Yi-Chi Liao

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INTRODUCTION

A Ph.D. candidate in Human-Computer Interaction (graduating Dec 2023) with top-tier paper publications (CHI/UIST/etc) at Aalto University, supervised by Prof. Antti Oulasvirta; also a postdoc researcher at Saarland University, supervised by Prof. Jürgen Steimle and Prof Anna Feit. My research directions:

- **Enhancing Human-in-the-Loop Optimization:** Integrating advanced machine learning techniques into optimization methods, assisting the designers' decision-making, achieving real-time interface adaptation, and fostering effective human-AI interactions [1,2,3,5,6,7,8].
- **Modeling Human Motions via Deep Reinforcement Learning:** Modeling, understanding, and simulating human motions when using interactive systems in physics simulations [4,6].
- **Building Novel Interactions:** Exploring novel input techniques [7,10,14], haptic displays [7,9,12,13], AR/VR interactions [5,11], and ML-based design tools [2,5].

EDUCATION

Aalto University, Helsinki, Finland

- Ph.D. in School of Electrical Engineering — May 2018 – Dec 2023
  - Dissertation: Human-in-the-Loop Design Optimization
  - Adviser: Dr. Antti Oulasvirta
  - Opponent: Dr. Pedro Lopes

National Taiwan University, Taipei City, Taiwan

- M.B.A. in Information Management — Sep 2014 – Jun 2017
  - Thesis: Effective Character Output Using a Wrist-Worn Tactile Display
  - Advisor: Dr. Bing-Yu Chen and Dr. Liwei Chan.
- B.B.A. in Information Management — Sep 2010 – Jun 2014

PUBLICATIONS

JOURNALS

[1] Yi-Chi Liao, John J. Dudley, George B. Mo, Chun-Lien Cheng, Liwei Chan, Antti Oulasvirta, and Per Ola Kristensson, "Interaction Design With Multi-objective Bayesian Optimization," in *Proceedings of the IEEE Pervasive Computing 2023*, Jan 2023.

[2] George B. Mo, John J. Dudley, Liwei Chan, Yi-Chi Liao, Antti Oulasvirta, and Per Ola Kristensson, "Cooperative Multi-Objective Bayesian Design Optimization," cond. accepted in *Proceedings of the ACM Transactions on Interactive Intelligent Systems 2023*, to be released soon.

CONFERENCES

[3] Lena Hegemann, Yue Jiang, Joon-Gi Shin, Yi-Chi Liao, Markku Laine, and Antti Oulasvirta, "Computational Assistance for User Interface Design: Smarter Generation and Evaluation of Design Ideas," in *Proceedings of the CHI 2023 Adjunct*, Hamburg, Germany, May 2023.

[4] Yi-Chi Liao, Kashyap Todi, Aditya Acharya, Antti Keurulainen, Andrew Howes, and Antti Oulasvirta, "Rediscovering Affordance: A Reinforcement Learning Perspective," in *Proceedings of the CHI 2022*, New Orleans, Louisiana, Apr 2022. (Direct acceptance rate = 12.5%)

[5] Liwei Chan, Yi-Chi Liao, George B. Mo, John J. Dudley, Chun-Lien Cheng, Per Ola Kristensson, and Antti Oulasvirta, "Investigating Positive and Negative Qualities of Human-in-the-Loop Optimization for Designing Interaction Techniques," in *Proceedings of the CHI 2022*, New Orleans, Louisiana, Apr 2022. (Direct acceptance rate = 12.5%). **Honorable Mention Award**.

[6] Yi-Chi Liao, "Computational Workflows for Designing Input Devices," in *Proceedings of the CHI 2021 Adjunct*, Yokohama, Japan, May 2021. (Acceptance rate = 21.7%)

[7] Yi-Chi Liao, Sunjun Kim, Byungjoo Lee, and Antti Oulasvirta, "Button Simulation and Design via FDVV Models," in *Proceedings of the CHI 2020*, Honolulu, HI, May 2020. (Acceptance rate = 24.3%)

[8] Yi-Chi Liao, Sunjun Kim, Byungjoo Lee, and Antti Oulasvirta, "Press'Em: Simulating Varying Button Tactility via FDVV Models," in *Proceedings of the CHI 2020 Adjunct*, Honolulu, HI, May 2020.

[9] Yi-Chi Liao, Sunjun Kim, and Antti Oulasvirta, "One Button to Rule Them All: Rendering Arbitrary Force-Displacement Curves," in *Proceedings of the UIST'18 Adjunct*, Berlin, Germany, Oct 2018.

[10] Yi-Chi Liao, Yen-Chiu Chen, Liwei Chan, and Bing-Yu Chen, "Dwell+: Multi-Level Mode Selection Using Vibrotactile Cues," in *Proceedings of the UIST'17*, Québec City, QC, Canada, Oct 2017. (Acceptance rate = 22%)

[11] Yung-Ta Lin, Yi-Chi Liao, Shan-Yuan Teng, Yi-Ju Chung, Liwei Chan, and Bing-Yu Chen, "Outside-In: Visualizing Out-of-Sight Regions-of-Interest in a 360° Video Using Spatial Picture-in-Picture Previews," in *Proceedings of the UIST'17*, Québec City, QC, Canada, Oct 2017. (Acceptance rate = 22%)

[12] Yi-Chi Liao, Yi-Ling Chen, Jo-Yu Lo, Rong-Hao Liang, Liwei Chan, and Bing-Yu Chen, "EdgeVib: Effective Alphanumeric Character Output Using a Wrist-Worn Tactile Display," in *Proceedings of the UIST'16*, Tokyo, Japan, Oct 2016. (Acceptance rate = 20%)

[13] Yi-Chi Liao, Shun-Yao Yang, Rong-Hao Liang, Liwei Chan, and Bing-Yu Chen, "ThirdHand: wearing a robotic arm to experience rich force feedback," in *Proceedings of the Siggraph Asia'15 Emerging Techonology*, Kobe, Japan, Nov 2015. (Acceptance rate = 30%)

[14] Chin-Yu Chien, Cheng-Yuan Li, Liwei Chan, Yi-Chi Liao, Rong-Hao Liang, Hao-Hua Chu, and Bing-Yu Chen, "fStrip: a malleable shape-retaining wearable strip for interface on-demand," in *Proceedings of the UbiComp/ISWC'15 Adjunct*, Osaka, Japan, Sep 2015.

AWARDS & EXPERIENCES

- Research Internship at Meta Reality Labs — May 2022 – Oct 2022
  - Supervisor: Dr. Aakar Gupta.
  - Collaborators: Dr. Ruta Desai, Dr. Tanya Jonker, and Dr. Hrvoje Benko.
  - Topic: Adaptive user interface for AR/VR input (paper submitted to CHI '24).
- ACM CHI '21 Doctoral Consortium — May 2021
  - Topic: Computational Workflows for Designing Input Devices
  - 10 doctoral candidates were accepted out of 46 submissions.
- Special Recognitions for Outstanding Reviews
  - 1 x recognitions for UIST 2022 Papers
  - 3 x recognitions for CHI 2021 Papers
  - 1 x recognitions for CHI 2020 Papers
- Best Implementation Award, Student Innovation Competition, UIST'16. — Oct 2016
  EMS Air Guitar, US$ 1,000 award.
- The Most Innovative Demo, HackNTU 2014. — Jun 2014
  Interactive chair for detecting sitting posture, US$ 1,000 award.
- Academic Achievement Awards, National Taiwan University, 2014. — Jun 2014
  NT$ 2,000 award for GPA in top 5% of the students in a class of 48 students.

PROFESSIONAL ACTIVITIES

- Program Associate Chair.
  - Paper track, ACM CHI 2024
  - Late-Breaking Works, ACM CHI 2021, 2022, 2023
  - Work-in-Progress, ACM TEI 2021.
- Organization Chair.
  - Video Preview Chair, ACM CHI 2022 - 2024.
  - Student Volunteer Chair, ACM IUI 2022.
- Paper Session Chair.
  - ACM CHI 2023 (Theory and Model Development), CHI 2022 (Intelligent Interaction Techniques).
  - ACM IUI 2022 (Mobiles and Wearables).
  - ACM UIST 2021 (Touch and Other Input Methods).
- Paper Reviewing.
  - CHI 2016 - 2023.
  - UIST 2022, 2023.
  - ACM Transactions on Computer-Human Interaction 2023.
  - IEEE Transactions on Haptics 2019, 2021. IEEE Haptics Symposium 2020.
  - International Journal of Human-Computer Studies 2021.
  - DIS 2020, MobileHCI 2017 - 2020, UbiComp/ISWC 2017, TEI 2017 - 2018, Augmented Human 2017.

- Supervision.
  - Supervising Aida Afshar Mohammadian, Aalto Science Institute (AScI) summer internship 2023. Topic: Reward shaping for reinforcement learning and real-time parameter inference.
- Teaching.
  - *Input and Sensing* on Computational User Interface Design Course, 2022.
  - *Bayesian Optimization* on Computational User Interface Design Course, 2021.
  - *Deep Learning* on Computational User Interface Design Course, 2020.
  - *Bayesian Statistics and Probabilistic Programming* on User Research Course, 2020.
  - *Probabilistic Decoding* on Engineering for Humans Course, 2020.
  - *Input Sesning and Data Processing* on Computational User Interface Design Course, 2019.
  - *Teaching assistant* for Engineering for Humans, 2019.
  - *Teaching assistant* for Introduction to Human-Computer Interaction, 2017.
  - *Teaching assistant* for Computer Architecture, 2014 - 2016.
- Others
  - Student Volunteer at Siggraph Asia 2016.
  - Software Engineer at Deloitte, Taiwan, 2014 - 2015.