

# LIANG HE

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I explore novel human-centered fabrication techniques to make interactive objects and to meet people's need in real life. My research interests in fabrication fall into four categories: **interactivity**, **material**, **mechanical structures**, and **computational design**. My research also aims to bring personal fabrication technologies to a broader audience (*e.g.*, novices, designers, engineers, *etc.*) for particular purposes.

## EDUCATION

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

## PUBLICATIONS

- CONFERENCE PAPER/POSTER **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 1<sup>st</sup> Annual ACM Symposium on Computational Fabrication. [Acceptance Rate: ]
- Kazemitabaar, M., McPeak, J., Jiao, A., **He, L.**, Outing, T., and Froehlich, J. MakerWear: A Tangible, Modular Approach for Children to Create Interactive Wearables. In Proceedings of CHI '17. [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." Software copyright granted. 2010.

## PROFESSIONAL EXPERIENCE

- FALL 2015, 2016  
SPRING 2017 **Human-Computer Interaction Lab**, University of Maryland, College Park, MD  
*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 and created 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.

## FELLOWSHIP / AWARDS

- 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** (4<sup>th</sup> place).  
FALL 2014 **UIST'14 Student Innovation Contest** (1<sup>st</sup> Most Creative Award).  
SPRING 2015 **Honorable Mentions Award**, CHI'15  
SPRING 2012 **G-Startup 2012 Seed Stage** in Global Mobile Internet Conference '12 (1<sup>st</sup> Startup)  
SPRING 2011 **Software Design, Microsoft Imagine Cup** Local Final (2<sup>nd</sup> place)

## TEACHING

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

## MENTORING

02/2017-XX/2017 Joshua Land (Undergrad in ME)

## TALKS

NOV 2016 Tech+Design: Interaction Design for a Purpose  
MAY 2016 HCIL's 33rd Annual Symposium

## ACADEMIC SERVICES

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

## SKILLS

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