

LAWRENCE H. KIM

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OBJECTIVE

I am a HRI researcher looking at how to design ubiquitous robotics for intuitive and natural integration into our everyday lives and to better complement humans through the use of mechatronics, robotics and haptics.

EDUCATION

Stanford University PhD Candidate, Mechanical Engineering Advisor: Sean Follmer	2016 - now
Stanford University Master of Science, Mechanical Engineering Advisor: Allison M. Okamura	2013 - 2015
University of Illinois at Urbana-Champaign Bachelor of Science, Mechanical Engineering, <i>Highest Honors</i>	2010 - 2013

RESEARCH

Research Assistant , SHAPE Lab, Stanford University Advised by Prof. Sean Follmer <ul style="list-style-type: none">• Developed a new Swarm User Interface named Zooids with other colleagues.• Designed human perception studies to better understand how people perceive abstract motion and haptic display from a swarm of robots.• Created algorithm to autonomously build complex structure using robots.• Designed and evaluated human tactile perception of mobile shape changing device.	2015 - now
Haptics Engineer , Building 8, Pro Unlimited @ Facebook Inc. Advised by Dr. Ali Israr & Dr. Frances Lau <ul style="list-style-type: none">• Developed prototypes of novel haptic device to communicate speech through touch.• Evaluated perceptibility and perception of various haptic stimuli (submission in progress).	2017 Fall
Research Assistant , CHARM Lab, Stanford University Advised by Prof. Allison M. Okamura <ul style="list-style-type: none">• Set up the Raven surgical robot and studied effect of master-slave tool misalignments.• Designed studies to test the trilateral shared control using Omni Phantom and Chai3d.	2013 - 2014
Undergraduate Researcher , Bretl Research Group, University of Illinois at Urbana Advised by Prof. Tim W. Bretl <ul style="list-style-type: none">• Designed flight control algorithm and developed novel attachment mechanism for drones.	2012 - 2013
Research Intern , Urban Energy System Center, Korea Institute of Science and Technology Advised by Dr. Dae-Young Lee <ul style="list-style-type: none">• Improved efficiency of hybrid desiccant cooling system.	Summer 2012
Research Intern , Refrigeration and Cryogenics Lab, Kookmin University Advised by Prof. Byung Ha Kang <ul style="list-style-type: none">• Built experiment apparatus and performed experiments for a desiccant cooling system.	Summer 2011
Student Researcher , Filtration Group, Inc. Advised by Phil Winters <ul style="list-style-type: none">• Improved and verified design of room air cleaner and gas turbine air filter through Solidworks/Floworks.	2008 - 2010

AWARDS & HONORS

CHI Best Paper Honorable Mention (SwarmHaptics)	2019
MDPI Robotics Travel Award	2019
Stanford Bio-X Travel Award	2019
Fast Company: Innovation by Design: Honorable Mention	2017
UIST Best Paper Award (Zooids)	2016
Samsung Scholarship, \$50,000/year for 5 years	2016 - now
Dean's List for Academic Excellence	2010 - 2013
National Merit Scholarship	2010 - 2013
Guy Richard Collins Scholarship	2012
Advanced Placement Scholar with Honor	2009

PUBLICATIONS

JOURNAL

2. **VPS Tactile Display: Tactile Information Transfer of Vibration, Pressure, and Shear** [LH Kim](#), P Castillo, S Follmer & A Israr. *IMWUT'19* Volume 3 June. [Acceptance rate = %]
1. **UbiSwarm: Ubiquitous Robotic Interfaces and Investigation of Abstract Motion as a Display** [LH Kim](#), & S Follmer. *IMWUT'17* Volume 1 September. [Acceptance rate = 9%]

CONFERENCE

6. **SwarmHaptics: Haptic Display with Swarm Robots** [LH Kim](#) & S Follmer. *CHI'19*. [Acceptance rate = 24%] **Best Paper Honorable Mention**
5. **Robotic Assembly of Haptic Proxy Objects for Tangible Interaction and Virtual Reality** Zhao, [LH Kim](#), Y Wang, M Le Goc & S Follmer. *ISS'17*. [Acceptance rate = 27%]
4. **Zooids: Building Blocks for Swarm User Interfaces.** M Le Goc, [LH Kim](#), A Parsaei, JD Fekete, P Dragicevic, & S Follmer. *UIST'16*. [Acceptance rate = 21%] **Best Paper Award**
3. **Haptic Edge Display for Mobile Tactile Interaction.** S Jang, [LH Kim](#), K Tanner, H Ishii, & S Follmer. *CHI'16*. [Acceptance rate = 23%]
2. **Design and Evaluation of a Trilateral Shared-Control Architecture for Teleoperated Training Robots.** K Shamaei, [LH Kim](#), & AM Okamura. *EMBC'15*.
1. **Effects of Master-Slave Tool Misalignment in a Teleoperated Surgical Robot.** [LH Kim](#), C Bargar, Y Che, & AM Okamura. *ICRA'15*. [Acceptance rate = 41%]

WORKSHOP

1. **Interaction with Ubiquitous Robots and Autonomous IoT** [LH Kim](#), & S Follmer. Workshop on New Directions for the IoT: Automate, Share, Build, and Care *CHI'19*

POSTERS & DEMOS

Human Perception of Swarm Robot Motion.

Griffin Dietz, Jane L E., Peter Washington, [Lawrence H. Kim](#), & Sean Follmer.

CHI Extended Abstracts

May. 2017

Zooids: Building Blocks for Swarm User Interfaces

Adobe Creative Lab Retreat at Stanford

Sept. 2016

UIST Demo

Oct. 2016

Haptic Edge Display for Mobile Tactile Interaction

Center for Automotive Research at Stanford (CARS) Annual Meeting
Bay Area Robotics Symposium

Dec. 2015
Oct. 2015

TEACHING

ME 101: Visual Thinking

Course Assistant for Instructors John Edmark and Patrick Fenton

Autumn
2015

ENGR 105: Introduction to Feedback Control

Course Assistant for Prof. Abbas Emami-Naeini

Spring
2015

ENGR 105: Introduction to Feedback Control

Course Assistant for Prof. Allison M. Okamura and Inst. Adam Leeper

Winter
2015

MEDIA

Seamless, SwarmHaptics: Haptic Display with Swarm Robots.

2019

<https://twitter.com/shiropen2/status/1102732246883065856>

Fast Company Design, This Swarm Of Little Robots Is A Totally New Kind Of Interface.

2017

www.fastcodesign.com/90136009

Hackaday, Zooids - Swarm User Interface

2017

<https://hackaday.com/2017/02/17/zooids-swarm-user-interface/>

NowThis Future, Check Out These Hive Mind Robots, >12M views

2016

<https://www.facebook.com/NowThisFuture/videos/1310676325640211/>

Circuit Breaker, Swarm of Tiny Robots, >4M views

2016

<https://www.facebook.com/circuitbreaker/videos/1640944836198339/>

Adafruit, 'Zooids' are Open-Source, Open-Hardware 'Bots for 'Swarm User Interfaces'

2016

<https://blog.adafruit.com/2016/11/07/>

Makery, Zooids: who are these cute robots?

2016

<http://www.makery.info/en/2016/11/28/zooids-mais-qui-son-t-ces-robots-mignons/>

TechCrunch, Swarms of tiny, cute robots will one day bring you your phone, like this

2016

<https://techcrunch.com/2016/10/20/>

PROFESSIONAL SERVICES

Reviewer

User Interface Software and Technology Symposium (UIST)

2019

Proceedings on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)

2019

World Haptic Symposium (WHC)

2019

Journal of Computational Design and Engineering

2018

SKILLS

Technical

Design Pro/Engineering, Solidworks, Floworks, Adobe Photoshop, Illustrator
Program C++, C, MATLAB, L^AT_EX, Chai3D, MotionGenesis, Mambo, JAVA
Fabrication 3D printing, Laser cutting, PCB etching

Languages

Native English, Korean