

YI-HAO PENG

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Research Interests

Human-Centered AI, Accessibility, Vision-Language Modeling, Multimodal Learning, Agents

Education

Ph.D. in Human-Computer Interaction, Carnegie Mellon University (CMU) 09/2020–current
• Advisors: Dr. Jeffrey Bigham and Dr. Amy Pavel

B.Sc. in Computer Science, National Taiwan University (NTU) 09/2015–6/2019
• Advisors: Dr. Mike Chen and Dr. Lung-Pan Cheng

Awards and Honors

Jacobs CERES (Connecting the EdTech Research Ecosystem) Fellowship 2022-2024
Adobe Research Fellowship (1 of 10 recipients worldwide) 2021
Best Undergraduate Research Award (1st place in NTU CS research exhibition) 2019
Appier Research Scholarship (Top AI/CS research award in Taiwan) 2018, 2019

Conference/Journal Publications

- [20] **Yi-Hao Peng**, Faria Huq, Yue Jiang, Jason Wu, Amanda Xin Yue Li, Jeffrey Bigham, Amy Pavel., *DreamStruct: Understanding Slides and User Interfaces via Synthetic Data Generation.*, European Conference on Computer Vision (ECCV), 2024.
- [19] Jason Wu, **Yi-Hao Peng**, Amanda Xin Yue Li, Amanda Swearngin, Jeffrey Bigham, Jeffrey Nichols., *UIClip: A Data-driven Model for Assessing User Interface Design.*, ACM Symposium on User Interface Software and Technology (UIST), 2024.
- [18] Mina Huh, Fangyuan Xu, **Yi-Hao Peng**, Chongyan Chen, Hansika Murugu, Danna Gurari, Eunsol Choi, Amy Pavel., *Long-form Answers to Visual Questions Asked by Blind and Low Vision People.*, Conference on Language Modeling (COLM), 2024.
- [17] Hao-Ping Lee, Wei-Lun Kao, Hung-Jui Wang, Ruei-Che Chang, **Yi-Hao Peng**, Fu-Yin Cherng, Shang-Tse Chen., *AdvCAPTCHA: Creating Usable and Secure Audio CAPTCHA with Adversarial Machine Learning.*, NDSS Symposium on Usable Security and Privacy (USEC), 2024.
- [16] Yaxin Hu, Laura Stegner, Yasmine Kotturi, Caroline Zhang, **Yi-Hao Peng**, Faria Huq, Yuhang Zhao, Jeffrey Bigham, Bilge Mutlu., *Designing a Conversational Telepresence Robot for Homebound Older Adults.*, ACM Conference on Designing Interactive Systems (DIS), 2024.
- [15] Mina Huh, **Yi-Hao Peng**, Amy Pavel., *GenAssist: Making Image Generation Accessible.*, ACM Symposium on User Interface Software and Technology (UIST), 2023. (**Best Paper Award**)
- [14] **Yi-Hao Peng**, Peggy Chi, Anjuli Kannan, Meredith Ringel Morris, Irfan Essa., *Slide Gestalt: Automatic Structure Extraction in Slide Decks for Non-Visual Access.*, ACM Conference on Human Factors in Computing Systems (CHI), 2023.

- [13] Jason Wu, Siyan Wang, Siman Shen, **Yi-Hao Peng**, Jeffrey Nichols, Jeffrey Bigham., *WebUI: A Dataset for Enhancing Visual UI Understanding with Web Semantics.*, ACM Conference on Human Factors in Computing Systems (CHI), 2023. (**Best Paper Honorable Mention Award**)
- [12] Lung-Pan Cheng, Yi Chen, **Yi-Hao Peng**, Christian Holtz., *Reality Rifts: Wonder-ful Interfaces by Disrupting Perceptual Causality.*, ACM Conference on Human Factors in Computing Systems (CHI), 2023.
- [11] Mina Huh, Saelyne Yang, **Yi-Hao Peng**, Xiang Anthony Chen, Young-Ho Kim, Amy Pavel., *AVscript: Accessible Video Editing with Audio-Visual Scripts.*, ACM Conference on Human Factors in Computing Systems (CHI), 2023.
- [10] **Yi-Hao Peng**, Jason Wu, Jeffrey Bigham, Amy Pavel., *Diffscriber: Describing Visual Design Changes to Support Mixed-ability Collaborative Presentation Authoring.*, ACM Symposium on User Interface Software and Technology (UIST), 2022.
- [9] Jaewook Lee, Jaylin Herskovitz, **Yi-Hao Peng**, Anhong Guo., *ImageExplorer: Multi-Layered Touch Exploration to Encourage Skepticism Towards Imperfect AI-Generated Image Captions.*, ACM Conference on Human Factors in Computing Systems (CHI), 2022.
- [8] **Yi-Hao Peng**, Jeffrey Bigham, Amy Pavel., *Slidecho: Flexible Non-Visual Exploration of Presentation Videos.*, ACM Conference on Computers and Accessibility (ASSETS), 2021.
- [7] **Yi-Hao Peng**, JiWoong Jang, Jeffrey Bigham, Amy Pavel., *Say It All: Feedback for Improving Non-Visual Presentation Accessibility.*, ACM Conference on Human Factors in Computing Systems (CHI), 2021.
- [6] Sih-Pin Lai, Cheng-An Hsieh, Yu-Hsin Lin, Teepob Harutaipree, Shih-Chin Lin, **Yi-Hao Peng**, Lung-Pan Cheng, Mike Chen., *StrengthGaming: Enabling Dynamic Repetition Tempo in Strength Training-based Exergame Design.*, ACM Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI), 2020.
- [5] **Yi-Hao Peng**, Carolyn Yu, Shi-Hong Liu, Chung-Wei Wang, Paul Taelle, Neng-Hao Yu, Mike Chen., *WalkingVibe: Reducing Virtual Reality Sickness and Improving Realism while Walking in VR using Unobtrusive Head-mounted Vibrotactile Feedback.*, ACM Conference on Human Factors in Computing Systems (CHI), 2020.
- [4] **Yi-Hao Peng**, Muh-Tarng Lin, Yi Chen, TzuChuan Chen, Pin-Sung Ku, Paul Taelle, Mike Chen., *PersonalTouch: Improving Touchscreen Usability by Personalizing Accessibility Settings based on Individual User's Touchscreen Interaction.*, ACM Conference on Human Factors in Computing Systems (CHI), 2019.
- [3] Shi-Hong Liu, Neng-Hao Yu, Liwei Chan, **Yi-Hao Peng**, Wei-Zen Sun, Mike Chen., *PhantomLegs: Reducing Virtual Reality Sickness Using Head-Worn Haptic Devices.* IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2019.
- [2] Pin-Sung Ku, Yu-Chih Lin, **Yi-Hao Peng**, Mike Chen., *PeriText: Utilizing Peripheral Vision for Reading Text on Augmented Reality Smart Glasses.*, IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2019.

- [1] **Yi-Hao Peng**, Ming-Wei Hsu, Paul Tael, Ting-Yu Lin, Po-En Lai, Leon Hsu, Tzu-Chuan Chen, Te-Yen Wu, Yu-An Chen, Hsien-Hui Tang, Mike Chen., *SpeechBubbles: Enhancing Captioning Experiences for Deaf and Hard-of-Hearing People in Group Conversations.*, ACM Conference on Human Factors in Computing Systems (CHI), 2018.

Professional Experience

- Adobe Research — Research Intern, Creative Intelligence 05/2024–09/2024
- Collaborators/Mentors: Ding Li, Mira Dontcheva
 - Develop algorithmic agents for creativity authoring
- Google Research — Research Intern, Machine Perception 05/2022–09/2022
- Collaborators/Mentors: Peggy Chi, Anjuli Kannan, Merrie Morris, Irfan Essa
 - Co-initiated research between Google Perception, Brain, and Cloud
 - Built perceptual algorithms for visual story understanding and generation [14]

Skills

Programming Language: Python, C/C++, JavaScript, Swift, R
Software and Tools: PyTorch, Keras, Scikit-learn, iOS, Unity3D

Volunteer and Services

Conference Program Committee:

- ACM CHI '25, FAccT '23

Conference Organizer (Chair/Co-Chair):

- Accessibility at ACM MobileHCI '19 & UIST '22–'23; Publicity at ASSETS '23

Paper Reviewer (100+):

- ACM CHI '20–'24, UIST '20–'24, PACM HCI '21–'24; IEEE TVCG '21
- Special Recognition: ACM UIST '22 x 1, UIST '24 x 2

School Committee:

- Ph.D. Admission Committee: 2023-2024 cycle

Teaching

- Programming Usable Interface — Teaching Assistant (CMU) 08/2023–01/2024
- Leading weekly lab lectures on web UI development to a class of 13 students
- Design Human-Centered Software — Teaching Assistant (CMU) 08/2022–01/2023
- Grading and providing support for students' assignments (*Processing* program)
- Building Interactive Technology — Teaching Assistant (NTU) 09/2019–01/2020
- Teaching students to engineer interactive software and hardware systems
 - Recognized by NTU CS Excellent Teaching Assistant Award (2020)
- HCI with Mobile Phones and Services — Teaching Assistant (NTU) 09/2018–01/2019
- Mentoring students' research projects [3, 6]