



EDUCATION

- MIT Media Lab, PhD** Sep 2013 - Present
Fluid Interfaces Group, Advisor - Pattie Maes, GPA 5.0 / 5.0
- KAIST, MS** Feb 2008 - Jan 2010
Dept of Electrical Engineering, GPA 4.12 / 4.3
Focus on 3D Computer Vision, Pattern Recognition
- KAIST, BS** Mar 2004 - Feb 2008
Dept of Electrical Engineering, GPA 3.52 / 4.3 Cum Laude
National Science and Technology Scholarship
- Gyeonggi Science High School** Mar 2002 - Feb 2004
Early Graduation

WORK EXPERIENCE

- Microsoft Research** Redmond, WA, USA, Jun 2014 - Aug 2014
Research Intern at Studio 99 supervised by Asta Roseway and Ann Paradiso. Created *Remnance of Form*, an interactive art installation comprising a series of vignettes designed to challenge our notion of reality through the manipulation of light and shadow.
- Samsung Electronics** Suwon, Korea, Feb 2010 - Apr 2013
Software Engineer at Telecommunication Systems Division Feb 2010 - Apr 2013
Messaging Solution for Wireless Enterprises Environment
Developing a real-time wireless SNS solution for enterprise environment. I was in charge of building push service and evaluating overall server performances including Frontend, DB, and Message Brokers.
Enterprise SNS
Developing a prototype SNS for enterprise users. I designed service backend for instant messaging, and built client libraries for Android devices to establish long-lived connection with our server cluster.
SMT-i9100 Home Media Frame
A Wi-fi driven Android tablet device for in-home users. I was in charge of core modules of Android's application frameworks including Window and Activity Managers. I also managed the device's compatibility check for CTS verification and Google Approval
- Creativity Lab - eyeCan Project** Oct 2011 - Apr 2012
Developed a low-cost, open-source eye-mouse for Lou Gehrig's Disease/Lock-in-syndrome patients. *eyeCan* showed how gaze interactions can produce a rich user experience. We also implemented supply-and-educate program in South Korea.
- Visual Communications Lab, KAIST** Daejeon, Korea, Mar 2008 - Jan 2010
Research Assistant
ISP Advanced Features
Developing efficient and enhanced image processing algorithms for embedded system (Dynamic Range Compression, Face Detection).
Development of Intelligent ISP Tool
Implementation of a tool that automatically calibrates an ISP module's parameters.
- KAIST Mirae Hall** Daejeon, Korea, Mar 2005 - Jun 2007
Part-time Acoustic Engineer for stage performances and lectures held in a school concert hall.

TEACHING EXPERIENCE

- MAS S66: Human machine symbiosis TA / Lecturer MIT, Spring 2016
- Invited Lecture Hong-ik University, Apr 23 2012
Invited to James Powderly's class (Former Professor at Hong-ik University)
- Pattern Recognition Course TA KAIST, Fall 2009
- Digital Image Processing Course TA KAIST, Spring 2009

INVITED TALKS

- Sebasi + PAN**, *Imagine by Inventing* Nov 20 2014
Seoul Digital Forum, *Samsung's eyeCan + Eyewriter: Co-writing a Recipe for Collaboration* May 1 2013
Science Talk Show, **Samsung Electronics** Nov 10 2012
Soh-tong rak-seo: Passion Talk for Samsung Employees, **Samsung Electronics** June 27 2012
A Story about Technology that Changes Lives, **Busan Tech Plus Forum** May 24 2012
Dream to be a technology wizard in Korea, **TEDxEonju**, Severance Hospital Apr 28 2012
eyeCan: The Project Story, **Samsung Medical Center** Dec 23 2011
Developing an DIY Eye-Mouse for ALS Patients, **TEDxSamsung 2nd Conference** COEX, Aug 16 2011

EXHIBITIONS

- TEI 2016 Arts Exhibition - *A Flying Pantograph* Feb 14 - 17 2016
MIT Hubweek - *A Flying Pantograph (prototype)* Oct 8 2015
CHI 2015 Interactivity - *Remnance of Form* May 18 - 23 2015
TEI 2015 Arts Exhibition - *Remnance of Form* Jan 17 - 18 2015
TEI 2015 Demo - *THAW, Cord Uls Projects* Jan 18 2015
UIST 2014 Demo - *THAW Project* Oct 6 2014
SUI 2014 Demo - *THAW Project* Oct 4 2014
Microsoft Research Studio 99 - *Remnance of Form* Aug 22 - Sep 16 2014
SXSW, *Science Fiction to Science Fabrication - LIMBO Project* Mar 2014
UIST 2013 Student Innovation Contest - *LiquiDesk Project* Oct 10 2013

PUBLICATIONS

peer-reviewed

*equal contribution

- S. Leigh**, and P. Maes. *Body Integrated Programmable Joints Interface*, **CHI 2016 (Best Paper Honorable Mention - 4%)** (To appear.)
*H. Agrawal, ***S. Leigh**, and P. Maes. *L'evolved: autonomous and ubiquitous utilities as smart agents*, **Ubicomp 2015**
S. Leigh, P. Schoessler, F. Heibeck, P. Maes, H. Ishii. *THAW: Tangible Interaction with See-Through Augmentation for Smartphones on Computer Screens*, **TEI 2015**
P. Schoessler, **S. Leigh**, K. Jagannath, P. van Hoof, H. Ishii, *Cord Uls: Controlling Devices with Augmented Cables*, **TEI 2015**
W. Kim, **S. Leigh**, N. Hur, J. Choi, *Feature-based detection of inverted-stereo for stereoscopic 3D viewing comfort*, **IEEE trans. on Broadcasting**
W. Kim, **S. Leigh**, G. Lee, N. Hur, J. Kim, *Automatic detection of pseudo-stereo*, **Int'l Conference on 3D Systems and Applications**

PUBLICATIONS

others

*equal contribution

- S. Leigh**, and P. Maes. *Body Integrated Programmable Joints Interface*, **CHI 2016 Interactivity**
***S. Leigh**, *H. Agrawal, and P. Maes. *A Flying Pantograph: Interleaving Expressivity of Human and Machine*, **TEI 2016 Arts Exhibition**
S. Leigh, H. Agrawal, and P. Maes. *Z-drawing: a flying agent system for computer-assisted drawing*, **SIGGRAPH 2015 Poster**
H. Agrawal, **S. Leigh**, and P. Maes. *L'evolved: autonomous and ubiquitous utilities as smart agents*, **Ubicomp Demo 2015**

PUBLICATIONS

others (cont')

- S. Leigh**, A. Roseway, and A. Paradiso. *Remnance of Form*, **INTERACTIONS 2015, How was it made?**, Sep 2015
- S. Leigh**, A. Roseway, and A. Paradiso. *Remnance of Form*, **INTERACTIONS 2015, Demo Hour**, Jul 2015
- S. Leigh**, and P. Maes. *AfterMath: Visualizing Consequences of Actions through Augmented Reality*, **CHI 2015 Work-in-progress**
- S. Leigh**, A. Roseway, A. Paradiso, and Pattie Maes. *Remnance of Form: Interactive Narratives through Unexpected Behaviors of a Shadow*, **CHI 2015 Interactivity**
- S. Leigh**, A. Roseway, A. Paradiso, and Pattie Maes. *Remnance of Form: Interactive Narratives with Augmented Shadows*, **CHI 2015 Video Showcase**
- S. Leigh**, A. Roseway, A. Paradiso. *Remnance of Form: Altered Reflection of Physical Reality*, **TEI 2015 Arts Exhibition**
- S. Leigh**, P. van Hoof, K. Jagannath, P. Maes, H. Ishii, *L-Shift: Encoding and Shifting Material Properties and Functionalities with Phase-shifting Liquid*, **TEI 2015 WiP**
- *C. Kao, *E. Dreshaj, *J. Amores, ***S. Leigh**, *X. Benavides, P. Maes, K. Perlin, H. Ishii. *clayodor: Retrieving Scents through the Manipulation of Malleable Material*, **TEI 2015 WiP**
- S. Leigh**, P. Schoessler, F. Heibeck, P. Maes, H. Ishii. *THAW: Tangible Interaction with See-Through Augmentation for Smartphones on Computer Screens*, **UIST 2014 Demo**
- Y. Sekikawa, **S. Leigh**, K. Suzuki, *Coded Lens: Using Coded Aperture for Low-cost and Versatile Imaging*, **SIGGRAPH 2014 Poster**
- S. Leigh**, E. Dreshaj, A. Dementyev, P. Maes, V. M. Bove, *LIMBO: Reprogramming and Augmenting Muscle Activities using Electrical Stimulation*, **CHI 2014 Workshop on Assistive Augmentation**
- P. Schoessler, **S. Leigh**, K. Jagannath, P. van Hoof, H. Ishii, *Cord UI: Manipulating Data on its Flow Path with Augmented Cables*, **TEI 2014 WiP**
- S. Leigh**, *eyeCan: affordable and versatile gaze interaction*, **UIST 2013 Poster**
- S. Hwang, D. Kim, **S. Leigh**, K. Wohn, *NailSense: fingertip force as a new input modality*, **UIST 2013 Poster**
- S. Leigh**, *Unified Algorithm for Batch/Sequential Estimation of 3-D Structure and Motion*, **Master Thesis**, Feb 2010
- W. Kim, **S. Leigh**, S. Kim, N. Hur, J. Kim, *Pseudo-stereo Detection via Feature Extraction*, **2010 Image Processing and Image Understanding Workshop**
- S. Leigh**, S. Kim, *2D-to-2D Homography Based Camera Pose Estimation Method Using EM Algorithm*, **2009 Proc. of Institute of Electronics Engineering of Korea**
- S. Leigh**, *Odometry by Planar Homography in Catadioptric Images and Comparison with IMU Data*, **Undergraduate Thesis**

PATENTS

- Display apparatus control system and method and apparatus for controlling a plurality of displays* EP2687947A1, CN103576854A, US20140022159
- Method of controlling at least one function of device by using eye action and device for performing the method* WO2013133618A1, US20150015483
- Photographing apparatus, photographing control method, and eyeball recognition apparatus* US20140022351A1, CN103581543A, EP2688287A2
- Method for providing content and display apparatus adopting the same* EP2687946A1, CN103576853A, US20140022157
- Method for controlling device on the basis of eyeball motion, and device therefor* WO2013133664A1
- APPARATUS FOR ENHANCING IMAGE AND METHOD THEREFOR* KR20110054183(A)

HONORS & AWARDS

CHI 2016 Best Paper Honorable Mention 2016
Cord Uls - Winner, Students Category, 2015 Fast Company Innovation by Design Awards Sep 14 2015
THAW - Finalist, Experimental Category, 2015 Fast Company Innovation by Design Awards Sep 14 2015
UIST 2014 People's Choice Best Demo Honorable Mention Oct 2014
UIST 2013 Student Innovation Contest, 3rd Place People's choice Sep 2013
Samsung Social Responsibility Award, Samsung Electronics Dec 2012
Employee Pride in Samsung, Samsung Electronics Mar 2012
National Science and Technology Scholarship (1st Class, 4-year support) KAIST, Mar 2004
*funded by Korea Science and Engineering Foundation
Second Place Award, 2nd Korean Youth Physicist Tournament 2002

MEDIA COVERAGE

prosthetic knowledge, Remnance of Form Dec 22 2015
BBC, Back to the Future: What will technology really look like? Oct 21 2015
MIT News, Neighborhood of innovation Oct 9 2015
CRN, We Now Have Drones That Can Draw Oct 9 2015
Motherboard, In the Future, Furniture Will Be Drones Oct 9 2015
Boston.com, Watch this drone scribble on a canvas at HUBweek Oct 8 2015
de Tijd, Een bezoekje aan de toekomst (A visit to the future) Oct 3 2015
PSFK, 6 Brands Creating the Connected Life May 28 2015
WIRED, MIT Inventors Turn Power Cords Into Gadget Interfaces Mar 6 2015
Gizmodo, Pinchable Headphone Cords That Control Your Music Are a Brilliant Idea Feb 20 2015
PSFK, Pinched Power Cables and Cords Double as Remote Controls Feb 12 2015
Fast Company, 5 Ways MIT Is Reinventing Your Power Cord Feb 2 2015
Gizmodo, *The 7 Most Important UI and UX Ideas of 2014* Dec 30 2014
WIRED, *MIT's Slick New UI Lets Your Phone and Desktop Screens Behave as One* Sep 24 2014
Golem.de, *Das Smartphone schnappt Dateien vom Bildschirm* Sep 22 2014
Engadget, *MIT can turn your smartphone into a different kind of second screen* Sep 19 2014
Fast Company (Featured), *MIT Invents A Magic Lens That Combines All Your Screens Into A Single Experience* Sep 17 2014
CNET, *Tomorrow Daily 053: Incredible multiscreen interaction from MIT's THAW project, and more* Sep 17 2014
CITEworld, *How phones and computers can talk via sight* Sep 17 2014
Slate, *MIT Researchers Are Using Smartphones to Interact With Other Screens* Sep 17 2014
Xataka, *THAW, o cómo cree el MIT que teléfonos y ordenadores pueden relacionarse* Sep 16 2014
Gizmodo, *MIT Made a Smartphone Control a Computer With a Simple Touch* Sep 15 2014
Design Boom, *THAW: Seamlessly Combine Your Smartphone and Your Desktop Computer* Sep 15 2014
The Verge, *Samsung releases source code for eyeCan, an eye-controlled mouse for the disabled* Feb 23 2012
The Korea Herald (1st page), *Samsung develops eye-controlled mouse* Feb 24 2012
Futura Science, *EyeCan, souris à commande oculaire de Samsung, en open source* Mar 1 2012
The Tech Journal, *Samsung's Virtual Mouse 'EyeCAN' For Hand Disabled People* Mar 1 2012
TEDActive 2012 Blog, *Developments on Mick Ebeling's EyeWriter* Mar 6 2012
Wall Street Journal Blog, *Samsung Develops Low-Cost "Eye Mouse"* Mar 22 2012

COMMUNITY & SOCIAL ACTIVITIES

AH 2016 Reviewer
SIGGRAPH Asia 2015 E-Tech Reviewer
CHI 2015 Work-in-Progress Reviewer
What the Hack, Organizer Samsung Electronics, Jan 15 2012
Samsung Frontier Membership Mentor 2011 - 2013
Samsung Super Rookie Membership Mentor 2011 - 2013
TEDxSamsung Organizer Mar 2011 - Apr 2013
Samsung Frontier Membership 2004 - 2010

BACKGROUND & SKILLS

Strong background in 3D Computer Vision, Augmented Reality, Machine Learning

Programming
Languages C, C++, C#, Java, Objective C, Python, Ruby, MATLAB, Max/MSP, HTML, CSS, Javascript,
Platforms Windows, Linux, OSX, iOS, Android, Embedded Linux

Fabrication
DIY Guitar - <http://www.sangwww.net/2014/02/diy-telecaster.html>
How to Make (Almost) Anything - http://fab.cba.mit.edu/classes/863.14/people/sang_leigh/

MUSIC ACTIVITIES

Starwars (Group Sound) Samsung Electronics, 2010 - 2013
Rockclassic (Rock+Classic Fusion Concert) KAIST, May 5 2007
Freshman Guitar Class Co-lecturer KAIST, 2007
INFINITE (Heavy Metal Club), KAIST, Guitarist (2004 - 2006) and Band Leader (2006)