KEFAN XU

PhD in Computer Science
(Human-Computer Interaction)

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EDUCATION

2022 – Present
Georgia Institute of Technology — Atlanta, GA, U.S.
Ph.D. Student, Human-Centered Computing, 4.0/4.0
Advisor: Dr. Rosa I. Arriaga

2019 – 2021
University of Michigan — Ann Arbor, MI, U.S.
M.S., Information Science, 4.0/4.0
Advisor: Dr. Mark W. Newman

2015 – 2019
New York University — New York City, NY, U.S. / Shanghai, China
B.S. Data Science | B.S. Interactive Media Arts (Doubled), 3.6/4.0

AWARDS

2025 **OMSCS Pre-Doc Fellowship** | Georgia Institute of Technology

2022 **Google Health Equity Research Initiative** | Google

2021 **IHPI/HSR Summer Student Fellowship** | University of Michigan

2019 **NYU Founders Day Award** | New York University

2016 **Tel Aviv University Summer Scholar Program** | Tel Aviv University

PUBLICATIONS

2022 **Kefan Xu**, Xinghui Yan, and Mark W. Newman. 2022. Understanding People's Experience for Physical Activity Planning and Exploring the Impact of Historical Records on Plan Creation and Execution. In CHI Conference on Human Factors in Computing Systems (CHI '22), April 29-May 5, 2022, New Orleans, LA, USA. ACM, New York, NY, USA, 15 pages. https://doi.org/10.1145/3491102.3501997

2024 **Kefan Xu**, Xinghui Yan, Myeonghan Ryu, Mark W. Newman, and Rosa I. Arriaga. 2024. Understanding the Effect of Reflective Iteration on Individuals' Physical Activity Planning. 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, 17 pages. https://doi.org/10.1145/3613904.3641937

2024 Hayley I. Evans, Myeonghan Ryu, Theresa Hsieh, Jiawei Zhou, **Kefan Xu**, Kenneth W. Akers, Andrew M. Sherrill, and Rosa I. Arriaga. 2024. Using Sensor-Captured Patient-Generated Data to Support Clinical Decisionmaking in PTSD Therapy. Proc. ACM Hum.-Comput. Interact. 8, CSCW1, Article 149 (April 2024), 28 pages. https://doi.org/10.1145/3637426

2025 Lingqing Wang, Chidimma Lois Anyi, **Kefan Xu,** Yifan Liu, Rosa I. Arriaga, and Ashok K. Goel. 2025. Explainable AI for Daily Scenarios from End-Users' Perspective: Non-Use, Concerns, and Ideal Design. In Proceedings of the 2025 ACM Designing Interactive Systems Conference (DIS '25). Association for Computing Machinery, New York, NY, USA, 2328-2349. https://doi.org/10.1145/3715336.3735796

2025 **Kefan Xu,** Cynthia M. Baseman, Nathaniel Swinger, Myeonghan Ryu, and Rosa I. Arriaga. 2025. Understanding the Temporality of Informal Caregivers' Sense-Making on Conflicts and Life-Changing Events through Online Health Communities. Proc. ACM Hum.-Comput. Interact. 9, 7, Article CSCW338 (November 2025), 36 pages. https://doi.org/10.1145/3757519

2025 [In Submission] Baseman, C.M., Ryu, M., Swinger, N.J., **Xu, K.,** Sherrill, A.W., and Arriaga, R.I. Human-centered Perspectives on a Clinical Decision Support System for Veteran PTSD Care.

2025 [In Submission] Swinger, N.J., Ryu, M., Baseman, C.M., **Xu, K.,** Sherrill, A.W., and Arriaga, R.I. Postphenomenological Insights from an In-the-Wild Collective Sensing System Deployment for PTSD Therapy

2025 [In Submission] Yuan, H., **Xu, K.,** Arriaga, R.I., Hub, J. I'm a person--not a patient or diagnosis": Centering the Person Living with Dementia's Perspective on Caregiver Dynamics and Technology Design

2025 [In Submission] **Xu, K.,** Thukral, A., Soneji, R., Ghahremani, S., Fayfman, M., Schechter, C.M., Arriaga, R.I. Towards Ecological Informatics: Navigating the Evolving Landscape for Chronic Disease Management

2025 [In Submission] Zhang, C., Huang, J., **Xu, K.,** Magerko, B. Beyond the Prompt Box: Co-designing Multimodal Generative AI with University Students in Everyday Contexts

TEACHING EXPERIENCE

2024 **Graduate Teaching Assistant | School of Interactive Computing, Georgia Tech** — Atlanta, GA, U.S.

Spring 2024 CS 7470 Mobile and Ubiquitous Computing (Prof. Thomas Ploetz)
Summer 2024 CS 7470 Mobile and Ubiquitous Computing (Prof. Clint Zeagler)

Graded and created assignment, mediated in-class activities, answered students' questions after class

2025 - 2026 **Instructor | School of Interactive Computing, Georgia Tech** — Atlanta, GA, U.S.

Fall 2025 - Spring 2026 COMP-1017P-AU4 Developing Mobile Experience for Well-Being: Health Informatics and Mobile App Design

Created the course which aimed to prepare students with theoretical and developmental knowledge of developing mobile experience for well-being.

Lectured for two semesters (one hour per week for 16 weeks per semester).

RESEARCH EXPERIENCE

2022 – Present

Graduate Research Assistant | School of Interactive Computing, Georgia Tech

Atlanta, GA, U.S.

Researcher in the **Ubicomp Health and Wellness lab**, investigating supporting **low-SES population** with **diabetes foot ulcers (DFU)**, as part of an **ADA** Grant.

2019 – 2022

Graduate Research Assistant | School of Information, University of Michigan

Ann Arbor, MI, U.S.

Student researcher, developed low-burden **experience sampling method (ESM)** for **older adults** with chronic fatigue.

2021 – 2022

Research Intern | Michigan Medicine, University of Michigan

Ann Arbor, MI, U.S.

Student research intern, developed web platform, **Taperology**, to facilitate clinicians' taper therapy for **benzodiazepine misuses**.

2018

Research Intern | College of Design and Innovation, TongJi University

Shanghai, China

Student research intern in the **iDVX lab**, developed and evaluated a **facial expression dataset**, which helps generate personas for designers.

RESEARCH PROJECTS

2022 – Present

Collaboration with Emory University and Grady Memorial Hospital

Diabetes Ubiquitous Computational Sensing System (DUCSS)

User Study Design: Designing user studies to uncover diabetes patients' self-management challenges, utilizing a user-centric approach. **Caregiver-Patient Dynamics**: Exploring caregiving dynamics in diabetes management, illuminating collaborative aspects. **Sensor Tech Development:** Leading the creation of patient-empowering sensors and mobile technologies, bridging clinical and patient spheres. **Self-Management Systems:** Innovating systems enhancing diabetes patients' self-management practices and patient-clinician communication.

2022 – Present

Collaboration with University of Michigan

Understanding Individual's Sense Making in Contextual Situated Sedentary Behavior Data

User Study Design: Designing user studies aimed at unveiling the diverse ways in which individuals make sense of their physical activity data. **Sensor Utilization Investigation:** Probing the feasibility and utility of various sensors in capturing holistic information about people's physical activity. **ESM Refinement:** Refining existing Experience Sampling Methods to encompass richer annotated data, enabling a more accurate depiction of individuals' physical activity habits. **System Development:** Conceptualizing and deploying a system that seamlessly amalgamates physical activity data, empowering individuals to gain comprehensive insights into their activity levels.

2022 – Present

Funded by Google Health Equity Initiative

FITBIT as Tech Probe: Understanding how Personal Tracking Devices can Promote Physical Activity in Low-SES Older Adults

Barrier Analysis: Examined the obstacles faced by low technology literacy individuals when engaging with technology. **Design Evaluation:** Evaluated design methodologies intended for low technology literacy users, pinpointing their strengths and limitations. **Refined Design Approach:** Developing a methodology for crafting technology solutions that are intuitive and accessible to individuals with limited technology literacy. **Prototyping and Evaluation:** Designing and deploying functional technology prototypes to empirically evaluate the proposed design principles, ensuring their effectiveness for low technology literacy populations.

Prolonged Exposure Collective Sensing System (PECSS)

2022 – 2025

Collaboration with Emory University

Patient Insight: Delved into PTSD patients' practices, uncovering their treatment experiences. **Clinical Workflow Analysis:** Studied step-by-step clinical procedures of Prolonged Exposure therapy, grasping the treatment process. **Clinician-Facing Tool Development:** Designed, evaluated, and implemented tools for clinicians, optimizing patient management and treatment strategies. **Patient-Facing Tool Creation**: Creating, assessing, and deploying patient tools, aiding Prolonged Exposure therapy and clinician communication.

Understanding the Dynamics of Chronic Disease Family Caregiving Experience: Using Caregiving Reddits as a Probe

2022 – 2024

Accepted by CSCW2025

Subreddit Exploration: Conducted analysis of posts originating from caregiving subreddits, unraveling the multifaceted nature of enduring informal caregiving encounters. **Initial Post Compilation**: The meticulous compilation of **120** foundational posts was achieved by tapping into four distinct caregiving forums and their accompanying comments. **Author-Driven Continuity:** Pursued an author-centric approach, further harvesting relevant posts spanning their caregiving journey, sequenced in chronological order. **Qualitative and Quantitative Insight**: My research delves into both qualitative and quantitative realms, parsing these posts to elucidate the fluid dynamics characterizing caregiving experiences.

Understanding the Effect of Iterative Reflection on Individuals' Weekly Planning of Physical Activity

2021 – 2023

Collaboration with University of Michigan

Accepted by CHI2024

Framework Implementation: Integrated the conceptualized physical activity planning framework within the functional Planneregy app. **Deployment:** Managed the seamless deployment of the Planneregy app via Apple's TestFlight service, ensuring efficient testing. **Usability Studies:** Carried out comprehensive usability studies to assess the app's user-friendliness and effectiveness. **42-Day User Study:** Orchestrated a 42-day user study, dedicated to assessing user experiences within the newly proposed framework. **HCI Paper and Design Insights:** Summarized the results of the 42-day study into an HCI paper, offering valuable design insights for prospective research endeavors.

Examining the Effect of Summary of Historical Planning Data on People's Planning and Execution of Subsequent Daily Physical Activity

2021 – 2022

Accepted by CHI2022

Examined people's experiences of planning regular moderate aerobic exercises with historical planning records. **App Development:** Developed an iOS application named Physicify, empowering users to strategize physical exercise plans and reflect on prior planning histories. **Two-Stage User Study Design:** Designed a two-phase user study, assessing participants' exercise planning encounters with and without historical data. **28-Day User Study Implementation:** Conducted a 28-day user study with seventeen participants, aiming to glean qualitative insights into Physicify's utilization. **Findings and Insights:** Findings suggested historical planning records could effectively shape future exercise plans by establishing connections between past failures and identifying uncertainty levels in forthcoming schedules.

Leveraging large-scale national data to understand, reduce, and prevent benzodiazepine-related harms among older adults

2021 – 2022

Website Design and Deployment: Designed and deployed a clinician-facing website, aiming to enhance communication regarding benzodiazepine misuse between clinicians and patients. **Algorithm Design**: Conceptualized and devised the taper calculator algorithm, empowering clinicians to formulate tailored taper schedules for their patients. **Tracking Mechanisms Development:** Crafted tracking mechanisms that enabled clinicians to closely monitor patients' progress during the tapering process. **Interview-Based Assessment:** Conducted interviews with clinicians, soliciting their insights and experiences, in order to gauge the efficacy of the website in routine care.

Low-burden Activity Pacing for Chronic Fatigue Self-Management

2019 – 2022

ESM Refinement: Developed seven reporting mechanisms (Proactive, Signal-Based, Event-Based, Post-Activity, Time-Based, Context-Based, CAR) inspired by self-tracking literature. Designed low-burden hybrid Experience Sampling Methods (ESM) solutions for limited energy individuals. **Cardiac Rehab Exploration:** Investigated activity practices of cardiac rehab patients, informed mobile app development incorporating activity pacing. **Chronic Condition Management:** Devised recurrent tracking-reflection mechanism aiding daily energy management for chronic conditions. **Prototypes Development**: Crafted mobile app prototypes aligned with the recurrent mechanism concept. **Activity Pacing Development**: Implemented "Pace to Plan" platform using React Native and Google Firebase, enhancing health experiences through HCI.

Intelligent Design of Emotional Expression Sketches in Storyboards

2018

Facial Sketch Dataset Design: Created FaceX dataset, containing five million vector-drawing sketches for Sketch-RNN neural networks. **Emotional Expression Generator:** Utilized FaceX for training EmoG, a Sketch-RNN-based emotional expression generator. **User Study & Evaluation:** Recruited 21 participants for a user study on EmoG's use in emotional storyboard creation. **Effectiveness Assessment:** Evaluated EmoG's efficiency in accurately conveying emotions in storyboards. Quantitative analysis via ANOVA tests. **Ease of Use and Effectiveness:** Demonstrated EmoG's user-friendliness and efficacy in creating expressive drawings.

REVIEWER

2022	**IEEEICHI2022**	2024	**CHI 2025**
2022	**CHI 2022 Late-Breaking Work**	2025	**IMWUT 2025**
2023	**IMWUT 2023**	2025	**CHI 2026**

MENTORING EXPERIENCE

2022 - 2023

Diptark Bose | Master Student | Now Software Development Engineer at Apple

Supervised Diptark in developing the PECSS platform for veterans with PTSD.

2022 - 2023

Hao Yuan | Master Student | Now PhD Student at Stevens Institute of Technology

Supervised Hao in conducting user recruitment and users studies with diabetes foot ulcer patients.

2022 - 2023

Abhinav Thukral | Master Student | Now UX Designer at Lucidchart

Supervised Abhinav in developing DUCSS platform for clinicians and patients to monitor diabetes foot ulcers.

2022 - 2024

Cynthia Baseman | Now PhD Student at the Georgia Tech

Supervising Cynthia in developing study protocols to understand the experience of DFU patients and their caregivers.

TALK

2023 **CRIDC Poster Competition 2023**

2024 **IPaT Research Showcase**

SKILLS

RESEARCH

Interviews • Co-Design • Grant Writing
Thematic Analysis • Literature Review • Contextual Inquiry
Focus Group • Usability Evaluation
Affinity Mapping • User-Centered Design • Ethnographic Research
Prototyping and Interaction Design
User Personas and Scenarios
Cross-Cultural Research

TOOLS

Unity • Git • Jupyter Notebook
Visual Studio Code • Xcode
Adobe Creative Suite (Ai, Ps, Ae, Au, An, Pr)
Sketch • Invision • Figma
Tableau • NVivo
Hype 3 • Microsoft Office

LANGUAGES

Python • Java • C++
C# • Swift • HTML / CSS / JavaScript • React Native • Processing • R
MySQL • d3.js • p5.js
ARKit • TensorFlow

KOWNLEDGE

Information Visualization • Databases
Develop Mobile Experience
UI/UX Design • AR/VR
Fundamental Human Behavior
Design Consumer Health Technology Graphic Design • Motion Design • Interaction Design • 3D Modeling