CS6750: Human Computer Interaction
Assignment P5 (Summer 2021)

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1 QUESTION 1: OMSCS PROGRAM (COMPUTER SCIENCE)

One of the positive effects of Georgia Tech's OMSCS program is that non-traditional students can now specialize in more areas of computer science due to the increase in the number of online masters degree programs that followed after the success of the OMSCS program. According to a recent article from Forbes magazine, there are now 40 massive online graduate-level online programs offered from 30 US universities (Nietzel, 2021). High-quality online graduate programs offer more opportunities to non-traditional students that experience additional barriers to obtaining advanced degrees, including financial costs, limited access to federal aid and scholarships, family obligations, employment, and geographic location. The increase in online graduate programs means that students have a greater selection of specializations to choose from and study under faculty specializing in their areas of interest.

The increase in successful online graduate programs has caused a negative effect in a reduction in enrollment at state and local universities, once the most affordable option. In-state tuition costs were once beneficial for students to stay in their communities to finish school instead of moving to programs out of state. A recent conversation I had with a Computer Science professor at an Arkansas university was how do we compete with online programs like Georgia Tech, and will online education eventually take the place of in-person learning. State universities are now trying to figure out ways to attract more students to their programs to not lose their computer science programs due to lower enrollment.

As more universities move to online graduate programs, competition will continue to increase, and students will choose programs that benefit their personal goals. In smaller schools that may not have the funding or resources, there may be opportunities for partnerships with local state universities. The OMSCS program could partner with other universities to offer joint degree programs in other areas such as business, public health, and analytics. Students could earn a dual degree (e.g., MS/MBA, MS/MPH, MS/MHA).

Other program ideas include adding offerings for independent research projects with local computer science faculty for course credit. A condition could be that the student works with supervising faculty at both Georgia Tech and the local university on a project to help their local community in some way. This idea could open the doors for more collaborative research among universities and more visibility for local programs.

2 QUESTION 2: HIDING INSTAGRAM LIKE COUNT

In 2019, Instagram announced that it would begin hiding the number of likes displayed under each post to support the mental health of its users. The company's CEO Adam Mosseri said, "When we look at the world of public content, we're going to put people in that world before organizations and corporations" (Blackwood, 2020). Since the beginning of social media, users have attributed personal value to the number of likes, followers, and comments they received. There is also a societal value on the number of likes and followers. People tend to like and share the content of accounts that have lots of engagement. Now, Instagram users have the option to keep their like count private. While the user can see their like count, others do not.

The organization's motivation behind the decision was to help reduce the pressure of younger people using the platform, making it less competitive. One of the potential benefits to Instagram regarding this change is that people will post more without the pressure of people knowing their likes count. Facebook's data science team found an increase in posting after hiding the number of likes (Blackwood, 2020). Smaller businesses and individual accounts benefit by appearing more equitable to accounts with more significant followings. However, larger and more established accounts may lose some of their perceived value. And now, that value translates to economic value, as businesses and influencers receive more money depending on the amount of engagement they get on social media.

2.1 How these motivations affect the design of technology

For Instagram, the motivation was to help people with their emotional and mental health by not focusing on the number of likes a post receives. However, after testing for a couple of years, they found that it did not seem to move the needle on improving user's mental health enough to accomplish this goal. Instagram

has not entirely removed the like and view counts. The user can still see the number of likes and views on their posts. Users have to go to advanced settings on every post and choose to "Hide Like and View Counts on This Post." Having to turn this on for every post violates the design principle of simplicity and ease. It makes it more difficult, especially for a feature to support the user's mental health.

After two years of testing hiding likes, Instagram found that the option annoyed some stakeholders because they used those metrics to figure out what was trending or popular (Newton, 2021). The option to view others like count is now available again by default, and users can choose to hide them in their privacy settings. However, this puts more choices on the users to make decisions. It's a balance of how many options to customize their experience before it becomes too much.

For individuals and companies with smaller accounts, hiding their like count may help them feel equitable to larger accounts who choose to hide their like count, but the algorithms that present their content to the public do not change. So for this motivation, the design may not benefit an account seeking higher engagement because it's still not truly equitable.

3 QUESTION 3: CHI CONFERENCE PAPERS REVIEW

Interactive Multisensory Environments for Primary School Children

CHI Proceedings 2020

Franca Garzotto, Eleonora Beccaluva, Mattia Gianotti, and Fabiano Riccardi

Although primarily used in therapeutic settings, the research in this paper studies the use of iMSEs (interactive Multisensory Environments) in primary school settings with a mixed group of children - with and without disabilities. Multisensory environments provide relaxation for severe cognitive impairments to reduce anxiety, stimulate engagement, and improve communication (Garzotto et al., 2020). The Magic Room, the latest version of iMSE, is an indoor space that provides as a variety of sensory experiences, including lights, projections, bubble machines, smart toys, aroma emitters, music, nature sounds, and objects and furniture for tactile feelings. The Magic Room contains a network of digital devices and sensors embedded in the walls, objects, and furniture that makes the

experience immersive. Children interact through manipulation, gestures, and movement. Caregivers can customize the experience from a web-based app on a tablet, including changing the complexity of the task, pausing, and repeating activities. The Magic Room has seven types of game activities.

The study installed Magic Room in two primary classrooms and observed mixed groups of children: neurotypical and atypical. The first study focused on evaluating the appropriate size of the group, the appropriate duration, and what activities children liked the most. Results found that Magic Room was suitable for mixed groups of students and small groups of atypical students only, a suggested duration of 45 minutes, and the number of students depending on the type of activity: less than 10 for active and less than 15 students in relax-based activities. Children liked Grocery and Immersive activities the most. The second study focused on exploring the well-being of children and their behavior. The research offers some preliminary evidence supporting the use of iMSEs for inclusive education, providing improved behavior, social skills, and motivation for both types of children.

I found this paper interesting because of my interest in using immersive technology in therapy and human-computer interaction for children. I also enjoyed reading the qualitative analysis used in this research using the Smileyometer, a four value rating indicated by smiley faces that children can use to show how much they like an activity.

Empathy Is All You Need: How a Conversational Agent Should Respond to Verbal Abuse

CHI Proceedings 2020

Hyojin Chin, Lebogang Wame Molefi , Mun Yong Yi

The background research for the study found that 10-40% of interactions with conversational agents reflect abusive and sexual explicit expressions (Chin, Molefi, and Yi, 2020). The authors mention growing evidence of this type of behavior transferring to real-life relationships. The research is conducted in two studies, focusing on three verbal abuse types: insults, threats, and swearing, and three types of responses from the agent: avoidance, empathy, and counterattacking. The first study investigated the responses to verbal abuse of four major commercially available conversational agents: Google Assistant, Apple's Siri, Microsoft's

Cortana, and Samsung's Bixby. The study found that most commercial agents used avoidance the most, with responses such as shutting the system down or directing to a web search. The authors state that this may not be the best strategy as it causes aggravation from the user. The second study examined how each abuse type and the agent's response style affects moral emotions most likely to reduce aggressive behavior such as guilt and shame. The study assigned each of the participants to one of three abuse types. The participant, acting as a specific type of abuser, interacted with three agents that employed different response styles. The subjects participated in a post-survey to report their feelings around the interaction. The analysis of the post-survey focused on moral emotions that deter aggressive behavior such as guilt and shame. Participants in the study stated it was challenging to continue verbally abusing the empathetic agent and found that empathetic agents were more likable and intelligent than the other two agents.

I chose this paper because I found the topic of AI agents experiencing verbal abuse interesting. I wondered if the agent learns aggressive or abusive behavior over time and the ethical implications. After reading the article, my perspective shifted toward the societal effects. Even though conversational agents are helpful, they can cause adverse effects such as unintentionally reinforcing abusive behaviors that can transfer to human relationships.

4 QUESTION 4: ADDITIONAL CONFERENCE PAPER REVIEWS

4.1 Interaction Design and Children Conference 2019

"Hey Google, Do Unicorns Exist?": Conversational Agents as a Path to Answers to Children's Questions

Silvia B. Lovato, Anne Marie Piper, Ellen A. Wartella

This research involved a naturalistic study of how young children used voice-based conversational agents in their homes to ask questions and find out information (Lovato, Piper, and Wartella, 2019). The paper discussed the importance of question-asking in child development, and the research focuses on the types of questions children ask conversational agents.

The study included a field deployment of 18 families with children aged 5 to 6 years old that did not currently have a smart home device. The researchers

provided a Google Home mini and training on how to use it. The device was in the home for two weeks. The results showed that the device correctly translated questions most of the time but only answered half of their questions directly. The device kept log files that researchers monitored remotely. The families could use the device without constraint, and children were encouraged to ask any questions. The results showed 45% of interactions where questions and the percentage of total family questions asked by the focal child were higher in smaller families (families with an only child). Some of the challenges identified were long responses that required interpretation, answers that were meant to be funny but were confusing to children, and children had difficulty restating information in follow-up questions. Children self-reported six dimensions of the device, including friendly, smart, trustworthy, alive, safe, and funny using the Smiley-ometer, also mentioned in Question 3 in another study. The children reported the devices as smart, friendly, and trustworthy. The authors highlighted several implications for design, including *tailor answer to unique users, simplify and decompose answers to children's questions, understand context through prior questions and responses, adapt responses based on repetitive questioning, and source curation and presentation* (Lovato, Piper, and Wartella, 2019).

I chose this paper because I've observed similar behavior in my children's interaction with Google Nest. In the beginning, they asked Google questions all the time and said that they believed Google knows everything. After about two years, they have realized what it can answer and still ask it a lot of questions, but have learned how to articulate questions to get the device to give better answers. They have also learned how to rephrase questions, a challenge mentioned in the paper.

4.2 Creativity and Cognition 2021

Child-Robot Interaction to Integrate Reflective Storytelling Into Creative Play

Layne Jackson Hubbard, Yifan Chen, Eliana Colunga, Pilyoung Kim, Tom Yeh

The purpose of this study was to explore ways that children communicate reflection and ideas when prompted by a robot (Hubbard et al., 2021). It discusses four approaches to how young children respond to reflective prompting. These four approaches are Imaginative, Narrative Recall, Process Oriented, and Descriptive Labeling. This study was performed remotely during the COVID-19 pandemic and used a hybrid Wizard of Oz method. The authors discuss the importance

of reflection as a metacognitive skill strengthened through practice. The study recruited 33 children ages 4-5 years old.

The children were asked to participate in creative play by creating anything using materials from their homes. Each child chose a stuffed animal from their home to tell stories about their creations. The research staff inserted a smartphone into the stuffed animal. The "robot" asked open-ended questions about the child's creative play, and together they saved a reflective story to the software. It asks beginning questions, follow-up questions, and story-ending questions. The child signaled that they finished by saying "the end" or "I'm all done."

The parents provided materials for the children to do creative play like markers, paint, play dough, and interlocking blocks. Children would put the stuffed animal on top of their parent's phone to initiate the conversation or "make the stuffie talk." The researchers listed the children's responses and would signal through the software the verbal response to give to the child. After the child completed the story, the robot asks a series of reflective questions such as "Next time you make something, what are you going to make?" The researchers concluded that interactions with the robot could foster meaningful reflections in varied creative play contexts (Hubbard et al., 2021).

I chose this paper because it's another excellent example of studies involving children and ways to protect vulnerable populations in research. In this study, they used storytelling as a developmentally appropriate way to get children to be reflective. The researchers mentioned six design goals, including using Real-World Context. For example, they used a stuffed animal the child already owned and materials from their home to support children in their own creative spaces.

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