

Metadata Collection for Personal Multimedia Repositories Using GWAP

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Extended abstract

With the increasing number of personal albums and photos in them, users have more and more problems with their organization [4]. This is due to lack of descriptive data, however, their amount only depends on the abilities and will of the image owners. Tools for metadata creation are available – the main problem is with the user motivation: because tagging and annotating of photos is usually a boring activity and its execution takes extended time periods. Other methods for obtaining metadata to general images also exist (automated methods, crowd-based, games with a purpose [1]), but these are unable to deliver specific metadata needed for personal imagery.

Our aim is to create a method to enrich personal photo albums with keywords and also named entities. To achieve this, we use tool that imports personal albums, allows creating annotations using a GWAP, extracts keywords and named entities from annotations and allows browsing in albums using obtained metadata.

Earlier, we devised a game with a purpose called PexAce [2, 3] for harvesting textual annotations to general images. Earlier experiments showed that people playing with their own photos are more engaged to game and also interested in creating annotations. By merging our game with automatic approach of metadata acquisition from game-produced annotations, we found an appropriate solution for creating metadata for personal photo albums. The main contribution of this work is a framework for processing annotations written to personal photos. This framework is based on metadata extraction modules called extractors and is extensible from this perspective. Inputs of all extractors are following five entries: photo, album to which photo belongs, user who created the annotation, annotation, and timestamp. In addition to these information, extractors have access to all logs saved during games and use them to refine results of annotation processing. Extractors are divided to two groups depending on their output. While the first group includes extractors extracting

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keywords without specifying their types or any other information about them, the extractors in second group are extract typed keywords and also named entities such as persons, geographic locations, events or holidays. To aggregate outputs of extractors we designed two types of aggregators for each type of extractor. These contain information about credibility of extractors and use it for aggregation of the results. Credibility of an extractor depends on the particular method (pre-processing, candidate selection or comparison method) used by the extraction (e.g. results provided by a particular tag extraction API can rank higher than results of another one).

To evaluate our method, we implemented different parts of our solution in a particular order. In the first stage we re-implemented and re-designed the PexAce game, which is now more user friendly and as a web application it can be run on multiple platforms. Then we implemented importing tools to transfer photos into our database. After this we had the first opportunity to evaluate its functionality and realized a qualitative verification in the form of an interview with a small number of users. In second phase we implement extractors with aggregators (processing annotations written to photos) and photo gallery (exploiting keywords extracted with our methods). The photo gallery offers the opportunity to verify usability of extracted keywords based on user feedback.

For quantitative verification of our method we created a tool which enables users manually annotate personal photos. Comparing these annotations with our results we can determine the precision and recall of the method we designed.

Analyzing the current state of solutions which are oriented to obtain descriptive data to photos, we imply the absence of solutions for personal photo albums. Because of this, and the lack of descriptive metadata in these albums we decided to use our existing method for metadata acquisition to general photos, and redesign it for obtaining metadata to personal photos.

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