

# ARATA HORIE

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

◇ a.horie@commissure.co.jp

## EDUCATION

---

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

## WORK EXPERIENCE

---

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

## GRANTS

---

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

## HONORS AND AWARDS

---

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

## 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. Rodan Umehara, Arata Horie, and Kouta Minamizawa. Rotational skin-stretch distribution creates directional force sensation on the wrist. In *2024 EuroHaptics Conference*, page TBD. Springer, 2024

2. 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
3. Ryo Murata, Arata Horie, and Masahiko Inami. Dynamic dermat: 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
4. Sosuke Ichihashi, Arata Horie, Masaharu Hirose, Zenda 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)**
5. Arata Horie, Zenda 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)**
6. Arata Horie, MHD Yamen Saraiji, Zenda 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
7. Hideki Shimobayashi, Tomoya Sasaki, Arata Horie, Riku Arakawa, Zenda 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
8. 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
9. 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. Rodan Umehara, Harunobu Taguchi, Arata Horie, Yusuke Kamiyama, Shin Sakamoto, Hironori Ishikawa, and Kouta Minamizawa. Feeltech wear: Enhancing mixed reality experience with wrist to finger haptic attribution. In *ACM SIGGRAPH 2024 Emerging Technologies*, pages 1–2. 2024 **SIGGRAPH 2024 Emerging Technologies Official Selection for Laval Vitual**
2. Kiryu Tsujita, Takatoshi Yoshida, Kohei Kobayashi, Arata Horie, Nobuhisa Hanamitsu, and Kouta Minamizawa. Haptoroom: Using vibrotactile floor interfaces to enable reconfigurable haptic interaction onto any furniture surfaces. In *ACM SIGGRAPH 2024 Emerging Technologies*, pages 1–2. 2024
3. Rodan Umehara, Arata Horie, and Kouta Minamizawa. Rotational skin-stretch distribution creates directional force sensation on the wrist. In *2024 EuroHaptics Conference*, page TBD. Springer, 2024 **Best Demo Award**
4. 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

5. 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
6. 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
7. 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
8. 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
9. 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
10. 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**
11. 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

---

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

---

<b>Otherness and Interaction Technology in Embodied Interaction</b> <b>Keio University Graduate School of Media Design</b> <i>Guest Lecturer</i>	<i>November 2023 - Present</i>
<b>Digital Interaction Prototyping</b> <b>Keio University Graduate School of Media Design</b> <i>Lecturer</i>	<i>May 2023 - Present</i>
<b>Data Processing</b> <b>Tohoku University</b> <i>Teaching Assistant</i>	<i>October 2017 - February 2018</i>