

MyPhotos – A System for Home Photo Management and Processing

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ABSTRACT

MyPhotos is a prototype system for home photo management and processing. Several home user orientated image processing and analysis tools are provided. And several auto grouping methods can help user to organize photos. The system also provides a natural user interface and a workflow for easy browsing and searching.

Keywords

Home photo management, image processing, photo grouping

1. INTRODUCTION

As a large number of family photos and other personal images have accumulated, users have encountered severe difficulties with image related works, such as management and processing. In most cases, users can only organize their digital photo with the tree structure of file system. The way of organizing, browsing and searching is very limited and unnatural. Another problem to home users is that although there is a variety of image processing software and tools, they are not so ease-of-use for unprofessional home users.

MyPhotos© is a prototype system developed at Microsoft Research Asia for family photos management and processing. In *MyPhotos*, traditional folders are replaced with a new concept – photo group. The image search and auto-grouping techniques make the browsing, searching and organization of photos much easier than ever. *MyPhotos* also integrates several home photo orientated tools to help users processing photos.

2. MAIN FEATURES

2.1 Photo Group

Photo Group is the basic concept for photo organization. One photo group can contain any number of photos, and one photo may belong to a few different groups. There is no hierarchy for photo groups although a virtual hierarchy can be generated

automatically with the intersection of different groups. Photo groups can be annotated with keywords.

There are two kinds of photo groups: either temporary or permanent. Temporary groups are usually generated by the system. Once a temporary group is annotated by the user, it is changed to a permanent one.

2.2 Photo Import

Photos can be imported from a digital camera, a scanner or hard-disk. In the import process, *MyPhotos* analyzes the content of each photo, then classifies it into city/landscape and indoor/outdoor category if applicable, and determines whether it contains any face and red-eye, and whether it is an underexposure photo or a duplicate one.

As users usually take photos in some event, *MyPhotos* will ask the user for the event name for each import and create a photo group for it. Of course the user doesn't have to input the event name.

2.3 Auto Correction

After import process, *MyPhotos* will show the problematic photos to the user if there is any, such as underexposure photos, photos with red-eyes, duplicate photos, and that need to be rotated [3]. Auto rotation, auto color fixing and auto red-eye removal can help the user to do the correction easily. Since not only identical photo but also very similar photo may be detected as a duplicate one, the system provides a user interface to help the user decide which one should be removed. This function can help the user to select the best photo taken for the same scene.

2.4 Photo Calendar

Traditionally, users store digital photos in folders and browse them folder by folder. In real life, photos are always related to a specific event, or something important to be memorized. In any case, time is the most important information for events. Based on this idea, *MyPhotos* provides a calendar view of photos to help users to browse and search photos.

To obtain date and time data from digital photos, at first, the system will extract the EXIF information from image files. Most of the digital cameras provide the EXIF information. If there is no EXIF or the taken date is not available, such as in scanned photos, the system applies an automated date/time recognition process to extract the time stamp from the image itself. If it fails to do so, the system will use the file date as the taken date and also allow the user to modify the taken date manually.

2.5 Photo Auto Grouping

The aim of auto photo grouping is to help users to browse and

organize digital photos. As it is almost impossible to achieve 100% accuracy, the result of auto grouping is editable and users can also create their photo groups based on it.

Photos can be automatically grouped in several ways. (1) Time grouping based on the taken time; (2) Scene grouping based on the similar scene; (3) Classification based on taken place: indoor vs. outdoor, city vs. landscape [2]; (4) Classification based on face detection: scenery, portrait or group photo according to the number of people [1].

2.6 Relevant Photo

In *MyPhotos*, there is a *relevant photo panel* to show related photos to a given photo. When the user focuses on one or more photos, *MyPhotos* will search for relevant photos in the entire system and show them automatically.

Three search methods are implemented in this system. The first is to find photos taken in the same day. The second one is to look for photos with similar scene based on the technology of content based image retrieval (CBIR) [4]. The third way is to show photos about the same person based on the user's annotation and face recognition [1]. In addition, the search component for relevant photo panel is pluggable.

With the help of relevant photo panel, users can easily explore the photos of interests.

3. REFERENCES

- [1] Li, S., et al, "Learning Probabilistic Distribution Model for Multi-View Face Detection", CVPR 2001, December 2001, Hawaii.
- [2] Vailay, A., et al, "Bayesian Framework for Hierarchical Semantic Classification of Vacation Images", IEEE Transactions on Image Processing, pp. 117-130, December 2000.
- [3] Wang, Y. and H.J Zhang, "Content-Based Image Orientation Detection with Support Vector Machines", Proc. of IEEE CVPR Workshop on Content-Based Access of Image and Video Libraries, December 2001, Kauai.
- [4] Zhu, X., et al, "A New Query Refinement and Semantics Integrated Image Retrieval System with Semi-automatic Annotation Scheme", Journal of Electronic Imaging, Special Issue on Storage, Processing and Retrieval of Digital Media, October 2001.

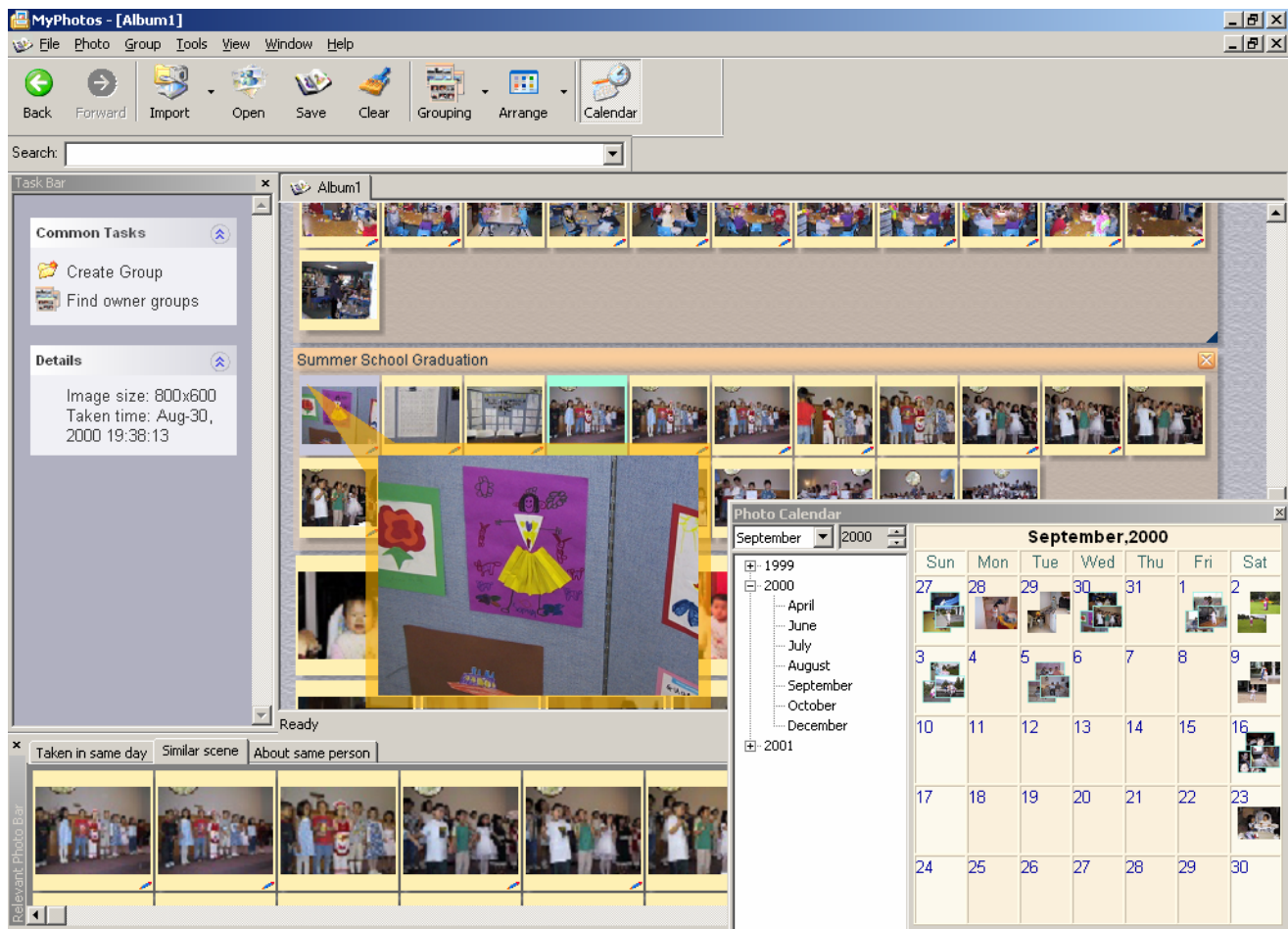


Figure 1. A typical interface page of the *MyPhotos* system