Mingyuan Zhong

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EDUCATION

University of Washington — Seattle, WA
Ph.D. Student in Computer Science & Engineering — *Sep. 2019–present*
Advisors: James Fogarty & Jacob Wobbrock

Tsinghua University — Beijing, China
B. Eng. in Computer Science & Technology — *Aug. 2014–July 2019*

PUBLICATIONS

- Raymond Fok, ***Mingyuan Zhong***, Anne Spencer Ross, James Fogarty, Jacob O. Wobbrock: A Large-Scale Longitudinal Analysis of Missing Label Accessibility Failures in Android Apps. (CHI '22).
- Mingrui "Ray" Zhang, ***Mingyuan Zhong***, Jacob O. Wobbrock: Ga11y: An Automated GIF Annotation System for Visually Impaired Users. (CHI '22).
- Junhan Kong, ***Mingyuan Zhong***, James Fogarty, Jacob O. Wobbrock: New Metrics for Understanding Touch by People with and without Limited Fine Motor Function. (ASSETS '21, Poster).
- ***Mingyuan Zhong***, Gang Li, Peggy Chi, Yang Li: HelpViz: Automatic Generation of Contextual Visual Mobile Tutorials from Text-Based Instructions. (UIST '21).
- ***Mingyuan Zhong***, Gang Li, Yang Li: Spacewalker: Rapid UI Design Exploration Using Lightweight Markup Enhancement and Crowd Genetic Programming. (CHI '21)
- Yue Qin, Chun Yu, Zhaoheng Li, ***Mingyuan Zhong***, Yukang Yan, Yuanchun Shi: ProxiMic: Convenient Voice Activation via Close-to-Mic Speech Detected by a Single Microphone. (CHI '21)
- ***Mingyuan Zhong***, Chun Yu, Qian Wang, Xuhai Xu, Yuanchun Shi: ForceBoard: Subtle Text Entry Leveraging Pressure. (CHI '18)
- Chun Yu, Ke Sun, ***Mingyuan Zhong***, Xincheng Li, Peijun Zhao, Yuanchun Shi: One-Dimensional Handwriting: Inputting Letters and Words on Smart Glasses. (CHI '16, Honorable Mention)
- Chun Yu, Ke Sun, ***Mingyuan Zhong***, Xincheng Li, Yuanchun Shi: One-Dimensional Handwriting Input Method and Apparatus. Chinese Patent, Pub No. CN105549890A.

RESEARCH EXPERIENCE

- **Mobile Accessibility Repair at Scale**
  University of Washington | Advisors: James Fogarty & Jacob Wobbrock — *2019–present*
  - Periodically crawled over 300 Android apps for over one year to gather accessibility data.
  - Analyzed accessibility failures and utilized heuristics, neural networks, and the crowd to create repairs.
  - Designed a structure-based component discovery algorithm to provide more granular and robust interface element matching.

- **Improving Android Touch Accuracy**
  Google | Hosts: Wenxin Feng & Shumin Zhai — *Summer 2021*
  - Developed algorithms to improve touch accuracy in different phases of a touch gesture by examining touch-related sensor data.

- **Automated GIF Annotation System for Visually Impaired Users**
  University of Washington | Advisor: Jacob Wobbrock — *Spring 2021*
  - Developed a mobile GIF annotation tool utilizing an interaction proxy approach.

- **Automatic Generation of Contextual Visual Mobile Tutorials**
  Google Research | Hosts: Yang Li & Gang Li *Summer 2020*
  - Created a pipeline that automatically generates visual tutorials for mobile tasks from raw text instructions.
  - Addressed errors and incompatibility from automatic tutorial generation using beam search and look-ahead.

- **UI Design Exploration Using Crowd Genetic Programming**
  Google Research | Hosts: Yang Li & Gang Li *Summer 2020*
  - Created an HTML markup extension that allows designers to specify alternatives for design search.
  - Designed an enhanced genetic algorithm that can efficiently explore a large design space using crowd responses.
  - Integrated general tool support that allows designers to improve web design quickly at a low cost.

- **Quantifying the User Perception of Janks in Transition Animations**
  HCI Lab, Tsinghua University | Advisors: Chun Yu & Jingyu Zhang *2018–present*
  - Built a platform that automatically interacted with Android devices and captured their displays using a high-speed camera; developed a program that analyzed the captured footage to identify janks.
  - Designed an Android application that inserted janks during user interaction, which included four common scenarios, and gathered user feedback.
  - Conducted a large-scale *in-the-wild* experiment of over 3600 people.

- **TenseInput: Augmenting Gesture Interaction with Muscle Contraction**
  GIX, Tsinghua University & University of Washington *Summer 2018*
  - Designed and assembled a wearable device to gather electromyography (EMG), motion, and pressure data from muscle contractions.
  - Designed CNN- and RNN-based models to detect muscle contraction.
  - Implemented three interaction scenarios to evaluate the practicality of this technique.

- **ForceBoard: Subtle Text Entry Leveraging Pressure**
  HCI Lab, Tsinghua University | Advisors: Yuanchun Shi & Chun Yu *2016–2017*
  - Proposed and designed a one-dimensional pressure-based text entry method.
  - Conducted a user study to examine people's ability of continuous pressure control.
  - Implemented a ForceBoard prototype, which enabled text entry by combining the pressure control model and statistical decoding; conducted a user study to evaluate its performance.

- **One-Dimensional Handwriting: Gesture-based Text Entry**
  HCI Lab, Tsinghua University | Advisors: Yuanchun Shi & Chun Yu *2015–2016*
  - Conducted a user-participatory study to solicit designs of one-dimensional gestures for text entry.
  - Developed a prototype 1D Handwriting keyboard on Google Glass, where users could use one-dimensional gestures that felt familiar to input letters and words, similar to handwriting.

Teaching Experience & Service

- **Teaching Assistant**: *Embedded Systems Capstone* with Bruce Hemingway (UW CSE/EE 475). *Autumn 2019*
- **Peer Reviewer**: ACM CHI LBW 2020; CHI 2022; UIST 2021, 2022; IUI 2019, 2020, 2021, 2022.

Skills

- **Programming Language**: C++ · Python · Java · JavaScript · Swift · Golang · VHDL
- **Technology**: Android · iOS · Linux · Arduino · OpenCV · OptiTrack · Keras · Unity · Django · Flask · SQL · Azure
- **Data Analysis**: R · SPSS · JMP · MATLAB
- **Media**: Photoshop · Premiere Pro · Lightroom