

## Ippei Suzuki 鈴木 一平

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Ippei Suzuki is a graduate student at Digital Nature Group, University of Tsukuba (Graduate School of Library, Information and Media Studies, Master's Program in Informatics). He is interested in cameras, displays, virtual realities, and human-computer interactions. He is also working as an engineer at Pixie Dust Technologies, Inc. He engages in software development, hardware development, event management, video production and so on. He got some awards such as Best Long Paper in Augmented Human 2017 & 2019 (peer-reviewed international conference), Laval Virtual Award 2017 TRANSPORT and MOBILITY, and JASSO Students of the Year 2017 Grand Prize (Academia).

## Research Interest

Camera, Display, Human-Computer Interaction

## Biography

### Education

1. **University of Tsukuba (JP), Graduate School of Library, Information and Media Studies**  
Master of Science in Informatics  
Digital Nature Group  
Apr. 2019 - Current (Expected End Date: Mar. 2021)
2. **University of Tsukuba (JP), College of Media Arts, Science and Technology**  
Bachelor of Science in Media Sciences and Engineering  
Digital Nature Group, Advisor: Associate Professor Yoichi Ochiai  
Apr. 2015 - Mar. 2019

### Work

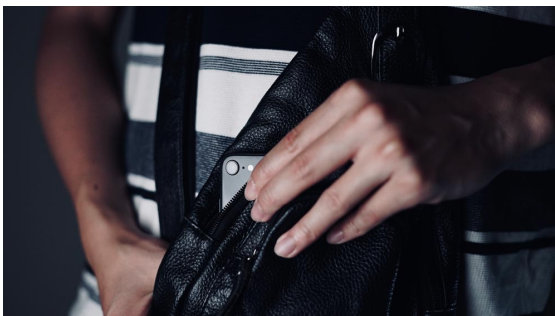
1. **Pixie Dust Technologies, Inc. (JP)**  
Engineer, Research and Development Department  
Oct. 2017 - Current
2. **Videosonic Co.,Ltd. (JP)**  
Cinematographer  
Aug. 2015 - Oct. 2017



## Unphotogenic Light

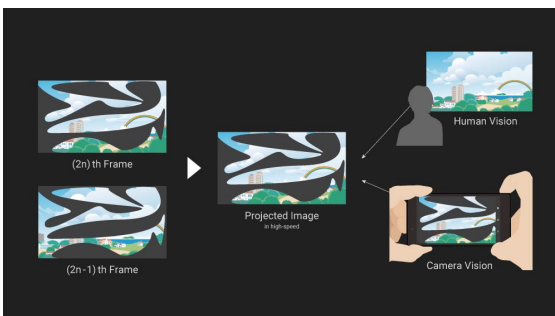
### High-Speed Projection Method to Prevent Secret Photography by Small Cameras

SID Symposium Digest of Technical Papers | 2018



### Problem

Protecting images projected on a screen is a difficult problem. Although protection techniques for digital copies have been discussed for many years, recordable content projected by general display techniques (e.g., LCDs, projectors) is not only visible to humans but can also be captured by cameras. In these cases, that which is "visible to human eyes" is nearly the same as being "recordable by a camera". Thus, projected recordable content is sometimes secretly captured by small cameras even when protection techniques against digital copies have been adopted. How can we fundamentally prevent content from secret photography?



### Solution

We focused on the difference between human and camera vision systems. Unlike cameras, humans cannot recognize the high-speed changes of light. We divide the image into smaller parts and project each part in succession over the same projection periods. That projected image becomes human eyes can see but cameras can only capture as an incomplete frame.

### Publication

Ipppei Suzuki, Shinnosuke Ando, and Yoichi Ochiai. 2018. 70-1: "Unphotogenic Light": Evaluation and Detail of the High-Speed Projection Method to Prevent Secret Photography with Small Cameras. SID Symposium Digest of Technical Papers. 49, 1, 930-933.

### Project Page

<https://1heisuzuki.com/projects/unphotogenic-light>



## Gushed Light Field

### Aerosol-based Aerial and Instant Fog Display

Proceedings of the 8th Augmented Human International Conference (AH '17) | 2017

Augmented Human 2017 BEST LONG PAPER AWARD 1ST PLACE



### Problem

Fog screens have been used as the primary diffusers in passive aerial displays. However, they are easily affected by airflow, and their fog generators occupy large areas. These problems interfere with mobile applications such as attaching them to a drone or a person. In addition, a fog machine cannot generate fog in a short period, and there is a delay before the fog can disappear. Therefore, we cannot produce a conventional system as a wearable device, nor can these instantly project an image. [How can we build a lightweight midair display with a high wind tolerance?](#)



### Solution

We employ [aerosol distribution from off-the-shelf sprays as a fog screen](#) that can resist wind and has high portability. We evaluated the feasibility of the aerosol type of fog screen. The size of the screen depends on the pressure of the aerosol spray and the nozzle used. We presented a design of the system setup and evaluated our experiments, system scalability, and applications.

Our system enables a new type of application by combining it with a multicopter, wearable item, multi-viewpoint aerosol-based fog display, or embedding it in the environment. Our system allows for the exploration of new application areas for fog displays, and augment expressions of entertainments and interactivity.

### Publication

**Ippei Suzuki**, Shuntarou Yoshimitsu, Keisuke Kawahara, Nobutaka Ito, Atsushi Shinoda, Akira Ishii, Takatoshi Yoshida, and Yoichi Ochiai. 2017. **Design Method for Gushed Light Field: Aerosol Based Aerial and Instant Display**. In Proceedings of the 8th Augmented Human International Conference (AH '17). ACM, New York, NY, USA, , Article 1 , 10 pages.

### Project Page

<https://1heisuzuki.com/projects/gushed-light-field>

## Awards

1. University of Tsukuba President's Award, University of Tsukuba, 2019-03.
2. 1ST BEST PAPER AWARD, Augmented Human 2019, 2019-03.
3. Grand Award (Student/Entertainment), 2017 Asia Digital Art Award FUKUOKA, 2017-12.
4. Finalists' Awards (Student/Entertainment), 2017 Asia Digital Art Award FUKUOKA, 2017-12.
5. Finalists' Awards (Student/Entertainment), 2017 Asia Digital Art Award FUKUOKA, 2017-12.
6. Award of Microsoft Tech (Microsoft Japan), Mashup Award 2017, 2017-12.
7. JASSO Students of the Year 2017 Grand Prize (Academia), Independent Administrative Institution Japan Student Services Organization, 2017-12.
8. James Dyson Award 2017 International Top 20 Shortlist, James Dyson Foundation, 2017-10.
9. James Dyson Award 2017 Japan Division 4th Place, James Dyson Foundation, 2017-09.
10. James Dyson Award 2017 Japan Division 5th Place, James Dyson Foundation, 2017-09.
11. University of Tsukuba President's Award, University of Tsukuba, 2017-06.
12. Best Poster/Demo Awards 2nd Prize, CHI 2017 Asian CHI symposium, 2017-05.
13. BEST LONG PAPER AWARD 1ST PLACE, Augmented Human 2017, 2017-03.
14. Laval Virtual Award 2017 TRANSPORT & MOBILITY, Laval Virtual, 2017-03.
15. 20th Japan Media Arts Festival Art Division Jury Selections, Japan Media Arts Festival Executive Committee 2017-03.
16. 22nd CAMPUS GENIUS AWARD 2016 SILVER (Jury Prize of Shuzo John Shiota), Computer Graphic Arts Society Japan, 2017-02.
17. Advanced Researcher Experience (ARE) Excellence Award, University of Tsukuba, 2017-01.

## Publications

### Conference Papers / Proceedings (peer-reviewed)

1. Akira Ishii, Masaya Tsuruta, **Ippei Suzuki**, Shuta Nakamae, Junichi Suzuki, and Yoichi Ochiai. 2019. Let Your World Open: CAVE-based Visualization Methods of Public Virtual Reality towards a Shareable VR Experience. In Proceedings of the 10th Augmented Human International Conference 2019 (AH2019). ACM, New York, NY, USA, Article 33, 8 pages.
2. **Ippei Suzuki**, Shinnosuke Ando, and Yoichi Ochiai. 2018. 70-1: "Unphotogenic Light": Evaluation and Detail of the High-Speed Projection Method to Prevent Secret Photography with Small Cameras. SID Symposium Digest of Technical Papers. 49, 1, 930-933.
3. Satoshi Hashizume, **Ippei Suzuki**, Kazuki Takazawa, Ryuichiro Sasaki, and Yoichi Ochiai. 2018. Telewheelchair: the Remote Controllable Electric Wheelchair System combined Human and Machine Intelligence. In *Proceedings of the 9th Augmented Human International Conference (AH '18)*. ACM, New York, NY, USA, Article 7, 9 pages.
4. Mose Sakashita, Tatsuya Minagawa, Amy Koike, **Ippei Suzuki**, Keisuke Kawahara, and Yoichi Ochiai. 2017. You as a Puppet: Evaluation of Telepresence User Interface for Puppetry. In *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST '17)*. ACM, New York, NY, USA, 217-228.
5. Yoichi Ochiai, Takayuki Hoshi, and **Ippei Suzuki**. 2017. Holographic Whisper: Rendering Audible Sound Spots in Three-dimensional Space by Focusing Ultrasonic Waves. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. ACM, New York, NY, USA, 4314-4325.
6. **Ippei Suzuki**, Shuntarou Yoshimitsu, Keisuke Kawahara, Nobutaka Ito, Atsushi Shinoda, Akira Ishii, Takatoshi Yoshida, and Yoichi Ochiai. 2017. Design Method for Gushed Light Field: Aerosol Based Aerial and Instant Display. In *Proceedings of the 8th Augmented Human International Conference (AH '17)*. ACM, New York, NY, USA, , Article 1 , 10 pages.
7. Akira Ishii, **Ippei Suzuki**, Shinji Sakamoto, Keita Kanai, Kazuki Takazawa, Hiraku Doi, and Yoichi Ochiai. 2016. Optical Marionette: Graphical Manipulation of Human's Walking Direction. In *Proceedings of the 29th Annual Symposium on User Interface Software and Technology (UIST '16)*. ACM, New York, NY, USA, 705-716.

### Demo (peer-reviewed)

1. Yoichi Ochiai, Kazuki Otao, Yuta Itoh, Shouki Imai, Kazuki Takazawa, Hiroyuki Osone, Atsushi Mori, and **Ippei Suzuki**. 2018. Make Your Own Retinal Projector: Retinal Near-Eye Displays via Metamaterials. In ACM SIGGRAPH 2018 Emerging Technologies (SIGGRAPH '18). ACM, New York, NY, USA, Article 13, 2 pages.
2. **Ippei Suzuki** and Yoichi Ochiai. 2017. Demonstration of the unphotogenic light: protection from secret photography by small cameras. In *SIGGRAPH Asia 2017 Emerging Technologies (SA '17)*. ACM, New York, NY, USA, Article 4, 1 pages.
3. Satoshi Hashizume, **Ippei Suzuki**, Kazuki Takazawa, Ryuichiro Sasaki, Yoshikuni Hashimoto, and Yoichi Ochiai. 2017. Telewheelchair: a demonstration of the intelligent electric wheelchair system towards human-machine. In *SIGGRAPH Asia 2017 Emerging Technologies (SA '17)*. ACM, New York, NY, USA, Article 15, 1 pages.
4. Akira Ishii, Masaya Tsuruta, **Ippei Suzuki**, Shuta Nakamae, Tatsuya Minagawa, Junichi Suzuki, and Yoichi Ochiai. 2017. ReverseCAVE experience: providing reverse perspectives for sharing VR experience. In *SIGGRAPH Asia 2017 VR Showcase (SA '17)*. ACM, New York, NY, USA, Article 9, 2 pages.
5. Yoichi Ochiai, Tatsuya Minagawa, Takayuki Hoshi, Daitetsu Sato, Kazuki Takazawa, Amy Koike, Satoshi Hashizume, **Ippei Suzuki**, Atsushi Shinoda, and Kazuyoshi Kubokawa. 2017. LeviFab: stabilization and manipulation of digitally fabricated objects for superconductive levitation. In *ACM SIGGRAPH 2017 Studio (SIGGRAPH '17)*. ACM, New York, NY, USA, Article 5, 2 pages.
6. **Ippei Suzuki**, Shuntarou Yoshimitsu, Keisuke Kawahara, Nobutaka Ito, Atsushi Shinoda, Akira Ishii, Ta katoshi Yoshida, and Yoichi Ochiai. 2016. Gushed Light Field: Design Method for Aerosol-based Fog Display. In *SIGGRAPH ASIA 2016 Emerging Technologies (SA '16)*. ACM, New York, NY, USA, , Article 9 , 2 pages.

7. Keisuke Kawahara, Mose Sakashita, Amy Koike, **Ippei Suzuki**, Kenta Suzuki, and Yoichi Ochiai. 2016. Transformed Human Presence for Puppetry. In *Proceedings of the 13th International Conference on Advances in Computer Entertainment Technology (ACE2016)*. ACM, New York, NY, USA, , Article 38 , 6 pages.
8. **Ippei Suzuki**, Shuntarou Yoshimitsu, Keisuke Kawahara, Nobutaka Ito, Atushi Shinoda, Akira Ishii, Takatoshi Yoshida, and Yoichi Ochiai. 2016. Gushed Diffusers: Fast-moving, Floating, and Lightweight Midair Display. In *Proceedings of the 29th Annual Symposium on User Interface Software and Technology (UIST '16 Adjunct)*. ACM, New York, NY, USA, 69-70.
9. Akira Ishii, **Ippei Suzuki**, Shinji Sakamoto, Keita Kanai, Kazuki Takazawa, Hiraku Doi, and Yoichi Ochiai. 2016. Graphical manipulation of human's walking direction with visual illusion. In *ACM SIGGRAPH 2016 Emerging Technologies (SIGGRAPH '16)*. ACM, New York, NY, USA, , Article 8 , 2 pages.
10. Mose Sakashita, Keisuke Kawahara, Amy Koike, Kenta Suzuki, **Ippei Suzuki**, and Yoichi Ochiai. 2016. Yadori: mask-type user interface for manipulation of puppets. In *ACM SIGGRAPH 2016 Emerging Technologies (SIGGRAPH '16)*. ACM, New York, NY, USA, , Article 23 , 1 pages.

## Posters (peer-reviewed)

1. Yoichi Ochiai, Kazuki Otao, Yuta Itoh, Shouki Imai, Kazuki Takazawa, Hiroyuki Osone, Atsushi Mori, and **Ippei Suzuki**. 2018. Make Your Own Retinal Projector: Retinal Near-Eye Displays via Metamaterials. In *SIGGRAPH 2018 Posters (SIGGRAPH '18)*. ACM, New York, NY, USA, Article 48, 2 pages.
2. Riku Iwasaki, Yuta Sato, **Ippei Suzuki**, Atsushi Shinoda, Kenta Yamamoto, Kohei Ogawa, and Yoichi Ochiai. 2017. Silk fabricator: using silkworms as 3D printers. In *SIGGRAPH Asia 2017 Posters (SA '17)*. ACM, New York, NY, USA, Article 46, 2 pages.
3. **Ippei Suzuki** and Yoichi Ochiai. 2017. Unphotogenic light: high-speed projection method to prevent secret photography by small cameras. In *ACM SIGGRAPH 2017 Posters (SIGGRAPH '17)*. ACM, New York, NY, USA, Article 65, 2 pages.
4. Akira Ishii, Masaya Tsuruta, **Ippei Suzuki**, Shuta Nakamae, Tatsuya Minagawa, Junichi Suzuki and Yoichi Ochiai. 2017. ReverseCAVE: providing reverse perspectives for sharing VR experience. In *ACM SIGGRAPH 2017 Posters (SIGGRAPH '17)*. ACM, New York, NY, USA, Article 28, 2 pages.
5. **Ippei Suzuki**, Satoshi Hashizume, Kazuki Takazawa, Yoshikuni Hashimoto, Ryuichiro Sasaki, and Yoichi Ochiai. 2017. Telewheelchair: The intelligent electric wheelchair system towards human-machine combined environmental supports. In *ACM SIGGRAPH 2017 Posters (SIGGRAPH '17)*. ACM, New York, NY, USA, Article 30, 1 pages.
6. Yoichi Ochiai, Tatsuya Minagawa, Takayuki Hoshi, Daitetsu Sato, Kazuki Takazawa, Amy Koike, Satoshi Hashizume, **Ippei Suzuki**, Atsushi Shinoda, and Kazuyoshi Kubokawa. 2017. LeviFab: stabilization and manipulation of digitally fabricated objects for superconductive levitation. In *ACM SIGGRAPH 2017 Posters (SIGGRAPH '17)*. ACM, New York, NY, USA, Article 7, 2 pages.
7. **Ippei Suzuki**, Shuntarou Yoshimitsu, Keisuke Kawahara, Nobutaka Ito, Atsushi Shinoda, Akira Ishii, Takatoshi Yoshida, and Yoichi Ochiai. 2016. Gushed Light Field: Design Method for Aerosol-based Fog Display. In *SIGGRAPH ASIA 2016 Posters (SA '16)*. ACM, New York, NY, USA, , Article 26 , 2 pages.
8. Akira Ishii, **Ippei Suzuki**, Shinji Sakamoto, Keita Kanai, Kazuki Takazawa, Hiraku Doi, and Yoichi Ochiai. 2016. Graphical manipulation of human's walking direction with visual illusion. In *ACM SIGGRAPH 2016 Posters (SIGGRAPH '16)*. ACM, New York, NY, USA, , Article 9 , 2 pages.

## Video Showcase (peer-reviewed)

1. Akira Ishii, [Ippei Suzuki](#), Masaya Tsuruta, Shuta Nakamae, Junichi Suzuki, and Yoichi Ochiai. 2018. ReverseCAVE: CAVE-based Visualization Methods of Public VR Towards Shareable VR Experience. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems (CHI EA '18)*. ACM, New York, NY, USA, Paper VS01, 1 pages.
2. [Ippei Suzuki](#), Shuntarou Yoshimitsu, Keisuke Kawahara, Nobutaka Ito, Atushi Shinoda, Akira Ishii, Takatoshi Yoshida, and Yoichi Ochiai. 2017. Gushed Light Field: Video Showcase of Aerosol-Based Fog Display. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17)*. ACM, New York, NY, USA, 453-453.

## Invited

1. [Ippei Suzuki](#), Shinnosuke Ando, and Yoichi Ochiai. 2018. Protection Method from Secret Photography. In the 25th International Display Workshops (IDW '18).

## Domestic Conference (Japan, invited)

1. Akira Ishii, [Ippei Suzuki](#), Shinji Sakamoto, Keita Kanai, Kazuki Takazawa, Hiraku Doi, and Yoichi Ochiai. Optical Marionette. In *24th Workshop on Interactive Systems and Software (WISS 2016)*. JSSST, Tokyo, Japan.