

# Curriculum Vitae

March 1<sup>st</sup>. 2021

## Takayuki Hoshi

Birthday: Aug. 1<sup>st</sup>, 1980 / Age: 40

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CRO of Pixie Dust Technologies, Inc.

Director – Board member

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He completed doctoral course at the University of Tokyo. Ph.D. (Information Science and Technology). He participated in the Company as CTO in 2017 to promote open innovation, after going to JSPS Research Fellowship for Young Scientists DC2/PD, assistant professor at Kumamoto University, Nagoya Institute of Technology, and the University of Tokyo. He converted to CRO in 2018. He is an expert of wave control technology based on full use of physics and mathematics.

He developed an ultrasonic phased array system for non-contact haptic stimulation in 2008 and demonstrated the world-first three-dimensional acoustic manipulation in 2013. He explored other applications of focused ultrasound, such as static electricity measurement, artificial pollination, fur-material graphics, focus speaker, and wound healing. Recently, he is surveying and investigating on the safety of ultrasound from both physics and physiology.

### EDUCATIONAL BACKGROUND

1. Ph.D. received from Dept. of Information Physics & Computing, Graduate School of Information Science & Technology, the University of Tokyo (Mar. 2008) (Advisor: Prof. Hiroyuki Shinoda)
2. M.E. received from Dept. of Information Physics & Computing, Graduate School of Information Science & Technology, the University of Tokyo (Mar. 2005) (Advisor: Prof. Hiroyuki Shinoda)
3. B.E. received from Dept. of Mathematical Engineering & Information Physics, Faculty of Engineering, the University of Tokyo (Mar. 2003) (Advisor: Prof. Susumu Tachi)

### RESEARCH INTEREST

Ultrasonics, Acoustics, Wave Engineering, Haptics, VR, HCI, Measurement Engineering

## PROFESSIONAL EXPERIENCE

1. CRO, Pixie Dust Technologies, Inc. (Aug. 2018 – Current)
2. CTO, Pixie Dust Technologies, Inc. (Oct. 2017 – July 2018)
3. Assistant Professor of Research Center for Advanced Science and Technology, the University of Tokyo (June 2016 – Sept. 2017)
4. Assistant Professor of Dept. of Information Physics & Computing, Graduate School of Information Science & Technology, the University of Tokyo (Apr. 2016 – May 2016)
5. Assistant Professor of Center for Innovative Young Researchers, Nagoya Institute of Technology (Apr. 2011 – Mar. 2015)
6. Assistant Professor of Dept. of Intelligent Mechanical Systems, Graduate School of Science & Technology, Kumamoto University (Apr. 2009 – Mar. 2011)

## TECHNICAL SKILL

Language: C, Python, Verilog-HDL, LaTeX

Environment: Visual Studio, Arduino, IAR EW for ARM, Jupyter Notebook, Quartus II, Microsoft Office (Word, Excel, PowerPoint)

## AWARD

1. Treatise Award, by FA Foundation (Dec. 2018)
2. Innovative Technologies, by Digital Content Association of Japan (Aug. 2018)
3. Treatise Award, by Measurement Division, Society of Instrument and Control Engineers (Sept. 2017)
4. Specially Selected Paper, by Information Processing Society of Japan (Dec. 2016)
5. Innovative Technologies, by Ministry of Economy, Trade and Industry, Japan (Sept. 2016)
6. Outstanding Performance Award, by Nagoya Institute of Technology (Nov. 2015)
7. Innovative Technologies, by Ministry of Economy, Trade and Industry, Japan (Sept. 2015)
8. Good Design Award, by Japan Institute of Design Promotion (Sept. 2015)
9. Laval Virtual Awards Industrial design & Simulation, by Laval Virtual (Mar. 2015)
10. Significant Contribution to Science and Technology, by National Institute of Science and Technology Policy (Dec. 2014)
11. Innovative Technologies Special Award, by Ministry of Economy, Trade and Industry, Japan (Oct. 2014)
12. Good Design Award, by Japan Institute of Design Promotion (Oct. 2014)
13. Innovative Technologies, by Ministry of Economy, Trade and Industry, Japan (Sept. 2014)
14. Best Demonstration Award Honorable Mention, by EuroHaptics Conference (June 2014)
15. Laval Virtual Awards Grand Prix du Jury, by Laval Virtual (Apr. 2014)
16. Laval Virtual Awards Interface & Multipurpose Equipment, by Laval Virtual (Mar. 2014)
17. Young Scientist Award, by Symposium on Ultrasonic Electronics (Jan. 2014)
18. Encouragement Award, by Measurement Division, Society of Instrument and Control

Engineers (Aug. 2013)

19. Interactive Presentation Award, by Information Processing Society of Japan (Feb. 2012)
20. Technology Award, by Electric Hobby Contest (Dec. 2012)
21. Annual Conference International Award, by Society of Instrument and Control Engineers (Sept. 2007)
22. Encouragement Award, by Measurement Division, Society of Instrument and Control Engineers (Oct. 2006)

#### BOOK

1. Takayuki Hoshi and Hiroyuki Shinoda: [Airborne Ultrasound Tactile Display](#), Hiroyuki Kajimoto, Satoshi Saga, and Masahi Konyo (Eds.), [Pervasive Haptics -Science, Design, and Application-](#), Springer Japan, pp. 121-138, 2016.

#### JOURNAL

1. Nao Wakabayashi, Atsushi Sakai, Hiroya Takada, Takayuki Hoshi, Hitomi Sano, Shizuko Ichinose, Hidenori Suzuki, Rei Ogawa: Noncontact Phased-Array Ultrasound Facilitates Acute Wound Healing in Mice, *Plastic and Reconstructive Surgery*, vol. 145, pp. 348e-359e, 2020. [[PRIS Online First](#)]
2. Trung Quang Pham, Takumi Kawaue, Takayuki Hoshi, Yoshihiro Tanaka, Tataka Miyata, and Akihito Sano: Role of Extrinsic Mechanical Force in the Development of the RA-I Tactile Mechanoreceptor, *Scientific Reports*, vol. 8, article no. 11085, 2018. [[nature.com](#)]
3. Ryota Kondo, Maki Sugimoto, Kouta Minamizawa, Takayuki Hoshi, Masahiko Inami, and Michiteru Kitazaki: Illusory Body Ownership of an Invisible Body Interpolated between Virtual Hands and Feet via Visual-motor Synchronicity, *Scientific Reports*, vol. 8, article no. 7541, 2018. [[nature.com](#)]
4. Yuki Uno, Hao Qiu, Toru Sai, Shunta Iguchi, Yota Mizutani, Takayuki Hoshi, Yoshihiro Kawahara, Yasuaki Kakehi, and Makoto Takamiya: Luciola: A Millimeter-Scale Light-Emitting Particle Moving in Mid-Air Based On Acoustic Levitation and Wireless Powering, *Proc. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT)*, vol. 1, article no. 166, 2017. [[ACM Digital Library](#)]
5. Trung Quang Pham, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: Effect of 3D Microstructure of Dermal Papillae on SED Concentration at a Mechanoreceptor Location, *PLOS ONE*, vol. 12, no. 12, e0189293, 2017. [[PLOS ONE](#)]
6. Trung Quang Pham, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: An FE Simulation Study on Population Response of RA-I Mechanoreceptor to Different Widths of Square Indenter, *SICE Journal of Control, Measurement, and System Integration*, vol. 10, no. 5, pp. 426-432, 2017. [[J-STAGE](#)]
7. Trung Quang Pham, Takayuki Hoshi, Yoshihiro Tanaka, Akihito Sano, Takumi Kawaue, and Takaki Miyata: Two-Photon Imaging of DiO-Labelled Meissner Corpuscle in Living Mouse's Fingertip, *IEEE Transactions on Haptics*, vol. 9, no. 4, pp. 483-491, 2016. [[IEEE Computer Society Digital Library](#)]
8. Yoichi Ochiai\*, Kota Kumagai\*, Takayuki Hoshi, Jun Rekimoto, Satoshi Hasegawa, and Yoshio Hayasaki: [Fairy Lights in Femtoseconds: Aerial and Volumetric Graphics Rendered by Focused Femtosecond Laser Combined with Computational Holographic Fields](#), *ACM Transactions on Graphics*, vol. 35, article no. 17, 2016. (\*Joint first authors) [[ACM Digital Library](#)]
9. Hiroshi Shimizu, Takayuki Hoshi, Kenji Nakamura, and Jai-Eok Park: [Development of a Non-contact](#)

[Ultrasonic Pollination Device](#), *Environmental Control in Biology*, vol. 53, no. 2, pp. 85-88, 2015. [[J-STAGE](#)]

10. Kazuya Kikunaga, Takayuki Hoshi, Hiroshi Yamashita, Masahiro Egashira, and Kazuhiro Nonaka: Development of a Technique for Measuring Static Electricity Distribution Using Focused Ultrasound Waves and an Induced Electric Field, *Journal of Electrostatics*, vol. 73, pp. 6-11, 2015. [[ScienceDirect](#)]
11. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: [Pixie Dust: Graphics Generated by Levitated and Animated Objects in Computational Acoustic-Potential Field](#), *ACM Transactions on Graphics*, vol. 33, article no. 85, 2014. [[ACM Digital Library](#)]
12. Yoichi Ochiai, Alexis Oyama, Takayuki Hoshi, and Jun Rekimoto: [The Colloidal Metamorphosis: Time Division Multiplexing of the Reflectance State](#), *IEEE Computer Graphics and Applications*, vol. 34, no. 4, pp. 42-51, 2014. [[CS Digital Library](#)]
13. Takayuki Hoshi, Yoichi Ochiai, and Jun Rekimoto: [Three-Dimensional Noncontact Manipulation by Opposite Ultrasonic Phased Arrays](#), *Japanese Journal of Applied Physics*, vol. 53, 07KE07, 2014. [[IOP](#)]
14. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: Three-Dimensional Mid-Air Acoustic Manipulation by Ultrasonic Phased Arrays, *PLOS ONE*, vol. 9, no. 5, e97590, 2014. [[PLOS ONE](#)]
15. Kazuya Kikunaga, Takayuki Hoshi, Hiroshi Yamashita, Yoshitaka Fujii, and Kazuhiro Nonaka: Measuring Technique for Static Electricity Using Focused Sound, *Journal of Electrostatics*, vol. 71, no. 3, pp. 554-557, 2012. [[ScienceDirect](#)]
16. Takayuki Hoshi, Masafumi Takahashi, Takayuki Iwamoto, and Hiroyuki Shinoda: [Noncontact Tactile Display Based on Radiation Pressure of Airborne Ultrasound](#), *IEEE Transactions on Haptics*, vol. 3, no. 3, pp. 155-165, 2010. [[IEEE Computer Society Digital Library](#)]

#### INTERNATIONAL CONFERENCE

1. Chihiro Urairi, Takayuki Hoshi, Izumi Ohta: A New Insect Pest Control Device Using Non-contact Force Generated by Ultrasonic Transducers, *Proc. 6th Annual Meeting of the Society for Bioacoustics*, P11, Tsukuba (Japan), 20-22 Nov. 2019. [Poster]
2. Hao Qiu, Yuki Uno, Toru Sai, Shunta Iguchi, Yota Mizutani, Takayuki Hoshi, Yoshihiro Kawahara, Yasuaki Kakehi, Makoto Takamiya: *Luciola: A Light-Emitting Particle Moving in Mid-Air based on Ultrasonic Levitation and Wireless Powering*, *Proc. ACM SIGGRAPH Asia 2018, Emerging Technologies*, article no. 7, Tokyo (Japan), 4-7 Dec. 2018. [Demo] [[ACM Digital Library](#)]
3. Yosuke Ueno, Takayuki Hoshi, Atsushi Hiyama, and Masahiko Inami: *Virtual Experiments of Augmentation of Transparent Cockpit*, *Proc. 24th International Display Workshops*, pp. 1445-1448, Sendai (Japan), 6-8 Dec. 2017.
4. Yoichi Ochiai, Tatsuya Minagawa, Takayuki Hoshi, Daitetsu Sato, Kazuki Takazawa, Amy Koike, Satoshi Hashizume, Ippei Suzuki, Atsushi Shinoda, and Kazuyoshi Kubokawa: *LeviFab: Stabilization and Manipulation of Digitally Fabricated Objects for Superconductive Levitation*, *Proc. ACM SIGGRAPH 2017, Studio*, article no. 5, Los Angeles, California (USA), 30 July - 3 Aug. 2017. [Demo] [[ACM Digital Library](#)]
5. Yoichi Ochiai, Tatsuya Minagawa, Takayuki Hoshi, Daitetsu Sato, Satoshi Hashizume, Kazuki Takazawa, Amy Koike, Ippei Suzuki, Atsushi Shinoda, and Kazuyoshi Kubokawa:

- LeviFab: Stabilization and Manipulation of Digitally Fabricated Objects for Superconductive Levitation, Proc. ACM SIGGRAPH 2017, Posters, article no. 7, Los Angeles, California (USA), 30 July - 3 Aug. 2017. [Poster] [\[ACM Digital Library\]](#)
6. Satoshi Hashizume, Amy Koike, Takayuki Hoshi, and Yoichi Ochiai: Sonovortex: Rendering Multi-resolution Aerial Haptics by Aerodynamic Vortex and Focused Ultrasound, Proc. ACM SIGGRAPH 2017, Posters, article no. 57, Los Angeles, California (USA), 30 July - 3 Aug. 2017. [Poster] [\[ACM Digital Library\]](#)
  7. Yoichi Ochiai\*, Takayuki Hoshi\*, and Ippei Suzuki: Holographic Whisper: Rendering Audible Sound Spots in Three-Dimensional Space by Focusing Ultrasonic Waves, Proc. ACM CHI 2017, pp. 4314-4325, Denver, Colorado (USA), 6-11 May 2017. (\*Joint first authors) [\[ACM Digital Library\]](#)
  8. Shigo Ko, Yuta Itoh, Yuta Sugiura, Takayuki Hoshi, and Maki Sugimoto: Spatial Calibration of Airborne Ultrasound Tactile Display and Projector-Camera System Using Fur Material, Proc. ACM TEI 2017, Work in Progress, pp. 583-588, Yokohama (Japan), 20-23 Mar. 2017. [Poster] [\[ACM Digital Library\]](#)
  9. Yuta Sugiura, Koki Toda, Takashi Kikuchi, Takayuki Hoshi, Youichi Kamiyama, Takeo Igarashi, and Masahiko Inami: Grassffiti: Drawing Method to Produce Large-scale Pictures on Conventional Grass Fields, Proc. ACM TEI 2017, Work in Progress, pp. 413-417, Yokohama (Japan), 20-23 Mar. 2017. [Poster] [\[ACM Digital Library\]](#)
  10. Ryota Kondo, Maki Sugimoto, Kouta Minamizawa, Takayuki Hoshi, Masahiko Inami, and Michiteru Kitazaki: The Illusory Body Ownership: Remapping of the Right Finger to the Left Arm by Vision-action Contingency of Different Body Parts, IEEE Symposium on 3D User Interfaces, Los Angeles, California (USA), 18-19 Mar. 2017. [Poster]
  11. Yuki Kubo, Hirobumi Tomita, Shuta Nakame, Takayuki Hoshi, and Yoichi Ochiai: Bubble Cloud: Projection of an Image onto a Bubble Cluster, Proc. 13th International Conference on Advances in Computer Entertainment Technology (ACE 2016), article no. 41, Osaka (Japan), 9-12 Nov. 2016. [\[ACM Digital Library\]](#)
  12. Pham Quang Trung, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: [A Finite Element Model of 3D Microstructure of Dermal Papillae: Concentration of Strain Energy Density at Mechanoreceptor Locations](#), Proc. SICE Annual Conference 2016, pp. 1320-1322, Tsukuba (Japan), 20-23 Sept. 2016.
  13. Yuki Kubo, Hirobumi Tomita, Shuta Nakame, Takayuki Hoshi, and Yoichi Ochiai: Bubble Clouds: 3D Form Display Composed of Soap Bubble Cluster, Proc. 16th International Conference on Entertainment Computing (ICEC '17), pp. 14-23, Tsukuba (Japan), 18-21 Sept. 2017. [\[Springer Link\]](#)
  14. Yoichi Ochiai\*, Kota Kumagai\*, Takayuki Hoshi, Satoshi Hasegawa, and Yoshio Hayasaki: [Cross-Field Aerial Haptics: Rendering Haptic Feedback in Air with Light and Acoustic Fields](#), Proc. ACM CHI 2016, pp. 3238-3247, San Jose, California (USA), 7-12 May 2016. (\*Joint first authors) [\[ACM Digital Library\]](#)

15. Takayuki Hoshi: [Gradual Phase Shift to Suppress Noise from Airborne Ultrasound Tactile Display](#), ACM CHI 2016 Workshop on Mid-Air Haptics and Displays: Systems for Uninstrumented Mid-Air Interactions, Session 2: Provide Visual and Haptic Feedback, San Jose, California (USA), 7-12 May 2016.
16. Takayuki Hoshi: [Variation of Tactile Feelings of Focused Ultrasound: Modulation Frequency and Hand Movement](#), Proc. ACM SIGGRAPH Asia 2015, Workshop on Haptic Media and Contents Design, article no. 18, Kobe (Japan), 2 Nov. 2015. [Demo] [\[ACM Digital Library\]](#)
17. Pham Quang Trung, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: Investigation on Tactile Sensor based on Tissue Engineering, Proc. Vietnamese-Japanese Students' Scientific Exchange Meeting (VJSE 2015), Kyoto (Japan), 31 Oct. 2015.
18. Kazuya Kikunaga and Takayuki Hoshi: Measuring Electrostatic Charge by Ultrasound Impulse Excitation, Proc. IEEE Industry Applications Society (IAS) Annual Meeting 2015, 2015-EPC-0511, Dallas, Texas (USA), 18-22 Oct. 2015.
19. Yoichi Ochiai, Kota Kumagai, Takayuki Hoshi, Jun Rekimoto, Satoshi Hasegawa, and Yoshio Hayasaki: [Fairy Lights in Femtoseconds: Aerial and Volumetric Graphics Rendered by Focused Femtosecond Laser Combined with Computational Holographic Fields](#), Proc. ACM SIGGRAPH 2015, Emerging Technologies, article no. 10, Los Angeles, California (USA), 9-13 Aug. 2015. [Demo] [\[ACM Digital Library\]](#) [\[Emerging Technologies Preview Trailer\]](#) [\[Emerging Technologies Contributor\]](#)
20. Yoichi Ochiai, Kota Kumagai, Takayuki Hoshi, Jun Rekimoto, Satoshi Hasegawa, and Yoshio Hayasaki: Fairy Lights in Femtoseconds: Aerial and Volumetric Graphics Rendered by Focused Femtosecond Laser Combined with Computational Holographic Fields, Proc. ACM SIGGRAPH 2015, Emerging Technologies Talks, article no. 10, Los Angeles, California (USA), 9-13 Aug. 2015.
21. Yoichi Ochiai, Kota Kumagai, Takayuki Hoshi, Jun Rekimoto, Satoshi Hasegawa, and Yoshio Hayasaki: Fairy Lights in Femtoseconds: Aerial and Volumetric Graphics Rendered by Focused Femtosecond Laser Combined with Computational Holographic Fields, Proc. ACM SIGGRAPH 2015, Posters (Research), Los Angeles, California (USA), 9-13 Aug. 2015. [Poster]
22. Masaya Takasaki, Daisuke Yamaguchi, Yoichi Ochiai, Takayuki Hoshi, and Takeshi Mizuno: Between Smoothness and Stickiness, Proc. IEEE World Haptics Conference, D-46, Chicago, Illinois (USA), 22-26 June 2015. [Demo] [\[Demonstrations Previews\]](#)
23. Trung Pham Quang, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: [Study on Three-dimensional Configuration of Dermal Papillae: Effects on Meissner Corpuscles](#), Proc. IEEE World Haptics Conference, Work-In-Progress, WIP-25, Chicago, Illinois (USA), 22-26 June 2015. [Poster]
24. Hiroshi Shimizu, Kenji Nakamura, Takayuki Hoshi, Hiroshi Nakamura, Juro Miyashita, and Katsuaki Ohdoi: Development of a Non-contact Ultrasonic Pollination System, Proc. XXXVI CIOSTA & CIGR Section V Conference 2015, paper ID 43, Saint-Petersburg (Russia), 26-

28 May 2015.

25. Yoichi Ochiai, Takayuki Hoshi, Kota Kumagai, Jun Rekimoto, Satoshi Hasegawa, and Yoshio Hayasaki: Fairy Lights, 17th International Conferences and Exhibition of Virtual Technologies and Uses (Laval Virtual 2015), Laval Virtual Awards, Laval (France), 8-12 Apr. 2015. [[Industrial design & Simulation](#) (One of 10 Awards) / 18 Mar. 2015]
26. Takayuki Hoshi: [Noncontact Tactile Display Using Airborne Ultrasound](#), Proc. 21st International Display Workshops, pp. 1529-1533, Niigata (Japan), [invited](#), 3-5 Dec. 2014.
27. Daisuke Yamaguchi, Yoichi Ochiai, Takayuki Hoshi, Jun Rekimoto, Masaya Takasaki: [Driving System of Diminished Haptics: Transformation of Real World Textures](#), Proc. AsiaHaptics 2014, B-18, Tsukuba (Japan), 18-20 Nov. 2014. [Demo] [[Partial Preview](#)]
28. Michinari Kono, Takayuki Hoshi, and Yasuaki Kakehi: [lapillus bug: Creature-like Behaving Particles Based on Interactive Mid-Air Acoustic Manipulation](#), Proc. 11th Advances in Computer Entertainment Technology Conference (ACE 2014), article no. 34, Madeira (Portugal), 11-14 Nov. 2014. [[ACM Digital Library](#)]
29. Gary M.Y. Hung, Nigel W. John, Chris Hancock, and Takayuki Hoshi: [Using Airborne Ultrasound as a Tactile Interface within Medical Training Simulators](#), Proc. 6th International Symposium on Biomedical Simulation (ISBMS 2014), pp. 30-39, Strasbourg (France), 16-17 Oct. 2014.
30. Yuta Sugiura, Koki Toda, Takayuki Hoshi, Youichi Kamiyama, Masahiko Inami, and Takeo Igarashi: [Graffiti Fur: Turning Your Carpet into a Computer Display](#), Proc. 27th ACM User Interface Software and Technology Symposium (ACM UIST 2014), pp. 149-156, Hawaii (USA), 5-8 Oct. 2014. [[Technical Program Preview](#)] [[Best Talk Award](#) (1/74) / 8 Oct. 2014]
31. Takayuki Hoshi, Yoichi Ochiai, and Jun Rekimoto: [Three-dimensional Non-contact Manipulation Based on Standing-wave Acoustic Levitation](#), Proc. 1st International Conference on Ultrasonic-Based Applications: From Analysis to Synthesis (ULTRASONICS 2014), p. 111, Lisbon (Portugal), [invited](#), 15-17 Sept. 2014.
32. Pham Quang Trung, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: Investigation of Spatial Structure Surrounding Meissner Corpuscle by Using Compact Finite-Element Methods, Proc. Vietnamese-Japanese Students' Scientific Exchange Meeting (VJSE 2014), Kobe (Japan), 13 Sept. 2014.
33. Yuta Sugiura, Koki Toda, Takayuki Hoshi, Masahiko Inami, and Takeo Igarashi: [Graffiti Fur: Turning Your Carpet into a Computer Display](#), Proc. ACM SIGGRAPH 2014, Emerging Technologies, article no. 9, Vancouver (Canada), 10-14 Aug. 2014. [Demo] [[ACM Digital Library](#)] [[Emerging Technologies Media Tour](#)]
34. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: [Pixie Dust: Graphics Generated by Levitated and Animated Objects in Computational Acoustic-Potential Field](#), Proc. ACM SIGGRAPH 2014, Emerging Technologies, article no. 21, Vancouver (Canada), 10-14 Aug. 2014. [Demo] [[ACM Digital Library](#)] [[Emerging Technologies Preview Trailer](#)] [[Emerging Technologies Contributor](#)] [[Emerging Technologies Media Tour](#)]

35. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: [Pixie Dust: Graphics Generated by Levitated and Animated Objects in Computational Acoustic-Potential Field](#), Proc. ACM SIGGRAPH 2014, Posters, article no. 83, Vancouver (Canada), 10-14 Aug. 2014. [Poster] [\[ACM Digital Library\]](#) [\[Invited to the First Round of the Student Research Competition \(25 student posters\)\]](#)
36. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: [Pixie Dust: Graphics Generated by Levitated and Animated Objects in Computational Acoustic-Potential Field](#), Proc. ACM SIGGRAPH 2014, Technical Papers, article no. 85, Vancouver (Canada), 10-14 Aug. 2014. [\[Technical Papers Preview Trailer\]](#) [\[ACM Digital Library\]](#)
37. Yoichi Ochiai, Takayuki Hoshi, Jun Rekimoto, and Masaya Takasaki: [Diminished Haptics: Towards Digital Transformation of Real World Textures](#), Proc. Eurohaptics 2014, Poster 53 / Demo 4, Versailles (France), 24-27 June 2014. [Poster & Demo] [\[Best Demonstration Award Honorable Mention \(2nd/30\) / 26 June 2014\]](#) [IEEE ToH / [News from the Field](#)]
38. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: Pixie Dust, 16th International Conferences and Exhibition of Virtual Technologies and Uses (Laval Virtual 2014), Laval Virtual Awards, Laval (France), 9-13 Apr. 2014. [\[Interface & Multipurpose Equipment \(One of 10 Awards\) / 28 Mar. 2014\]](#) [\[Grand Prix du Jury \(1/10\) / 10 Apr. 2014\]](#)
39. Yoichi Ochiai, Takayuki Hoshi, and Jun Rekimoto: Three-Dimensional Mid-Air Acoustic Manipulation, 16th International Conferences and Exhibition of Virtual Technologies and Uses (Laval Virtual 2014), ReVolution, Laval (France), 9-13 Apr. 2014. [Demo] [\[Invited Pproject \(One of 4 Projects\)/ 6 Mar. 2014\]](#)
40. Michinari Kono, Yasuaki Kakehi, and Takayuki Hoshi: lapillus bug, Proc. ACM SIGGRAPH Asia 2013, Art Gallery, Hong Kong (China), 19-22 Nov. 2013. [Demo] [\[Movie\]](#)
41. Yoichi Ochiai, Alexis Oyama, Takayuki Hoshi, and Jun Rekimoto: [Theory and Application of the Colloidal Display: Programmable Bubble Screen for Computer Entertainment](#), Proc. 10th International Conference on Advances in Computer Entertainment Technology (ACE 2013), pp. 198-214, Twente (Netherlands), 12-15 Nov. 2013. [\[Springer Diamond Award for best research \(1/77\) / 15 Nov. 2013\]](#)
42. Pham Quang Trung, Takayuki Hoshi, Yoshihiro Tanaka, and Akihito Sano: [Proposal of Tactile Sensor Development Based on Tissue Engineering](#), Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems 2013 (IROS 2013), pp. 2030-2034, Tokyo (Japan), 3-8 Nov. 2013.
43. Yoichi Ochiai, Alexis Oyama, Takayuki Hoshi, and Jun Rekimoto: [Poppable Display: A Display Which Enables People to Interact with Popping, Breaking, and Tearing](#), Proc. 2013 IEEE 2nd Global Conference on Consumer Electronics (GCCE 2013), pp. 124-128, Makuhari (Japan), 1-4 Oct. 2013.
44. Kei Nakatsuma, Takayuki Hoshi, and Ipppei Torigoe: [Haptic-Emoticon: A Framework for Creating and Sharing Haptic Contents](#), Proc. SICE Annual Conference 2013, pp. 218-222, Nagoya (Japan), 14-17 Sept. 2013.



45. Takayuki Hoshi: [Compact Device for Markerless Hand Tracking and Noncontact Tactile Feedback](#), Proc. SICE Annual Conference 2013, pp. 277-278, Nagoya (Japan), 14-17 Sept. 2013.
46. Kei Nakatsuma, Takayuki Hoshi, and Ipppei Torigoe: [Haptic-Emoticon: A Platform for Creating and Sharing Haptic Contents](#), Proc. ACM SIGGRAPH 2013, Posters, Anaheim, California (USA), 21-25 July 2013. [Poster] [\[Movie\]](#)
47. Yoichi Ochiai, Alexis Oyama, Takayuki Hoshi, and Jun Rekimoto: [Reflective, Deformable, Colloidal Display: A Waterfall-Based Colloidal Membrane Using Focused Ultrasonic Waves](#), Proc. ACM SIGGRAPH 2013, Posters, Anaheim, California (USA), 21-25 July 2013. [Poster] [\[Movie\]](#) [\[Student Research Competition Semi-Finalist \(15 student posters\) / 23 July 2013\]](#)
48. Gary M.Y. Hung, Nigel W. John, Chris Hancock, Derek A. Gould, and Takayuki Hoshi: [UltraPulse - Simulating Arterial Pulse with Focused Airborne Ultrasound](#), Proc. 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'13), pp. 2511-2514, Osaka (Japan), 3-7 July 2013.
49. Kazuya Kikunaga, Takayuki Hoshi, Hiroshi Yamashita, Yoshitaka Fujii, and Kazuhiro Nonaka: Measuring Technique for Static Electricity Using Focused Sound, Journal of Electrostatics (12th International Conference on Electrostatics (Electrostatics 2013)), vol. 71, no. 3, pp. 554-557, Budapest (Hungary), 17-19 Apr. 2013. [\[Young Scientist Award \(4 scientists below 35 years\) / 19 Apr. 2013\]](#)
50. Yoichi Ochiai, Alexis Oyama, Takayuki Hoshi, and Jun Rekimoto: Colloidal Display, 15th International Conference and Exhibition on Virtual Reality and Converging Technologies (Laval Virtual 2013), ReVolution, Laval (France), 20-24 Mar. 2013. [Demo] [\[Movie\]](#) [\[Laval Virtual Awards 2013 Nominee\]](#)
51. Takayuki Hoshi: [Compact Ultrasound Device for Noncontact Interaction](#), Proc. Advances in Computer Entertainment Conference 2012 (ACE 2012), pp. 502-505, Kathmandu (Nepal), 3-5 Nov. 2012. [Demo] [\[Movie\]](#)
52. Takayuki Hoshi: [Development of Portable Device of Airborne Ultrasound Tactile Display](#), Proc. SICE Annual Conference 2012, pp. 290-292, Akita (Japan), 20-23 Aug. 2012.
53. Takayuki Hoshi: [Handwriting Transmission System Using Noncontact Tactile Display](#), Proc. IEEE Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (IEEE Haptics Symposium 2012), pp. 399-401, Vancouver (Canada), 4-7 Mar. 2012. [Poster & Demo] [\[Best Demo Award Candidate \(12/47\) / 7 Mar. 2012\]](#)
54. Takayuki Hoshi: [Midair Input-Output Interface Consisting of Depth Camera and Noncontact Tactile Display](#), Proc. SICE Annual Conference 2011, pp. 608-609, Waseda (Japan), 13-18 Sept. 2011.
55. Takayuki Hoshi: [Development of Aerial-Input and Aerial-Tactile-Feedback System](#), Proc. 4th Joint Eurohaptics Conference and IEEE Haptics Symposium (IEEE World Haptics 2011), pp. 569-573, Istanbul (Turkey), 22-24 June 2011. [Poster & Demo]

56. Takayuki Hoshi, Yuta Nishiyama, and Ippei Torigoe: [Observations of Airflow Arising from Airborne Ultrasound Tactile Display](#), Proc. SICE Annual Conference 2010, pp. 384-385, Taipei (Taiwan), 18-21 Aug. 2010.
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