Designing Mixed Reality Games to Study Culture, Family Practices, and Social Engagement

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Our Research

Our research focuses on the design and study of pervasive and location-based games that explore cultural practices, social engagement, community, family values, and the documentation and understanding of place. We believe such mixed reality games present a unique opportunity for engaging community participants in the documentation and sharing of their experiences relating to their surroundings, community, and lifestyle.

We are also interested in the notion of 'scalable' pervasive games. Many pervasive games are designed in a way that makes them difficult to duplicate in various locations or sustain long-term participation [2]. This makes it challenging to understand the effects of repeated or long-term participation [1,7]. Our research explores how we can design self-sustaining and scalable pervasive games based on player-generated content.

Together, this research includes and builds on our studies of content-creation in the pervasive game, Geocaching [6], the design of pervasive games focused on cultural understanding [3], and studies of 'everyday

design' processes where end users make and remake designs for their own purposes [8,9].

Our Recent Research

Our recent research on mixed reality games has focused on two main projects:

1. ***Geocaching:*** We have studied the pervasive game of Geocaching using surveys and active participation and observation to understand the practices players engage in when searching for geocaches and creating and hiding them for others [6]. Our results show that Geocaching benefits by having players directly create game content, including both lightweight and elaborate creations. We believe this is significant because the difference between elaborate verses lightweight content creation unravels the relationships between sociality and culture as it appears in the narrative structure of Internet communications [6]. One way this happens is by allowing geocachers to share locations of significance and their concept of place with other geocachers who then visit these places to find the hidden geocaches. Over time, cultural norms of how to create 'good' content are created and evolved as players seek to create geocaches that fit within the expected paradigm of the game. They also expand these expectations to create new gaming experiences. One property of Geocaching that is also rare when compared with other pervasive games: in Geocaching, players themselves 'orchestrate' the game as opposed to just game administrators. One way this is done is through a well-designed groupware system consisting of online logs of players' activities.

Overall, we believe that Geocaching's content creation mechanisms have helped the game to grow to considerable size over the last decade in terms of the amount of game content available for players to find and the number of players themselves.

2. ***See It:*** We have designed a location-based game called See It (http://seeitgame.com) where players use ambiguous visual clues in the form of images and video clips to find locations containing a hidden container. Imagine Geocaching but without the GPS-device; instead, players using images or video clips of locations.

The goal of See It was to try and increase physical activities amongst players in order to promote more physically active lifestyles. In addition to this, we wanted to create the game in such a way that it could easily scale and be self-sustaining over time [5]. To do this, we based See It's design around the content creation model found in Geocaching. We wanted to understand if such a model could be applied within the context of a *new* location-based game to help promote its growth.

We conducted an initial study of game play by newcomers to See It that looked at how they searched for and created game content [5]. Our findings illustrated that, counter to our goal, it can be difficult to apply Geocaching's content-creation model within the context of a new location-based game. The challenge is that new location-based games do not have an established player base to strongly support game content-creation practices. This situation has lead us to look for future opportunities to collaborate with other disciplines that already have an established practice in place, but need tools such as See It to bring together the narrative structure and location into one system.

Upcoming Research

Our upcoming research plans are focused on using See It as a pervasive gaming platform to explore a number of additional research topics:

1. ***Family Communication:*** Many family members (e.g., parents and children) do not spend much time together because of an ever-increasing demand on people's time. As a result, family members drift apart and feel less close to one another. Our goal is to try and increase family 'together time' and improve family skills like communication, coordination, and collaboration by having family members design game content within a themed-version of See It that is representative of their interests. For example, grandparents could create a game that directly relates to the family's history. In the process of game play, the family would learn the significance of each location to the grandparents. Here we will explore how family members jointly hunt for and create game content for each other, as well as for other families.

2. ***Documenting Place:*** Historically, civilizations have recorded their collective experiences by first making decisions about what is important to communicate and then composing an audible or visual story of the event. Whether we are referring to Paleolithic cave paintings or a photograph posted on Facebook, people have been sharing knowledge about the human experience since the beginning of time [4]. Our goal is to understand how pervasive games can be used as tools for people to document their understanding of place in this digital world culture. We plan to work with scientists and writers to create themed games that combine narrative structure and geographical locations. For example, we plan to work with data collected by scientists monitoring endangered Mexican Grey wolves in the Gila Wilderness to build a location-based game that allows people to learn about these animals and help document their habitat. This will involve creating a written and visual record of locations that have significant meaning to the community and having people visit these locations and contribute content. Here we will have players use the content-creation mechanisms found in See It to extend the significance of locations by contributing to the stories written by their community.

Workshop Goals

Our goal for the workshop is first and foremost to establish stronger ties with those performing research in the areas of mixed reality and pervasive games. We are looking for future collaborators who share joint interests.

We also feel that the field of mixed reality games is coming to a crucial point in its lifetime. While still somewhat in its infancy, the field has now been around for close to a decade. Yet, for content developers, designers, and researchers in the field, it can be hard to find and grasp all of the research that has been done. People call the field by different names (e.g., mixed reality, augmented reality, location-based, mobile, and pervasive games, etc.) and publications are spread throughout a variety of conferences and journals. Given this, we would like to see the workshop lead to a collection of works, be it a special journal issue or edited book, that tries to bring the field together in a more cohesive manner.

In addition to this, we have several 'burning questions' for other attendees, as asked for in the workshop call. These include:

1. How do you promote 'scalability' or 'long term play' in the mixed reality games you create and how can we provide generalizable frameworks for supporting this in mixed reality games more broadly?

2. What aspects of culture and the 'human experience' do you explore in your mixed reality games and, as a field, what core cultural questions should we be asking?

3. How do you define 'mixed reality games'? How is this different or the same as 'augmented reality games', 'location-based games', or 'pervasive games'?

Bios

Carman Neustaedter is an Assistant Professor in the School of Interactive Arts + Technology at Simon Fraser University, Canada. His research is in design, human-computer interaction, and domestic computing. Here he focuses on the design and use of technologies for connecting people who are separated by distance or time. This includes design for promoting family connectedness, support for workplace collaboration, and bringing people together through pervasive games.

Vicki Moulder is an artist, designer and Ph.D. student at the School of Interactive Arts + Technology at Simon Fraser University. Her work explores creative collaborations at the intersection of technology and cultural production. Since 1991 she has been actively involved in producing a number of community-based artworks (local and International).

Ron Wakkary is an Associate Professor in the School of Interactive Arts + Technology at Simon Fraser University. His primary research is in interaction design, focusing on tangible computing and responsive environments, and the study of 'everyday design' in which we all contribute to the ongoing design of artifacts and surroundings.

Tejinder Judge is a User Experience Researcher at Google Inc. Her research is in human-computer interaction and computer-supported cooperative work where she studies and designs technologies for families. She received her PhD at Virginia Tech.

Anthony Tang is an Assistant Professor at the University of Calgary where he might play more games than he does work. The jury is still out.

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