Omar Khan

Ph.D. Candidate in Human-Computer Interaction

omark807@gmail.com | https://omarkhan83.com | omark807 | omark807

Research Interests

HCI and UX researcher at the intersection of accessibility, visualization, and AI-assisted content creation. Building AI systems democratizing qualitative visualization authoring, enabling users with diverse abilities to create interpretive diagrams and conceptual models independently. Research with blind and low-vision scientists informs transferable methods for inclusive visual communication across STEM, education, and collaborative knowledge sharing.

Education

University of Illinois Urbana-Champaign

Ph.D., Computer Science — 2022 - 2027

Advisor: Dr. JooYoung Seo

Certificate in Information Accessibility Design and Policy

University of Illinois Urbana-Champaign

B.S., Computer Science + Crop Sciences — 2017 - 2021

Skills

Programming Languages	Python***, Java**, JavaScript**, R**, Swift**, C++*
Technologies	HTML***, CSS***, Git**, LaTeX**, MAXQDA**, MS Office**, Qualtrics**, SQL**, MongoDB*, Neo4J*, Docker*, Kubernetes*, Figma*
Frameworks	React**, Next.js**, PyTorch**, SciPy**, TensorFlow**, scikit-learn**, SciPy**, Matplotlib**, NumPy**, Pandas**, NLTK**, SQLAlchemy*, Flask*, d3.js*, Hadoop*, Spark*
Research Methods	Interview Design***, Semi-Structured Interviews***, Thematic Analysis*** A/B Testing**, Co-Design**, Experimental Design**, Prototyping**, Statistical Analysis**, Survey Design**, Usability Testing** Affinity Diagrams*, Heuristic Evaluation*

** = Familiar; ** = Experienced; *** = Proficient*

Research Experience

(x)Ability Design Lab

Champaign, IL

Graduate Research Assistant | Advisor: Dr. JooYoung Seo — 05/2024--Present

- **QUARTZ (Qualitative Understanding via Accessible Representation and VisualiZation**
  - Leading user research to understand barriers in qualitative data visualization, conducting **15+** co-design sessions
  - Designing user study protocols, including survey instruments, semi-structured interview protocols, and task-based usability testing
  - Managing global participant recruitment pipeline via BLV advocacy networks (e.g., World Blind Union)
- **Re-Imagining Knowledge Production Workflows by, with, and for BLV Researchers**
  - Led a mixed-methods global study with BLV researchers (survey = 57; interviews = 15) using activity theory to examine research tool barriers, revealing **17% task delegation rate** and critical gaps in data visualization tools **(2.58/5 difficulty)**.
  - Synthesized findings through reflexive thematic analysis to develop systemic design recommendations addressing workflow contradictions across literature review, analysis, and dissemination stages.
- **LLM Fine-Tuning for Accessibility Applications Using High-Performance Computing**
  - Fine-tuning large language models on distributed GPU clusters to develop accessibility-focused AI solutions, optimizing performance for assistive technologies.
- **Accessible Extended Reality (XR) Co-Design**
  - Co-designed *PunchPulse*, an accessible VR boxing game with a **5-person mixed-abilities team**, leveraging the Rapid Iterative Testing and Evaluation (RITE) framework over 16 weeks
- **Multimodal LLM-Based Data Visualization**
  - Collaborated with **8 developers** and **3 researchers** to build, refine, and advance MAIDR, a multimodal AI-driven system for accessible data visualization.

CROPS Lab
Urbana, IL

Graduate Research Assistant | Advisor: Dr. Camille Cobb — 08/2022--05/2024

- **YouTube Influencer Ads and Privacy Promises**
  - Led large-scale quantitative analysis of **300M YouTube influencer privacy technology advertisements**, identifying top-advertised products and consumer misinformation risks.
- **Smart Home Data Collection Consent Dynamics**
  - Co-led mixed-methods analysis of **360-participant survey** examining consent dynamics in smart home environments, revealing **84% of users experienced consent violations**.
  - Developed stakeholder-specific recommendations for consentful smart home ecosystems.

National Center for Supercomputing Applications
Urbana, IL

Research Assistant | Advisors: Dr. Megan Dailey & Dr. Matthew Hudson — 08/2021--12/2021

- **Food Bank Marketplace Mobile App**
  - Developed the initial software design specification for a mobile app aimed to create a marketplace to provide food banks with the means to procure fresh produce from farmers at a reduced cost, aiming to reduce food waste and insecurity.

ORCHID Lab
Urbana, IL

Undergraduate Research Assistant | Advisor: Dr. Brian P. Bailey — 01/2021--05/2021

- **Proximal Process Goal Accomplishment**
  - Researched methodologies and visualizations to help individuals accomplish proximal process goals (goals that are achievable in a short amount of time and involve specific processes).

Siebel School of Computing and Data Science
Urbana, IL

Undergraduate Research Assistant | Advisor: Dr. Lawrence C. Angrave — 01/2021--05/2021

- **Webcam-Based Eye Tracking in ClassTranscribe**
  - Investigated the challenges of webcam-based eye tracking and an implementation of it in ClassTranscribe, an online lecture streaming platform at the University of Illinois, using WebGazer, a React.js-based framework developed by Brown University.

Siebel School of Computing and Data Science
Urbana, IL

Undergraduate Research Assistant | Advisor: Dr. Geoffrey L. Herman — 05/2019--08/2019

- **Computerized Exam for Computer Architecture**
  - Designed, implemented, and deployed a computerized, multi-part exam with another undergraduate student on pipelining and cache analysis for CS 233: Computer Architecture, taken annually by **400+ students**, introducing hardware concepts
  - Co-authored a publication on the implications of our implementation on engineering education beyond computing

Professional Experience

Infosys
Remote

Design Research Intern (Center for Autonomous Learning) — 06/2025-Present

- Investigating accessibility needs and design opportunities for autonomous delivery robots through mixed-methods user research

Fable
Remote

Accessibility Tester (Contract) — 09/2025-Present

- Conducting accessibility testing (user interviews, prototype reviews, and compatibility assessments) for a wide range of clients across multiple industry domains through the U.S, Canada, and the U.K.
- Partnering with cross-functional teams to translate findings into actionable, prioritized recommendations for inclusive design

American Foundation for the Blind (AFB)
Remote

Researcher (Volunteer) — 09/2025-Present

- Conducted comparative thematic analysis across disabled and non-disabled survey respondents to characterize differential experiences with AI systems; identified key accessibility gaps and designed evidence-based interventions

Viasat

Carlsbad, CA

Software Engineer Intern

05/2021-08/2021

- Designed and implemented a Slack app with 2 other interns using Python (frontend), SQLAlchemy, and Kubernetes (backend) that allows users to manually archive older Jira projects and automatically archive them by a given date

L'Oreal U.S.A.

Remote

Software Engineer Extern

06/2020-08/2020

- Collaborated with a team of 4 externs in a product design competition, implementing a data-driven solution to reduce the amount of plastic used in L'Oreal product packaging

Publications and Presentations

Conference and Journal Publications

(C1) **Omar Khan** and JooYoung Seo. 2026. QUARTZ: Qualitative Understanding via Accessible Representation and Visualization. *In submission to ASSETS 2026.* [TBA]

(C2) **Omar Khan** and JooYoung Seo. 2026. "I Don't Want My Mental Health App To Give Me Mental Health Barriers": Unpacking The Need For Digital Mental Health Tracking Services With And For The Blind Community *In submission to ASSETS 2026.* [TBA]

(C3) Carmel H. Heydarian, Mei-Lian Vader, **Omar Khan**, Alyssa Shock, Sarahelizabeth J. Baguhn, and Arielle Silverman. 2026. The Invisible Burden of Brittleness: The Impacts of AI Failures on People with Disabilities. *In submission to ASSETS 2026.* [TBA]

(C4) **Omar Khan** and JooYoung Seo. 2026. I Don't Trust Any Professional Research Tool": A Re-Imagination of Knowledge Production Workflows by, with, and for Blind and Low-Vision Researchers. *In Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26). April 13--17, 2026, Barcelona, Spain.* ACM, New York, NY, USA, 24 pages. [DOI] [arxiv]

(C5) Sanchita S. Kamath, **Omar Khan**, Anurag Choudhary, Jan Meyerhoff-Liang, Soyoung Choi, JooYoung Seo. 2025. PunchPulse: A Physically Demanding Virtual Reality Boxing Game Designed with, for and by Blind and Low-Vision Players. In *The 27th International ACM SIGACCESS Conference Computers and Accessibility (ASSETS '25)*, October 26--29, 2025, Denver, CO, USA. ACM, New York, NY, USA, 21 pages. [DOI]

(C6) Sanchita S. Kamath, **Omar Khan**, Aziz N. Zeidieh, and JooYoung Seo. 2025. Sensing the Shape of Data: Non-Visual Exploration of Statistical Concepts in Histograms with Blind and Low-Vision Learners. *arXiv preprint arXiv:2509.14452.* [arxiv]

(C7) Alex Atcheson, **Omar Khan**, Brian Siemann, Anika Jain, and Karrie Karahalios. 2025. I'd Never Actually Realized How Big An Impact It Had Until Now": Perspectives of University Students with Disabilities on Generative Artificial Intelligence. In *CHI Conference on Human Factors in Computing Systems (CHI '25), April 26--May 01, 2025, Yokohama, Japan.* ACM, New York, NY, USA, 22 pages. [DOI]

(C8) Yi-Shyuan Chiang, **Omar Khan**, Adam Bates, and Camille Cobb. (2024). More than just informed: The importance of consent facets in smart homes. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24), May 11--16, 2024, Honolulu, HI, USA.* ACM, New York, NY, USA, 21 pages. [DOI]

(C9) Suleman Mahmood, Mingjie Zhao, **Omar Khan**, Geoffrey L. Herman. (2020). Caches as an Example of Machine-gradable Exam Questions for Complex Engineering Systems. In *Proceedings of the 49th ASEE/IEEE Frontiers in Education Conference, Uppsala, Sweden, Oct. 21--24.* [DOI]

Public Reports & White Papers

(R1) Silverman, A. M., Whistler, A. L., Shock, A., Heydarian, C. H., Baguhn, S. J., Hanuschock, W. E., Hashimoto, A., **Khan, O.**, & Vader, M-L. (2026). The AI Quagmire: Benefits, Risks, and User Aspirations Through a Disability Lens. *American Foundation for the Blind.* [Link]

Works in Progress, Posters, and Presentations

(W1) **Omar Khan** and JooYoung Seo. 2025. Sighted People Have Their Pick Of The Litter": Unpacking The Need For Digital Mental Health (DMH) Tracking Services With And For The Blind Community. In *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '25), April 26--May 1, 2025, Yokohama, Japan.* ACM, New York, NY, USA, 13 pages. [DOI]

(W2) Sanchita S. Kamath, Aziz Zeidieh, **Omar Khan**, Dhruv Sethi, and JooYoung Seo. 2024. Playing Without Barriers: Crafting Playful and Accessible VR Table-Tennis with and for Blind and Low-Vision Individuals. In *Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '24).* Association for Computing Machinery, New York, NY, USA, Article 88, 1--5. [DOI]

(W3) Harsh Deep, Joanna Huang, Rashi Dembi, **Omar Khan**, and Lawrence Angrave. Webcam Eye-Tracking Based Accessibility for ClassTranscribe. *Virtual poster presentation: Illinois Undergraduate Research Symposium 2021.*

Service and Leadership

Research Service

2026	Technical Paper Reviewer	*DIS 2026*

Community Service

2024-Present	Broadening Participation in Computing (BPC): K-12 Student Outreach Committee	*UIUC*
2023-Present	Director, Board of Directors | PACE - Center for Independent Living	*Urbana, IL*
2021-2022	Campus Co-Director, Fundraising Team | The Percentage Project Inc.	*Remote*
2020-2022	Facilitator, Curriculum Development Co-Lead | Girls Who Code	*UIUC*
2021	Mentoring Co-Chair | Illinois Women in Computer Science	*UIUC*
2019-2020	Content Co-Chair | Reflections | Projections	*UIUC*
2019-2020	Co-Director | Illinois Computer Science Sail	*UIUC*

Teaching Experience

S24	Graduate Teaching Assistant: CS 467: Social Visualization	*UIUC*
F23, F24	Graduate Teaching Assistant: CS 210/211: Ethical & Professional Issues/Conduct in CS	*UIUC*
F19, S20, F20, S21	Undergraduate Course Assistant: CS 233: Computer Architecture	*UIUC*
F18, S19, F19	Undergraduate Course Assistant: CS 196-25: Freshman Honors	*UIUC*
F18, S19	Undergraduate Course Assistant: CS 125: Introduction to Computer Science	*UIUC*

Mentoring

2025-Present	Soundarya Kumar Pradhan	*UIUC MCS*

Awards and Honors

08/2025	SIGACCESS Travel Scholarship	*ACM*
12/2024	2025 CRA-WP Grad Cohort for Women & Grad Cohort for IDEALS	*CRA-WP*
04/2021	Most Long-Term Social Impact: Stanford Open Datathon 2021	*Stanford*
2020-2021	The Climate Corporation Scholarship	*UIUC*