Reminiscing through location-based asynchronous video communication

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Abstract

Reminiscing is an activity usually performed face to face. However, with friends and families moving apart, it is becoming important to maintain rich relationships at a distance. This includes the relationship building and group identity strengthening activity of reminiscing. To this end, we have created the Serendipitous Family Stories system, a web and mobile system that allows people to create video stories for others and save them at a place in the world to be discovered on their mobile phones. In a 20-participant field study of this system, we observed increased communication about family history over a distance and outcomes that demonstrated the strengthening of family relationships.

Keywords

Intergenerational communication, video sharing, mobile, reminiscing, stories

ACM Classification Keywords

H.4.3 Communications Applications
H.5.1 Multimedia Information Systems
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, Experimentation, Human Factors

Introduction

Sharing stories is a core part of being human. People reminisce and discuss stories from their past with family, friends, neighbors, and new acquaintances. Stories serve as a way to get to know others and to build stronger ties through shared memories. Traditionally, stories are told face-to-face and through our research we've found that holidays, family parties, and other in-person get togethers are still the main occasion for the telling of stories from a family's history.

However, families are moving apart from each other. As of 1993, 43% of American adults lived more than an hour away from their parents. [6] This number is growing as the workforce becomes more mobile and retirement destinations increasingly lure older adults to locations far from family.

We are interested in connecting older adults to their children over a distance through the sharing of location-based video stories. We believe that the visual nature of video, which allows recipients to literally see their older relatives, combined with the serendipity and asynchronous nature of location-based delivery together form a strong platform for the sharing of memories. This experience then encourages recipients to be aware of locations of family importance in their lives and to initiate communication about these family stories across generations.
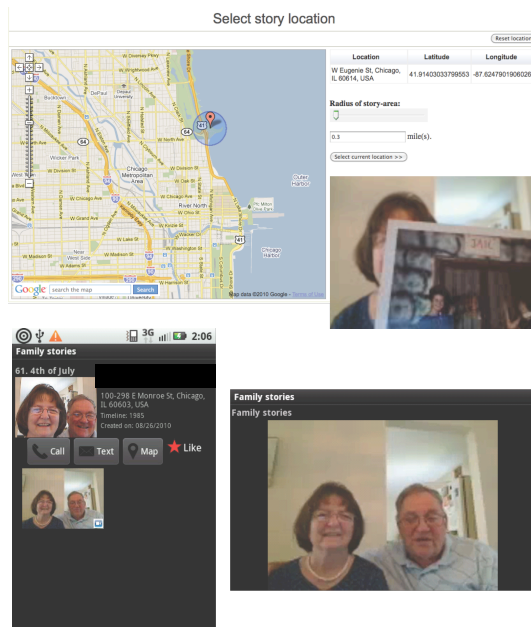
This project builds upon work by Bidwell et al in creating systems for mobile storytelling in Africa [2] and is similar to Hart's Reverse Geocache project [3] in that content can only be unlocked when the recipient visits a particular physical location.

## The Serendipitous Family Stories System

The Serendipitous Family Stories (SFS) system was created based on findings of an earlier study on intergenerational communication over a distance. [1] We observed how a person's current location can trigger conversations over the phone about past family stories that occurred in that place. From this, we wanted to create a system that made reminiscing about stories in a particular place easier and would increase communication between generations over a distance.

The system contains two user-facing components. First, the Family Stories website allows for users to record video stories using the webcam in their computer and to save them to a spot on a map. Stories can be shared with friends and family members through this web interface. We use a Flash component in the web page to automatically find the camera and audio source to make it as easy as possible to record videos. As our goal was to turn seniors into video-creators, we wanted this process to be as simple as possible.

The second component is the mobile application, which currently runs on any Android phone with OS version 1.6 or higher. This application automatically connects to our server and downloads the stories shared with that device's phone number. It then monitors the location of

figure 1. The web interface (top) allows for users to record video stories and save them at a place in the world. They can then share the story with friends and family members who use the mobile application (bottom) to receive the story when they approach that location.
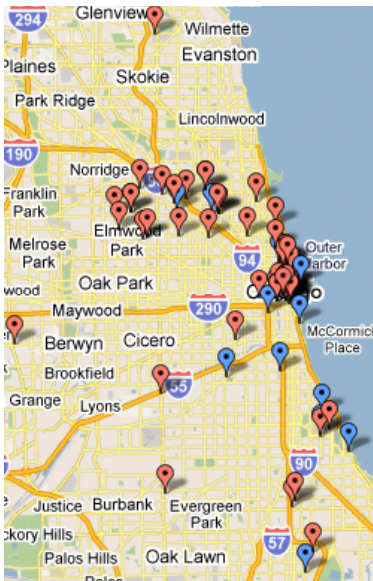
the device through network location (to minimize battery drain and work indoors) in the background. When the device nears the location of a story that has not been found before, it will vibrate three times to get the user's attention. If the user is within a pre-defined radius of the story location, they can "unlock" the story and view the video. Otherwise, they are given a map to the story location. Once a story is unlocked, its videos can be viewed from any location. Each story page contains shortcuts to call or text message the creator as well as a button to "like" the story. When users return to locations where stories are located, no vibration will occur, but a silent notification will be placed in their status bar so that they can be reminded of previously viewed stories in that area.

This design creates the potential for a game dynamic in which users seek to find all of the stories that are shared with them. A "hint" on the main page of the application also tells users the rough cardinal direction and distance to the nearest story.

Method

We used a professional recruiting agency to recruit 20 diverse participants to use the system. Ten participants were adult children in their 20s-40s living in Chicago and would be receiving stories on their Android phones. The other ten participants were their older relatives (parents, grandparents, aunts), five who lived in South Florida (about 1200 miles away) and five who lived in the Chicago area, but not with the main participant. They would be creating stories in the system to share with their younger relatives.

We met with the older adults first for them to record stories using our web interface. We brought a laptop
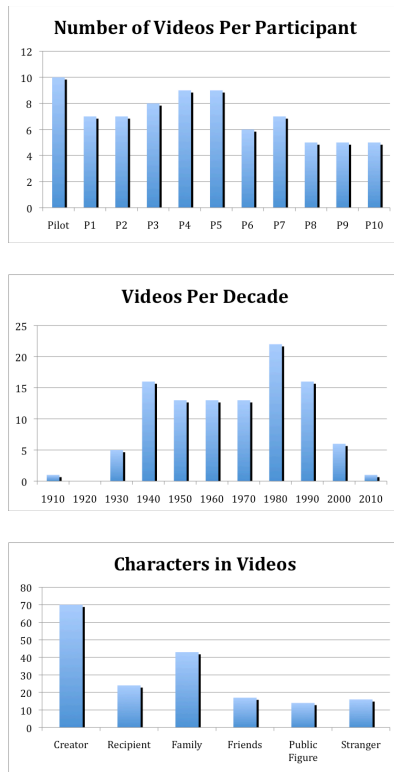
with a webcam to their homes and after a brief explanation of the system and a few icebreaker questions, we let the participants create as many videos as they would like using our system's web site. We set a minimum of five stories, but some participants created as many as nine videos. After creating stories, we conducted a short interview on previous storytelling and communication patterns in their family.

Later, we met with the younger adults in their homes and either installed our application on their existing Android phone or moved their SIM card into a new Android phone with the application preinstalled. Participants were told to keep the application installed for four weeks and to call our voicemail diary system whenever they found a story to report on their experience. Their older relative was also asked to call if they received any communication about the stories. After a quick demonstration of the system, we conducted a short semi-structured interview with the younger relatives about their story sharing and communication practices.

In addition to the interviews and voicemail diary entries, we also logged information from the mobile application including times when a story was nearby, when it was opened, when a story video was played, or when communication was initiated from the application.

Initial Findings

In total, the older adults in our study created 68 stories that they saved in various places around the greater Chicago area as shown in Figure 2. These stories generated 119 story views as the recipients watched videos on their own and later shared them with friends and family as supported by our interview data. 28

figure 2: Locations of stories around Chicago. Stories were distributed all over the city with a concentration in the central "downtown" area near the lake. 83% of stories were discovered (and shown in red) during the four-week study.

Number of Videos Per Participant

Videos Per Decade

Characters in Videos

figure 3. Graphs showing the number of videos created by each participant, the decades that the stories occurred in, and the people featured in the stories. Note that many videos were created from the 1970s onward which often included shared events with the younger adult participant (24/68).

communications were directly initiated from the system including text messages, phone calls and lightweight "like" messages to the story creators.

Story Content
Initial findings from a content analysis performed on the 68 videos created in the trial are shown in Figure 3. Stories ranged from a wide variety of times in our participants' lives, but tended to have peaks in the times when they were growing up (1940s) and the times when their children were growing up (1980s) and in some cases starting their own families (1990s).

Many stories were of events or people that the recipients were not familiar with. Recipients reported learning many new things about their family and about the city itself. For the older adults, telling these stories was an act of reminiscing, but for the recipients they were a chance to become more aware of who their parents or grandparents were earlier in life. C4 learned that her grandmother was a fan of a rival baseball team and that "she never had a car growing up. So everything they did they took a bus or the train!" P3 told us that her daughter "didn't realize that I was so young when I was out of college and said that she didn't realize that I was a Junior Executive with [retail chain]. She thought I was just always a little sales clerk." These revelations led to discussions between generations and further details of the stories being told.

Other stories were of familiar events and brought about a joint reminiscing between the sender and receiver. Often, these stories focused on embarrassing or funny events from when the recipient was younger. Frequently, these stories brought about deep emotions

in the recipients. C6 told her mom that she "made her cry and she was so touched by the stories."

Discovering Stories
By the end of the four weeks, our participants had discovered 83% of the stories that were created for them. Some participants found all of their stories while others only found as few as two out of five. Coming across a story was seen by participants as "a cute little treat" (C3) and an experience "that will make you feel happy or bring a smile to your face" (P6).

Some stories were found in unexpected places. C2 was picking up a marriage certificate at the courthouse and found a story from his aunt at the mall across the street. "I was surprised. I was not intentionally going to the location to see the story but it was a surprise for me ... and then this thing was right there!" (C2) Other times, participants came across stories and received notifications that they were close by, but not close enough to view the video. In these cases, participants had to change course to find the story. While this was not often possible in a busy morning commute, when participants had more flexibility they would open up the map and find the exact location.

Other stories were in the places where participants expected to find them. Based on family history and common stories that are told, they thought stories would appear in certain places. C7's father-in-law was an attorney for many years in Chicago. C7 told us: "I went over to the Daley Center because that's where he did a lot of his court cases." In the initial interview C3 told us that she was "anxious because I know when I start to use it I'll start getting notifications right away because I work right next to Macy's or Marshall Fields."

She told us of her mom telling her of a holiday tradition of seeing the windows at Fields "ever since I can remember." For these participants, getting these familiar stories helped strengthen the tie of stories to places in their daily lives and reminded them of good memories from their past.

Ramping Communication
We observed a pattern of ramping communication [5], where initial lighter-weight asynchronous communication through text messages or "likes" led to deeper communication over the phone or in person at later times. This style of communication matches what we had previously observed in studies of social TV systems [4] and we believe is a key way to build social engagement with systems that involve interaction at a distance. One example was C6: I "did end up texting my mother and telling her how sweet it was. Brought back a lot of memories, which was nice. And she called me back and we actually laughed about it."

In the end, participants reported feeling closer to their family because of their participation. P4: "This has really brought us closer together because we've been more communicative." P5 called the intergenerational communication that the system created "a minor miracle" since her daughter did not previously show an interest in family history. Here, two factors may have acted together to reach the 'tipping point' for an audience previously uninterested in reminiscence activities: the *serendipity* achieved through the receipt of the story in everyday settings, and the a*synchronicity* offered by the deferred delivery. We found in our first study that intergenerational communication is often inhibited for fear of interrupting the other family member when s/he is busy. In SFS,

both the obtrusiveness and the social pressure of attending to a face-to-face reminiscence activity are avoided. The system made receiving stories "fun" as reported by several participants and by "being places where other people were" (C4) brought an added dimension to the hearing of family stories.

Discussion
We believe that the mobile device is an ideal platform for fostering reminiscing experiences. Because of its context-awareness, stories can be displayed in a wide variety of contexts. As we saw in our field study, stories from the past are often forgotten or not retold for decades. Systems like ours can help to resurface these memories in contextually relevant situations.

We are also quite interested in the ability for reminiscing systems to encourage conversation and increase feelings of togetherness and family. Our observations in the study have shown initial results that mobile interfaces that support ramping communication fidelity can indeed increase communication about family history and strengthen family relationships. We are encouraged by these findings and would like to see how this usage can occur beyond the immediate family to sharing stories with friends and acquaintances.

Location-based asynchronous media delivery is a new and interesting way to communicate with those in our lives. We are interested in other applications of this technology that help make people more aware of their surroundings and places where friends and family have visited or enjoyed. To this end, we are hoping to release the system as a public beta in the near future to study this new form of communication.

Goals for the Workshop
In this workshop, we hope to learn more about other reminiscing systems as well as theories that we can apply in the analysis of our own findings. We hope to share some of the exciting data that we have found from our field deployments and demonstrate the system to workshop attendees.

Author Bios
Frank Bentley is a Principal Staff Research Scientist at the Motorola Mobility Applied Research Center in Libertyville, IL. He combines methods from Anthropology, Human Computer Interaction, Design, and Computer Science to understand technology needs and design and develop new solutions which he tests in the field. Previous projects include research on mobile ambient communication systems, which led to the commercial MotoBLUR system now in use by millions of people. Frank has served on the program committees of Pervasive, WWW, Multimedia, Mobile HCI, and JCDL.

Santosh Basapur is a Senior Staff HCI Researcher in the Applied Research Center of Motorola Mobility Inc. His current research is in Next Generation TV user experiences and Wellness Applications for Senior Citizens focusing on Wellness at Senior Centers and Inter-generational communication. He has published at HFES, CHI, EuroITV, IASDR, Design & Emotion, HCII, and Pervasive Health. Currently, Santosh is also pursuing a part-time PhD in Interaction Design at Institute of Design in Chicago, USA.

Sujoy Kumar Chowdhury is an HCI focused computer engineer currently pursuing a Masters in Human Factors and Usability Testing at Missouri Western State University, USA. He developed a prototype for the Serendipitous Family Stories System during his UX research internship at Motorola Mobility Inc. Before coming to USA, he gained industry experience across four telecom carriers in Bangladesh in designing innovative value added services (including Bangla SMS). Sujoy is also a part-time graduate student at the Iowa State University HCI program.

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