
PicMemory: Enriching Intergenerational Family Interaction and Memory Collection

Hung-Chi Lee

National Taiwan University
No. 1, Sec. 4, Roosevelt Rd.
Taipei, 10617 Taiwan
d99922020@ntu.edu.tw

Jane Yung-jen Hsu

National Taiwan University
No. 1, Sec. 4, Roosevelt Rd.
Taipei, 10617 Taiwan
yjhsu@csie.ntu.edu.tw

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Abstract

The goals of this study are to create opportunities for enriching the family interaction and collaboratively collecting family stories among family members. We present PicMemory, an interactive mobile application for bridging the gaps of technology familiar between the older and the younger generations in the intergenerational family. We purpose three functions: (1) Multi-model story collection; (2) Collaborative memory organization; and (3) Enriched family interaction, to facilitate the communication and memory collection within the family. In this demonstration, we extend the concepts of enriching conference experience by collecting participants' feedback and organizing the memories of the conference. We are looking forward to seeing the PicMemory can be used to interact with all participants, and willing to hearing about any interesting user experiences. Meanwhile, we will collect user feedback to inform our future directions of the PicMemory.

Author Keywords

Storytelling; Photo-sharing; Mobile; Automatic Speech Recognition; Text-to-speech; Tag extraction



Figure 1: The interfaces of the story collection. The older and the younger family member can interact with each other by their familiar ways, such as voice and text interfaces. We integrated ASR and TTS to mediate the multi-model story collection behaviors.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Sharing family stories with photos happens as a routine part of family life. Family tell stories for many reasons, such as they can share their experiences, improve memories of events, record family history and also gain healthy benefits from narrating stories [5]. With the major proliferations of digital photos technologies, Photoware [2] have shown gradual and significant shifts in photo-sharing behaviors. From the competitive analysis of Cherish [4], we have seen the shifts are from analog photos to digital and from collocated sharing to distance sharing. With the shifts, younger people could quickly adapt to immerse in new technology, but some older adults are hesitant about new technology. Because of this, the elder family members might be gradually excluded from the photo-sharing process. Previous studies also bring up the notion of "constructive conflict" about photo display and sharing within intergenerational relationships in the family [1, 3, 6]. According to a survey of the elderly and technology use shows that the elderly face many hurdles to adopting a new technology. For example, physical challenges, skeptical attitudes, or learning difficulties, but the smartphone ownership among the elderly has still risen modestly in recent year, from 11% in 2011 to 18% in 2014 [7]. Following the increasing acceptance of smartphone of the elderly, we choose the smartphones as a technology-mediated medium for them and their family.

In order to help the older family members to recur to the family stories and photos sharing processes, we

presented PicMemory, an interactive mobile application for the intergenerational family. The goal of PicMemory is to create opportunities for enriching the family interaction and collaboratively collecting family stories among family members.

Features

We implemented the PicMemory on mobile platforms including iOS and Android. In the application, each family has their sharing space for family members share photos and leave messages. The family sharing zone will be identified with a family ID. To provide a story sharing platform for the intergenerational family, we designed the three main functions for the PicMemory: (1) Multi-model story collection; (2) Collaborative memory organization; and (3) Enrich family interaction. Detailed descriptions of the three parts shown as following.

Multi-model story collection

The sharing process of the PicMemory is based on attaching story contents to the photos. Family members can capture or choose photos from albums and then upload the photos to the family sharing space. For bridging the technology gaps of the elderly, we adopted voiced interface for the elderly to listen and record the stories by the familiar way of speaking. And we also provided the text interface for the younger could type text messages as usual. The interfaces are shown in Figure 1, we applied a long-press-gesture to point out a region for leaving messages or recording the voices, for example, we could describe the paint by leaving a message on the paint. After recording voices, we designed a double-click-gesture to stop recording and also defined the tap gesture to play the recorded voices.



Figure 2: The interface of memory editing. Every family member could edit and update the story and tags of the photo.



Figure 3: The interfaces show the PicMemory use voice instruction to retrieve the photos and use tags to explore related photos.

The PicMemory integrated with Text-To-Speech (TTS) and Automatically Speech Recognition (ASR) modules, which are provided by SpeechKit. The TTS module is used to read out the text messages for the elderly who may not be able to see words clearly. And the ASR module can help the elderly to transcribe their oral narratives without typing. At the end of this part, we collected a set of multi-model stories that including photos, voice recordings, and text messages.

Collaborative memory organization

All family members can help to correct the stories of photos collaboratively. Since our story contents were collected from transcribing the voice recordings by ASR services, some words may not be correctly transcribed, especially names of people or locations. We supposed that the family members should know the exact story, so we implemented an editing mode for the members to re-write or summarize the voice recordings and text messages, the interface shows in Figure 2. Meanwhile, we extracted meaningful tags from the corrected story contents. For tags extraction, we adopt the CKIP text segmentation system, which performs as a web service and returns segmented text with part-of-speech tagging. Our system removed the stop words and annotated the nouns onto the photos as tags, which can be used to describe and highlight particular objects in the photos. Furthermore, the tags also can be accustomed to organizing and retrieving related photos.

Enrich family interaction

When we collected the stories with the tags behind of the photos, the tags can be used to enrich family interaction. The PicMemory provides the reminiscence mode for the family members to retrieve photos by saying a natural language sentence, the interfaces

show in Figure 3. Since the PicMemory receives an imperative sentence, the system will extract keywords from the sentence. And then, the system will use the tags to find out most related photos from collected photo set. To calculate the relationship of photos, we implemented cosine similarity to compute the similarity scores between photos. Furthermore, when users click a tag annotated on the photo, the system will retrieve all photos, which are tagged the same tag. Through this way, the PicMemory provides the materials for family conversations by exploring the photos with the tags.

Demonstration

All participants in CHI2016 will be invited as family members within a family called CHIFamily. Everyone could download PicMemory from App Store or Google Play and then join the CHIFamily. In the demo session, we will facilitate the participants to interact with each other and to collect shared memories by the following ways. Figure 4. shows the interfaces of the PicMemory in the scenario of the conference's demo session.

Feedback collection

The PicMemory can be used to help the authors to gather feedback from other participants by recording voices or leaving text messages. For example, in the poster session of the conference, when visitors come to a poster, but the author may not be here or talk to someone else. The visitors could take a photo of the poster and leave feedback for them. At the same time, other participants can see the new photo and comments and leave their messages.

Conference comments organization

When the authors see the comments on their poster photos, they can reply and organize the comments through the PicMemory. The authors and the visitors

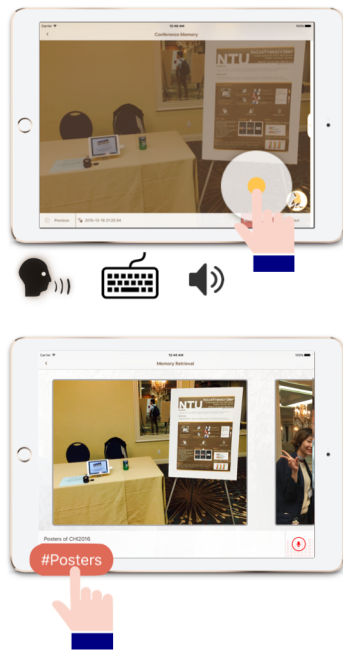


Figure 4: The interfaces present the PicMemory in the scenario of the conference's demo session. All participants can leave voice and text comments for any posters and explore related photos through related tags.

could collaboratively modify and correct the comments of the poster. And then our system will be able to extract the keywords from the comments and annotated them on the photos.

Enriched conference experience

After the author and the participants collaboratively correct the content of photos, other participants can easily find out the discussion of posters by searching tags.

Conclusion

We presented PicMemory to collect family stories and facilitate photo sharing among the intergenerational family. We proposed three main functions to bridge the technology gaps between the elder and younger generations, to organize collected story and to enrich the family interaction. In the demonstration session of CHI2016, we imitated the same features to facilitate the interaction between the authors and the participants and to collect shared memories about the demo session. We are looking forward to seeing our system, the PicMemory can be used to interact with all participants, and glad to hearing about any interesting user experiences. In the end, the PicMemory provides the experiences about creating participants' shared memories and bridging the authors and the visitors to gather plentiful feedback in the conference.

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