

# EMILY KUANG

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🏠 <https://emilykuang.github.io/>

## RESEARCH FOCUS

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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

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### 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

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### 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

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- 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

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- 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 EXTENDED ABSTRACTS & WORKSHOP PAPERS

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

## INVITED TALKS & POSTERS

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### 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

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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

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### 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

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### 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