Research Statement | Ellen Simpson

Areas of expertise: Human Computer Interaction, Infrastructure Studies, AI Fairness and Ethics

My research investigates how digital technologies reimagine the sociotechnical routines of people to help better inform the future design of technologies, policies, and online platforms. Routines are repeated and recognizable patterns of action, such as logging on to TikTok and watching videos that validate one's identity after a hard day. Yet online, much of what we routinely do is filtered through multiple algorithms, a type of sociotechnical system, that mediate and shape how we routinely experience the world, our identities, or our creative selves, in both good and bad ways. Focusing on how sociotechnical systems are shaping people's routine behaviors, I explore how (1) how sociotechnical systems shape people's everyday routines, such as how they enact, and feel validated in their identity, (2) how sociotechnical systems lead people to routinely learn new skills and about themselves, and (3) how people routinely address gaps in sociotechnical systems to support their routines and the routines of their communities. During my Ph.D., I worked with historically marginalized communities (LGBTQ+ people, neurodiverse people), expert communities of users (content creators), and working communities (visual artists) to learn about their routines and use of digital technologies. Currently, as a postdoctoral researcher working on a one-year project at the University of Virginia's School of Data Science, I am expanding my exploration of how digital technologies shape people's everyday routines by examining how the introduction of automated decision-making softwares (ADS) and AI into the field of job candidate recruitment is reconfiguring the everyday routines of talent acquisition specialists, recruiters, and hiring managers, which has long-term impacts to the routine practice of job seeking that everyone, at some point, must go through. All together, my research discusses how people work to improve, adapt, and transform sociotechnical systems for themselves and others in ways that push back against the normative logics embedded into their design and functionality, and how studying everyday users can help to improve technology design, policy, implementation, and integration into existing work processes.

I am an information scientist, and I work at the intersections of Human-Computer Interaction, Computer-Supported Cooperative Work and Social Computing, Information Science, Media Studies, and Science and Technology Studies. Working with everyday people and their use of technology, I take a problem-centric approach to research. I underpin my work with practical applications of theories of power and resistance to the normative logics of society by examining edge cases and experiences of technology from multiple perspectives. Edge cases often represent an experience so outside the norm of what a technology was designed to do, and I use a variety of methods to approach research questions, from in-depth interviews to content analysis to topic modeling and other big data approaches. My work contributes to theory and practice, where I offer both critique and practical guidance to address research problems.

I have published at top-tier peer-reviewed computing venues, including first-author papers at Human Factors in Computing Systems (CHI), Computer Supported Cooperative Work and Social Computing (CSCW), and the International Conference on Supporting Group Work (GROUP). My work has also been published in top peer-reviewed journals, including *New Media and Society* and *Policy & Internet*. At GROUP '23, I received a Best Paper Award, which was one of the two best paper awards given. To date, I have published nine full papers, four of which were first-author papers – 6 in journals and 3 in conference proceedings. I currently have 3 papers in submission. According to Google Scholar, as of Nov. '24, I have a citation count of 453 and an h-index of 10, where, notably, a paper I published in 2021 has already been cited 205 times. My publications appear on syllabi at The University of Colorado Boulder, University College London, Northeastern University, The University of California Los Angeles, and The University of Washington.

Current Research

My research focuses on the routine, everyday experiences of people working with, on, and through sociotechnical systems, with particularly attention paid to the routine use of sociotechnical systems where user experience is mediated by and through AI (e.g., content recommendation, AI filtering, content moderation). I have explored (1) routine identity work in AI-mediated systems, (2) how AI-mediated systems shape our routine practices, such as work, learning, or self-discovery, and, (3) how people and communities are appropriating these systems to routinely meet their needs. I elaborate on each below:

Exploring Routine Identity Work in AI-Mediated Sociotechnical Systems — Social computing research often draws on the experiences of the most marginalized in society - edge cases - as these experiences are so outside of the normative user for whom these technologies have been designed that their experiences can demonstrate moments where technologies break down, and potentially cause harm. In my first paper on TikTok (which has now been cited 188 times since it was published in 2021), I found that while the platform generally was a positive space for queer people, only certain versions of queer

identity were consistently shown to users by TikTok's content recommendation algorithms, which alienated some users whose identities did not align with that version of queer identity (Simpson & Semaan, 2021). These moments where sociotechnical systems present contradictions of benefit and potential harm are a recurring theme in my research, as they demonstrate the underlying power dynamics that are designed into technology. In exploring how algorithms prioritize certain norms of identity, my research critically evaluates popular platforms and systems that are a part of the routines of our daily life and demonstrates how the benefits and harms of technology are not always cut and dry, but rather subject to nuance. From this research, I began to see how AI is shaping people's routines, especially around identity and creative practice. This led me to my next project.

How AI-Mediated Sociotechnical Systems Shapes Our Routines: Creative Practice and Identity — Of particular interest to me is the exploration of everyday use of sociotechnical systems, particularly those with embedded AI, to understand how people learn new skills and themselves. For example, in my work with autistic TikTok users, I explored how the community's use of TikTok to discuss and revise their biographical narrative through the lens of an Autism diagnosis, allowed for both identity exploration and community building through the co-construction of the #Autistok hashtag and community (Alper et al., 2023). Further, this community's appropriation of TikTok as a communication tool allowed others to understand, and at times augment, the process of getting a medical diagnosis of Autism. In this work, I am also interested in how navigating AI-mediated sociotechnical systems like TikTok shapes creative practice, focusing on how care for community has led many TikTok content creators to shift their routine creative practice to include additional time to add captioning to the videos they make, even after the implementation of an auto captioning feature on the platform (Simpson et al., 2023). Exploring how these routine encounters with technology shaped their routine enactment of their identity or their routine creative practice allowed me to make recommendations on community-driven accessibility practices, as well as rethink the role that technology plays in self-discovery and creative practice. This led to my dissertation work, where I focused on how people and communities were resilient in their routine use of sociotechnical systems.

Generating Resilience and Joy: How People and Communities are Appropriating Sociotechnical Systems — In adopting an infrastructure-oriented lens to understanding people's everyday routines with and within sociotechnical systems, I also reveal moments of individual and community resilience and resistance to hegemonic power structures embedded in society. In focusing on resilience, how one bounces back from threat or disruption, I operate within the contradictions of sociotechnical systems for communities. In my Ph.D. research, I explored how visual artists drew on existing sociotechnical infrastructures to share and monetize their art in ways that prioritized their personal joy and fostered creative community through the infrastructuring of inspiration into their everyday routines (Simpson & Semaan, 2024 [in submission]). Technology is designed with a specific use in mind. By focusing on resilience and joy, I show that users are routinely reappropriating existing sociotechnical systems to address gaps they see in existing infrastructures. This could be to help augment the existing medical establishment to better understand, and advocate for an autism diagnosis, or to find joy in creativity, rather than feeling used and exploited by online platforms.

Research Agenda

As a sociotechnical scholar studying how people *use* technology to shape their social worlds, as well as how technology, in turn, shapes people, I aim to improve how platforms and platform policies are designed – particularly when technology impacts the routines of some people differently than it does for others. My goal is to expand how we think about technology design by challenging the social and cultural normative values embedded into technology design and functionality and expand how we think about use and functionality by applying social, theoretical, and historical lenses.

I plan on building a collaborative lab culture that draws on individual experiences and expertise to produce robust, mixed-methods research. Throughout my tenure as a graduate student, I've collaborated with colleagues across multiple institutions on research projects and want to foster this collaborative effort in my students as well. Below I outline future research opportunities I want to pursue:

Impacts of AI integration into Everyday Lives and Routines — Emergent from my dissertation interviews with visual artists was a growing concern over generative AI, which has been echoed in my current postdoc work with recruiters and hiring managers over automated decision-making softwares being used during job candidate recruitment and hiring. With mounting concern over AI integration into the everyday fabric of people's lives, I want to continue exploring how this integration is impacting routine work, and therefore *the future of work* for people in various job roles and industries. Here, I

would love to run focus groups with various professionals on how AI has been introduced in their workplaces, and how it is impacting their routine work functions, as well as work with people in the creative industries to understand how training sets for generative AI art could be produced ethically, if at all. I plan on employing focus groups, interviews, and speculative design workshops to continue my work in this area.

Unpacking Routine Identity Work in Sociotechnical Systems — A running theme in my graduate career is focused on understanding how identity is embedded into the sociotechnical systems by and through which people go about their daily lives – going so far as to write a literature review about how HCI research understands and discussed LGBTQ+ people (Taylor et al., 2023). I want to continue to explore these systems and am particularly interested in the tensions between how a person sees themselves, and how they are constructed within sociotechnical systems. I want to examine the routine navigation of sociotechnical systems by LGBTQ+ before they come out, or as they are questioning their identity. I want to build on my current collaboration with neurodivergent communities around how algorithms are augmenting the medical diagnosis process for them to unpack these experiences of identity discovery and formation to drive and develop guidance for teens and young adults around algorithmic literacy. I envision collaborations with local middle and high schools, LGBTQ+ groups, and industry partners to facilitate community-based interventions, as well as insights from topic modeling, interview data, and content analysis.

Empowering Communities through Community-Based Technology Education — Over the past two summers, I worked with first-generation college students for a summer intensive, Pathways, hosted through the College of Media, Communication, and Information (CMCI) at CU Boulder which is designed to help students with backgrounds like my own feel comfortable at universities. Continuing to promote opportunities where the invisible curriculum of the academy is demystified is a key reason why I want to become an educator. I want to find community-based needs for technology education and work with my research community to empower historically underserved communities (e.g., indigenous, migrant) through need-driven technology education. In developing novel approaches through community collaboration, I want to explore how technology is used by these communities, and learn from these communities what is needed from their technology, and work with the community to co-design and prototype these tools in a prolonged and sustainable way.

Funding Considerations

As a HCI researcher, I would seek out funding from the National Science Foundation's core programming in computing (NSF ISS HCC). During my first three years, I would seek funding from National Science Foundation's (NSF) Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII), which would act as the scaffold for an NSF CAREER grant that I plan to write going into my third year. Additionally, there is significant industry interest and opportunities (e.g., Microsoft and Google grants) in my current areas of research, such as AI in Recruiting, as my postdoc is partially funded through a grant from Capital One, allowing me to seek out and apply for small grants from industry. Lastly, given the potential of my research in having a significant impact on local communities, there are also several foundation grants I would pursue (e.g., Sloan). Additionally, I would like to write other NSF Grants (Small, Medium, and Large) with collaborators to tackle large scale problems on routine technology use and appropriation by historically marginalized communities at the intersection of my interests and the expertise and experience of others, as solving large problems like this requires collaboration across disciplines and methods.

References

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