 2017 - March 2019</i>

GRANTS

ACT-X Hardware in Future for Resilience of Real Space, "Design of Self-other Inseparable Intercorporeality Through Body Surface Deformation Device", JST <i>Japan Science and Technologies</i>	2021 - 2023
Japan Society for Promotion of Science DC2, "Self-motion Sensation Induction by the Presentation of Distributed Force", JSPS <i>Japan Society for Promotion of Science</i>	2020 - 2021

HONORS AND AWARDS

Dean's Award AY2021, Graduate School of Engineering <i>The University of Tokyo</i>	2022
Fellowships from Japan Society for Promotion of Science DC2, JSPS <i>Japan Society for Promotion of Science</i>	2020 - 2021
Best Paper Award, UbiComp MIMSVAI 2021 <i>Co-author, "High-speed non-contact thermal display using infrared rays and shutter mechanism"</i>	2021
Best Paper Award Nominated, World Haptics Conference 2021 <i>Author, "Two-dimensional moving phantom sensation created by rotational skin stretch distribution"</i>	2021
Outstanding Performance Award, Asia Digital Art Award 2020 <i>Author, "TorsionCrowds"</i>	2020
Disruptive Challenge Finalist, INNO-Vation 2019 <i>Author, Ministry of Internal Affairs and Communications in Japan</i>	2019
Best Demonstration Award Gold Winner, AsiaHptics 2018 <i>Author, "Enhancing Haptic Experience in a Seat with Two-DoF Buttock Skin Stretch"</i>	2018
Ultrahaptics Student Challenge Finalist, EuroHaptics 2018 <i>Co-author, "Weather Teleport"</i>	2018
Robomech Award, Robotics and Mechatronics 2018 <i>Author, "Induction of acceleration sensation of self-motion by presenting shear force to buttocks"</i>	2018
Young Researcher's Award, VRSJ 2018 <i>Author, "Presenting a pushing up feeling from the seat by buttocks skin stretch"</i>	2018
Excellent Presentation Award, SICE SI 2018 <i>Author, "2-DoF Buttock Skin Stretch for Inducing Acceleration Perception of Self-motion"</i>	2018
COLOPL Award, International collegiate Virtual Reality Contest 2017 <i>Team Manager, "Shall we coffee cup?"</i>	2017
Young Researcher's Award, SICE SI 2017 <i>Author, "Sliding direction and speed presentation Combining high frequency and asymmetric vibration"</i>	2017
Excellent Presentation Award, SICE SI 2017 <i>Author, "Sliding direction and speed presentation Combining high frequency and asymmetric vibration"</i>	2017

PEER-REVIEWED PUBLICATIONS

JOURNAL PAPER

1. Arata Horie, Hideki Shimobayashi, Hiroto Saito, and Masahiko Inami. Designing distributed-type haptic device based on rotational skin stretch. *Transactions of the Virtual Reality Society of Japan*, 25(4):402–411, 2020
2. Hiroto Saito, Arata Horie, Azumi Maekawa, Seito Matsubara, Sohei Wakisaka, Zendai Kashino, Shunichi Kasahara, and Masahiko Inami. Transparency in human-machine mutual action. *Journal of Robotics and Mechatronics*, 33(5):987–1003, 2021(Co-first author)

CONFERENCE PAPER

1. Arata Horie, Yunao Zheng, and Masahiko Inami. A wearable system integrating force myography and skin stretch feedback toward force skill learning. In *2023 IEEE World Haptics Conference (WHC)*, pages 190–196. IEEE, 2023

2. Ryo Murata, Arata Horie, and Masahiko Inami. Dynamic derm: Body surface deformation display for real-world embodied interactions. In *Proceedings of the Augmented Humans International Conference 2023*, AHs '23, page 267 – 277, New York, NY, USA, 2023. Association for Computing Machinery
3. Sosuke Ichihashi, Arata Horie, Masaharu Hirose, Zendai Kashino, Shigeo Yoshida, and Masahiko Inami. High-speed non-contact thermal display using infrared rays and shutter mechanism. *UbiComp '21*, page 565 – 569, New York, NY, USA, 2021. Association for Computing Machinery **(Best Paper Award)**
4. Arata Horie, Zendai Kashino, Hideki Shimobayashi, and Masahiko Inami. Two-dimensional moving phantom sensation created by rotational skin stretch distribution. In *2021 IEEE World Haptics Conference (WHC)*, pages 139–144, 2021 **(Nominated to Best Paper Award)**
5. Arata Horie, MHD Yamen Saraiji, Zendai Kashino, and Masahiko Inami. Encounteredlimbs: A room-scale encountered-type haptic presentation using wearable robotic arms. In *2021 IEEE Virtual Reality and 3D User Interfaces (VR)*, pages 260–269. IEEE, 2021
6. Hideki Shimobayashi, Tomoya Sasaki, Arata Horie, Riku Arakawa, Zendai Kashino, and Masahiko Inami. Independent control of supernumerary appendages exploiting upper limb redundancy. In *Augmented Humans Conference 2021*, AHs'21, page 19 – 30, New York, NY, USA, 2021. Association for Computing Machinery
7. Yudai Tanaka, Arata Horie, and Xiang 'Anthony' Chen. Dualvib: Simulating haptic sensation of dynamic mass by combining pseudo-force and texture feedback. In *26th ACM Symposium on Virtual Reality Software and Technology*, VRST '20, New York, NY, USA, 2020. Association for Computing Machinery
8. Arata Horie, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. Buttock skin stretch: Inducing shear force perception and acceleration illusion on self-motion perception. In *International Conference on Human Haptic Sensing and Touch Enabled Computer Applications*, pages 135–147. Springer, 2018

DEMO

1. Harunobu Taguchi, Youichi Kamiyama, Kenta Kan, Yulan Ju, Arata Horie, Yoshihiro Tanaka, Hironori Ishikawa, and Kouta Minamizawa. Multichannel haptic communication platform with wearable sensing and display. In *SIGGRAPH Asia 2023 Emerging Technologies*, pages 1–2. 2023
2. Aoi Uyama, Youichi Kamiyama, Sohei Wakisaka, Arata Horie, Tatsuya Saito, and Kouta Minamizawa. Somatic music: Enhancing musical experiences through the performer's embodiment. In *SIGGRAPH Asia 2023 Posters*, pages 1–2. 2023
3. Arata Horie, Ryo Murata, Zendai Kashino, and Masahiko Inami. Seeing is feeling: A novel haptic display for wearer-observer mutual haptic understanding. In *ACM SIGGRAPH Asia 2022 Emerging Technologies*, SIGGRAPH Asia '22, New York, NY, USA, 2022. Association for Computing Machinery
4. Sosuke Ichihashi, Arata Horie, Masaharu Hirose, Zendai Kashino, Shigeo Yoshida, Sohei Wakisaka, and Masahiko Inami. Thermoblinds: Non-contact, highly responsive thermal feedback for thermal interaction. In *ACM SIGGRAPH 2022 Emerging Technologies*, SIGGRAPH '22, New York, NY, USA, 2022. Association for Computing Machinery
5. Arata Horie, Hideki Shimobayashi, and Masahiko Inami. Torsioncrowds: Multi-points twist stimulation display for large part of the body. In *ACM SIGGRAPH 2020 Emerging Technologies*, SIGGRAPH '20, New York, NY, USA, 2020. Association for Computing Machinery

6. Arata Horie, Masashi Konyo, Hikaru Nagano, and Satoshi Tadokoro. Whole-body perception of ground geometry by buttock skin stretch. In *IEEE World Haptics Conference*. IEEE, 2019
7. Arata Horie, Akito Nomura, Kenjiro Tadakuma, Masashi Konyo, Hikaru Nagano, and Satoshi Tadokoro. Enhancing haptic experience in a seat with two-dof buttock skin stretch. In *International AsiaHaptics conference*, pages 134–138. Springer, 2018 **Best Demo Award Gold Winner**
8. Arata Horie, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. Buttock skin stretch: Inducing shear force perception and acceleration illusion on self-motion perception. In *International Conference on Human Haptic Sensing and Touch Enabled Computer Applications*, pages 135–147. Springer, 2018

NON-REVIEWED PUBLICATIONS (FIRST AUTHOR)

1. Arata Horie and Masahiko Inami. Basic study of rotating tactors array presenting strain distribution on back skin. In *Annual Conference of the Virtual Reality Society of Japan*. VRSJ, 2019
2. Arata Horie, Akito Nomura, Kenjiro Tadakuma, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. 2-dof buttock skin stretch for inducing acceleration perception of self-motion. In *SICE System Integration*, volume 2018. SICE, 2018 **Excellent Presentation Award**
3. Arata Horie, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. Presenting pushing up feeling from the seat by buttocks skin stretch. In *Annual Conference of the Virtual Reality Society of Japan*, volume 2017. VRSJ, 2017 **Young Researcher's Award**
4. Arata Horie, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. Induction of acceleration sensation of self-motion by presenting shear force to buttocks. In *Robotics Mechatronics Conference 2018*. JSME, 2018 **Robomech Award**
5. Arata Horie, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. -2nd report- sliding direction and speed presentation combining high frequency and asymmetric vibration. In *SICE System Integration*, volume 2017. SICE, 2017 **Excellent Presentation Award, Young Researcher's Award**
6. Arata Horie, Hikaru Nagano, Masashi Konyo, and Satoshi Tadokoro. Sliding direction and speed presentation combining high frequency and asymmetric vibration. In *Annual Conference of the Virtual Reality Society of Japan*, volume 2017. VRSJ, 2017

PATENT

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|---|-------------------|
| 力覚提示装置及び力覚提示方法
堀江新 (75/100) , 稲見昌彦 (25/100) | 特願 2019-163973 |
| 力覚提示装置及び力覚提示方法
堀江新 (75/100) , 稲見昌彦 (25/100) | PCT/JP2020/032185 |
| 運動教示装置、運動教示システム、運動教示方法およびプログラム
堀江新 (45/100) , 檜山敦 (35/100) , 稲見昌彦 (20/100) | 特願 2020-219284 |

TEACHING EXPERIENCE

Otherness and Interaction Technology in Embodied Interaction
Keio University Graduate School of Media Design
Guest Lecturer

November 2023 - Present

Digital Interaction Prototyping
Keio University Graduate School of Media Design
Lecturer

May 2023 - Present

Data Processing
Tohoku University
Teaching Assistant

October 2017 - February 2018