

LIANG HE

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My particular research interest in the field of Human-Computer Interaction is ***Fabrication Techniques for Social Good***. My research approach is to re-examine the material and mechanical properties of existing things and create new design opportunities and user interfaces for socially impactful purposes typically with fabrication techniques. My current research passion falls into ***3D Printing for Interactivity*** and ***Assistive 3D Printing Technology***.

EDUCATION

- 2017 - Present **University of Washington, Seattle, WA**
2015 - 2017 **University of Maryland, College Park, MD**
Ph.D. student in Computer Science (Human-Computer Interaction).
Advised by Prof. Jon E. Froehlich.
- 2013 - 2015 **Carnegie Mellon University, PA**
M.S. in Computational Design.
Thesis: SqueezaPulse: Adding Interactive Input Using Passive Pulses of Air
- 2010 - 2013 **University of Chinese Academy of Sciences (UCAS), Beijing**
M.S. in Computer Science and Technology. Advised by Prof. Danli Wang.
- 2006 - 2010 **Beihang University (BUAA), Beijing**
B.Eng. in Software Engineering.

PUBLICATIONS

- CONFERENCE PAPER/POSTER **He, L.,** Wan, Z., Findlater, L., and Froehlich, J. TacTILE: A Preliminary Toolchain for Creating Accessible Graphics with 3D-Printed Overlays and Auditory Annotations. In Poster Proceedings of the 19th International ACM SIGACCESS Conference on Computers & Accessibility (ASSETS'17). Baltimore, MA, Oct 30 – Nov 1, 2017.
- He, L.,** Peng, H., Land, J., Fuge, M., and Froehlich, J. Designing 3D-Printed Deformation Behaviors Using Spring-Based Structures: An Initial Investigation. In Adject Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST'17). Quebec City, Canada, October 22–25, 2017.

He, L., Land, J., Peng, H., Fuge, M., and Froehlich, J. Early Exploration of Deformable Interactive Designs with 3D-Printed Springs. In Proceedings of the 1st Annual ACM Symposium on Computational Fabrication. Cambridge, Massachusetts, June 12-13, 2017.



Kazemitabaar, M., McPeak, J., Jiao, A., **He, L.**, Outing, T., and Froehlich, J. MakerWear: A Tangible Approach to Interactive Wearable Creation for Children. In Proceedings of CHI '17 on Human Factors in Computing Systems. [Acceptance Rate: 25%] **Best Paper Award [Top 1%]**

He, L., Laput, G., Brockmeyer, E., and Froehlich, J. SqueezaPulse: Adding Interactive Input to Fabricated Objects Using Corrugated Tubes and Air Pulses. In Proceedings of the ACM symposium on tangible and embodied interaction (TEI '17). [Acceptance Rate: 27%]



Kazemitabaar, M., **He, L.**, Wang, K., Aloimonos, C., Cheng, T., and Froehlich, J. ReWear: Early Explorations of a Modular Wearable Construction Kit for Young Children. In Proceedings of CHI '16 Extended Abstracts on Human Factors in Computing Systems. [Acceptance Rate: 43%] **Best Paper Award [Top 1%]**

Du, R. and **He, L.** VRSurus: Enhancing Interactivity and Tangibility of Puppets in Virtual Reality. In Proceedings of CHI '16 Extended Abstracts on Human Factors in Computing Systems. [Acceptance Rate: 43%]

He, L., Xu, C., Xu, D., and Brill, R. PneuHaptic: Delivering Haptic Cues with a Pneumatic Armband. In Proceedings of the 19th International Symposium on Wearable Computers (ISWC'15). Osaka, Japan, September 7-11, 2015. [Acceptance Rate: 25%]

Cheng, K., **He, L.**, Meng, X., Shamma, D., Thangpalam, A., and Nguyen, D. CozyMaps: Real-time Collaboration on a Shared Map with Multiple Displays. In Proceedings of the 17th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI'15). Copenhagen, Denmark, August 24-27, 2015. [Acceptance Rate: 25.2%]



Plimmer, B., **He, L.**, Zaman, T., Karunanayaka, K., Yeo, A., Jengan, G., and Do, E. New Interaction Tools for Preserving an Old Language. In Proceedings of the 33rd annual ACM conference on Human factors in computing systems (CHI'15). Seoul, Korea, April 18-12, 2015. [Acceptance Rate: 23%] **Honorable Mentions Award**

Wang, D., Zhang, Y., Gu, T., **He, L.**, and Wang, H. E-Block: A Tangible Programming Tool for Children. In Adjunct Proceedings of the 25th Annual ACM Symposium on User Interface Software and Technology (UIST'12). Cambridge, Massachusetts, October 7–10, 2012.

- He, L.**, Li, G., Zhang, Y., Wang, D., and Wang, H. TempoString: A Tangible Tool for Children's Music Creation. In Proceedings of the 14th International Conference on Ubiquitous Computing (UbiComp'12). Pittsburgh, September 5–8, 2012.
- JOURNAL PAPERS Wang, D., **He, L.**, and Dou, K. StoryCube: Supporting Children's Storytelling with a Tangible Tool. The Journal of Supercomputing, Volume 70 Issue 1, Pages 269-283. Springer. 2014.
- PATENTS "A Method and System for Children's Tangible Storytelling". Patent No.: 2013100129910. 2013.
- SOFTWARE COPYRIGHTS "InkSound: A Pen-based System for Chinese Traditional Painting." 2010.

PROFESSIONAL EXPERIENCE

- Fall 2017 **University of Washington, Seattle, WA**
Graduate Research Assistant. Advised by Prof. Jon E. Froehlich.
 Lead a fabrication research project that aims to enable end users to design and fabricate deformable 3D prints.
- FALL 2015, 2016 **University of Maryland, College Park, MD**
 SPRING 2017 *Graduate Research Assistant.* Advised by Prof. Jon E. Froehlich.
 Lead research projects on fabrication and supported research projects in TUI.
- SUMMER 2016 **Microsoft Research, Redmond, WA**
Research Intern. Mentored by Rob DeLine.
 Designed and developed an open sourced, GUI-based tool for non-expert makers to align all types of signals from input devices.
- SPRING 2015 **Computational Design Lab, Carnegie Mellon University, PA**
Graduate Researcher. Advised by Eric Brockmeyer, collaborate with Gierad Laput.
 Led a research project on acoustic sensing and fabrication for interactive input.
- SUMMER 2014 **KEIO-NUS CUTE Center, Singapore**
Research Intern. Advised by Prof. Ellen Yi-Luen Do and Prof. Beryl Plimmer.
 Developed conductive toolsets for rich tangible interactions on touchscreen.
 Designed collaborative interaction techniques in multiple-surfaces environment.
- SPRING 2014 **Human-Computer Interaction Institute, Carnegie Mellon University, PA**
Independent Student Researcher. Supported by Prof. Scott E. Hudson.
 Led a research project on haptic simulations on body by pneumatic approaches.
- SPRING 2014 **Art Fab, Carnegie Mellon University, PA**
Graduate Research Assistant. Advised by Prof. Ali Momeni.
 Designed and built embedded circuitry and wireless communication for interactive puppetry performance.
- FALL 2010 - 2013 **HCI Lab, Institute of Software, Chinese Academy of Sciences, Beijing**

Research Assistant. Advised by Prof. Danli Wang.

Investigated post-WIMP interfaces for creation purposes and tangible interaction, including pen-based system for Chinese traditional painting, storytelling system based on IMU and machine learning, and novel music creation interface.

SPRING 2010

Microsoft Research Asia, Beijing

Part-time Student Intern. Mentored by Bei Li.

Designed and built an online photo management system based on Silverlight, Windows Azure, Deep Zoom and WFC.

F E L L O W S H I P / A W A R D S

SPRING 2017

Best Paper Award, CHI'17

FALL 2015, 2016

Dean's fellowship, Department of Computer Science, UMD

SPRING 2016

Best Late-Breaking Work Paper Award, CHI'16

FALL 2015

UIST '15 Student Innovation Contest (4th place).

FALL 2014

UIST'14 Student Innovation Contest (1st Most Creative Award).

SPRING 2015

Honorable Mentions Award, CHI'15

SPRING 2012

G-Startup 2012 Seed Stage in Global Mobile Internet Conference '12 (1st Startup)

SPRING 2011

Software Design, Microsoft Imagine Cup Local Final (2nd place)

T E A C H I N G

FALL 2016

UMD CMSC 250: Discrete Structures

SPRING 2016

UMD CMSC 132: Object-Oriented Programming II

FALL 2015

UMD CMSC 131: Object-Oriented Programming I

M E N T O R I N G

02/2017-XX/2017

Joshua Land (Undergrad in ME)

T A L K S

NOV 2016

Tech+Design: Interaction Design for a Purpose

MAY 2016

HCIL's 33rd Annual Symposium

A C A D E M I C S E R V I C E S

PAPER REVIEWERS CHI 2016/2017/2018, TEI 2017/2018, IDC 2017, MobileHCI 2016
VOLUNTEER TEI 2017, CHI 2015, UIST 2014, CHI 2014, China Symposium on HCI

S K I L L S

PROGRAMMING C/C++, Java, JavaScript, XHTML, CSS, C#, iOS, Python, SQL
HARDWARE/TOOLS Digital prototyping, PCB making, hand tools
DESIGN Adobe Creative Suite, Rhinoceros, Eagle
OTHER Painting, graphic design, calligraphy