

# Ching-Yi Tsai

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XR Interaction, Perceptual Design, Haptics

## Education

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### Princeton University

PhD Student in Computer Science

Advisor: [Parastoo Abtahi](#)

New Jersey, USA

Start in July 2024

### National Taiwan University

M.S. in Networking and Multimedia

Advisor: [Mike Y. Chen](#)

Taipei, Taiwan

Sept 2020 - June 2022

### National Taiwan University

B.S. in Computer Science and Information Engineering

Taipei, Taiwan

Sept 2016 - June 2020

## Research / Work Experience

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### National Taiwan University

Graduate Research Assistant at NTU CPL lab

Advisor: [Lung Pan Cheng](#)

Taipei, Taiwan

Sept 2023 - Feb 2024

### Obligatory Military Service

Marine Corps

Kaohsiung, Taiwan

April 2023 - Augt 2023

### University of Waterloo

Graduate Research Assistant at Waterloo HCI lab

Advisor: [Daniel Vogel](#)

Ontario, Canada / Remote

Nov 2022 - March 2023

### National Taiwan University

Graduate Research Assistant at NTU HCI lab

Advisor: [Mike Yen Chen](#)

Taipei, Taiwan



Sept 2022 - Nov 2022

## Publication

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### Full Paper

- [C8] [Ching-Yi Tsai](#), Ryan Yen, Daekum Kim, Daniel Vogel **"Gait Gestures: Examining Stride and Foot Strike Variation as an Input Method While Walking"** (UIST'24)  
*Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (UIST'24)*
- [C7] Chia-An Fan, En-Huei Wu, Chia-Yu Cheng, Yu-Cheng Chang, Alvaro Lopez, Yu Chen, Chia-Chen Chi, Yi-Sheng Chan, [Ching-Yi Tsai](#), Mike Y. Chen **"SpinShot: Optimizing Both Physical and Perceived Force Feedback of Flywheel-Based, Directional Impact Handheld"** (UIST'24)  
*Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (UIST'24)*

- [C6] Shun-Yu Wang, Wei-Chung Su, Serena Chen, Ching-Yi Tsai, Marta Misztal, Katherine M. Cheng, Alwena Lin, Yu Chen, Mike Y. Chen **“RoomDreaming: Generative-AI Approach to Facilitating Iterative, Preliminary Interior Design Exploration”**  
*Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI'24)*
- [C5] Pin Chun Lu, Che Wei Wang, Yu Lun Hsu, Alvaro Lopez, Ching-Yi Tsai, Chiao-Ju Chang, Wei Tian Mireille, Mike Y. Chen **“VeeR: Exploring the Feasibility of Deliberately Designing VR Motion that Diverges from Mundane, Everyday Physical Motion to Create More Entertaining VR Experiences”**  
*Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI'24)*
- [A1] Yi-Shuo Lin, Ching Yi Tsai, Lung-Pan Cheng **“Clonemator: Composing Spatiotemporal Clones to Create Interactive Automators in Virtual Reality”** *arXiv:2311.04427, Nov. 2023.*  
<https://doi.org/10.48550/arXiv.2311.04427>
- [C4] Po-Yu Chen\*, Ching-Yi Tsai\*, Wei-Hsin Wang\*, Chao-Jung Lai, Chia-An Fan, Shih Chin Lin, Chia-Chen Chi, Mike Y. Chen 2023 **“AirCharge: Amplifying Ungrounded Impact Force by Accumulating Air Propulsion Momentum”** (\* equal contribution)  
*Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology (UIST'23)*
- [C3]  Ching-Yi Tsai, I-Lun Tsai, Chao-Jung Lai, Derrek Chow, Lauren Wei, Lung-Pan Cheng, Mike Y Chen 2022 **“AirRacket: Perceptual Design of Ungrounded, Directional Force Feedback to Improve Virtual Racket Sports Experiences”**  
*Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI'22)*  
**Best Paper Award, Top 1% in all submitted papers**
- [C2]  Yu-Hsin Lin, Yu-Wei Wang, Pin-Sung Ku, Yun-Ting Cheng, Yuan-Chih Hsu, Ching-Yi Tsai, Mike Y Chen 2021 **“HapticSeer: A Multi-channel, Black-box, Platform-agnostic Approach to Detecting Video Game Events for Real-time Haptic Feedback”**  
*Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI'21)*  
**Honorable Mention Award, Top 5% in all submitted papers**
- [C1] Chin Guan Lim, Chin Yi Tsai, Mike Y Chen 2020 **“MuscleSense: Exploring Weight Sensing using Wearable Surface Electromyography (sEMG)”**  
*Proceedings of the Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI'20)*

### Demo, Poster, and Extended Abstract

- [E3]  Ching-Yi Tsai, Chen-Kuo Sun, Lung-Pan Cheng 2022 **“Garnish into Thin Air”**  
*The Adjunct Publication of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22 Adjunct, Student Innovation Contest)*  
**People's Choice Best SIC Award**
- [E2] Yu-Wei Wang, Yu-Hsin Lin, Yoko Miyatake, Ching-Yi Tsai, Pin-Sung Ku, Mike Y. Chen 2021 **“JetController: High-speed Ungrounded 3-DoF Force Feedback Controllers using Air Propulsion Jets”**  
*ACM SIGGRAPH 2021 Labs (SIGGRAPH'21 Labs)*

- [E1] Yu-Wei Wang, Yu-Hsin Lin, Pin-Sung Ku, Yōko Miyatake, Po-Yu Chen, Chun-Miao Tseng, [Ching-Yi Tsai](#), Mike Y Chen **“Demonstration of JetController: High-speed Ungrounded Force Feedback Controllers Using Air Propulsion Jets”**  
*Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI'21 EA)*

**Note about venues:** CHI (ACM Conference on Human Factors in Computing Systems) is recognized as a very top-tier HCI conference and venue (ranked #1 on Google Scholar). The average acceptance rate for CHI is 23%.

## Ongoing Research Project

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### **Augmenting Everyday Objects with Anthropomorphic Reactions in Mixed Reality to Convey Physical Affordance**

This project aims to improve user interaction with everyday objects in mixed reality by anthropomorphizing objects.

- Implementing MR systems that overlay everyday objects with interactive arms and faces to perform human-like reactions.
- Mapping different types of sociability to objects based on their physical properties using LLM model.

## Honor & Award

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| 2024 | <b>Special Recognition for Outstanding Review at ACM TEI 2024</b><br>1 recognition for reviewing TEI 2024 papers  |
|      | <b>Special Recognition for Outstanding Review at ACM DIS 2024</b><br>2 recognition for reviewing DIS 2024 papers  |
| 2023 | <b>Special Recognition for Outstanding Review at ACM UIST 2023</b><br>1 recognition for reviewing UIST 2023 papers  |
| 2022 | <b>Best Paper Award for AirRacket [C3] at ACM CHI 2022</b><br>Awarded to top 1% of all submitted papers   |
|      | <b>Best SIC Award (People’s Choice) for “Garnish into Thin Air” [E2] at ACM UIST 2022</b><br>Awarded to UIST22 student innovation contest group with the most audience votes. |
|      | <b>Special Recognition for Outstanding Review at ACM CHI 2023</b><br>1 recognition for reviewing CHI 2023 papers  |
|      | <b>Highly Useful Review at ACM VRST 2023</b><br>1 recognition for reviewing VRST 2023 papers  |
|      | <b>NTUEE-1975 Innovation and Entrepreneurship Awardee</b><br>(Institutional) Awarded to top students based on academic / industry excellence - NTD 100, 000                   |
|      | <b>Gary Marsden Travel Award</b><br>(International) Awarded to early researchers for SIGCHI conference opportunities. - USD 2,500   |
|      | <b>Appier Scholarship</b><br>(National) Awarded to domestic researchers for top conference opportunities. - NTD 50,000  |
| 2021 | <b>Honorable Mention Award for HapticSeer [C2] at ACM CHI 2021</b><br>Awarded to top 5% of all submitted papers   |
|      | <b>1st Place Award at Line Hackathon 2021</b><br>(National) Championship over 200+ teams - NTD 100, 000   |
| 2019 | <b>Finalist at International WorldQuant Challenge</b><br>(National) Finalist at quant trading competition over 40+ teams.   |
| 2018 | <b>Finalist at Bo-Le AI x CSR Competition</b><br>(National) Finalist for AI-based e-commerce solutions for over 50+ startup teams.  |

## Academic Service

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Reviewing (41) 2024 **UIST\* CHI DIS\* TEI\* VRST ISS CHI-LBW**  
2023 **UIST\* CHI\* DIS VRST AH MobileHCI CHI-LBW**  
2022 **DIS VRST\***  
(\*: recognition for outstanding or highly useful review)

Host **TAICHI'21** Co-host Online Keynote: "TAICHI x UIST- UIST Community in Taiwan"

Invited Talk **SIGGRAPH Asia'22** Invited to present AirRacket [**C3**] in "Best of HCI" Session  
**TAICHI'22** Presenting AirRacket [**C3**] in "SIGCHI Corridor" Session  
**TAICHI'21** Presenting JetController [**E1**] in "Best of HCI" Session

Organizer **UCCU 2021**, local UIST/CHI/CSCW/UbiComp event due to COVID-19

**Note about conferences:** TAICHI is the top domestic HCI conference in Taiwan.

## Teaching Experience

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Teaching Assistant **Advanced Human-Computer Interaction** 2021 Fall  
Graduate course at NTU CSIE, CSIE7644

Teaching Assistant **Introduction to Human-Computer Interaction and Design** 2020 Spring  
Undergraduate course at NTU CSIE, CSIE5641

## Selected Press Coverage

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**New Scientist** "Virtual tennis racket uses air jet to recreate feel of hitting a ball."  
**VR Times** "Researchers Use Air to Simulate Haptic Feedback in VR Sports."  
**MIXED Reality News** "Air pressure simulates racket haptics in VR."

## Skill & Others

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Programming Python, Javascript, C++, C, C#, R, HTML, CSS, Matlab.  
Dev Tool Tensorflow, Keras, Unity, Xcode, Android Studio, React, Node.js, p5.js, jQuery, Git, Arduino, Fusion360.  
Design Tool Figma, EasyEDA, Arduino, Davinci Resolve, Adobe Creative Cloud.  
Hobby Saxophone (jazz / classical), Kirigami, Jogging  
Language English, Chinese

## Referee

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**Mike Y. Chen**  
Professor  
National Taiwan University  
[mikechen@csie.ntu.edu.tw](mailto:mikechen@csie.ntu.edu.tw)  
[C1, C2, C3, C4, C5, C6, E1, E2]

**Daniel Vogel**  
Associate Professor  
University of Waterloo  
[dvogel@uwaterloo.ca](mailto:dvogel@uwaterloo.ca)  
[C8]

**Lung-Pan Cheng**  
Associate Professor  
National Taiwan University  
[lung-pan.cheng@csie.ntu.edu.tw](mailto:lung-pan.cheng@csie.ntu.edu.tw)  
[C3, E3, A1]

