

# HAIJUN XIA

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## RESEARCH INTERESTS

My research area is in Human-Computer Interaction. I focus on supporting our creativity with novel design of the graphical user interfaces as well as direct, intuitive, and flexible interactions.

## EMPLOYMENT

### University of California, San Diego, CA

Assistant Professor. Cognitive Science and the Design Lab

Jan 2020 - present

## EDUCATION

### Ph.D. in Computer Science, Advisor: Daniel Wigdor

Department of Computer Science, University of Toronto, Canada

2015 – 2019

### M.Sc. in Computer Science, Advisor: Daniel Wigdor

Department of Computer Science, University of Toronto, Canada

2013 - 2015

### B.Eng. in Computer Science (with Honors)

Department of Computer Science, Tsinghua University, China

2009 - 2013

## AWARDS AND HONORS

**Best Paper Award** *ACM UIST 2020* (top 1%)

2020

**Microsoft Ph.D. Fellowship** (10 recipients from North America)

2018

**Adobe Ph.D. Fellowship** (10 recipients worldwide)

2018

**Best Paper Nomination** *ACM CHI 2019* (top 5%)

2018

**Best Paper Nomination** *ACM CHI 2018* (top 5%)

2018

**Best Paper Nomination** *ACM CHI 2017* (top 4%)

2017

**Best Paper Nomination** *ACM CHI 2017* (top 4%)

2017

**Best Paper Award** *ACM CHI 2016* (top 1%)

2016

**Wolfond Fellowship**, *University of Toronto*

2013

**Outstanding Undergraduate**, *Tsinghua University*

2013

## PUBLICATIONS – FULL PAPER

Most work in HCI is published as conference papers, among which CHI and UIST are the premiere venues.

- [16] **Xia, H.** Crosspower: Bridging Graphics and Linguistics. 2020. Proceedings of the ACM Symposium on User Interface Software and Technology. UIST 2020. ACM, New York, NY. To appear.
- [15] **Xia, H.**, Jacobs, J. and Agrawala, M. Crosscast: Adding Visuals to Audio Travel Podcasts. 2020. Proceedings of the ACM Symposium on User Interface Software and Technology. UIST 2020. ACM, New York, NY. To appear.
- [14] Hayatpur, D., **Xia, H.**, and Wigdor, D. DataHop: Spatial Data Exploration in Virtual Reality. 2020. Proceedings of the ACM Symposium on User Interface Software and Technology. UIST 2020. ACM, New York, NY. To appear.
- [13] Li, T.J., Chen, J., **Xia, H.**, Mitchell, T., and Myers, B. Multi-Modal Repairs of Conversational Breakdowns in Task-Oriented Dialogs. 2020. Proceedings of the ACM Symposium on User Interface Software and Technology. UIST 2020. ACM, New York, NY. To appear. **Best Paper Award**
- [12] Herscher, S., Defanti, C., Vitovitch, N., Brenner, C., **Xia, H.**, Layng, K., Perlin, K., CAVRN: An Exploration and Evaluation of a Collective Audience Virtual Reality Nexus Experience. 2019. ACM Symposium on User Interface Software and Technology. UIST 2019. ACM, New York, NY, 1137 - 1150.
- [11] Hayatpur, D., Heo, S., **Xia, H.**, Stuerzlinger, W. and Wigdor, D. Plane, Ray, and Point: Interaction Methods for ad hoc Creation of Alignment and Manipulation Constraints in VR. 2019. ACM Symposium on User Interface Software and Technology. UIST 2019. ACM, New York, NY. 1185–1195.

- [10] Kim, N., Riche, N., Bach, B., Xu, G., Brehmer, M., Hinckley, K., Pahud, M., **Xia, H.**, McGuffin, M., and Pfister, H. 2019 DataToon: Drawing Dynamic Network Comics With Pen + Touch Interaction. 2019 In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2019. ACM, New York, NY, USA, Paper105, 12 pages.
- [9] Zhang, Y., Pahud, M., Holz, C., **Xia, H.**, Laput, G., McGuffin, M., Tu, X., Mittereder, A., Su, F., Buxton, W., Hinckley, K. 2019. Sensing Posture-Aware Pen+Touch Interaction on Tablets. In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2019. ACM, New York, NY, USA, Paper 55, 14 pages.  
**Best Paper Honorable Mention**
- [8] **Xia, H.**, Herscher, S., Perlin, K., and Wigdor, D. 2018 Spacetime: Enabling Fluid Individual and Collaborative Editing in Virtual Reality. In *Proceedings of the ACM Symposium on User Interface Software and Technology*. UIST 2018. ACM, New York, NY, 853-866.
- [7] Lu Z., **Xia, H.**, Heo, S., and Wigdor, D. 2018 You Watch, You Give, and You Engage: A Study of Live Streaming Practices in China. In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2018. ACM, New York, NY. 466-479.
- [6] **Xia, H.**, Riche, N., Chevalier, F. Araujo, B., and Wigdor, D. 2018 Datalnk: Enabling Direct and Creative Data-Oriented Drawing. In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2018. ACM, New York, NY. 223-236.  
**Best Paper Honorable Mention**
- [5] **Xia, H.**, Hinckley, K, Pahud, M., Tu, X., and Buxton, B. 2017 WritLarge: Ink Unleashed by Unified Scope, Action, & Zoom. In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2017. ACM, New York, NY. 3227-3240.  
**Best Paper Honorable Mention**
- [4] **Xia, H.**, Araujo, B., and Wigdor, D. 2017. Collection Objects: Enabling Fluid Formation and Manipulation of Aggregate Selections. In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2017. ACM, New York, NY. 5592-5604.  
**Best Paper Honorable Mention**
- [3] **Xia, H.**, Araujo, B., Grossman, T., and Wigdor, D. 2016. Object-Oriented Drawing. In *Proceedings of the ACM annual conference on Human Factors in Computing Systems*. CHI 2016. 4610-4621.  
**Best Paper Award**
- [2] **Xia, H.**, Grossman, T., and Fitzmaurice, G. 2015. NanoStylus: Enhancing Input on Ultra-Small Displays with a Finger-Mounted Stylus. In *Proceedings of the ACM symposium on user interface software and technology*. UIST 2015. ACM, New York, NY, 447-456.
- [1] **Xia, H.**, Jota, R., McCanny, B., Yu, Z., Forlines, C., Singh, K., and Wigdor, D. 2014. Zero-Latency Tapping: Using Hover Information to Predict Touch Locations and Eliminate Touchdown Latency. In *Proceedings of the ACM symposium on user interface software and technology*. UIST 2014. ACM, New York, NY, 205-214.

## PUBLICATIONS – SHORT PAPER, EXTENDED ABSTRACT, POSTER AND OTHERS

- [3] **Xia, H.** 2016. Object-Oriented Interaction: Enabling Direct Physical Manipulation of Abstract Content via Objectification. In *Proceedings of the 29th Annual Symposium on User Interface Software and Technology*. UIST '16 Adjunct. ACM, New York, NY, USA, 13-16.
- [2] Liu, X., **Xia, H.**, and Gu, J. 2013. FlexStroke: a jamming brush tip simulating multiple painting tools on digital platform. In *Proceedings of the adjunct publication of the 26th annual ACM symposium on User interface software and technology*. UIST '13 Adjunct. ACM, New York, NY, USA, 23-24.
- [1] **Xia, H.**, Zhang, J, Zhu, Y., Yu, C, and Shi, Y. 2012. Mobile assistant: enhancing desktop interaction using mobile phone. In *Proceedings of the 2012 ACM international conference on Interactive tabletops and surfaces*. ITS 2012. ACM, New York, NY, USA, 379-382.

## RESEARCH EXPERIENCE

### Chatham Labs, ON, Canada

September 2018 - May 2019

Visiting researcher. Leading the development of novel devices and interaction techniques for Augmented Reality

### Stanford University, CA

June – September 2018

Visiting researcher with Professor Maneesh Agrawala.

Conducting research on automatic visual content generation from text.

<b>New York University, New York, NY</b> Visiting researcher with Ken Perlin from New York University. Conducted research on novel interaction techniques in virtual reality.	October 2017- March 2018
<b>Microsoft Research, Redmond, WA</b> Research intern in EPIC Group with Ken Hinckley, Michel Pahud, and Bill Buxton. Interaction techniques for early stage design with pen and touch input.	May - August 2017
<b>Microsoft Research, Redmond, WA</b> Research intern in Natural Interaction Group with Ken Hinckley, Michel Pahud, and Bill Buxton. Interaction techniques for early stage design with pen and touch input.	May - August 2016
<b>Autodesk Research, Toronto, Canada</b> Research intern in User Interface Research Group with Tovi Grossman. Developed a wearable device for fast and accurate input on ultra-small screens.	January - April 2015
<b>Microsoft Research Asia, Beijing</b> Research intern in HCI Group with Koji Yatani. Developed a system to support ESL writing.	January - April 2013
<b>INVITED TALKS</b>	
<b>University of California, San Diego</b> Department of Cognitive Science & The Design lab (San Diego, CA) <i>The Power of Representation in Human-Computer Interaction</i>	May 2019
<b>Facebook Reality Lab, (Seattle, WA)</b> <i>The Power of Representation in Human-Computer Interaction</i>	May 2019
<b>Microsoft Research (Seattle, WA)</b> <i>The Power of Representation in Human-Computer Interaction</i>	April 2019
<b>Adobe Research (Seattle, WA)</b> <i>The Power of Representation in Human-Computer Interaction</i>	April 2019
<b>Simon Fraser University, Computing Science (Vancouver, Canada)</b> <i>The Power of Representation in Human-Computer Interaction</i>	March 2019
<b>University of Waterloo, School of Computer Science (Waterloo, Canada)</b> <i>The Power of Representation in Human-Computer Interaction</i>	March 2019
<b>York University, School of Information Science (York, Canada)</b> <i>The Power of Representation in Human-Computer Interaction</i>	December 2018
<b>Toronto User Experience (TUX) (Toronto, Canada)</b> <i>Supporting Direct Human-Computer Communication.</i>	November 2018
<b>University of Paris-Sud, Computer Science Department, HCI Group (Paris, France)</b> <i>Supporting Direct Human-Computer Communication</i>	October 2018
<b>Stanford University, Computer Science Department, HCI Group (Stanford, CA)</b> <i>Not your fault! Enhancing Creativity via Direct Representation and Manipulation</i>	August 2018
<b>ACM SIGGRAPH 2018, BEST of SIGCHI, Invited Speaker (Vancouver, Canada)</b> <i>DataInk: Enabling Direct and Creative Data-Oriented Drawing</i>	August 2018
<b>Alibaba Group, DAMO Academy (Sunnyvale, CA)</b> <i>Not your fault! Enhancing Creativity via Direct Representation and Manipulation</i>	August 2018
<b>Brain, Invited Speaker (San Mateo, CA)</b> <i>Not your fault! Enhancing Creativity via Direct Representation and Manipulation</i>	July 2018

**BlueDot**, Invited Speaker (Toronto, Canada)

May 2018

*DataInk: Enabling Direct and Creative Data-Oriented Drawing*

**CPTTE 2017**, Conference on Pen&Touch Technology in Education, Invited Speaker (Evanston, IL)

October 2017

*Object-Oriented Representation: Enabling Direct Manipulation of Abstract Content*

*WritLarge: Ink Unleashed by Unified Scope, Action, & Zoom*

**Autodesk Research**, Invited Speaker (Toronto, Canada)

September 2014

*Zero-Latency Tapping: Using Hover Information to Predict Touch Locations and Eliminate Touchdown Latency*

## ACADEMIC SERVICE

**Program Committee, Associate Chair (AC)**, ACM UIST 2020 Papers and Notes

**Program Committee, Associate Chair (AC)**, ACM CHI 2019 Papers and Notes

**Program Committee, Associate Chair (AC)**, ACM CHI'18 Late Breaking Work

**Program Committee, Associate Chair (AC)**, Chinese CHI'18

**Program Committee, Associate Chair (AC)**, ACM CHI'17 Interactivity

**Reviewer – Conference Paper** ACM CHI'15, '16, 17, 18, ACM UIST'16, 17, 18, 19, ACM GI'17, ACM ISS'18, IEEE VIS'18, ACM SIGGRAPH'20

**Reviewer – Journal Paper** ACM TOCHI (2019)

## STUDENTS MENTORED

Hui Xin Ng, Ph.D. student. Cognitive Science. UCSD	2020
Karl Rosenberg. Visiting Ph.D. Computer Science, New York University	2020
Alan Tram. Undergraduate student. Cognitive Science. UCSD	2020
Krystal Zhang. Undergraduate student. Cognitive Science. UCSD	2020
Devamardeep Hayatpur, Undergraduate student, University of Toronto	2018, 2019, 2020
Sebastian Herscher, Ph.D. student, Computer Science, New York University	2018
Zhicong Lu, Ph.D. student, Computer Science, University of Toronto	2017
Michael Wang, Undergraduate student, Computer Science, University of Toronto	2017
Ming Feng Wan, Undergraduate student, Computer Science, University of Toronto	2017

## PATENTS APPROVED

- [4] Hinckley, K. P., Buxton, W. A. S., Pahud, M., and Xia, H. 2018. Unified system for bimanual interactions on flexible representations of content. US Patent US10558341B2.
- [3] Hinckley, K. P., Pahud, M., Buxton, W. A. S., and Xia, H. 2018. Unified system for bimanual interactions. US Patent US20180239519A1.
- [2] Grossman, T., Fitzmaurice, G., and Xia, H. 2019. Enhancing input on small displays with a finger mounted stylus. US Patent US10466812B2.
- [1] Forlines, C., Costa, RJJ., Wigdor, D., Singh, K., and Xia, H. 2016. Systems and methods for using hover information to predict touch locations and reduce or eliminate touchdown latency. US Patent US20160188112A1.