GEMS: A Location-Based Game for Supporting Family Storytelling

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Abstract

GEMS is a location-based game designed to support the telling and sharing of stories and to enhance knowledge of place among family members and close friends. The game narrative and mechanics prompt players to reflect on meaningful places from their past and to travel to those places and create geolocated digital memory records that capture the personal significance of the places in question. Other players can then visit the locations to collect and view the records.

Author Keywords

Location-based games; pervasive games; storytelling; family

ACM Classification Keywords

H.5.3. Group and Organization Interfaces: Computer-supported cooperative work.

Introduction

Location-based games (LBGs) are games that extend the gameplay experience into the real world by incorporating aspects of the player's environment into the game system. In this way, LBGs are more closely integrated with real life and real locations than traditional games, and they can offer new ways to interact with and explore familiar places.

Many LBGs interface with locations according to static, observable features. For example, in Geocaching [4], locations are defined in terms of geographic coordinates and physical terrain. From a human perspective, however, locations may be defined by the social contexts and histories at play.

In our research, we are interested in a person's knowledge and understanding of places through the lens of personal experience. Our research investigates how a LBG can be designed to support telling and sharing stories between family members and close friends and, ultimately, to enhance a family's knowledge of meaningful places in each member's life.

To this end, we designed a location-based storytelling game called GEMS ("Geolocated Embedded Memory System"). The game is framed by a science-fiction narrative in which players must contribute to a chronicle of human experiences before a series of natural disasters rearranges the surface of the earth. Players interact with a mysterious AI character who prompts them to reflect on and document places that hold special meaning for them in exchange for information about the impending catastrophe.

Location is gaining popularity as a context for sharing personal experiences through applications like FourSquare and Facebook's Location Services, and we want to explore this area further. Compared to existing methods for documenting and sharing location-specific experiences (e.g. geotagging photos), a game system can not only support the act of storytelling but it can also engage the motivations that surround it by framing the activity as part of a larger narrative and as part of a series of goals. While our design does give players a

way to share stories, it also encourages them to consider which experiences are worth sharing and which places are worth revisiting.

Related Work

GEMS is similar to several existing LBGs and we compare them in this section. First, Geocaching is a location-based treasure hunt game in which players use a GPS device to find hidden containers [4]. Geocaching is notable for its relatively long life span, its self-sustaining community, and its implementation of player-generated content [6, 7, 8]. Our research further explores player practices and motivations for making and consuming their own content in LBGs.

See It is a location-based treasure hunt game designed to investigate scalability and player-generated content in LBGs [7]. See It expands the treasure-hunt model seen in Geocaching [7] to use location-specific photos and video clips as clues. GEMS iterates on this idea and makes the location-specific media the prize rather than the clue: the memory records players create in their exchange with the AI character double as content for related players to track down and consume.

Serendipitous Family Stories is a system that enables family members to create and collect geolocated video messages [2]. Parents record and situate a video message or story for their children using a desktop interface. Their children can then use a mobile interface to track down and view the video in the location it is associated with. Our research uses similar ideas as the basis for a system driven by player-generated content.

Eyespy is a LBG in which players earn points by tagging real-life places with geolocated text and photos and by

verifying tags created by other players [1]. In this way, the game continually supplies new gameplay opportunities because one player's activity creates new content for other players to consume. While Eyespy uses this create-and-collect pattern to generate a reliable catalogue of visible geographic details [1], our design uses it to encourage the sharing of personal stories through the context of place.

The Design of GEMS

GEMS is designed to unfold like a conversation. The AI character periodically asks players about various aspects of their past, and players respond by recording and sharing a relevant story or memory. Figure 1 outlines a sample gameplay scenario, and this section details the key components of gameplay.

Directives
Throughout the game, players receive directives in the form of inquiries from the AI character. Directives provide players with short-term goals and help structure the content they must create. For example, Figure 2 shows a directive received by a player that asks for information about the player's home. Some directives relate to specific types of places like this while others focus on specific emotions, experiences, or people ("Show me a place where you experiences fear"). Both types give players a concept to reflect on and to use as the foundation of a personal story.

Directives are a crucial part of the design because they catalyze the storytelling process with both a push and a pull. As a question, a directive prompts the player to reflect and to begin formulating a story. As a game objective, a directive gives the player a short-term goal to work toward in the storytelling process.
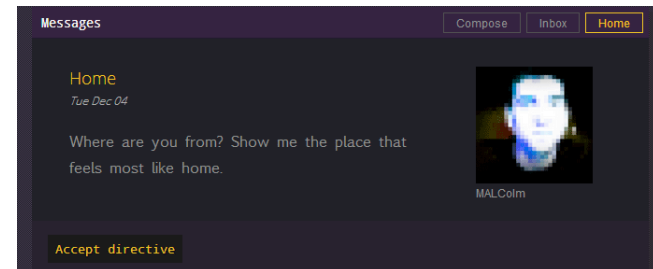

Figure 2. Players receive messages containing directives from the AI character.

Memory Records
In order to complete a directive, players must create a memory record. A memory record uses a combination of coordinates, text, audio recordings, photographs, or video clips to capture a particular experience and the place it originates.

There are two ways to create a record. Primarily, players can travel to the location in question and use a mobile device (Android phone or iPhone) to capture media and make a record on the spot. In this case, the game determines the player's location using the device's GPS tracking unit. We believe this method of record creation offers the player a unique way to reflect on a personal experience and a novel way to document it. By revisiting a location for the specific purpose of telling the story of what happened there, players can become investigators of their own histories. They can experience the place again in a new context and, using their mobile device, they can produce media that helps to communicate the significance of the place.

Alternatively, players may create a record remotely from a desktop web browser. In this case, players use a map to select a location for the record, as in Figure 3,
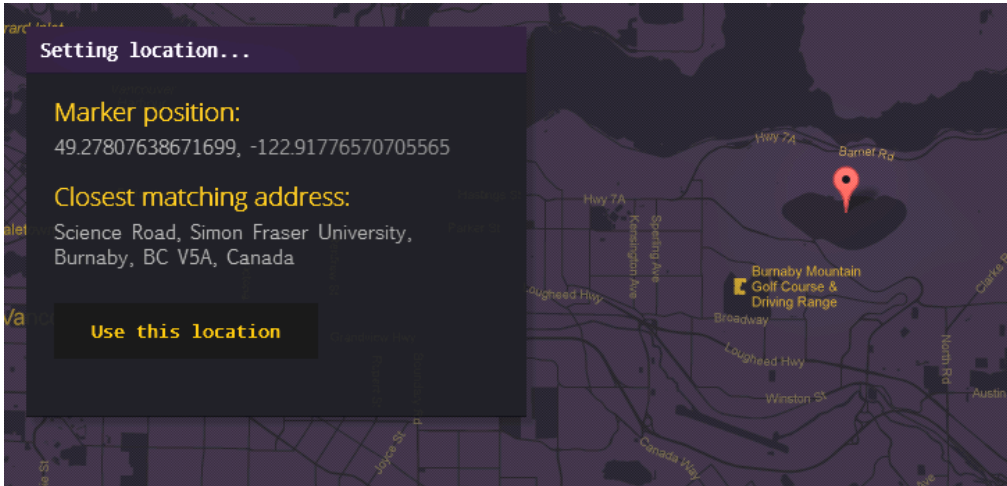
Figure 3. Players can create and embed a record remotely using a map interface to select a location.

Figure 4. Players spend access tokens to unlock collections of information in the databank.
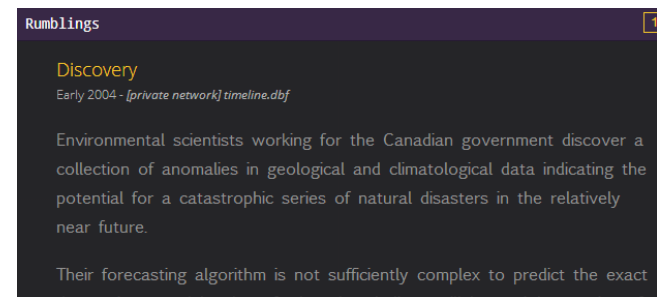
Figure 5. A databank entry revealing part of the narrative.

and upload the appropriate media files from their local hard drive. This method is intended to enable players to document places that they cannot visit due to time constraints, distance, or other obstacles.

The Databank

In context of the game fiction, the databank is the AI character's pool of information relating to the impending disasters. As players make records and complete directives, they earn access tokens that can be used to unlock narrative content in the databank. Figure 4 shows the databank interface for selecting and unlocking collections of information. Each collection contains a number of fictitious blog posts, scientific reports, and other files pertaining to the storyline. Figure 5 shows a sample databank entry from the first collection.
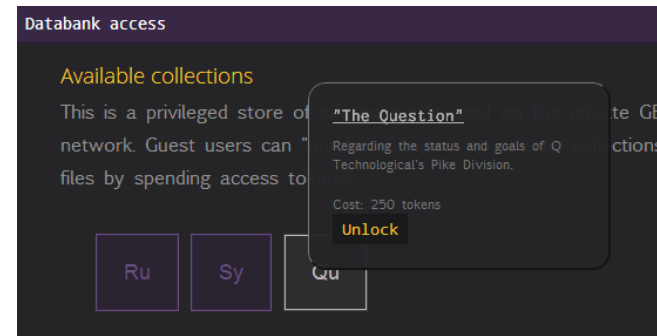
This fragmented style is intended to give players a sense of a puzzle with missing pieces. In order to gather all of the pieces, they need to indulge the AI character and complete more directives. We believe this kind of narrative can act as a hook to sustain players' interest and motivation over multiple gameplay sessions. Each directive players complete brings them closer to a clear understanding of the fictional threat and, ultimately, to the resolution of the story.

Group Play

Players may follow each other in order to locate,

collect, and view each other's records. This feature is intended to enable family members and close friends to play together, but strangers may play together as well. Players can search by username for other players and then request permission to follow a particular person. If that player agrees, the follower gains access to content created by the other player.

Players can see the locations of their friends' records laid out as markers on a map. To view the content of one of these records, players must first collect the record by travelling to its physical location and logging into the game's mobile interface. In this way, there is an overlapping of experience in which one player's present moment in a particular space is augmented by the personal story a different player left behind.

User Study Method

We are currently running a user study to evaluate GEMS as a way to document and share personal memories and as a way to connect these memories to concrete locations. The study follows multiple waves, or small groups, of participants for a period of three weeks each. This format allows us to observe players in detail for a substantial time period without limiting the study to an insufficient number of participants.

Each wave consists of four to six participants. At the beginning of the three-week period, the primary author conducts a short, semi-structured interview with each player to obtain an understanding of their current practices relating to documentation of personal experiences, storytelling, and family communication. As they play the game, players receive diary questions through the game's mail system. At the end of the three-week period, the primary author conducts a semi-

structured interview touching on enjoyable, problematic, or otherwise memorable gameplay moments. Players also complete an Intrinsic Motivation Inventory (IMI) [5] to help understand their motivation for playing.

The first wave consists of student volunteers from Simon Fraser University. The second and possibly third waves planned for early 2013 will expand the study to include parents with children and other more diverse participants.

Early Findings

We are currently nearing the end of the first wave of the user study. So far, we have been surprised to discover that the mindset and behavior of many of our participants contradicts some of the hypotheses that inform the design of the game.

Memory and Location Selection

In the initial interviews, we asked participants to describe the kinds of places which hold special meaning for them and for their families. We were expecting "light" responses relating to cherished vacation spots, childhood landmarks, and other nostalgic places. However, four of five participants described places associated with more somber experiences first and only considered lighter places when prompted.

Three of the participants described places related to death such as a family burial plot or a park where a loved one's ashes were scattered. One other participant described a public park as a place of fear where he had experienced some trauma.

Remote vs. Local Interaction

When we introduced GEMS, we were surprised to learn that most players were more interested in creating

memory records remotely (selecting a location on a map) than in physically travelling to the location to create a record in the actual place. In the design process, we felt the latter method would appeal to players because it provides an opportunity to refresh one's experience of a site and rediscover the details that made it memorable in the first place.

Similarly, we were surprised to learn that while some players were curious about playing with friends and family, they felt it might be too much work to travel to a particular location in order to access a friend's record. In designing this aspect of the game, we felt players would be intrigued by the chance to perceive a place simultaneously through the lens of personal, present experience and through the lens of another player's memory of the place. However, this finding suggests players might prefer a virtual alternative to physically visiting the location.

Conclusion

GEMS is a LBG designed to help family members and close friends reflect on, document, and share personal experiences through physical locations. The user study follows players as they play the game over a period of three weeks. So far, we are finding that physical distance and travel may be more of a barrier to gameplay than we initially thought. We are continuing to evaluate the design and the idea of using games and narrative to support users in recording and sharing place-based memories.

Acknowledgements

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