A critique of two papers on: Managing Digital Photos for Consumers

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ABSTRACT
Two papers on the study of available tools for organizing personal collection of digital photos and their comparison to non-digital techniques for management of photos have been reviewed. A comparison of the papers suggests a new experiment to test the improvements suggested by one paper, inspired by the study of non-digital organization from the other paper. The result is a tool to make organization of digital images easy and fun by making them easier to browse instead of finding better search methods.

KEYWORDS
Digital Photography, Personal Photographs, Organizing, Browsing, Sharing, Image Collection, Usability

INTRODUCTION
Digital photography is now widely accepted as an alternative to film photography. While people generally take a lot more pictures with digital cameras due to much large capacity and no charge per photo, current techniques used in photo-managing software are not as usable for consumers as they are for business users of photo collections. Two papers compare managing of consumer photos using digital tools with traditional methods of organizing photos.

FIRST PAPER SUMMARY
The first paper reviewed [1] performs a study that investigated how people manage their collections of digital photographs in comparison to the way they manage their printed (non-digital) collections. The authors studied a group of recent digital photographers by giving away cameras to the participants and asking them to use "Shoebox", a (prototype) digital photograph management tool. Alongside simple browsing features such as folders and thumbnails Shoebox has advanced multimedia features such as content-based image retrieval and speech recognition applied to voice annotations to study whether these features can be useful for personal photo management. Their results suggest that participants found their digital photos much easier to manage than their non-digital ones, if they organized the non-digital photos at all. It was also shown that the advanced features were not used very often, due to inaccuracy and technology limitations, despite the fact that the users expected to use them in their initial interview. They concluded chronological sorting and being able to view many images at once using thumbnails are the most important requirements for consumers.

SECOND PAPER SUMMARY
The second paper [2] took a reversed approach by studying how home users use traditional ways of storing and organizing their personal photo collections (by observing participants with two video cameras) and comparing it to the possibilities and limitations of available tools for digital image collections. They found that the interfaces of current digital tools provide excellent support for solution oriented indexing, but limited support for browsing and storytelling. In their study they asked users of ages 40 an up (referring to them as "guardian of memory") to organize their photos and after a process they described as "pleasurable and time-consuming" they discovered a general thread of three stages: a rough preselection based on the quality of printed photos, making piles of photos based on subjects or events and finally selection of photos from different piles to construct a story. They also proposed an alternative interface combining real world interaction with the possibilities of new media for interacting with digital images. They concluded even though digital tools for image management are very helpful in organization of pictures, they are not developed to help you interact with your personal collection and the interface should feel more like working with printed photos to give you the pleasure of organizing photos.

COMPARISON
The first paper is a more practical study of tools for managing digital photos to create a better tool for home users of digital photography, while the second paper studies organization of "non-digital" photos in order to propose new methods for organizing digital photos. Although the first paper mentioned a comparison of digital methods of organizing photos with traditional methods, it only considered them very briefly. The only study of traditional techniques by them was an initial interview asking participants how they would find their printed photos and whether they would organize them at all, not "how" they would organize their photographs. On the other hand, while the second paper studied organization of printed photos in detail, the study was done only for a certain type of people: people over 40 years of age who would take care of organizing the pictures in their home. These people are not necessarily the ones who would take the pictures and due to the nature of digital pictures the photographer himself would normally be the one who stores the pictures in the computer. Also according to the first paper, organizing the pictures is easiest when done for recently taken pictures which is yet another reason for the photographer to store and organize them immediately. Thus people who organize

digital pictures may have different methods of organizing photos than "guardians of memory" and at lease should be considered.

The first paper concludes the basic features of digital photo management systems are well-designed and sorting of pictures in chronological order, which comes naturally with most (if not all) digital cameras, and being able to display a large number of images at once, established by using thumbnails, are the two most critical and frequently used features. The second paper confirmed the need for thumbnails by observing that when organizing printed photos the participants used the "maximum available area" on the table. The chronological ordering of photos is important because photos taken at the same time represent same or similar events and in the study done in the second paper, participants initially organized their printed photos based on events, thus digital or not the chronological ordering of digital photos is very helpful to organization and categorization. This is an advantage for digital photography because browsing printed pictures can destroy their initial chronological ordering and they must be rearranged. However it is only a small advantage since it is not too hard for people to recognize their personal photos.

It seems like the user study on the first paper is done long before the second paper, yet, their prototype seems more realistic to me than what is proposed in the second paper. The first paper proved thumbnails and other methods used in current tools to be very efficient. There is no reason why a system that feels like dealing with printed photos should give us more pleasure when organizing photos than a system with thumbnails and slide shows. However, it might be very helpful to allow selection of smaller groups of photos and make them larger and easier to see.

CONCLUSIONS AND FUTURE WORK

Both of the advanced features (text-to-speech for audio annotation and image analysis) were inaccurate due to the limitations of the available technology. Since most annotation for personal photos will include names and words that are not in the dictionary, current speech recognition techniques will have inaccuracies. Similar problems exist for face recognition. Thus more research on using these feature would be unnecessary until the technologies improve.

It was proved that users do not need to search for their personal images and browsing them is quite sufficient for finding them. Browsing thumbnails to find an image is proved to be efficient and in fact easier than printed photo in available systems. What has not become easier is use of these collections to tell stories or simply enjoy the collection.

We can use the findings of the second paper and add the final stage in organizing of printed photos, i.e. constructing a story based on the organized collection, to a new system based on the Shoebox prototype. We can create lists (or "stories") of pictures and store these lists as pointers letting us have the same picture in multiple stories. Each story can have it's own title and optional audio or text annotation. Later these stories can be played back as slide shows or exported as videos, interactive presentations or simply sideshows for the web. Note that the Shoebox prototype did support web page export, however the selection had to be made at the time of export and we want to be able to export a previously selected story.

It would still be good to have the option of adding annotation to each picture as a description but searching them won't be necessary. After all, people do add notes to their printed pictures and both papers confirmed it. Also, it might be very helpful to use something like cascaded photos (like piles of printed photos) or larger thumbnails for smaller groups of photos since this can make photos larger and easier to see.

For grouping photos when browsing, using rolls is proven to be good. Some participants in the Shoebox experiment only used a single roll for the whole content of the camera's flash memory. It should help to have a general roll for new photos in addition to those created by the user. To help users occasionally find photos based on factors other than the event in which they are organized, it would help to have user defined keywords like some of the other prototypes studied in the first paper (e.g. the Fotofile project). Another option would be to have the same picture in two different rolls. For example a picture of the family's son can be in a roll under his name as well as one under the event the picture belongs two. To avoid having to search for rolls themselves it might also help to separate event-based collections from other rolls. In other words have a set of basic rolls (one for each member of the family, one for new pictures, one for pictures of flowers, etc.) and another set of rolls for events which can instead be called a set of "events". However this will use a lot of screen real state and there's a trade off between having this organization with smaller rolls and having bigger, more accessible, rolls with thumbnails to represent a sample of the content of the rolls.

Although comparing digital photos to printed photos can help in the design of personal photo management systems, it can be distracting to completely mimic real life. Besides, as it was explained earlier, digital pictures have advantages over printed photos and are easier to organize.

To study these finding in practice and compare the two studies, further user study can be performed with an upgraded prototype as explained. There are open-sourced image management programs available that are very close to Shoebox and can be a good start for further study.

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