RESEARCH STATEMENT
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Technology has the potential to enable access to people and information in disparate places. Much work is done in computer science that leads to storage, organization, retrieval and dissemination of information. Understanding, supporting and improving the interaction that occurs between digital bits and humans is the primary goal of the field of Human-Computer Interaction (HCI) – the focus of my research interests. HCI also values the role technology plays in supporting human-to-human interaction. In order to support these interactions, technology must be designed, implemented and evaluated to meet user’s needs.

In the last decade mobile devices have emerged as the computing platform of the future. It is forecasted that within the next two years there will be over two billion devices worldwide, which if distributed evenly would account for approximately one third of the world’s population. The relatively recent iPhone proliferation and Android release echo the promise of this expanding field. Mobile devices have several limitations due mainly to their size; these limitations impact interaction — both input and output. I believe some of these limitations can be mitigated and others leveraged to create strengths. In this time of widespread distribution, collaborative interfaces can help overcome these perceived weaknesses. This is the focus of my Ph.D. research.

The last five years I have been a researcher at the University of Maryland’s (UMD) Human Computer Interaction Lab (HCIL). The HCIL, which is celebrating its 25th Anniversary this year, is one of the oldest HCI laboratories in the nation and worldwide and is known for its rigorous, collaborative and interdisciplinary research. I have integrated these values and practices into my research philosophy. I have had the opportunity to work closely with Dr. Allison Druin, Associate Professor and current Director of the HCIL and my interdisciplinary doctoral program cohorts, Dr. Gene Chipman (Computer Science) and Mona Leigh Guha (Education). I have also worked on an information visualization project with Dr. Ben Shneiderman and designed, built and evaluated a mouse for older adults with Dr. François Guimbretière. Working with researchers in similar and dissimilar fields broadens perspective and polishes specific research via critical, constructive feedback from different points of view.

During my time at the University of Maryland, I have focused my research on developing educational technology projects for young children, highlighting the design and iterative process of creation. Much of this work has been with Kidsteam which is an intergenerational design team that includes children ages 6-10 and adult researchers. Kidsteam meets twice a week and works on multiple research projects at varying levels of the process from design (all members – including the children – are design partners) to evaluation. I have assumed several significant roles in Kidsteam: leading numerous sessions, working with industry partners (e.g. Microsoft, National Park Service, Fisher Price) to design the methods to be used, facilitating sessions and more.

My experience at UMD has exposed me to several user groups as well as qualitative research methods including case studies, grounded theory, and qualitative analyses of interaction artifacts (notes, video, drawings, etc). My Master’s work at Brigham Young University (BYU), Image Processing with Crayons, was focused on quantitative evaluation in which I used speed and accuracy measures to analyze the data. I have learned that both qualitative and quantitative
methods are important to a robust evaluation of technology and processes. Working with the specific user population of young children, I have learned that the need to address specific user groups is critical.

HCI research includes developing new interactions and interfaces, and understanding and working with users employing user-centered or participatory design principles. This enables real problems to be addressed in ways that real users will be able to use. I firmly believe in involving users in the design process as well as evaluating the designed technology with various user groups. While my recent experience is specifically with young children (ages 6-11), I also worked with younger children (ages 4-6) at the on-campus, Center for Young Children campus and with older adults at local community centers on two separate projects. HCI and participatory design researchers have illustrated how user-centered design is important for these and other demographics. It is not enough to build technology – technology must make an impact to individuals and society at large.

In this quickly-evolving world an interdisciplinary approach a necessity. Computer science research is flourishing in several areas by building intra- and inter-departmental bridges and partnerships with other areas and researchers. The interdisciplinary study of HCI affords several promising collaborations with new colleagues.

Interacting and collaborating with colleagues is essential, but students also play a critical role in research. Research is enhanced by teaching. By sharing examples from research, students not only see applications of the principles, but are opened to thinking about creating new technologies and expanding the field of research. It also opens the door to dialogue that can be formative in solidifying research directions. This can impact individuals and open doors to mentoring opportunities, allowing students to have a hands-on research experience with a faculty mentor.

Observing current trends, envisioning the future and making the future become reality is the role of academic research. Frequently assessing oneself and thoughtfully processing critical feedback is instrumental in polishing research. Research, like personal progress, is an iterative process constantly reflecting, reviewing, designing, creating and evaluating. At some point in time all technology must interact with humans – facilitating and improving the communion between human and machine is my goal as an HCI researcher.