

# MINGRUI ZHANG

Meta Reality Labs  
Meta Platforms, Inc  
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## EDUCATION

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- University of Washington, Seattle** *Sep. 2017 - June 2022*  
Ph.D. in Information Science, The Information School  
Focus: Human-Computer Interaction  
Advisor: Jacob O. Wobbrock
- Tsinghua University, Beijing** *Aug. 2013 - Jul. 2017*  
B.Eng. with Honors, Department of Computer Science and Technology  
Minor in journalism
- Massachusetts Institute of Technology, Boston** *Jun. 2016 - Sep. 2016*  
Visiting student, the Fluid Interfaces Group, MIT Media Lab  
Advisor: Pattie Maes
- The Chinese University of Hong Kong, Hong Kong** *Sep. 2015 - Dec. 2015*  
Exchange student, Department of Computer Science and Engineering

## PROFESSIONAL EXPERIENCE

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- Meta Reality Labs. New York, NY** *Oct. 2022 - Present*  
*Research Scientist*
  - Project lead of novel keyboard interaction techniques for AR with gesture interface based on EMG signals.
  - Project lead on dictation interface with on-the-fly correction with LLM.
  - Design and prototype user experience for EMG handwriting experience.
  - Multimodal input interaction prototyping with hand + gaze for next generation mix reality headset (Quest).
- ACE Lab, University of Washington** *Oct. 2017 - Jun. 2022*  
*Lab Director: Jacob O. Wobbrock*  
*Research Assistant*
  - My major Ph.D. work. Developed AI-Mediated information interaction techniques, enhancing accessibility and user experience (see publication).
- User Empowerment Lab, University of Washington** *Jun. 2018 - Jun. 2022*  
*Lab Director: Alexis Hiniker*  
*Research Assistant*
  - Created mobile applications for experiments on virtual assistants with children and families.
  - Conducted qualitative research on digital news consumption and designed alternative mobile clients to promote positive technology use.
- Apple Inc. Seattle, WA** *Jun. 2021 - Sep. 2021*  
*Advised by Huy Viet Le and Tim Paek*  
*Research Intern*
  - Prototyped and modeled gaze-based dictation interaction experience (look and speak / correct) for apple vision pro.
- Facebook Reality Labs. New York, NY** *Jun. 2020 - Oct. 2020*  
*Advised by Adam Berenzweig*  
*Research Intern*

- Developed EMG-based QWERTY-style text entry interactions, enabling text entry on any surface.
- Enhanced neural network structure and data collection pipeline with CTC loss for gesture classification.

**Google Inc. Mountain View, CA**

*Oct. 2019 - Dec. 2019*

*Advised by Shumin Zhai*

*Research Intern*

- Improved Gboard auto-correction features, increasing accuracy and user satisfaction.

**Momenta.ai Inc. Beijing**

*Dec. 2016 - Jun. 2017*

*Advised by Ji Liang*

*Research Intern*

- Enhanced road segmentation models, increasing recall and accuracy by 5%.
- Optimized framework speed from 8fps to 100fps.

**Fluid Interfaces Group, MIT Media Lab**

*Jun. 2016 - Sep. 2016*

*Visiting Student*

- Developed hardware and algorithms for innovative interaction projects using Myo armband.

**MailTime Inc. Beijing**

*Feb. 2016 - Jun. 2016*

*iOS Intern*

- Designed and implemented the iOS interaction logic and UI, improving user retention by 25%.

**Multimedia Lab, the Chinese University of Hong Kong**

*Jun. 2015 - Aug. 2015*

*Research Assistant*

- ML codes on modifying the CXXNET (a framework of deep learning) for image classification.

**Chestnut Tech Inc. Beijing**

*Oct. 2014 - Jan. 2016*

*Co-founder, iOS Developer*

- Developed Parocam application on iOS, focusing on face transform algorithms and UI design.

## RESEARCH INTEREST

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### Human-Computer Interaction

My research interests are in **Human-Computer Interaction**, specifically in creating **AI-mediated interactions** to facilitate the **input and understanding of information**, as well as to create equal information access for **people with disabilities**.

## PEER-REVIEWED CONFERENCE PAPERS

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- C.19 Yue Fu, Mingrui “Ray” Zhang, Lynn K Nguyen, Yifan Lin, Rebecca Michelson, Tala June Tayebi, Alexis Hiniker. (2023) Self-Talk with Superhero Zip: Supporting Childrens Socioemotional Learning with Conversational Agents. *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference (IDC '23)*. Chicago, USA (Juen 19-23, 2023). New York: ACM Press. [29%]
- C.18 Mingrui “Ray” Zhang, Shumin Zhai, Jacob O. Wobbrock. (2022) TypeAnywhere: A QWERTY-Based Text Entry Solution for Ubiquitous Computing. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI '22)*. New Orleans, USA (April 30 - May 6, 2022). New York: ACM Press. [25%]
- C.17 Mingrui “Ray” Zhang, Kai Lukoff, Raveena Rao, Amanda Baughan, Alexis Hiniker. (2022) Monitoring Screen Time or Redesigning It? Two Approaches to Supporting Intentional Social Media Use. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI '22)*. New Orleans, USA (April 30 - May 6, 2022). New York: ACM Press. [25%]

- C.16 Amanda Baughan, **Mingrui “Ray” Zhang**, Raveena Rao, Kai Lukoff, Anastasia Schaadhardt, Lisa Butler, Alexis Hiniker. (2022) “I Don’t Even Remember What I Read”: How Design Influences Dissociation on Social Media. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI ’22)*. New Orleans, USA (April 30 - May 6, 2022). New York: ACM Press. [25%]
- C.15 **Mingrui “Ray” Zhang**, Mingyuan Zhong, Jacob O. Wobbrock. (2022) Gally: an Automated GIF Annotation System for Visually Impaired Users. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI ’22)*. New Orleans, USA (April 30 - May 6, 2022). New York: ACM Press. [25%]
- C.14 Alexis Hiniker, Amelia Wang, Jonathan Tran, **Mingrui “Ray” Zhang**, Jenny Radesky, Kiley Sobel, Sungsoo Ray Hong. (2021). Can Conversational Agents Change the Way Children Talk to People? *Proceedings of the 20th Annual ACM Conference on Interaction Design and Children (IDC ’21)*. Athens, Greece (June 24-30, 2021). New York: ACM Press.
- C.13 Ruolin Wang, Zixuan Chen, **Mingrui “Ray” Zhang**, Zhaoheng Li, Zhixiu Liu, Zhihan Dang, Chun Yu, Xiang “Anthony” Chen. (2021) Revamp: Enhancing Accessible Information Seeking Experience of Online Shopping for Blind or Low Vision Users. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI ’21)*. Yokohama, Japan (May 8-13, 2021). New York: ACM Press. [26%]
- C.12 **Mingrui “Ray” Zhang**, Ruolin Wang, Xuhai Xu, Qisheng Li, Ather Sharif and Jacob O. Wobbrock. (2021). Voicemoji: Emoji entry using voice for visually impaired people. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI ’21)*. Yokohama, Japan (May 8-13, 2021). New York: ACM Press. [26%]
- C.11 **Mingrui “Ray” Zhang**, Shumin Zhai. (2021). PhraseFlow: Designs and Empirical Studies of Phrase-Level Input. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI ’21)*. Yokohama, Japan (May 8-13, 2021). New York: ACM Press. [26%]
- C.10 **Mingrui “Ray” Zhang**, Alex Mariakakis, Jacob Burke and Jacob O. Wobbrock. (2021). A comparative study of lexical and semantic emoji suggestion systems. *Proceedings of iConference 2021. Beijing, China (March 17-31, 2021)*. Lecture Notes in Computer Science. Switzerland: Springer. [31%]
- C.9 Wenzhe Cui, Suwen Zhu, **Mingrui “Ray” Zhang**, H. Andrew Schwartz, Jacob O. Wobbrock, Xiaojun Bi. (2020). JustCorrect: Intelligent post hoc text correction techniques on smartphones. *Proceedings of the ACM Symposium on User Interface Software & Technology (UIST ’20)*. Minneapolis, Minnesota (October 20-23, 2020). New York: ACM Press. [22%]
- C.8 Zhihang Dong, Tongshuang Wu, Sicheng Song, **Mingrui “Ray” Zhang**. (2020). Interactive Attention Model Explorer for NLP Tasks with Unbalanced Data Sizes. *2020 IEEE Pacific Visualization Symposium (PacificVis)*. Tianjin, China (Jun 3-5, 2020). IEEE Computer Society. [24%]
- C.7 **Mingrui “Ray” Zhang**, Jacob O. Wobbrock. (2020). Gedit: Keyboard gestures for mobile text editing. *Proceedings of Graphics Interface (GI ’20)*. Toronto, Ontario (May 21-22, 2020). Toronto, Ontario: Canadian Information Processing Society.
- C.6 Erin Beneteau, Yini Guan, Olivia K. Richards, **Mingrui “Ray” Zhang**, Julie A. Kientz, Jason Yip, Alexis Hiniker. (2020). Assumptions Checked: How Families Learn About and Use the Echo Dot. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT 2020)*. New York: ACM Press.
- C.5 **Mingrui “Ray” Zhang**, He Wen, Jacob O. Wobbrock. (2019). Type, Then Correct: Intelligent Text Correction Techniques for Mobile Text Entry Using Neural Networks. *Proceedings of the*

*32nd Annual ACM Symposium on User Interface Software & Technology (UIST '19)*. New York: ACM Press. [24%]

- C.4 **Mingrui “Ray” Zhang**, Jacob O. Wobbrock. (2019). Beyond the Input Stream: Making Text Entry Evaluations More Flexible with Transcription Sequences. *Proceedings of the 32nd Annual ACM Symposium on User Interface Software & Technology (UIST '19)*. New York: ACM Press. [24%]
- C.3 **Mingrui “Ray” Zhang**, Shumin Zhai, Jacob O. Wobbrock. (2019). Text entry throughput: Towards unifying speed and accuracy in a single performance metric. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 19)*. New York: ACM Press. [24%]
- C.2 Alexis Hiniker, Jon Froehlich, **Mingrui “Ray” Zhang**, Erin Beneteau. (2019). Anchored Audio Sampling: A Seamless Method for Exploring Childrens Thoughts and Reactions During Deployment Studies. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 19)*. New York: ACM Press. *Best Paper Award (Top 1%)*
- C.1 Erin Beneteau, Olivia K. Richards, **Mingrui “Ray” Zhang**, Julie A. Kientz, Jason Yip, Alexis Hiniker. (2019). Communication Breakdowns Between Families and Alexa. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 19)*. New York: ACM Press. [24%]
- C.0 Xin Yi, Chun Yu, **Mingrui “Ray” Zhang**, Sida Gao, Ke Sun, Yuanchun Shi. (2015). ATK: Enabling Ten-Finger Freehand Typing in Air Based on 3D Hand Tracking Data. *Proceedings of the 28th Annual ACM Symposium on User Interface Software & Technology (UIST '15)*. New York: ACM Press. [24%]

## OTHER PUBLICATIONS

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- P.2 **Mingrui “Ray” Zhang**, Ashley Boone, Sara M Behbakt, Alexis Hiniker. (2022). Understanding the Digital News Consumption Experience During the COVID Pandemic, *arXiv*
- P.1 **Mingrui “Ray” Zhang**, Shumin Zhai. (2020). Partial-Candidate Commit for Chinese Pinyin Text Entry, *Technical Disclosures Commons*
- P.0 **Mingrui “Ray” Zhang**, Shumin Zhai. (2021) Two-handed Typing Method on an Arbitrary Surface. *Technical Disclosures Commons*

## BOOK CHAPTERS

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- B.1 **Mingrui “Ray” Zhang**, He Wen, Wenzhe Cui, Suwen Zhu, H.Andrew Schwartz, Xiaojun Bi and Jacob O. Wobbrock. (2021). AI-driven Intelligent Text Correction Techniques for Mobile Text Entry. Chapter 6 in Yang Li & Otmar Hilliges (eds.), *Artificial Intelligence for Human Computer Interaction: A Modern Approach*. Switzerland: Springer.
- B.0 **Mingrui “Ray” Zhang**. (2015 - present). *When Rocket Launches*. on Gitbook

## HONORS & AWARDS

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Ford Fellowship, University of Washington	2022
Special Recognition, CHI paper reviews	2021
Best Paper Award, ACM CHI	2019
Excellent Graduate of the CST Department, Tsinghua	2017
The National Scholarship of China (Top 1%)	2016
1st Winner of the National Database Conference Cup	2016

## TEACHING

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## Teaching Assistant

INFO 201 Foundational Skills for Data Science, UW Seattle	2021 Fall
INFO 490 Undergraduate Capstone, UW Seattle	2020 Winter, 2020 Spring
INFO 449 iOS Programming, UW Seattle	2019 Winter
INFO 360 Design Thinking, UW Seattle	2017 Fall, 2018 Winter
INFO 498 Rapid Prototyping, UW Seattle	2018 Spring

## Guest Lecturer

INFO 463 Input and Interaction, UW Seattle	2020 Fall
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## STUDENTS MENTORED

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Jiahao Tim Li (UW Undergraduate)	Oct. 2021 - Nov. 2021
Raveena Rao (UW Undergraduate)	Feb. 2021 - Jun. 2021
Sara Behbakht (UW Undergraduate)	Apr. 2020 - Jun. 2020
Ashley Boone (UW Undergraduate, now a PhD student at Georgia Tech)	Feb. 2021 - Jun. 2020
Jacob Burke (UW Undergraduate, now at Microsoft) [C.11]	June. 2018 - Sep. 2018

## INVITED TALKS

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### 2022

#### **Towards Humanlike Communication with Computers**

NYU Shanghai, Shanghai, China  
Boston University, Boston, MA, USA  
Purdue University, West Lafayette, IN  
Meta Reality Labs, New York, NY, USA  
Apple, Seattle, WA, USA  
Google Research, Mountain View, CA, USA

### 2021

#### **Intelligent Text Input Methods and Metrics**

University of Washington, Seattle, WA, USA

### 2019

#### **Text Entry for the New Era**

HCI Seminar, Stanford University, Palo Alto, CA, USA

#### **Text Entry for the New Era**

Google Android UX Group, Mountain View, CA, USA

## PROFESSIONAL SERVICE

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Demo Co-chair	UIST '22
UW DUB Seminar Coordinator	2021
Assistant for early planning	CHI '20
Peer Reviewer	CHI '19 - '22; UIST '19 - '22; MobileHCI '21; AutomobileUI '21; IEEE EICS '21; THMS '20;