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Ruei-Che Chang

Education

2022–Present **University of Michigan**, *Ann Arbor, Michigan*
Ph.D. Candidate in Computer Science & Engineering.
Human-AI Lab, advised by Anhong Guo

2020–2022 **National Taiwan University**, *Taipei, Taiwan*
Visiting Student and Research Assistant.
Interactive Graphics Lab, advised by Bing-Yu Chen

2019–2021 **Dartmouth College**, *Hanover, New Hampshire*
M.S. in Computer Science.

2014–2018 **National Cheng Kung University**, *Tainan, Taiwan*
B.S. in Electrical Engineering.

Professional Experiences

2024 **Meta Reality Labs Research**, *Toronto, Ontario, Canada*
May – Aug **Research Scientist Intern**. Host: Hemant Surale, Michael Glueck, Tovi Grossman.
- Explored visual-audio modality transitions for mobile tasks on the go.

Awards and Honors

2025 **Apple Scholars in AI/ML PhD Fellowship (AI for Accessibility)**
Full tuition and stipend coverage, and travel fund each year (2025-2027)

2024 **Best Paper Award at ACM UIST 2024 for WorldScribe [C.15]**
Top 1% out of 608 submissions

Weinberg Cognitive Science Fellowship
Full tuition and stipend coverage for one semester

Finalist, CSE Honors Competition, University of Michigan
One of the five finalists recognized as "top research done by PhD students" at CSE. Awarded $600.

2023 **Rackham International Students Chia-Lun Lo Fellowship**
$13,770 for stipend in Summer 2024

2023-2025 **Special Recognition for Outstanding Reviews**
CHI '23 '24 '25, **UIST** '23 '24, **DIS** '24

2022-2024 **Rackham Travel Grant Awards**
UIST'22 ($900), UIST'23 ($900), ASSETS'24 ($1100)

2022 **University of Michigan CSE Departmental Fellowship**
Full tuition and stipend coverage for first-year PhD Study

2020 **Best Paper Honorable Mention at ACM CHI 2020 for Glissade [C.2]**
Top 5% out of 3216 submissions

2019 **Dartmouth College Tuition Scholarship**
75% tuition coverage for master's study

Peer-Reviewed Full Papers

2024 [C.15] **Ruei-Che Chang**, Yuxuan Liu, Anhong Guo. "WorldScribe: Towards Context-Aware Live Visual Descriptions." *In The 37th Annual ACM Symposium on User Interface Software and Technology* (**UIST'24**). Pittsburgh, PA, USA. 2024. [Acceptance Rate: 24%] 🏆 **Best Paper Award**

[C.14] **Ruei-Che Chang**, Chia-Sheng Hung, Bing-Yu Chen, Dhruv Jain, Anhong Guo. "SoundShift: Exploring Sound Manipulations for Accessible Mixed-Reality Awareness." *In Proceedings of the 2024 ACM Conference on Designing Interactive Systems* (**DIS'24**). Copenhagen, Denmark. 2024.

[C.13] **Ruei-Che Chang**, Yuxuan Liu, Lotus Zhang, Anhong Guo. "EditScribe: Non-Visual Image Editing with Natural Language Verification Loop." *In Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility* (**ASSETS'24**). St. Jonh's, Newfoundland, Canada. 2024. [Acceptance Rate: 30%]

[C.12] Rosiana Natalie, **Ruei-Che Chang**, Smitha Sheshadri, Anhong Guo, Kotaro Hara. "Audio Description Customization." *In Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility* (**ASSETS'24**). St. Jonh's, Newfoundland, Canada. 2024. [Acceptance Rate: 30%]

[C.11] Andi Xu, Minyu Cai, Dier Hou, **Ruei-Che Chang**, Anhong Guo. "ImageExplorer Deployment: Understanding Text-Based and Touch-Based Image Exploration in the Wild." In *Proceedings of the 21st Web for All Conference* (**W4A 2024**). Sentosa, Singapore. 2024.

[C.10] Hao-Ping Lee, Wei-Lun Kao, Hung-Jui Wang, **Ruei-Che Chang**, Yi-Hao Peng, Fu-Ying Cherng, Shang-Tse Chen. "AdvCAPTCHA: Creating Usable and Secure Audio CAPTCHA with Adversarial Machine Learning." *NDSS Symposium on Usable Security and Privacy* (**USEC'24**). San Diego, California. 2024.

2023 [C.9] **Ruei-Che Chang***, Seraphina Yong*, Fang-Ying Liao, Chih-An Tsao, Bing-Yu Chen. "Understanding (Non-)Visual Needs of the Design of Laser Cut Architecture." *In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (**CHI'23**). Hamberg, Germany. 2023. [Acceptance Rate: 28.39%]

2022 [C.8] **Ruei-Che Chang**, Chao-Hsien Ting, Chia-Sheng Hung, Wan-Chen Lee, Liang-Jin Chen, Yu-Tzu Chao, Bing-Yu Chen, Anhong Guo. "OmniScribe: Authoring Immersive Audio Descriptions for 360° Videos." *In The 35th Annual ACM Symposium on User Interface Software and Technology* (**UIST'22**). Bend, Oregon. 2022. [Acceptance Rate: 26.3%]

[C.7] Ching-Wen Hung, **Ruei-Che Chang**, Hong-Sheng Chen, Chung-Han Liang, Liwei Chan, Bing-Yu Chen. "Puppeteer: Exploring Intuitive Hand Gestures and Upper-Body Postures for Manipulating Human Avatar Actions." *In The 28th Annual ACM Symposium on Virtual Reality Software and Technology* (**VRST'22**). Tsukuba, Japan. 2022. [Acceptance Rate: 26.7%]

2021 [C.6] **Ruei-Che Chang**, Chih-An Tsao, Fang-Ying Liao, Seraphina Yong, Tom Yeh, Bing-Yu Chen. "Daedalus in the Dark: Designing for Non-Visual Accessible Construction of Laser-Cut Architecture." *In The 34th Annual ACM Symposium on User Interface Software and Technology* (**UIST'21**). Virtual Event. 2021. [Acceptance Rate: 21%]

[C.5] **Ruei-Che Chang***, Wen-Ping Wang*, Chi-Huan Chiang, Te-Yen Wu, Zheer Xu, Justin Luo, Bing-Yu Chen, Xing-Dong Yang. "AccessibleCircuits: Adaptive Add-On Circuit Components for People with Blindness or Low Vision." *In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (**CHI'21**). Virtual Event, Japan. 2021. [Acceptance Rate: 26.3%]

2020 [C.4] **Ruei-Che Chang***, Chi-Huan Chiang*, Shuo-wen Hsu, Chih-Yun Yang, Da-Yuan Huang, Bing-Yu Chen. 2020. "TanGo: Exploring Expressive Tangible Interactions on Head-Mounted Displays." *In Symposium on Spatial User Interaction* (**SUI'20**). Virtual Event. 2020. [Acceptance Rate: 31%]

[C.3] **Ruei-Che Chang***, Yi-Shyuan Chiang*, Yi-Lin Chuang, Shih-Ya Chou, Hao-Ping Lee, I-Ju Lin, Jian Hua Jiang Chen, Yung-Ju Chang. "Exploring the Design Space of User-System Communication for Smart home Routine Assistants." *In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (**CHI'20**). Virtual Event. 2020. [Acceptance Rate: 24.3%]

[C.2] Kai-Chieh Huang, Chen-Kuo Sun, Da-Yuan Huang, Yu-Chun Chen, **Ruei-Che Chang**, Shuo-wen Hsu, Chih-Yun Yang, Bing-Yu Chen. "Glissade: Generating Balance Shifting Feedback to Facilitate Auxiliary Digital Pen Input." *In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems.* (**CHI'20**). Virtual Event. 2020. [Acceptance Rate: 24.3%] **Best Paper Honorable Mention (Top 5% of 3126 submissions)**

2019 [C.1] Chi Wang, Da-Yuan Huang, Shuo-Wen Hsu, Chu-En Hou, Yeu-Luen Chiu, **Ruei-Che Chang**, Jo-Yu Lo, Bing-Yu Chen. "Masque: Exploring Lateral Skin Stretch Feedback on the Face with Head-Mounted Displays." *In Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology* (**UIST'19**). New Orleans, LA. 2019. [Acceptance Rate: 24.4%]

Posters and Demos

2024 [A.3] **Ruei-Che Chang**, Yuxuan Liu, Anhong Guo. "Demonstration of WorldScribe: Towards Context-Aware Live Visual Descriptions." *In The 37th Annual ACM Symposium on User Interface Software and Technology* (**UIST'24**). Pittsburgh, PA, USA. 2024.

2023 [A.2] **Ruei-Che Chang**, Chia-Sheng Hong, Dhruv Jain, Anhong Guo. "SoundBlender: Exploring Sound Manipulations for Mixed-Reality Awareness." *In The 36th Annual ACM Symposium on User Interface Software and Technology* (**UIST'23 Demo**). San Francisco, California. 2023.

2022 [A.1] Ching-Wen Hung, **Ruei-Che Chang**, Hong-Sheng Chen, Chung-Han Liang, Liwei Chan, Bing-Yu Chen. "Puppeteer: Manipulating Human Avatar Actions with Intuitive Hand Gestures and Upper Body Postures." *In The 35th Annual ACM Symposium on User Interface Software and Technology* (**UIST'22 Poster**). Bend, Oregon. 2022.

Past Research Experiences

Sep 2021 – Apr 2022 **Human-AI Lab, University of Michigan**
Research Intern, advised by Anhong Guo.
- Developed OmniScribe for authoring immersive audio descriptions for 360° videos [C.8].

Jun 2020 – Jul 2022 **Interactive Graphics Lab, National Taiwan University**
Visiting Student, advised by Bing-Yu Chen and Tom Yeh (University of Colorado).
- Developed Daedalus for non-visual accessible construction of laser-cut architecture [C.6].
- Conducted study to understand (non-)visual needs for laser-cut model design [C.9].

Feb 2019 – Aug 2019 ***Research Assistant, advised by Bing-Yu Chen.***
Developed Unity applications for Glissade[C.2] and Masque [C.1].
- Developed TanGo for expressive haptic interaction on VR headset [C.4].

Sep 2018 – Apr 2019 **Mobile and Ubiquitous Interaction Lab, National Yang Ming Chiao Tung University**
Research Assistant, advised by Yung-Ju (Stanley) Chang.
- Designed and conducted an experiment to understand the friction between human and the smart home AI agent [C.3].

Academic Services

80+ papers reviewed.
Special recognition for outstanding reviews in UIST'23, CHI'23, CHI'24, DIS'24, UIST'24, CHI'25
Programm Committee Associate Chair CHI'23 LBW, CHI'24 LBW, CHI'25 LBW

Reviewer CHI('22 '23 '24 '25), UIST('21 '22 '23 '24), CSCW('23), TOHCI('23), TEI('23), SUI('23), DIS('22 '24), ISS('22), MobileHCI('22), IEEE VR('23 '24), VRST('23), CHI LBW('20 '21 '22)

Student Volunteer UIST'22

Invited Talk

Nov 2024 **CMU Accessibility Lunch Seminar.** *"Building a Real-World Assistant Agent for People who are blind"*

Nov 2024 **UMich CSE Honor Competition.** *"WorldScribe: Towards Context-Aware Live Visual Descriptions"*

Media Coverage

Nov 2024 **University of Michigan Engineering News.** "CSE Graduate Honors Competition showcases exceptional research by PhD students"

Oct 2024 **Health Tech World.** "AI tool gives blind person 'picture of the real world' "

Oct 2024 **University of Michigan Engineering News.** "Real-time descriptions of surroundings for people who are blind"

Teaching Experiences

Winter 2024 **EECS493 User Interface Development,** Graduate Student Instructor.

Mentorship

2024–present **Jovan Zheng Feng Yap**, *Undergrad* at UMich.
2024–present **Wenqian Trista Liu**, *MS student* at UMich.
2023–2024 **Yuxuan Liu**, *Undergrad* at UMich. (*First Position*: PhD student at UMich)
2023–2024 **Linfeng Song**, *Undergrad* at UMich. (*First Position*: MS student at UPenn)
2023–2024 **Hyeji Han**, *MS student* at UMich.
2023–2024 **Andi Xu**, *Undergrad* at UMich. (*First Position*: MS Student at Stanford)
2022–2023 **Minyu Cai**, *Undergrad* at UMich. (*First Position*: MS student at CMU)
2022–2023 **Dier Hou**, *Undergrad* at UMich. (*First Position*: MS student at UCSD)
2022–2023 **Chia-Sheng Hung**, *MS student* at National Taiwan University. (*First Position*: Amazon, Taiwan)
2021–2022 **Fang-Ying Liao**, *MS student* at National Taiwan University. (*First Position*: Syntec, Taiwan)
2021–2022 **Chao-Hsien Ting**, *MS student* at National Taiwan University.
2021 **Chih-An Tsao**, *MS student* at National Taiwan University. (*First Position*: Sony, Taiwan)

Skills

Programming Java, C#, Python, JavaScript, ROS, OpenCV, MongoDB, Swift, LaTeX
Prototyping Arduino, 3D-printing, Fusion 360, Laser-cutting
Platforms/IDE Unity3D, Android Studio, Fusion 360, Xcode