LAWRENCE KIM

lawkim@stanford.edu ◇ www.lhkim.com ◇ (630) 200-4877

RESEARCH INTERESTS

Human-Computer Interaction, Human-Robot Interaction, Human-Centered Design, Robotics, Haptics

EDUCATION

Stanford University 2016 - present
PhD Candidate, Mechanical Engineering
Thesis: *Interaction with Ubiquitous Robots*
Committee: Sean Follmer, Allison Okamura, James Landay

Stanford University 2013 - 2015
Master of Science, Mechanical Engineering

University of Illinois at Urbana-Champaign 2010 - 2013
Bachelor of Science, Mechanical Engineering, *Highest Honors*

RESEARCH EXPERIENCE

SHAPE Lab, Stanford University 2015 - present
Research Assistant *Stanford, CA*
Research with Prof. Sean Follmer on interaction with ubiquitous robots and haptic devices.
Designed and built novel hardware platforms such as swarm robot platform and haptic devices.
Conducted human subject testings to quantify human perception and elicit qualitative inputs from users.

Facebook Building 8 thru Pro Unlimited 2017 Fall
Research Intern *Menlo Park, CA*
Research with Dr. Ali Israr & Dr. Frances Lau on communication through touch.
Developed, and ran studies with new haptic device to enable speech communication through the skin.

CHARM Lab, Stanford University 2013 - 2014
Research Assistant *Stanford, CA*
Research with Allison M. Okamura on surgical robotics and trilateral shared control.
Evaluated effects of tool misalignment and trilateral shared control for robot teleoperation.

Bretl Research Group, University of Illinois at Urbana 2012 - 2013
Undergraduate Researcher *Urbana, IL*
Research with Tim W. Bretl on use of drone in construction sites.
Designed and developed attachment mechanism for drones to perch on construction beams.

KAIST, Urban Energy System Center 2012 Summer
Research Intern *Seoul, Korea*
Research with Dae-Young Lee on hybrid desiccant cooling system.

AWARDS & HONORS

CHI Best Paper Honorable Mention (Top 5 %) 2019
Fast Company: Innovation by Design: Honorable Mention 2017
UIST Best Paper Award (Top 1%) 2016
Samsung Scholarship, $50,000/year for 5 years 2016 - present
Computing Reviews: Notable Books and Articles 2016

PUBLICATIONS

Premiere conference venues in human-computer interaction (e.g., ACM CHI and UIST) are highly selective. Unlike in many fields, these venues publish archival papers and are comparable to or exceed many HCI journals in terms of visibility and impact.
See: `https://dl.acm.org/citation.cfm?id=1743546.1743569`

JOURNAL

3. **Lawrence H Kim**, Sean Follmer
"Generating Legible Swarm Motion"
ACM Transactions on Human-Robot Interaction (THRI) '20. [In Preparation]

2. **Lawrence H Kim**, Pablo Castillo, Sean Follmer, Ali Israr
"VPS Tactile Display: Tactile Information Transfer of Vibration, Pressure, and Shear"
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT). 3(2), 51, June 2019. (Presented at UbiComp 2019)

1. **Lawrence H Kim**, Sean Follmer
"UbiSwarm: Ubiquitous Robotic Interfaces and Investigation of Abstract Motion as a Display"
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT). 1(3), 66, Sep. 2017. (Presented at UbiComp 2017) [Acceptance rate = 9%]

CONFERENCE

7. **Lawrence H Kim**, Daniel Drew, Vernoika Domova, Sean Follmer
"User-defined Swarm Robot Control"
Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems. [Under Review]

6. **Best Paper Honorable Mention (Top 5%)**
Lawrence H Kim, Sean Follmer
"SwarmHaptics: Haptic Display with Swarm Robots"
Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. p.688. [Acceptance rate = 24%]

5. Yiwei Zhao, **Lawrence H Kim**, Ye Wang, Mathieu Le Goc, Sean Follmer
"Robotic Assembly of Haptic Proxy Objects for Tangible Interaction and Virtual Reality"
In Proceedings of the 2017 ACM International Conference on Interactive Surfaces and Spaces (ISS). pp. 82-91. [Acceptance rate = 27%]

4. **Best Paper Award (Top 1%)**
Mathieu Le Goc, **Lawrence H Kim**, ..., Jean-Daniel Fekete, Pierre Dragicevic, Sean Follmer
"Zooids: Building Blocks for Swarm User Interfaces"
In Proceedings of the 29th Annual Symposium on User Interface Software and Technology (UIST). pp. 97-109. [Acceptance rate = 21%]

3. Sungjune Jang, **Lawrence H Kim**, Kesler Tanner, Hiroshi Ishii, Sean Follmer
"Haptic Edge Display for Mobile Tactile Interaction"
In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems. pp. 3706-3716. [Acceptance rate = 23%]

2. Kamran Shamaei, **Lawrence H Kim**, Allison M Okamura
"Design and Evaluation of a Trilateral Shared-Control Architecture for Teleoperated Training Robots"
In 2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC). pp. 4887-4893.

1. **Lawrence H Kim**, Cliff Bargar, Yuhang Che, Allison M Okamura
   "Effects of Master-Slave Tool Misalignment in a Teleoperated Surgical Robot"
   In 2015 IEEE International Conference on Robotics and Automation (ICRA). pp. 5364-5370. [Acceptance rate = 41%]

WORKSHOP

1. **Lawrence H Kim**, Sean Follmer
   "Interaction with Ubiquitous Robots and Autonomous IoT"
   Workshop on New Directions for the IoT: Automate, Share, Build, and Care, CHI'19

POSTERS & DEMOS

Griffin Dietz, Jane L E., Peter Washington, **Lawrence H Kim**, Sean Follmer.
"Human Perception of Swarm Robot Motion"
Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems 2017

"Zooids: Building Blocks for Swarm User Interfaces"
Adobe Creative Lab Retreat at Stanford 2016
In Proceedings of the 29th Annual Symposium on User Interface Software and Technology (UIST) Demo 2016

"Haptic Edge Display for Mobile Tactile Interaction"
Center for Automotive Research at Stanford (CARS) Annual Meeting 2015
Bay Area Robotics Symposium (BARS) 2015

INVITED PRESENTATIONS

1. Interaction with Ubiquitous Robots and Autonomous Vehicles
   Hyundai Global Top Talent Forum, San Diego, CA, August 2019

TEACHING

ME 101: Visual Thinking Autumn
Course Assistant for Instructors John Edmark and Patrick Fenton 2015

ENGR 105: Introduction to Feedback Control Spring
Course Assistant for Prof. Abbas Emami-Naeini 2015

ENGR 105: Introduction to Feedback Control Winter
Course Assistant for Prof. Allison M. Okamura and Inst. Adam Leeper 2015

MENTORING

Yuqi Yao, Education Masters 2019 - present
Yiwei Zhao, ME Masters – now at Electronic Art (EA) Digital Platform 2016 - 2017
Ye Wang, ME/CS Coterm/undergraduate – now at Apple 2017
Ali Parsaei, ME Masters – now at Omron Automation 2015 - 2016

PROFESSIONAL SERVICES

Reviewer CHI 2020, DIS 2019, UIST 2019, WHC 2019, IMWUT 2018, JCDE 2018

Outreach Teacher, "Stories in Motion: Mechanical Automata and Rapid Prototyping", Stanford's Splash Program, Nov 2019

Demo of haptic technology, Duncan Polytechnical High School's Health and Technology Pathways, May 2014

Demo of haptic technology, Manteca High School's Health Science Pathway, April 2014

SELECTED PRESS

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-sont-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/