

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 focused on the human-centered design of AI-powered technologies, including visual analytics tools and conversational assistants to support UX analysis
- 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 in 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 JOURNAL PUBLICATIONS

- J.3 Ehsan Jahangirzadeh Soure*, **Emily Kuang***, Mingming Fan, and 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](https://doi.org/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](https://doi.org/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](https://doi.org/10.15353/vsnl.v2i1.105)

PEER-REVIEWED CONFERENCE PUBLICATIONS

- 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](https://doi.org/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](https://doi.org/10.1145/3461778.3462127)
- C.1 Ameneh Boroomand, Mohammad Javad Sahfieh, 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 WORKSHOP PUBLICATIONS

- 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](https://arxiv.org/abs/2109.06828) [**🏆 Best Paper Winner**]

INVITED TALKS & POSTERS

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

Department Nomination for Google Ph.D. Fellowship ~ 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 2023** Full papers
- **ACM CHI 2022** Full papers
- **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

Project Judge

- GENIUS Olympiad 2022: International Project Competition

ADDITIONAL PROFESSIONAL EXPERIENCE

North Inc. (now acquired by Google)

Apr 2018 - Aug 2018

Computer Vision Developer

- Designed algorithm to quantify image sharpness and created a GUI to output real-time metrics; reduced time needed for assembling multi-camera system used to fit smart glasses
- Conducted field studies on the sizing procedure; results led to process improvements

Synaptive Medical Inc.

Sept 2017- Dec 2017

Optics Engineering Intern

- Designed and led an investigation into the stabilization of stereoscopic videos for a neurosurgical robot; results led to reduced complexity of the FPGA architecture
- Collected feedback from surgeons to optimize visualization presets during mock surgeries

St. Michael's Hospital

Jan 2017 - Apr 2017

Medical Imaging Research Assistant

- Created a video processing pipeline for non-invasive detection of diabetic foot ulcers
- Assisted with patient interviews to determine user requirements for the in-home prototype