

Xiaoyi Zhang

xiaoyizuw@gmail.com | 213-215-2967 | www.XiaoyiZhang.me

Started career as a HCI+AI researcher; delivered product features & internal tools as a Machine Learning engineer; guided my team (9 direct reports) as a tech lead. Built developer tools heavily used in Apple **LLM** and **Vision Pro** effort. Two **Best Paper** awards (CHI, W4A) plus three Best Paper Nominees.

Interests: **ML Developer Tools, Model Latency Optimization, UI Accessibility, Human AI Interaction.**

Employment

2018 - Now **APPLE | Staff ML Research Engineer & Manager** Seattle, WA
Owner (Tech Lead and/or Manager) of all projects below

2023 - Now Built **automatic optimization** pipelines that enable Apple Intelligence models **run fast (30 token/s on iPhone) on-device and cloud**. Gate keeper of new model release.

Made internal **GPTs store for productivity** - engineers made chatbots with work knowledge.

2022 - 2023 Created Talaria to support latency optimization of 50+ ML models, including most of iPhone camera models and all **Vision Pro** real-time models. Won CHI **best paper nominee**.

2020 - 2022 Published ML-driven UI Understanding framework used in **20+ Apple products** (e.g., Siri automation).

2018 - 2020 Defined and shipped Screen Recognition accessibility feature in iOS 14+ (**used by 20M users with visual impairments**). Won CHI **best paper**.

2016 & 2017 **MICROSOFT RESEARCH | Intern**

Released SwipeSpeak, a communication app for people with ALS ([iOS Store](#) / [Github](#)).

Built patented low-cost eye gesture recognition system on phone powered by computer vision.

2013 & 2015 **GOOGLE RESEARCH | Intern**

Developed collaboration features and presentation mode in [coLaboratory](#) (Colab).

Built patented non-rigid face features detection, pose & gaze tracking, integrated in productivity tools.

2012 **APPLE | Intern**

Built the first version of Contacts web app for iCloud.

Education

2014 - 2018 **Ph.D.** in Computer Science University of Washington, Seattle (UW)
Committee James Fogarty (Advisor), Leah Findlater, Jennifer Mankoff, Meredith Morris, Jacob Wobbrock

2011 - 2014 **Bachelor** in Computer Science University of California, Los Angeles (UCLA)

Publication

[2024 CHI] (Best Paper Nominee) Talaria: Interactively Optimizing Machine Learning Models for Efficient Inference

F. Hohman, C. Wang, J. Lee, J. Görtler, D. Moritz, J. P. Bigham, Z. Ren, C. Foret, Q. Shan, X. Zhang • [PAPER](#)

[2024 TOCHI] Towards Automated Accessibility Report Generation for Mobile Apps

A. Swearngin, J. Wu, X. Zhang, T. Barik, J. Nichols

[2022 CHI] Towards Complete Icon Labeling in Mobile Applications

J. Chen, A. Swearngin, J. Wu, T. Barik, J. Nichols, X. Zhang • [PAPER](#)

[2022 IUI] Understanding Screen Relationships from Screenshots of Smartphone Applications

S. Feiz, J. Wu, X. Zhang, S. Swearngin, T. Barik, J. Nichols • [PAPER](#)

[2022 Arxiv] Extracting Replayable Interactions from Videos of Mobile App Usage

J. Chen, A. Swearngin, J. Wu, T. Barik, J. Nichols, X. Zhang • [PAPER](#)

[2022 Arxiv] Reflow: Automatically Improving Touch Interactions in Mobile Applications through Pixel-based Refinements

J. Wu, T. Barik, X. Zhang, C. Lea, J. Nichols, J. P. Bigham • [PAPER](#)

[2021 CHI] (Best Paper) Screen Recognition: Creating Accessibility Metadata for Mobile Apps from Pixels

X. Zhang, L. de Greef, A. Swearngin, S. White, K. Murray, L. Yu, Q. Shan, J. Nichols, J. Wu, C. Fleizach, A. Everitt, J. P. Bigham • [VIDEO](#) • [PAPER](#) • Shipped in iOS 14+

[2021 W4A] (Best Paper) When Can Accessibility Help? Exploration of Accessibility Feature Recommendation on Mobile Devices

J. Wu, G. Reyes, S. White, X. Zhang, J. P. Bigham • [PAPER](#)

[2021 UIST] Screen Parsing: Towards Reverse Engineering of UI Models from Screenshots

J. Wu, X. Zhang, J. P. Bigham, J. Nichols • [PAPER](#)

[2020 TACCESS] An Epidemiology-Inspired Large-scale Analysis of Android App Accessibility

A. Ross, X. Zhang, J. Fogarty, J. O. Wobbrock

[2019 Web Accessibility] Book Chapter: Tangible Interfaces

M. Baldwin, R. Khurana, D. McIsaac, Y. Sun, T. Tran, X. Zhang, J. Fogarty, G. Hayes, J. Mankoff

[2018 UIST] Robust Annotation of Mobile Application Interfaces in Methods for Accessibility Repair

X. Zhang, A. Ross, J. Fogarty • [VIDEO](#) • [PAPER](#)

[2018 ASSETS] Interactiles: 3D Printed Tactile Interfaces on Phone to Enhance Mobile Accessibility

X. Zhang, T. Tran, Y. Sun, I. Culhane, J. Fogarty, J. Mankoff • [VIDEO](#) • [PAPER](#)

[2018 ASSETS] (Best Paper Nominee) Examining Image-Based Button Labeling for Accessibility in Apps through Large-Scale Analysis

A. Ross, X. Zhang, J. Fogarty, J. O. Wobbrock • [PAPER](#)

[2018 VL/HCC] APPINITE: A Multi-Modal Interface for Specifying Data Descriptions in Programming by Demonstration Using Verbal Instructions

T. Li, I. Labutov, X. Li, X. Zhang, W. Shi, W. Ding, T. Mitchell and B. A. Myers • [VIDEO](#) • [PAPER](#)

[2018 Ubicomp] Beacon: Designing a Portable Device for Self-Administering a Measure of CFF

R. Karkar, R. Kocielnik, X. Zhang, J. Fogarty, G N. Ioannou, S A. Munson, J. Zia

[2017 ASSETS] (Best Paper Nominee) Epidemiology as a Framework for Large-Scale Mobile Application Accessibility Assessment

A. Ross, X. Zhang, J. Fogarty, J. O. Wobbrock • [PAPER](#)

[2017 CHI] Interaction Proxies for Runtime Repair and Enhancement of Mobile Application Accessibility

X. Zhang, A. Ross, A. Caspi, J. Fogarty, J. O. Wobbrock • [VIDEO](#) • [PAPER](#)

[2017 CHI] Smartphone-Based Eye Gesture Communication for People with Motor Disabilities

X. Zhang, H. Kulkarni, M. R. Morris • [VIDEO](#) • [PAPER](#)

[2016 CHI] Examining Unlock Journaling with Diaries and Reminders for In Situ Self-Report in Health & Wellness

X. Zhang, L. Pina, J. Fogarty • [VIDEO](#) • [PAPER](#)

[2015 UIST] Leveraging Dual-Observable Input for Fine-Grained Thumb Interaction Using Forearm EMG

D. Huang, X. Zhang, S. Saponas, J. Fogarty, S. Gollakota • [VIDEO](#) • [PAPER](#)

[2015 IEEE Intelligent Systems] FridgeNet: A Nutrition & Social Activity Promotion Platform for Aging Population

Y. Lee, M-C Huang, X. Zhang, W. Xu

[2014 IEEE Biomedical and Health Informatics] BreathSens: A Continuous On-Bed Respiratory Monitoring System With Torso Localization Using an Unobtrusive Pressure Sensing Array

J. Liu, M-C Huang, W. Xu, X. Zhang, L. Stevens, N. Alshurafa, M. Sarrafzadeh

[2014 IEEE Biomedical and Health Informatics] Using Pressure Map Sequences for Recognition of On Bed Rehabilitation Exercises

M-C. Huang, J. Liu, W. Xu, N. Alshurafa, X. Zhang, M. Sarrafzadeh

[2013 BodyNets] See UV on Your Skin: An Ultraviolet Sensing and Visualization System

X. Zhang, W. Xu, M-C. Huang, F. Ren, N. Amini

[2013 BodyNets] Proper Running Posture Guide: A Wearable Biomechanics Capture System

X. Zhang, M-C. Huang, F. Ren, W. Xu, N. Guan, W. Yi

Patent

On-the-fly Calibration For Improved On-device Eye Tracking ([Detail](#))

Pixel-based Optimization For A User Interface ([Detail](#))

Methods And Systems For Self-administered Measurement Of Critical Flicker Frequency ([Detail](#))

Automated E-tran Application ([Detail](#))

User Interface Control Using Gaze Tracking ([Detail](#))

Media Coverage

2020 **iPhones Can Now Automatically Recognize and Label Buttons and UI Features for Blind Users**
[TechCrunch](#) reported Screen Recognition feature in iOS 14.

2017 **Microsoft App Helps People with ALS Speak Using Just Their Eyes**
Reported by [Newsweek](#) / [The Telegraph](#) / [New Scientist](#) / [BGR](#) / [Business Standard](#) and 50+ medias.