EMILY KUANG

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https://emilykuang.github.io/

RESEARCH FOCUS

My research explores the intersection of Human-Computer Interaction (HCI), Artificial Intelligence (AI), and User Experience (UX). I design, evaluate, and improve human-AI collaborative tools to support usability and UX analysis.

I also collaborate with other researchers on topics including accessibility in computing education, accessible technology for older adults, and VR for older adults.

EDUCATION

PhD in Computing and Information Sciences Aug 2020 - present
Rochester Institute of Technology, New York State, United States
Advised by Dr. Kristen Shinohara and Dr. Mingming Fan
Participating in the AWARE-AI NSF Research Traineeship (NRT) Program

BASc in Biomedical Engineering Sept 2015 - Apr 2020
University of Waterloo, Ontario, Canada
Capstone advised by Dr. John Zelek
Graduated on Dean's Honour List

PROFESSIONAL EXPERIENCE

Rochester Institute of Technology Aug 2020 - present
Graduate Research Assistant

- Conduct HCI research on the human-centered design of AI-powered technologies, including visual analytics tools and conversational assistants to support UX analysis **[C.3, J.3, C.6]**
- Design, conduct, and analyze research studies employing a variety of methods including interviews, surveys, design probes, usability studies, and quantitative experiments
- Author technical papers for publication and develop dissemination plans

Meta, Reality Labs May 2022 - Aug 2022
UX Research Intern

- Conducted literature review and authored reports on first-hand experiences to inform the design of an AR hardware prototype
- Designed and conducted a user study with 30 participants to investigate audio performance
- Presented results to >100 product stakeholders including researchers, engineers, and cross-functional partners; recommendations led to changes in product design

Uncharted Software Inc., ASKE-E Team May 2021 - Aug 2021

Research Intern

- Worked on the DARPA Automating Scientific Knowledge Extraction (ASKE) program
- Designed wireframes and implemented new features in the human-machine interface (HMI) of a visual analytics system for multi-scale graph analysis and knowledge discovery **[W.1]**

Huawei Technologies Canada, Human-Machine Interaction (HMI) Lab Jan 2019 - Aug 2020

Research Engineer

- Trained machine learning models for gesture recognition using Tensorflow
- Designed and conducted user experiments to explore novel interaction techniques on large screens using mid-air gesture input; presented at the Huawei Developer Conference 2019

University of Waterloo, Vision and Image Processing (VIP) Lab May 2016 - Apr 2018

Research Assistant

- Designed and 3D-printed a lens-free microscope **[J.2]** and a smartphone spectrometer **[J.1]**
- Conducted testing with biological specimens to achieve optical resolution in the nm range

PEER-REVIEWED CONFERENCE PUBLICATIONS

C.6 Emily Kuang, Ehsan Jahangirzadeh Soure, Mingming Fan, Jian Zhao, Kristen Shinohara. **Collaboration with Conversational AI Assistants for UX Evaluation: Questions and How to Ask them (Voice vs. Text).** *Proc. ACM Conference on Human Factors in Computing Systems (CHI)*, 2023. DOI: 10.1145/3544548.3581247

C.5 Emily Kuang, Ruihuan Chen, Mingming Fan. **Enhancing Older Adults' Gesture Typing Experience Using the T9 Keyboard on Small Touchscreen Devices.** *Proc. ACM Conference on Human Factors in Computing Systems (CHI)*, 2023. DOI: 10.1145/3544548.3581105

C.4 Xiaoying Wei, Yizheng Gu, Emily Kuang, Xian Wang, Beiyan Cao, Xiaofu Jin, Mingming Fan. **Bridging the Generational Gap: Exploring How Virtual Reality Supports Remote Communication Between Grandparents and Grandchildren.** *Proc. ACM Conference on Human Factors in Computing Systems (CHI)*, 2023. DOI: 10.1145/3544548.3581405

C.3 Emily Kuang, Xiaofu Jin, Mingming Fan. **"Merging Results Is No Easy Task": An International Survey Study of Collaborative Data Analysis Practices Among UX Practitioners.** *Proc. ACM Conference on Human Factors in Computing Systems (CHI)*, 2022. DOI: 10.1145/3491102.3517647

C.2 Xiaofu Jin, Emily Kuang, Mingming Fan. **"Too old to bank digitally?": A Survey of Banking Practices and Challenges Among Older Adults in China.** *Proc. ACM Conference on Designing Interactive Systems (DIS)*, 2021. DOI: 10.1145/3461778.3462127

C.1 Ameneh Boroomand, Mohammad Javad Sahfiee, Linda Wang, Emily Kuang, Farnoud Kazemzadeh, Alexander Wong. **Compensated lens-free light field spectroscopy.** *Proc. International Conference on Inverse Problems in Engineering* (ICIPE), 2017.

PEER-REVIEWED JOURNAL PUBLICATIONS

J.3 Ehsan Jahangirzadeh Soure*, Emily Kuang*, Mingming Fan, Jian Zhao. **CoUX: Collaborative Visual Analysis of Think-Aloud Usability Test Videos for Digital Interfaces.** *IEEE Transactions on Visualizations and Computer Graphics* (TVCG), (*Proc. of IEEE VIS*), 2021. DOI: 10.1109/TVCG.2021.3114822 (* denotes equal contribution)

J.2 Emily Kuang, Farnoud Kazemzadeh, Alexander Wong. **Enhanced Smartphone Spectroscopy via High-throughput Computational Slit.** *Journal of Computational Vision and Imaging Systems*, vol. 2, no. 1, 2016. DOI: 10.15353/vsnl.v2i1.97

J.1 Farnoud Kazemzadeh, Emily Kuang, Alexander Wong. **Compact, Field-Portable Lens-free Microscope using Superresolution Spatio-Spectral Light-field Fusion.** *Journal of Computational Vision and Imaging Systems*, vol. 2, no. 1, 2016. DOI: 10.15353/vsnl.v2i1.105

PEER-REVIEWED EXTENDED ABSTRACTS & WORKSHOP PAPERS

W.2 Emily Kuang. **Crafting Human-AI Collaborative Analysis for User Experience Evaluation.** *In Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (*CHI EA '23*). DOI: 10.1145/3544549.3577042 (*In Press*)

W.1 Fahd Husain, Rosa Romero-Gómez, Emily Kuang, Dario Segura, Adamo Carolli, Lai Chung Liu, Manfred Cheung, Yohann Paris. **A Multi-scale Visual Analytics Approach for Exploring Biomedical Knowledge.** *Proc. Workshop on Visual Analytics in Healthcare* (VAHC), IEEE VIS, 2021. arXiv:2109.06828 **[🏆Best Paper Winner]**

INVITED TALKS & POSTERS

Enhancing Older Adults' Gesture Typing Experience Using the T9 on Small Touchscreen Devices

- Guest Lecture in ISTE-266: Design For Accessibility, Apr 2023

Human-AI Collaboration for UX Evaluation: Visualizations and Conversational Assistants

- Poster presentation at RIT Artificial Intelligence Summit, Oct 2022

Crafting Human-AI Collaborative Analysis of Usability Test Recordings

- Poster presentation at CRA-WP Grad Cohort for Women, Apr 2022

Collaborative Visual Analysis of Think-Aloud Usability Test Videos for Digital Interfaces

- Guest Lecture in ISTE782: Visual Analytics, Nov 2021

AWARDS AND HONORS

Google Ph.D. Fellowship in Human-Computer Interaction ~ Google 2023

AWARE-AI NRT Seed Funding Award ($1000 USD) ~RIT 2022

Department Nomination for Microsoft Research Ph.D. Fellowship ~ RIT 2022

Merit-based Ph.D. Scholarship ~ RIT 2020

Experience Award ~ Natural Sciences and Engineering Research Council of Canada (NSERC) 2018

President's Research Award ~ University of Waterloo 2018

President's Research Award ~ University of Waterloo 2017

Undergraduate Student Research Award ~ NSERC 2016

President's Scholarship of Distinction ~ University of Waterloo 2015

PROFESSIONAL SERVICE

Paper Reviewer

- **ACM CHI** 2022, 2023 Full papers
- **ACM CSCW** 2023 Full papers
- **Frontiers in Computer Science** 2023 Sec. Human-Media Interaction
- **Chinese CHI** 2021 Late Breaking Work

Student Volunteer

- **ACM CHI** 2022 New Orleans, LA, USA
- **IEEE VIS** 2021 Remote

Council Representative

- AWARE-AI NSF Research Traineeship 2022-2023

ADDITIONAL PROFESSIONAL EXPERIENCE

North Inc. (now acquired by Google) Apr 2018 - Aug 2018

Computer Vision Developer

- Designed algorithm to quantify image sharpness for multi-camera system assembly

Synaptive Medical Inc. Sept 2017- Dec 2017

Optics Engineering Intern

- Investigated the stabilization of stereoscopic videos for a neurosurgical robot

St. Michael's Hospital Jan 2017 - Apr 2017

Medical Imaging Research Assistant

- Worked on a video processing pipeline for non-invasive detection of diabetic foot ulcers