

Research Statement

Research Philosophy

I am interested in researching the actual and potential impacts of technology on people and people on technology. My view of research is pragmatic, and I am most comfortable with mixed-methods research designs which include both participants' subjective interpretations of their experiences with technology and more objective measures of performance, use, etc. The goal of my research is to inform every stage of the design and development of technologies that better serve children and people with disabilities, who are often not considered in early stages of development. I use participatory methods to actively involve relevant stakeholders (e.g., children, parents, teachers, and therapists) in the development and evaluation of novel and existing systems. To form a holistic view of a research problem and potential solutions, I believe it is critical to work closely with diverse, interdisciplinary teams.

My research interests are broad and human-centered, which means my future work will depend somewhat on the relationships I build at and around my future institution. I will bring in relationships and tools from my prior work and collaborate with other faculty within and outside of computing and community partners that align with all of our goals.

Importantly, I want to foster students' interest in research. I have mentored 23 undergraduate research assistants and want to continue to support students in identifying research questions relevant to their communities and developing the skills to design and execute plans to answer those research questions.

User-Centered Approaches to Understanding Limits of Existing Technology

As an undergraduate research assistant at Indiana University Bloomington, I interviewed caregivers of older adults about their communication needs for coordinating short-term care. We identified limitations of existing communication apps used by respite care providers (e.g., complete lack of functionality in rural areas with sparse cell service) and incorporated those considerations into the design of a new communication app (e.g., saving notes and messages locally when unable to sync). This project solidified my interest in understanding how social systems can inform responsible, user-centered technology design.

As a trainee in the Iowa Leadership Education in Neurodevelopmental Disabilities (ILEND) program, I worked with graduate students and faculty in education, statistics, and speech-language pathology on a research project. We conducted a survey of speech-language pathologists, special education teachers, and assistive technology professionals in Iowa schools to identify barriers to the provision of services related to augmentative and alternative communication (AAC). We found, in contrast to prior work, funding is not a primary barrier to AAC service provision in Iowa, but the time required to provide AAC services poses substantial barriers to AAC adoption. I am interested in continuing to explore how designers can address systemic barriers to assistive technology adoption and maintenance.

Child- and Family-Centered Approaches to Technology Development

My dissertation work has focused on evaluating the impact of a system designed to support preschool children's development of self-regulation skills through face-to-face social roleplay, developing and deploying the system for broader use, and adapting the system to support use by parents, therapists, and neurodivergent children. StoryCarnival aims to provide low-tech supports (stories and an adult-operated voice agent) for children's face-to-face social play. The stories introduce characters with

complementary skills working together to partially resolve a problem, and it is up to the players to decide what might happen next (as described in GoodIT '23). We have found that the structured activities and voice agent can help integrate shy preschool children in play (IDC '21) and overall encourage a trend toward more collaborative, social play between preschool children in both the US (BIT, 2023) and Uruguay (IDC '23).

I have worked with an interdisciplinary team of faculty and students to make the system publicly available in both English and Spanish at storycarnival.org. This process has involved full-stack web app development with NodeJS and AWS, iteration on 3D-printed designs for the physical voice agent, and project management with a rotating team of undergraduate students in computer science, informatics, psychology, creative writing, and art.

My current line of work focuses on evaluating the potential for StoryCarnival to support neurodivergent children at home (CSCW '24) and in group play therapy contexts (in preparation) and identify adaptations needed to make the system more accessible to those populations. So far, this work has led to changes to the design of user interface for teleoperating the voice agent, the addition of printable PDF versions of the stories, and modifications to the play planning portion of the web app. I have also been working with a preschool teacher and children in her class to identify usability issues that may prevent StoryCarnival from being adopted by other preschool teachers.

Through this work, I have developed ideas for projects that could introduce individual undergraduate students to research. For example, with a few software modifications it would be relatively easy to design a small experimental study exploring how different interaction methods (one passive, one active) could influence parents' dialogic reading with their children.

Participatory Approaches to Anticipatory Ethics

I am also interested in developing participatory approaches to involving children and adult stakeholders (e.g., parents, teachers, etc.) in anticipatory ethics studies of emerging technologies. I work with a consortium of researchers from seven universities using a variety of methods with diverse populations to identify general best practices and principles for conducting these types of anticipatory ethics studies within Child-Computer Interaction (CCI). As part of this project, I developed a set of 62 statements reflecting a range of attitudes parents could hold toward technologies aimed at children using CCI literature published at CHI and IDC. I then used a Q-Sort activity with 49 parents to develop a set of three personas that reflect cohesive, distinct attitudes toward technologies aimed at children. We used both the Q-Sort activity and the personas as an activity in early research sessions with parents and professionals who work with children exploring ethical concerns for emerging extended reality technologies both to validate the personas and facilitate discussion of ethical concerns (in preparation).

In the future, the parent personas could be used to facilitate discussions of various existing or hypothetical technologies. I would also be interested in adapting the item set and conducting similar activities with other populations of interest. For example, this method could be useful in identifying attitudes emerging adults hold toward technology and potentially identify differences in attitudes between subgroups of that population (students vs. non-students, people with disabilities vs. those without disabilities, etc.).