
GoThrough: A Crowd-sharing Service That Reinforces Self-esteem of the Elderly via Sharing Life Stories.

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Abstract

GoThrough represents the development of a system that tries to tackle the marginalization of the elderly in Taiwan society. This system can help the elderly who reside in nursing homes easily preserve, gather and share their life stories on a tablet device. Individuals' stories will then be collected into a catalog of reminiscence for presentation to an online community. This crowd-sharing/sourcing approach will allow an online community to give "thumbs-up" and record comments regarding the shared stories and images, which we believe will serve as a means of psychological support to the elderly. Through the gathering, presentation and review of senior citizens' life stories, we hope that *GoThrough* will build a bridge for the elderly with the general public and online communities to connect them and inspire a positive change in their perspectives toward each other.

Author Keywords

Life Stories; Collective Memories; User Interface For The Elderly; Tablet; Multitouch.

ACM Classification Keywords

H5.m. Information interfaces and presentation: Miscellaneous.

Background and Motivation

The annual growth rate of the elderly population in Taiwan is one of the highest in the world. According to the data forecast by Taiwan's Government, Taiwan will become a hyper-aged society within 20 years. The dramatic change in the number of senior citizens compels our society to place the well-being of the elderly within the spotlight of public concern and developmental efforts.



Figure 1(a): The resident liked to share their life stories via photos and other precious items.



Figure 1(b): The resident pointed to her photo as she shared her stories.

Ironically, it is likely that the levels of well-being for older citizens will spiral downward resultantly. One means of dealing with this demographic shift is encouraging the elderly to reside in nursing homes for more effective health care. However, this may cause social isolation in such an insular environment. Interacting less with their families and others, the elderly residents may develop loneliness and distress and come to possess a negative self-image [1].

Moreover, public perspectives regarding the elderly continue to deteriorate. A long-term survey done by Taiwan's Ministry of the Interior suggests that over 70 percent of young people have an overall negative view of the elderly, and that rate keeps climbing. This trend exacerbates the acute marginalization of the elderly.

Hence we seek a means of creating a bridge between the elderly and the public, as well as to overcome negative perspectives and stereotypes. From a psychotherapeutic perspective, reminiscing about even a single segment of their life stories can allow the elderly to reinforce their self-esteem and maintain a positive self-image. The life stories of the elderly also represent the composite knowledge and history of previous eras of society which a valuable social

resources. They may well enlighten people as well as to allow seniors citizens to be better understood and empathized with [2]. We believe that through gathering life stories of the elderly, it will help the elderly maintain self-esteem and social inclusion, while also transferring a valuable asset to the public.

Problem Space and The Elderly's Needs

We started our research and development with a contextual inquiry at two nursing homes. Through interviewing four elderly residents and three social workers on site, we gained a holistic insight regarding the contexts, lives and mental state of the elderly residents.

Our observations have reconfirmed the aforementioned downsides of the elderly living in nursing homes. *"I am talkative and iterating stories right now does not mean that I'm happy. I feel depressed and frustrated when you guys are not here listening."* *"Family members did visit and call me, but a lot less than when I live in my old house alone."* And their physical constraints also become an impediment for social activities outside or even inside the institute.

We have discovered that the elderly residents do have a strong interest in sharing their life stories, and that this process makes them more optimistic. In addition to recounting past experiences, three residents were eager to have us visit their rooms to look through their hard-copy photos, their handicrafts, and other precious items (Figure 1a). In the process, they would point to a photo or item which in turn evoked a stream of stories (Figure 1b). Through expressing their life stories, we heard comments such as: "I feel that I'm reliving my



Figure 2: One resident stored photos in a box and placed the box under the bed.

glorious days.” and “Sharing my experiences and knowledge with youngsters will enlighten them.”

However, a lack of companions causes the elderly have little motivation to share their stories while in nursing homes. Moreover, their photos and handicrafts, which contain or can evoke many life stories, were poorly preserved due to the limited space allocated to them in nursing homes. Some had left numerous items at their old homes or stored under their beds, and rarely took them out to view (Figure 2). One, shockingly, had even thrown away a huge part of their personal collection due to a space issue.

Problem Identified and Design Decision

By creating an affinity wall, we concluded that life stories could be great sources to revitalize the elderly and can also consolidate into a valuable form of knowledge and history. However, sharing and expressing life stories needs a strong social interaction to support because the feedback and the sense of sharing to others are important to the elderly.

Moreover, the vehicle for such stories of the elderly is also important in the process of conveying stories. Each photo and artifact evoke memories, assist in the process of sharing stories, and contribute to reinforcing the identities of the elderly as well as serve as a record of the elderly's life and times. Without proper social connections, it is difficult for the elderly to achieve this process of sharing life stories in nursing homes. Using physical objects like hard-copy photos and artifacts to assist in the process of sharing life stories also constrains the activity. Physical objects need space to be stored and preserved and also require that the sharing of life stories be done in person.

We listed the following insights and objectives: (1) Elderly residents need a way to collect and preserve their hard-copy photos, artifacts and other physical objects that are closely associated with, and evocative of, precious life stories. (2) Elderly residents need a way to break through the insularity of the nursing homes and find an audience with which they can share their life stories. (3) Incentives need to be created to cause an audience become interested in listening to the stories of the elderly, while also allowing those seniors to gain empathy and positive feedback to encourage them.

Based on this list, we decided to design a system that will help nursing home residents preserve their precious collections and have the ability to share their stories and connect with audiences without the limitation of physical forms, space and distance. Moreover, stories sourced from elderly individuals can be aggregated into a bigger picture that represents their spatiotemporal background, perspectives and knowledge. We believe this will help attract audiences to take greater interest in the elderly and surmount negative perspectives and stereotypes of the public on the elderly and any resultant negative self-image the elderly have regarding themselves.

Related Work

Several works involve the use of photos as media to help the elderly spark memories and gain social inclusion. *The Photostroller* utilizes a device that streams photos sampled from Flickr to help the elderly gain connections, rebuild memories and reiterate their stories through a better grasp of the outside world [3].

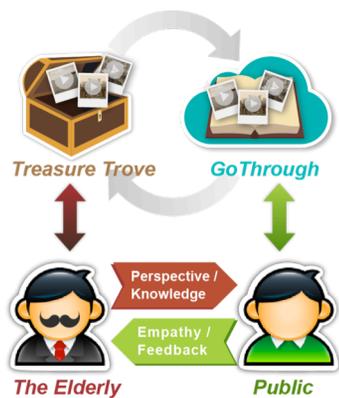


Figure 3: The overall scenario

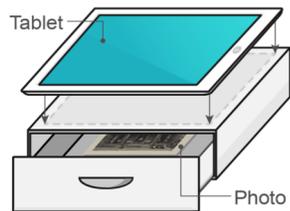


Figure 4: Connecting a tablet with the Treasure Trove accessory.

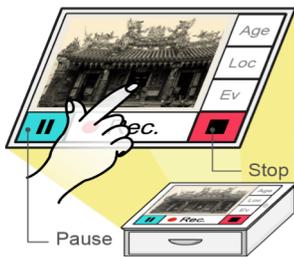


Figure 5: Sharing digitalized physical objects and stories.

*Enmesh*¹ is an iPad application that assists the elderly to exchange photos and texts messages. This application is proven to be helpful in assisting the elderly gain social engagement with each other through sharing of photos and thoughts.

Through reviewing and sharing digitalized photos, the elderly may successfully evoke memories and gain a greater sense of belonging. We believe that by incorporating sharing of the user's digitalized collections with the sharing of life stories this process can be further enhanced.

Our Solution and Design

We present *GoThrough*, an senior-friendly system with two interfaces helping the elderly gather and share their life stories on a tablet device, and a website showcasing their life stories as collective and interesting themes for the public outside of nursing homes. The overall scenario of *GoThrough* is (Figure 3):

1. Elderly residents put their physical objects, such as hard-copy photos or souvenirs in the "Treasure Trove," and then the box automatically digitalizes the objects and reveals the digital copy on the tablet.
2. Elderly residents use the interface on the tablet to tag their digital copies of the physical objects, record stories with voice and share it to the *GoThrough* website, which will categorize the life stories of the elderly into different themes.

3. The public views and searches sorted stories, and then may give feedback to the elderly on the *GoThrough* website.

4. The elderly can review their digital collection and receive feedback and encouragement from others on the photo album feature of the interface.

GoThrough will create social incentives for the elderly to share and review their life stories extensively. Another project has pointed out that seniors' digitalized photos with annotation could be used to represent collective memories [4]. We believe that *GoThrough* will also create an allure and nostalgia for the public to "go through" the life stories of the elderly, allowing the public to better understand seniors' perspectives by reviewing those stories.

The Treasure Trove (Figure 4)

Regarding the elderly can be intimidated by the thought of using technologies without prior computing experience, we design a vintage case with a dock that can connect to touch-based tablets like iPads. By incorporate vintage case, the elderly can quickly build up a mental model that the usage of the case is just like the way they store their printed-photos or other physical collections.

After a tablet is plugged onto the case, the tablet will be connected to a camera and a sensor in the drawer. Whenever the drawer is closed, and the camera senses that an object is placed in the drawer, it will immediately take a photo of the object and display the photo on the Treasure Trove application.

¹ <http://broadband.unimelb.edu.au/engage/news/release/2012/120621.html>

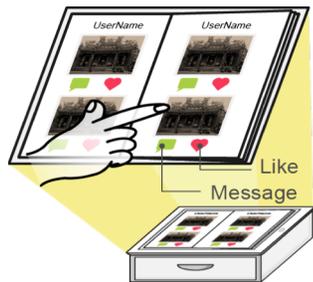


Figure 6: The photo-book like interface design.

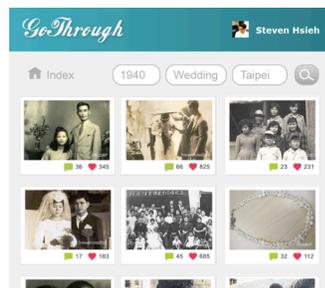


Figure 7: The story wall on GoThrough Website. (Topic: 1940's Weddings)



Figure 8: An individual story video with red mark as track records on the imagery.

The Treasure Trove application contains two interface features to let the elderly record, share and review their life stories and digital collections:

1. The Story Recording Interface (Figure 5) will pop out whenever a photo is taken by the box. Due to the high rate of elderly illiteracy in Taiwan, and the complexity of typing Chinese characters, we adopt a voice instruction and speech recognition method to allow the elderly to tag events, locations and time information of the stories by voice. After tagging, the elderly can record the stories they want to share. We find that the elderly have a tendency to point to different spots on photos when elaborating details. Thus, the interface is designed to track finger tapping, and the track record, along with the photo and the audio of the stories, will be converted together into a story video when being shared to the website.

2. The Photo Album Interface (Figure 6) will show up when story recording is done. The layout of this interface emulates a real photo album with flip effects that can give proper consideration to the elderly. The user can tap photos to review, check their subscribers or listen to audio feedback from the audience of the website.

GoThrough Website (Figure 7)

On the website, the aggregation of story videos of the elderly is like a historical archive that preserves their perspectives, traditions, landscapes and other components of their times. When users log onto the website, they will see a video wall. Users can search, filter and sort stories by playing with the combination of tags to create different and interesting themes for themselves. For example, "Time: 1941; Event:

Weddings," users can gain a holistic view from the story video of the elderly that brides in Taiwan still wore "cheongsam" in the weddings of the 1940's.

Weekly thematic topics, e.g. "Elderly Love Stories," will be created by the *GoThrough* system, as well as per requests from the public. These topics can generate user stickiness that will make the public spend more time on following life stories and giving feedback on the website. It will also help *GoThrough* source more versatile stories from the senior users since our tagging system is limited to events, time and locations.

When clicking on an individual story on the site, users can view the story video and subscribe to the user who shares that specific story. Moreover, they can also "thumbs-up" for the story and record a sound segment in response to the elder (Figure 8). For the elderly, feedback recorded by users is more recognizable and have more warmth than a synthesized system of sound or text message feedback [5].

User Testing

In regard to different user groups involved in the Treasure Trove and the *GoThrough* website, we carried out two usability tests to evaluate our design.

For the Treasure Trove, ten seniors who reside in nursing homes participated in our Wizard of Oz prototyping [6]. With our paper prototype (Figure 9, 10), we found out that the vintage case and the photo album interface did help elderly participants to get past barriers of access and intimidation. All participants had no problem in relating to the functions to act in everyday-life, and perform digitalization and photo viewing with ease.



Figure 9: A paper prototype of the *Treasure Trove*.



Figure 10: Wizard of Oz test with the *Treasure Trove*.



Figure 11: User interacting with the website prototype.

Although using the voice instruction and speech recognition method to guide the elderly to perform photo tagging and story recording took more time, all participants performed tagging, recording and sharing correctly. "I don't have to think much about what to do. The one step at a time voice instructions are easy to follow." Interestingly, most participants had the tendency to seek out someone to look at when guided by the system's voice. This gave us the insight that the interface could simulate a listener and instructor, which would help the elderly gain further social engagement to perform tasks and share stories.

Finally, the elderly participants had trouble in understanding the meaning of some icons and numbers. They were not familiar with general icons like "○" and "x", and were also nonchalant toward numbers on the interface. We believe that replacing numbers, representing the quantity of "thumbs-up" and voice feedback, with pictures of the audience would be more amicable and understandable for the elderly. And voice instructions will be helpful in some scenarios to help the elderly to comprehend the usage of icons.

For the *GoThrough* website, six participants, who represent our core users, tested our simulated website (Figure 11). The majority of participants thought the layout of photos and stories were easy to view and attractive, the mix-match of tags created interesting themes, and story videos with track records were lively. Participants also pointed out responding to the elderly by recording audio feedback allowed them to feel that they are truly communicating with the elderly users. Overall, participants showed interest and engagement in "thumbs-up" story videos or recording feedback.

Conclusion

GoThrough will help the elderly residing in nursing homes to reinforce their self-esteem and social inclusion, while also generating public awareness toward the elderly. We believe that the symbiotic cycle of sharing, gathering and reviewing life stories will further alleviate the sense of being abandoned felt by the elderly, and thus, improve the mental health and quality of life of the seniors who use the system. Additionally, the digitalized life stories of the users shared via the Internet will aggregate into a valuable story database that will help the public relive the lives and times of the users and generate understanding and empathy. We believe that *GoThrough* will create a bridge for the public and the elderly by which to become better connected and convey knowledge, and in the end encourage mutual change in perspectives.

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