JASON WU

5000 Forbes Ave ⋄ Pittsburgh, PA 15213

(+1) 404 234 7381 ⋄ jsonwu@cmu.edu

EDUCATION

Carnegie Mellon University   *August 2018 - Present*
Advisor: Jeffrey Bigham
Ph.D. Human-Computer Interaction
Human-Computer Interaction Institute

Carnegie Mellon University   *May 2022*
Advisor: Jeffrey Bigham
Masters of Human-Computer Interaction
Human-Computer Interaction Institute

Georgia Institute of Technology   *August 2015 - May 2018*
B.S. Computer Science (Intelligence & Information Internetworks)   *Highest Honors*

AWARDS & HONORS

IUI Best Paper (2024)
Heidelberg Laureate Forum Young Researcher (2023)
CHI Best Paper Honorable Mention (2023)
CHI Best Paper (2021)
W4A Best Technical Paper (2021)
CHI Best Paper Honorable Mention (2020)
Fast Company Innovation by Design Student Finalist (2020)
NSF Graduate Research Fellowship (2019-2024)
Georgia Tech College of Computing Outstanding Undergraduate Researcher (2018)
HackGT - Best Microsoft Technology Award (2017)
MARTAHack - Implementation Prize Runner Up (2017)
HackStart - First Place Winner (2015)
Zell-Miller Scholarship (2015-2018)
NMSQT Georgia Pacific Corporate Scholarship (2015-2018)

DISSERTATIONS

Computational Understanding of User Interfaces   July 2024
Ph.D. Dissertation   *Carnegie Mellon University*

Described computational and data-driven approaches to understand UI semantics, functionality, and
design for accessibility, software testing, and authoring applications.

Synchronous Interfaces for Wearable Computers   May 2018
Undergraduate Dissertation   *Georgia Institute of Technology*

Researched synchronous interfaces for wearable computers, which are a type of input system that allows
users to express intent by performing an action in sync with stimuli presented to them

JOURNAL PUBLICATIONS

[J.3] **Towards Automated Accessibility Report Generation for Mobile Apps**
ACM Transactions on Computer-Human Interaction 2024 (To Appear)
Amanda Swearngin, Jason Wu, Xiaoyi Zhang, Esteban Gomez, Jen Coughenour, Rachel Stukenborg, Bhavya Garg, Greg Hughes, Adriana Hilliard, Jeffrey P Bigham, Jeffrey Nichols

[J.2] **ScratchThat: Supporting Command-Agnostic Speech Repair in Voice-Driven Assistants**
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 2019 Issue 2
Jason Wu, Karan Ahuja, Richard Li, Victor Chen, Jeffrey P. Bigham

[J.1] **SynchroWatch: One-Handed Synchronous Smartwatches Gestures Using Correlation and Magnetic Sensing**
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 2017 Issue 4
Gabriel Reyes, Jason Wu, Nikita Juneja, Maxim Goldshtein, W. Keith Edwards, Gregory D. Abowd, Thad Starner

CONFERENCE PAPERS

[C.22] **DreamStruct: Understanding Slides and UIs via Synthetic Data Generation**
Proceedings of ECCV 2024, The European Conference on Computer Vision (Conditionally Accepted)
Yi-Hao Peng, Faria Huq, Yue Jiang, Jason Wu, Amanda Li, Jeffrey P. Bigham, Amy Pavel

[C.21] **UIClip: A Data-driven Model for Assessing User Interface Design**
Proceedings of UIST 2024, ACM Symposium on User Interface Software and Technology (Conditionally Accepted)
Jason Wu, Yi-Hao Peng, Amanda Li, Amanda Swearngin, Jeffrey P. Bigham, Jeffrey Nichols

[C.20] **UICoder: Finetuning Large Language Models to Generate User Interface Code through Automated Feedback**
Proceedings of NAACL 2024, Annual Conference of the North American Chapter of the Association for Computational Linguistics (To Appear)
Jason Wu, Eldon Schoop, Alan Leung, Titus Barik, Jeffrey P. Bigham, Jeffrey Nichols

[C.19] **FrameKit: A Tool for Authoring Adaptive UIs Using Keyframes**
Proceedings of IUI 2024, ACM Conference on Intelligent User Interfaces (Best Paper Award 🏆)
Jason Wu, Kashyap Todi, Joannes Chan, Brad A. Myers, Ben Lafreniere

[C.18] **Never-ending Learning of User Interfaces**
Proceedings of UIST 2023, ACM Symposium on User Interface Software and Technology
Jason Wu, Rebecca Krosnick, Eldon Schoop, Amanda Swearngin, Jeffrey P. Bigham, Jeffrey Nichols

[C.17] **STAR: Smartphone-Analogous Typing in Augmented Reality**
Proceedings of UIST 2023, ACM Symposium on User Interface Software and Technology
Taejun Kim, Amy Karlson, Aakar Gupta, Tovi Grossman, Jason Wu, Parastoo Abtahi, Christopher Collins, Michael Glueck, Hemant Surale

[C.16] **WebUI: A Dataset for Enhancing Visual UI Understanding with Web Semantics** (Best Paper Honorable Mention ★)
Proceedings of CHI 2023, ACM Conference on Human Factors in Computing Systems
Jason Wu, Siyan Wang, Siman Shen, Yi-Hao Peng, Jeffrey Nichols, Jeffrey P. Bigham

[C.15] **Diffscriber: Describing Visual Design Changes to Support Mixed-Ability Presentation Authoring**
Proceedings of UIST 2022, ACM Symposium on User Interface Software and Technology
Yi-Hao Peng, Jason Wu, Jeffrey P. Bigham, Amy Pavel

[C.14] Understanding Screen Relationships from Screenshots of Smartphone Applications
Proceedings of IUI 2022, International Conference on Intelligent User Interfaces
Shirin Feiz Disfani, <u>Jason Wu</u>, Xiaoyi Zhang, Amanda Swearngin, Titus Barik, Jeffrey Nichols

[C.13] Towards Complete Icon Labeling in Mobile Applications
Proceedings of CHI 2022, ACM Conference on Human Factors in Computing Systems
Jieshan Chen, Amanda Swearngin, <u>Jason Wu</u>, Titus Barik, Jeffrey Nichols, Xiaoyi Zhang

[C.12] MultiBench: Multiscale Benchmarks for Multimodal Representation Learning
Proceedings of the Neural Information Processing Systems Track on Datasets and Benchmarks 2021
Paul Pu Liang, Yiwei Lyu, Xiang Fan, Zetian Wu, Yun Cheng, <u>Jason Wu</u>, Leslie Yufan Chen, Peter Wu, Michelle A Lee, Yuke Zhu, Russ Salakhutdinov, Louis-Philippe Morency

[C.11] Screen Parsing: Towards Reverse Engineering of UI Models from Screenshots
Proceedings of UIST 2021, ACM Symposium on User Interface Software and Technology
<u>Jason Wu</u>, Xiaoyi Zhang, Jeffrey Nichols, Jeffrey P. Bigham

[C.10] Screen Recognition: Creating Accessibility Metadata for Mobile Applications from Pixels (Best Paper Award 🏆)
Proceedings of CHI 2021, ACM Conference on Human Factors in Computing Systems
Xiaoyi Zhang, Lilian de Greef, Amanda Swearngin, Samuel C. White, Kyle Murray, Lisa Yu, Qi Shan, Jeffrey Nichols, <u>Jason Wu</u>, Chris Fleizach, Aaron Everitt, Jeffrey P. Bigham

[C.9] When Can Accessibility Help?: An Exploration of Accessibility Feature Recommendation on Mobile Devices (Best Technical Paper Award 🏆)
Proceedings of W4A 2021, the 18th International Web for All Conference
<u>Jason Wu</u>, Gabriel Reyes, Samuel C. White, Xiaoyi Zhang, Jeffrey P. Bigham

[C.8] Making Mobile Augmented Reality Applications Accessible
Proceedings of ASSETS 2020, ACM Conference on Computers and Accessibility
Jaylin Herskovitz, <u>Jason Wu</u>, Samuel C. White, Amy Pavel, Anhong Guo, Gabriel Reyes, Jeffrey P. Bigham

[C.7] Disability and the COVID-19 Pandemic: Using Twitter to Understand Accessibility during Rapid Societal Transition
Proceedings of ASSETS 2020, ACM Conference on Computers and Accessibility
Cole Gleason, Stephanie Valencia-Valencia, Lynn Kirabo, <u>Jason Wu</u>, Anhong Guo, Elizabeth J. Carter, Jeffrey P. Bigham, Cynthia L. Bennett, and Amy Pavel

[C.6] Automatic Class Discovery and One-Shot Interactions for Acoustic Activity Recognition (Best Paper Honorable Mention ★)
Proceedings of CHI 2020, ACM Conference on Human Factors in Computing Systems
<u>Jason Wu</u>, Chris Harrison, Jeffrey P. Bigham, Gierad Laput

[C.5] SelfSync: Exploring Self-synchronous Body-based Hotword Gestures for Initiating Interaction
Proceedings of ISWC 2019, ACM International Symposium on Wearable Computers
Juyoung Lee, Shaurye Aggarwal, <u>Jason Wu</u>, Thad Starner, Woontack Woo

[C.4] TongueBoard: An Oral Interface for Subtle Input
Proceedings of AH 2019, ACM 10th Augmented Human International Conference 2019
Richard Li, <u>Jason Wu</u>, Thad Starner

[C.3] NADiA - Neural Network Driven Virtual Human Conversation Agents
Proceedings of IVA 2018, ACM International Conference on Intelligent Virtual Agents
<u>Jason Wu</u>, Sayan Ghosh, Mathieu Chollet, Steven Ly, Sharon Mozgai, and Stefan Scherer

[C.2] **SeeSaw - Rapid One-Handed Synchronous Gesture Interface for Smartwatches**
Proceedings of ISWC 2018, ACM International Symposium on Wearable Computers
Jason Wu, Cooper Colglazier, Adhithya Ravishankar, Yuyan Duan, Yuanbo Wang, Thomas Ploetz, Thad Starner

[C.1] **Whoosh: Non-Voice Acoustics for Low-Cost, Hands-Free, and Rapid Input on Smartwatches**
Proceedings of ISWC 2016, ACM International Symposium on Wearable Computers
Gabriel Reyes, Dingtian Zhang, Sarthak Ghosh, Pratik Shah, Jason Wu, Aman Parmani, Bailey Bercik, Thad Starner, Gregory D. Abowd, W. Keith Edwards

POSTERS & WORKSHOP PAPERS

[W.6] **Using LLMs to Customize the UI of Webpages**
Adjunct Proceedings of UIST 2023, ACM Symposium on User Interface Software and Technology
Amanda Li, Jason Wu, Jeffrey P. Bigham

[W.5] **Towards Never-ending Learning of User Interfaces**
AI & HCI Workshop at the 40th International Conference on Machine Learning (ICML)
Jason Wu, Rebecca Krosnick, Eldon Schoop, Amanda Swearngin, Jeffrey P. Bigham, Jeffrey Nichols

[W.4] **Ability-Based Optimization of Existing UIs**
CHI 2022 Workshop on Computational Approaches for Understanding, Generating, and Adapting User Interfaces
Jason Wu, Jeffrey Nichols, Jeffrey P. Bigham

[W.3] **Towards Recommending Accessibility Features on Mobile Devices**
Proceedings of ASSETS 2020, ACM Conference on Computers and Accessibility
Jason Wu, Gabriel Reyes, Samuel C. White, Xiaoyi Zhang, Jeffrey P. Bigham

[W.2] **Supporting Speech Repair in Voice-Driven Assistants**
CHI 2019 Workshop on Mapping Theoretical and Methodological Perspectives for Understanding Speech Interface Interactions
Jason Wu, Karan Ahuja, Richard Li, Victor Chen, Jeffrey P. Bigham

[W.1] **NADiA - Towards Neural Network Driven Virtual Human Conversation Agents**
Proceedings of the 17th International Conference on Autonomous Agents and Multi-Agent Systems
Jason Wu, Sayan Ghosh, Mathieu Chollet, Steven Ly, Sharon Mozgai, and Stefan Scherer

OTHER PUBLICATIONS

[O.3] **Screen Correspondence: Mapping Interchangeable Elements between UIs**
arXiv preprint arXiv:2301.08372
Jason Wu, Amanda Swearngin, Xiaoyi Zhang, Jeffrey Nichols, Jeffrey P Bigham

[O.2] **Reflow: Automatically Improving Touch Interactions in Mobile Applications through Pixel-based Refinements**
arXiv preprint arXiv:2207.07712
Jason Wu, Titus Barik, Xiaoyi Zhang, Colin Lea, Jeffrey Nichols, Jeffrey P Bigham

[O.1] **Extracting Replayable Interactions from Videos of Mobile App Usage**
arXiv preprint arXiv:2207.04165
Jieshan Chen, Amanda Swearngin, Jason Wu, Titus Barik, Jeffrey Nichols, Xiaoyi Zhang

PATENTS

[O.2] **Accessible mixed reality applications**
US Patent App. 18/239,018 (Pending)
Jeffrey P. Bigham, Jaylin Herskovitz, Sam C. White, <u>Jason Wu</u>

[O.1] **Pixel-based optimization for a user interface**
US Patent App. 17/067,601 (Pending)
Jeffrey P. Bigham, Colin Lea, <u>Jason Wu</u>, Xiaoyi Zhang

INVITED TALKS & GUEST LECTURES

[T.7]	**Computational Understanding of User Interfaces**	
	Apple Inc., Human-Centered Machine Intelligence	May 29, 2024
[T.6]	**Can ChatGPT make my User Interface?**	
	CMU, Programming User Interfaces (05-430/05-630), Guest Lecture	April 10, 2024
[T.5]	**Computational Understanding of User Interfaces**	
	University of Southern California, CS Colloquium	April 4, 2024
[T.4]	**Computational Understanding of User Interfaces**	
	University of California Berkeley, BiD Seminar	October 24, 2023
[T.3]	**Computational Understanding of User Interfaces**	
	Saarland University	October 6, 2023
[T.2]	**Ability-Based Optimization of User Interfaces**	
	Stanford HCI Lunch Talk	December 7, 2022
[T.1]	**Ability-Based Optimization of User Interfaces**	
	University of Toronto, Dynamic Graphics Project	November 11, 2022

SELECTED MEDIA COVERAGE

[S.20]	**FCC** FCC Announces Winners of Chair's Awards for Advancements in Accessibility	2021
[S.19]	**Apple ML Blog** Making Mobile Applications Accessible with Machine Learning	2021
[S.18]	**CMU SCS News** CMU, Apple Team Improves iOS App Accessibility	2021
[S.17]	**Apple** New features available with iOS 14	2020
[S.16]	**TechCrunch** iPhones can now automatically recognize and label buttons and UI features for blind users	2020
[S.15]	**Fast Company** The best student-design projects of 2020	2020
[S.14]	**AppleInsider** Siri may improve accuracy by mapping the room like a HomePod does	2020
[S.13]	**TechCrunch** Apple and CMU researchers demo a low friction learn-by-listening system for smarter home devices	2020
[S.12]	**Android Authority** What if your smart speaker could react to sounds in your home?	2020
[S.11]	**Carnegie Mellon HCII News** Wu Receives National Science Foundation Graduate Research Fellowship	2019
[S.10]	**Eureka Alert** New techniques allow greater control of smartwatches	2017
[S.9]	**Georgia Tech President's Newsletter** Improving Smartwatches	2017
[S.8]	**R&D World** New Techniques Allow Greater Control of Smartwatches	2017
[S.7]	**Gizbot** New technology lets you control smartwatch using breath and skin	2017
[S.6]	**Yahoo! Tech** Breathe in, breathe out: New technique controls smartwatch using breath and skin	2017
[S.5]	**Digital Trends** Breathe in, breathe out: New technique controls smartwatch using breath and skin	2017
[S.4]	**Georgia Tech GVU Center** Gaining Greater Control of Smartwatches	2017
[S.3]	**Georgia Tech ECE** New Techniques Allow Greater Control of Smartwatches	2017

[S.2] **YouTube – Georgia Tech** Interactive Techniques for Smartwatches   2017
[S.1] **Georgia Tech News Center** New Techniques Allow Greater Control of Smartwatches   2017

EMPLOYMENT

CMU Human-Computer Interaction Institute   August 2018 - Present
Graduate Research Assistant

· Developed accessible interactions for novel computing devices and modalities
· Researched methods for automatically detecting and addressing accessibility needs in mobile devices
· Explored sensing techniques for enabling intelligent and interactive environments

Apple Inc.   December 2022 - Present
Machine Learning Research Intern

· Developed machine learning models for predicting semantics from user interfaces
· Developed systems for improving the accessibility and usability of mobile apps

Meta Platforms Inc.   August 2022 - December 2022
Research Scientist Intern

· Researched user interfaces for augmented reality and virtual reality
· Applied computational methods to interaction and interface design

Apple Inc.   April 2019 - July 2022
Machine Learning + Accessibility Research Engineer (Contractor)

· Prototyped systems for improving accessibility of mobile technologies
· Researched machine learning and sensor-driven interaction techniques

Google AI Perception Team   June 2018 - August 2018
Software Engineering Intern, Research Role

· Prototyped novel interfaces for subtle control of wearable devices
· Integrated audio accessibility features into wearable devices

Georgia Tech Ubicomp Lab   January 2016 - May 2018
Undergraduate Researcher

· Explored methods for inferring lung-health from smartphone data using passive sensing
· Researched novel input interactions for smartwatches and head worn displays
· Served as mentor for graduate research group that explored input interfaces for wearable computers

USC Institute for Creative Technologies   June 2017 - August 2017
Undergraduate Research Intern

· Trained deep learning models for visual affect recognition
· Integrated affective language models, character animation system, and deep vision models to create a mobile virtual human system

Agency Oasis   June 2015 - August 2015
Web Development Intern

· Worked with C#, SQL Server, and Sitecore, an enterprise-grade .NET CMS
· Wrote software to automate and import Harvest timesheet data into Excel

TEACHING

CMU 05-410/05-610 User-Centered Research & Evaluation   January 2022 - May 2022
Graduate Teaching Assistant

· Taught lab section of 20 students
· Helped prepare teaching materials for user-centered research
· Helped create and grade assignments and tests

CMU 05-430/05-630 Programming User Interfaces   August 2021 - December 2021
Graduate Teaching Assistant

· Taught lab section of 20 students
· Helped prepare teaching materials for web-based UI development
· Helped create and grade assignments and tests

Georgia Tech CS4605/CS7470 Mobile & Ubiquitous Computing   January 2018 - May 2018
Project Mentor

· Mentored two groups of 4 students on projects related to mobile and ubiquitous computing
· Guided student-led course projects on input techniques for wearables and mobile games for asthma
· One group project resulted in a publication to international peer-reviewed conference (ISWC)

VOLUNTEERING & SERVICE

Organizing Committee (Student Innovation Contest Co-chair) for UIST 2023
Organizing Committee (Web Co-chair) for ASSETS 2022
Program Committee for CHI 2025
Program Committee for UIST 2024
Program Committee for FAccT 2023
Program Committee for CHI Late-Breaking Work 2022, 2023
Program Committee for CHI 2022 Workshop: Computational Approaches for Understanding, Generating, and Adapting User Interfaces
Area Chair for ICML 2023 Workshop: Artificial Intelligence & Human-Computer Interaction
Volunteer for CMU HCII PhD Application Support Program 2020, 2021, 2022
Reviewer for NeurIPS Workshop on Human Evaluation of Generative Models 2022
Reviewer for TOCHI 2022
Reviewer for NeurIPS Datasets and Benchmarks 2022
Reviewer for IMWUT 2019, 2022
Reviewer for DIS 2022
Reviewer for CHI 2020, 2021, 2022*, 2023, 2024
Reviewer for CHI Late-Breaking Work 2020, 2021, 2022, 2023
Reviewer for EICS 2020, 2021, 2022
Reviewer for International Journal of Human-Computer Studies 2021
Reviewer for IUI 2020
Reviewer for UIST 2019, 2020*, 2021*, 2022**, 2023, 2024
Reviewer for SIGGRAPH Posters 2023, 2024
Student Volunteer for ASSETS 2019
Student Volunteer for Ubicomp 2018

MENTORING AND ADVISING

---

* Indicates Special Recognition for review

Chaehyeon Kim (CMU - HCII REU) — Summer 2024

Yunchu Chen (CMU - HCII REU) — Summer 2024

Amanda (Xin Yue) Li (CMU - Undergraduate, Masters Research) — Spring 2023 - Summer 2024

Siyan Wang (CMU - HCII REU) — Summer 2022

Siman Shen (CMU - HCII REU) — Summer 2022

Katerina Nikiforova (CMU - Undergraduate Research) — Spring 2022

Cooper Colglazier (Georgia Tech - Project Mentor) — Spring 2018

Adhithya Ravishankar (Georgia Tech - Project Mentor) — Spring 2018

Yuyan Duan (Georgia Tech - Project Mentor) — Spring 2018

Yuanbo Wang (Georgia Tech - Project Mentor) — Spring 2018