

DoYoung Lee

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1. Summary

Interests : Novel interfaces for wearables / UAV / AR systems

Contribution: Ideation and prototyping

Experiences: Ideation methods, physical computing, JAVA, UNITY (C#) and data analysis (R)

2. Education

Bachelor of Science in Design and Human Engineering

Ulsan National Institute of Science and Technology (UNIST)

Ulsan, Korea 2010 - 2014

- 3.67/4.3 (9% ranked)

- Multi-disciplinary Major

- Affective & Human Factors Engineering

- Computer Science Engineering

- Academic performance scholarship recipient

Master & Ph.D combined

Ulsan National Institute of Science and Technology (UNIST)

Ulsan, Korea 2014 - 2020.06 (expected)

- 4.02/4.3

- Advised by Ian Oakley (whereveriam.org/ interactions)

- Topics are **novel interfaces** for **wearables / UAV / AR**

- Academic performance scholarship recipient

3. Publications

[9] (Submitted) **DoYoung Lee**, Suwhan Lee, and Ian Oakley (2019). "Nailz: Sensing Hand Input with Touch Sensitive Nails". In Proceedings of ACM CHI'20, Honolulu, Hwai'i, USA

[8] **DoYoung Lee**, Youryang Lee, Yonghwan Shin and Ian Oakley (2018). "Designing Socially Acceptable Hand-to-Face Input". In Proceedings of UIST'18, Berlin, Germany

[7] Rasel Islam, **DoYoung Lee**, Liza Suraiya Jahan and Ian Oakley (2018) "GlassPass: Tapping Gestures to Unlock Smart Glasses." In Proceedings of Augmented Human 2018, Seoul, Korea

[6] Gil, H.J., **Lee, D.Y.**, Im, S.G. and Oakley, I. (2017) "TriTap: Identifying Finger Touches on Smartwatches." To appear in Proceedings of ACM CHI'17, Denver, CO, USA

[5] Oakley, I., Lindahl, C., Le, K., **Lee, D.Y.** and Islam, R.M.D. (2016) "The Flat Finger: Exploring Area Touches on Smartwatches". In Proceedings of ACM CHI'16, San Jose, CA, USA

[4] Oakley, I., **Lee, D.Y.**, Islam, R.M.D. and Esteves, A. "Beats: Tapping Gestures for Smart Watches". In Proceedings of ACM CHI'15, Seoul, Republic of Korea

[3] T Yang, **DY Lee**, Y Kwak, J Choi, C Kim, SP Kim. (2015) "Evaluation of TV commercials using neurophysiological responses". Journal of physiological anthropology 34 (1), 19

[2] Oakley, I. and **Lee, D.Y.** (2014) "Interaction on the Edge: Offset Sensing for Small Devices". In Proceedings of ACM CHI 2014, Toronto, Canada

[1] TY Yang, **DY Lee**, SP Kim. (2014) "Development of Neural Indices from the Human Encephalography to Evaluate TV Commercials". Ergonomics Society of Korea, 380-384

4. Skills

Languages

- JAVA, R, C#, Python, C++

Experienced

- Eye Tracking, Hand/Body Tracking (Computer Vision)

- Drone/UAV, AR/VR, 3D Modeling/Printing

Tools

- UNITY 3D

- Physical Computing

- PCB Design

5. Projects

Sensing Interaction on Device Edges for Wearable Computing (2014 - 2017)

- Built application using physical computing and C++
- Conducted elicitation study (elicit user-defined gesture set on novel interface) for EdgeTouch [2] prototype

Smart Toy Project (2015 - 2016)

- Designed and Developed the smart toys
- Toy for visualizing time spent using physical computing and java
- Music toy that uses novel note system using physical computing

Development of Personal Identification Technology based on Biomedical Signals to Avoid Identity Theft (2016 - 2018)

- Developed eye-gaze based authentication system using eye tracker, matlab and java
- Developed algorithm to analyze data using java and R

Next Generation Touch Input for Smart-Glasses (2017 - 2019)

- Developed input interaction on-ear / on-nail touches [8] using physical computing, computer vision

Novel Authentication Method on AR / VR Environment (2018)

- Developed controller/hands inputs system on AR and VR for authentication using UNITY

Others

- Novel controller with vector concept for quadcopter using python and java
- Detecting foot action using optical and pressure sensor on the insole using physical computing and java

6. Patents (all are registered)

Identifying Finger Touches on Smartwatches [6] (2018, Korea, 10-1861325)

- Identifying finger that is making a contact using touch image among thumb, index and middle

Input Method for Smartwatch - Actions for Various Touch Pattern [5] (2017, Korea, 10-1791132)

- Detecting area touches on the touch screen

Eyetracker - System and Method to Control Media Device Using Eyetracking (2017, Korea, 10-1805065)

- Controlling each media by looking at

Novel Input Method Based on Braille by Using Swiping on Smartwatch (2017, Korea, 10-1779554)

- Activating each braille dots by swiping above

Method of Beats Touch [4] (2017, Korea, 10-1695940)

- Detecting rapid tapping gestures among sequential or simultaneous inputs with index and middle fingers

7. Experiences as a Maker and Prototyper

Prototyping Club DINO (2014 - Present)

Founder & Engineering Advisor

- Maker Faire Seoul (2014 - 2018)
 - Super Mario question box; show item graphics on above LCD when it punched
 - Giant joystick and buttons; 130cm height of joystick, user need to cooperate to win the game
 - Sorting hat from Harry Potter; 8 servo-motors handle the face motions. It react as talking at wearing
 - Closer-brighter LED; manipulate brightness of LED using strength of radio signal
 - LED djembe; interactive instrument that transform sound frequency into LEDs around
- Teaching
 - Arduino and java programming to club members (2014 - Present)
 - Physical computing to elementary school students (2015 - Present)

Outsourcing

- Various interfaces for hand and controller inputs in VR. (slider, teleport, tool swap and etc.) using UNITY
- Two hands input in VR. (art work; changing the time flow using two hands) using UNITY