

Franklin Mingzhe Li

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Education

- Sept 2020 – present **Doctor of Philosophy (Advised by Dr. Patrick A. Carrington),**
Carnegie Mellon University, Human-Computer Interaction Institute (Expected Graduation 2026 May).
- Sept 2020 – Dec 2022 **Master of Science (Advised by Dr. Patrick A. Carrington),**
Carnegie Mellon University, School of Computer Science (GPA 3.99/4.0).
- Sept 2018 – May 2020 **Master of Science (Advised by Dr. Khai N. Truong),**
University of Toronto, Computer Science (GPA 4.0/4.0).
- Aug 2013 – May 2018 **Bachelor of Applied Science (Advised by Dr. Khai N. Truong),**
University of Toronto, Electrical Engineering.

Peer-reviewed Journal Publications

- J5 Exploring the Impact of Emotional Voice Integration in Sign-to-Speech Translators for Deaf-to-Hearing Communication
Hyunchul Lim, Minghan Gao, **Franklin Mingzhe Li**, Nam Anh Dang, Ianip Sit, Michelle M Olson, Cheng Zhang
In Proceedings of ACM on Human-Computer Interaction (PACMHCI), CSCW October, 2025 (To Appear).
- J4 Understanding How Older Adults Comprehend COVID-19 Interactive Visualizations via Think-Aloud Protocol
Mingming Fan, Yiwon Wang, Yuni Xie, **Franklin Mingzhe Li**, Chunyang Chen
International Journal of Human-Computer Interaction (IJHCI), 2022.
- J3 An Exploration of Captioning Practices and Challenges of Individual Content Creators on YouTube for People with Hearing Impairments
Franklin Mingzhe Li, Cheng Lu, Zhicong Lu, Patrick Carrington, Khai N. Truong
In Proceedings of ACM on Human-Computer Interaction (PACMHCI), Volume 6, Issue CSCW1, Article 75, 2022.
- J2 FMT: A Wearable Camera-Based Object Tracking Memory Aid for Older Adults
Franklin Mingzhe Li, Di Laura Chen, Mingming Fan, Khai N. Truong
In Proceedings of ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2019.
- J1 Face Recognition Assistant for People with Visual Impairments
Mohammad Kianpisheh, **Franklin Mingzhe Li**, Khai N. Truong
In Proceedings of ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2019.

Peer-reviewed Full-Paper Conference Publications

- C27 AROMA: Mixed-Initiative AI Assistance for Non-Visual Cooking by Grounding Multimodal Information Between Reality and Videos
Zheng Ning, Leyang Li, Daniel Killough, JooYoung Seo, Patrick Carrington, Yapeng Tian, Yuhang Zhao, **Franklin Mingzhe Li**, Toby Jia-Jun Li
In Proceedings of the ACM Symposium on User Interface Software and Technology (UIST), 2025.
- C26 Exploring Object Status Recognition for Recipe Progress Tracking in Non-Visual Cooking
Franklin Mingzhe Li, Kaitlyn Ng, Bin Zhu, Patrick Carrington
In Proceedings of the 27th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2025.
- C25 More than One Step at a Time: Designing Procedural Feedback for Non-visual Makeup Routines
Franklin Mingzhe Li, Akihiko Oharazawa, Chloe Qingyu Zhu, Misty Fan, Daisuke Sato, Chieko Asakawa, Patrick Carrington
In Proceedings of the 27th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2025.
- C24 Understanding How Visually Impaired Players Socialize in Mobile Games
Zihe Ran, Xiyu Li, Qing Xiao, Yanyun Wang, **Franklin Mingzhe Li**, Zhicong Lu
In Proceedings of the 27th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2025.
- C23 Understanding the Video Content Creation Journey of Creators with Sensory Impairment in Kenya
Lan Xiao, Maryam Bandukda, **Franklin Mingzhe Li**, Mark Colley, Catherine Holloway
In Proceedings of the 27th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2025.
- C22 Towards Expressive Visual Content by Blind Creators Through AI Support
Lotus Zhang, Zhuohao (Jerry) Zhang, Gina Clepper, **Franklin Mingzhe Li**, Patrick Carrington, Jacob O. Wobbrock, Leah Findlater
In Proceedings of the 27th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2025.
- C21 How Users Who are Blind or Low Vision Play Mobile Games: Perceptions, Challenges, and Strategies
Zihe Ran, Xiyu Li, Qing Xiao, Xianzhe Fan, **Franklin Mingzhe Li**, Yanyun Wang, Zhicong Lu
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2025.
- C20 PANDA: Parkinson's Assistance and Notification Driving Aid
Tianyang Wen, Xucheng Zhang, Zhirong Wan, Jing Zhao, Yicheng Zhu, Ning Su, Xiaolan Peng, Jin Huang, Wei Sun, Feng Tian, **Franklin Mingzhe Li**
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2025.
- C19 SpellRing: Recognizing Continuous Fingerspelling in American Sign Language using a Ring
Hyunchul Lim, Nam Anh Dang, Dylan Lee, Tianhong Catherine Yu, Jane Lu, **Franklin Mingzhe Li**, Yiqi Jin, Yan Ma, Xiaojun Bi, François Guimbretière, Cheng Zhang
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2025.
- C18 A Recipe for Success? Exploring Strategies for Improving Non-Visual Access to Cooking Instructions
Franklin Mingzhe Li, Ashley Wang, Patrick Carrington, Shaun K. Kane
In Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2024.
- C17 A Contextual Inquiry of People with Vision Impairments in Cooking
Franklin Mingzhe Li, Michael Xieyang Liu, Shaun K. Kane, Patrick Carrington
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2024.

- C16 Co-design Accessible Public Robots: Insights from People with Mobility Disability, Robotic Practitioners and Their Collaborations
Howard Ziyu Han, **Franklin Mingzhe Li**, Alesandra Baca Vazquez, Daragh Byrne, Nikolas Martelaro, Sarah E Fox
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2024.
- C15 Designing Gaze-Assisted Upper-Body Gesture Interaction with and for People with Spinal Muscular Atrophy in VR
Jingze Tian, Yingna Wang, Keye Yu, Liyi Xu, Junan Xie, **Franklin Mingzhe Li**, Yafeng Niu, Mingming Fan
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2024.
- C14 Selenite: Scaffolding Online Sensemaking with Comprehensive Overviews Elicited from Large Language Models
Michael Xieyang Liu, Tongshuang Wu, Tianying Chen, **Franklin Mingzhe Li**, Aniket Kittur, Brad A Myers
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2024.
- C13 Embodied Exploration: Facilitating Remote Accessibility Assessment for Wheelchair Users with Virtual Reality
Siyu Pei, Alexander Chen, Chen Chen, **Franklin Mingzhe Li**, Megan Fozzard, Hao-Yun Chi, Nadir Weibel, Patrick Carrington, Yang Zhang
In Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2023.
- C11 Understanding Visual Arts Experiences of Blind People
Franklin Mingzhe Li*, Lotus Zhang*, Maryam Bandukda, Abigale Stangl, Kristen Shinohara, Leah Findlater, Patrick Carrington (*Equal contribution)
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2023.
- C10 Breaking the “Inescapable” Cycle of Pain: Supporting Wheelchair Users’ Upper Extremity Health Awareness and Management with Tracking Technologies
Yunzhi Li, **Franklin Mingzhe Li**, Patrick Carrington
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2023.
- C9 Freedom to Choose: Understanding Input Modality Preferences of People with Upper-body Motor Impairments for Activities of Daily Living
Franklin Mingzhe Li, Michael Xieyang Liu, Yang Zhang, Patrick Carrington
In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2022.
- C8 “It Feels Like Taking a Gamble”: Exploring Perceptions, Practices, and Challenges of Using Makeup and Cosmetics for People with Visual Impairments
Franklin Mingzhe Li*, Francheska Spektor*, Meng Xia*, Mina Huh*, Peter Cederberg, Yuqi Gong, Kristen Shinohara, and Patrick Carrington (*Equal contribution)
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2022.
- C7 Non-Visual Cooking: Exploring Practices and Challenges of Meal Preparation by People with Visual Impairments
Franklin Mingzhe Li, Jamie Dorst, Peter Cederberg, Patrick Carrington
In Proceedings of the 23rd International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2021.
- C6 ThumbTrak: Recognizing Micro-finger Poses Using a Ring with Proximity Sensing
Wei Sun, **Franklin Mingzhe Li**, Congshu Huang, Zhenyu Lei, Benjamin Steeper, Songyun Tao, Feng Tian, Cheng Zhang
In Proceedings of the 23rd International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI), 2021.

- C5 "I Choose Assistive Devices That Save My Face" A Study on Perceptions of Accessibility and Assistive Technology Use Conducted in China
Franklin Mingzhe Li, Di Laura Chen, Mingming Fan, Khai N. Truong
In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2021.
- C4 TeethTap: Recognizing Discrete Teeth Gestures using Motion and Acoustic Sensing on an Earpiece
Wei Sun*, **Franklin Mingzhe Li***, Benjamin Steeper*, Songlin Xu, Feng Tian, Cheng Zhang (*Equal Contribution)
In Proceedings of the 26th International Conference on Intelligent User Interfaces (IUI), 2021.
- C3 Eyelid Gestures on Mobile Devices for People with Motor Impairments
Mingming Fan*, Zhen Li*, **Franklin Mingzhe Li*** (*Equal Contribution)
In Proceedings of the 22nd International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2020, **Best Artifact Award**.
- C2 BrailleSketch: A Gesture-based Text Input Method for People with Visual Impairments
Franklin Mingzhe Li, Mingming Fan, Khai N. Truong
In Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2017.
- C1 The Living Room: Exploring the Haunted and Paranormal to Transform Design and Interaction
Michelle Annett, Matthew Lakier, **Franklin Mingzhe Li**, Daniel Wigdor, Tovi Grossman, George Fitzmaurice
In Proceedings of the 2016 ACM Conference on Designing Interactive Systems (DIS), 2016.

Peer-reviewed Poster Publications

- P4 Accessible Cyber-Physical Activities
Riku Arakawa*, **Franklin Mingzhe Li***, Nandi Zhang, Mina Huh, Amy Pavel, Ryo Suzuki, Patrick Carrington, Yukang Yan (Equal Contribution)
Adjunct Proceedings of the 38th Annual ACM Symposium on User Interface Software and Technology (2025).
- P3 OSCAR: Object Status and Contextual Awareness for Recipes to Support Non-Visual Cooking
Franklin Mingzhe Li, Kaitlyn Ng, Bin Zhu, Patrick Carrington
Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI), 2025.
- P2 Context matters: Investigating information sharing in mixed-visual ability social interactions
Maryam Bandukda, Yichen Wang, Monica Perusquia-Hernandez, **Franklin Mingzhe Li**, Catherine Holloway
Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI), 2024.
- P1 The Robot in Our Path: Investigating the Perceptions of People with Motor Disabilities on Navigating Public Space Alongside Sidewalk Robots
Howard Han, **Franklin Mingzhe Li**, Nikolas Martelaro, Daragh Byrne, Sarah E Fox
In Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS), 2023.

Professional Experiences

- May 2025 – **Research Intern at Google**, *Hosted by Dr. Cynthia Bennett, and Dr. Shaun Kane*,
Aug 2025 Worked on the research in AI and Accessibility.
- May 2019 – **Research Intern at Apple**, *Hosted by Dr. Jeffrey P. Bigham, and Dr. Xiaoyi Zhang*,
Sept 2019 Worked on the research in AI and Accessibility.
- May 2016 – **Analog Designer at AMD**,
Aug 2017 Designed circuit test bench, Cadence layout & schematics, automating test bench, standard cell.

May 2015 – **Research Intern at DGP Lab**, *Mentored by Dr. Daniel J. Wigdor, and Dr. Michelle Annett*,
Aug 2015 Worked on the research in Human-Computer Interaction, and interaction techniques of multi-touch interfaces.

Research Directions and Methods

Human-Computer Interaction, Accessibility, Ubiquitous Computing, Quantitative and Qualitative Study, Participatory Design, Scenario-based Study.

Awards, Grants, and Fellowship

Feb 2025 **Stuart K Card Fellowship**, Carnegie Mellon University (\$120000).
Oct 2022 **Graduate Student Assembly/Provost Conference Funds**, Carnegie Mellon University (\$750).
Aug 2022 **Google's Research Collabs (with Dr. Patrick Carrington and Dr. Shaun Kane)**, Google Inc. (\$80,000 Plus \$20,000 in Google Cloud).
Mar 2022 **Graduate Student Assembly/Provost Conference Funds**, Carnegie Mellon University (\$750).
Apr 2021 **Postgraduate Scholarship-Doctoral**, The Natural Sciences and Engineering Research Council of Canada (NSERC) (\$63,000).
Jan 2021 **Inclusive Design Challenge Award (Co-applicant)**, US Department of Transportation (\$300,000).
Oct 2020 **Best Artifact Award**, ASSETS 2020.
Sept 2018 **Faculty of Arts And Science Tuition Fellowship**, University of Toronto (\$18,558).
Nov 2018 **Faculty of Arts And Science Program-Level Fellowship**, University of Toronto (\$1,000).
Aug 2015 **UTRECS Scholarship**, University of Toronto (\$6,000).

Community Services

Member (2022-2024) and Vice-Chair (2024-Current), *SIGCHI Accessibility Committee*.

Organizing Committee, *Publication Chair (CHI 2025)*, *Accessibility Chair (ASSETS 2025, CHI 2024, CSCW 2023, HCOMP 2023, C&C 2023, C&C 2022, C&C 2021)*, *Inclusion and Broadening Participation Chair (UbiComp 2024)*, *Student Volunteer Chair (ASSETS 2022)*.

Program Committee, *CHI 2026, UbiComp/ISWC 2025, CHI 2025, ASSETS 2024, CHI 2024, Chinese-CHI 2021, CHI 2020 LBW*.

Session Chair, *CHI 2025, CHI 2024*.

Reviewer, *CHI 2025, IMWUT 2025, UIST 2024, IMWUT 2024, MobileHCI 2024, DIS 2024, CHI 2024, ASSETS 2023, CHI 2023, TACCESS 2022, IMWUT 2023, UIST 2023, TACCESS 2022, ISS 2022, CHI 2022, Chinese-CHI 2021, ISS 2021, IDC 2021, UIST 2021, CSCW 2021, CHI 2021, EICS PACM 2021, UIST 2020, IJHCS, CHI 2020, CHI 2020 Late Breaking Works, CHI 2019 Late Breaking Works*.

Student Volunteer, *ASSETS 2020*.

Jan 2025 **PhD Admission Committee**, *Carnegie Mellon University*.

Mar 2022 **Co-PhD Lead of Open House**, *Carnegie Mellon University*.

Jan 2022 **REU Admission Committee**, *Carnegie Mellon University*.

Dec 2018 – **Human-Computer Interaction Meeting Organizer**,
May 2019 *University of Toronto*.

Teaching Experiences & Invited Talks

Sept 2025 **Co-Instructor**,
Accessibility and Assistive Technology (05332/632), Carnegie Mellon University.

- Aug 2025 **Invited Talk: Conversational Audio Description Editor**,
Google LLC,
Invited by Dr. Cynthia Bennett and Dr. Shaun Kane.
- Mar 2024 **Invited Talk: Building Usable Systems for People with Disabilities in Physical Activities**,
University of Rochester,
Invited by Dr. Yukang Yan.
- Mar 2024 **Guest Lecture**,
Designing Human-Centered Software, Carnegie Mellon University,
Invited by Dr. Aaron Steinfeld.
- Feb 2024 **Guest Lecture**,
Designing Human-Centered Software, Carnegie Mellon University,
Invited by Dr. Sherry Tongshuang Wu.
- Oct 2023 **Invited Talk: Building Usable Systems for People with Disabilities in Physical Activities**,
University of Notre Dame,
Invited by Dr. Toby Jia-jun Li.
- Oct 2023 **Guest Lecture**,
Designing Human-Centered Software, Carnegie Mellon University,
Invited by Dr. Aaron Steinfeld and Dr. Sherry Tongshuang Wu.
- Jan 2023 – **Teaching Assistant**,
May 2023 *Designing Human-Centered Software, Carnegie Mellon University*.
- Mar 2023 **Invited Talk: Leveraging AI for Accessibility in Physical Space**,
APEX Lab, The Hong Kong University of Science and Technology (HKUST),
Invited by Dr. Mingming Fan.
- Feb 2023 **Invited Talk: Leveraging AI for Accessibility in Physical Space**,
DGP Lab, University of Toronto.
- Aug 2022 – **Teaching Assistant**,
Dec 2022 *User-Centered Research and Evaluation, Carnegie Mellon University*.
- Jan 2019 – **Teaching Assistant**,
April 2019 *CSC258H1S: Computer Organization, University of Toronto*.
- Sept 2018 – **Teaching Assistant**,
Dec 2018 *CSC258H1F: Computer Organization, University of Toronto*.

Selected Patent, Media Coverage and Featuring

- Mar 2025 **Yahoo News:** Smart ring “spellring” translates sign language into text.
- Mar 2025 **The Magazine of Cornell Ann S. Bowers College of Computing and Information Science:** AI ring tracks spelled words in American Sign Language.
- Dec 2024 **The Magazine of CMU's School of Computer Science:** Accessing Recipe Information Without Looking.
- Jun 2024 **The Magazine of CMU's School of Computer Science:** New Search Engine Tool Helps Users Make Sense of Unfamiliar Topics.
- Jul 2022 **The Magazine of CMU's School of Computer Science:** Accessibility Enables Equality.
- Jan 2022 **Communications of the ACM:** Eyelid gestures for people with motor impairments.
- Aug 2021 **US Patent:** On-the-fly calibration for improved on-device eye tracking.
- May 2021 **IEEE Spectrum:** The Next Frontier for Gesture Control is Teeth.
- Jan 2021 **Mobility21:** Mobility21 Researchers Win US Department of Transportation Inclusive Design Challenge Award.
- Sept 2019 **New Scientist:** Where have I left my wallet? This smart camera can remind you.

Mentorship

Feb 2025 **Chloe Zhu**, *Undergraduate Student at Carnegie Mellon University.*
Feb 2025 **Misty Fan**, *Undergraduate Student at Carnegie Mellon University.*
May 2024 **Areen Khalaila**, *REU Student at Carnegie Mellon University.*
May 2024 **Ashley Fong**, *REU Student at Carnegie Mellon University.*
Jan 2024 **Kaitlyn Ng**, *Undergraduate Student at Carnegie Mellon University.*
May 2023 **Howard Han**, *Master Student at Carnegie Mellon University.*
Sept 2022 **Ashley Wang**, *Master Student at Carnegie Mellon University.*
May 2022 **Rachel Sadeh**, *REU Student at Carnegie Mellon University.*
Oct 2021 **Mina Huh**, *Accessibility Research Assistant at KAIST.*
Jun 2021 **Yuqi Gong**, *Undergraduate Student at Carnegie Mellon University.*
Mar 2021 **Jamie Dorst**, *Undergraduate Student at Carnegie Mellon University.*
Mar 2021 **Peter Cederberg**, *Master Student at Carnegie Mellon University.*

Personal Interests

Cooking, Soccer, Hiking, Badminton, Swimming.