

SIGACCESS Member Profile

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Member of SIGACCESS since: 2004

Member of ACM since: 2004

Also member of: SIGCHI

1. How many years have you been working in this area?

2 years.

2. What motivates or inspires you to work in this area?

My specific interest in accessible computing is to build innovative computer tools for children with disabilities – tools that respect the children’s desire to be like other children, and help them access social and learning opportunities. My inspiration is personal: my older brother was born with Cerebral Palsy. While it is unlikely that his Cerebral Palsy will be cured medically in our lifetime, I believe assistive technology can help make the world more accessible for him and for other individuals with disabilities. Growing up, I watched my brother face both social and learning challenges due to a disability that is primarily physical. It is these challenges I hope my research can address.

3. Please describe your current research project(s):

For my dissertation I am designing, implementing and evaluating the use of a new kind of “authorable” virtual peer that will allow children with autism to learn about reciprocal social interaction, peer collaboration and storytelling by building their own virtual humans and observing how they interact in the world. Children with Autism Spectrum Disorder (ASD) often lack the communication and reciprocal social interaction skills that lay the groundwork for school-based learning of literacy and for later academic and social achievement. However, these same children may spend hours interacting with interactive computer games. Virtual peers are 3D, life-size animated characters that look like children and are capable of interacting, sharing real toys, and responding to children’s input. I am developing a new virtual peer that incorporates authoring features, such that the child can control the different communication and social interaction features of the system (such as nonverbal behaviors of the agent: eye gaze, hand gestures, head nods and posture shifts), and observe the effects on interaction. Children with autism will use Authorable Virtual Peer (AVP) in three modes. Children interact with the virtual peer by telling stories with the system. In a second mode, children also control the virtual peer by using an interface to select predefined responses. Finally, in the third mode, children author the virtual peer by using tools to create new behaviors and responses. These three modes help children with ASD develop communication and reciprocal social interaction

skills by rehearsing verbal and nonverbal interaction skills with an indefatigable peer, manipulating the verbal and nonverbal behaviors of the virtual peer and observing the effects on interaction, and constructing their own interaction examples. The target population for this research is children with high-functioning autism (IQ above 80) with verbal abilities, ages 8-13.

A pilot study with an 8-year-old girl with an Autism Spectrum Disorder (Asperger Syndrome), whom we will call Mary, investigated Mary's verbal and non-verbal behaviors in an interaction with an existing virtual peer, Sam. Mary and Sam told two collaborative stories together where they took turns adding to the story, Mary initiated one story with Sam, and then Mary requested that Sam continue telling stories for two stories. Mary engaged with Sam with notable enthusiasm, and exhibited eye gaze and play gestures that illustrated her engagement with Sam. She performed collaborative storytelling acts by elaborating on Sam's stories, facilitating her own story, and responding to Sam. However, we also observed in Mary several areas where an AVP could be used to practice different kinds of interactions that she did not perform, such as role-playing, or making or acknowledging suggestions.

Developing an AVP for children with ASD will add to our understanding of autism itself, and lead to improved interventions to help children take advantage of the social world around them.

4. *What is your professional background?*

I am currently a PhD candidate in the joint Ph.D. program in Computer Science and Communication at Northwestern University (the program is called Technology and Social Behavior). I also have an M.S. in Computer Science from Northwestern University and an M.A. in Instructional Technology from Columbia University, Teachers College. My undergraduate degree is in Computer Science from Brown University. After Brown, I worked for two years at Sun Microsystems in Menlo Park, CA as a Software Engineer on the Java 3D project.

5. *What technology or product would you really like to see developed? Why?*

A virtual peer that can speak Sign Language. Virtual peers have been used to significantly increase typically-developing children's early literacy skills. Perhaps a virtual peer that uses Sign Language can help Deaf children develop literacy skills – literacy is particularly challenging for Deaf children.

6. *Have you participated in any SIGACCESS-sponsored event?*

I participated in the 2005 ASSETS Doctoral Consortium; my presentation was entitled: Storytelling with a Virtual Peer as an Intervention for Children with Autism. My presentation won the Best Doctoral Candidate Award and was the final plenary presentation.

7. *What else would you like to see SIGACCESS do?*

Publish a journal.