PhotoArcs: A Tool for Creating and Sharing Photo-Narratives

Project Goals

The goal of our project is to enable photographers to add narratives to their photo collection and to extend their narratives to include others' photos. Users can organize their pictures into linear "photo-arcs" connected by textual narratives. Users can also view other narratives that use the same pictures, or perhaps similar pictures, which introduce a non-linear, interactive element by providing jumping-off points or tangents from their own narratives.

This project was inspired by Geoffrey Bowker's talk at the SIMS Distinguished Lecture Series. Bowker posited that the concept of Perfect Memory is difficult to achieve in digital media because data is stored in databases that do not easily accommodate narrative. Our project attempts to visualize and save some of these ephemeral narratives around photo-sharing.

The project is further inspired by our ongoing interviews concerning the social uses of photographs. We have found that one of the primary uses of photographs is sharing, where sharers construct narratives around the photographs they show which then reinforce relationships and group identity. One of the advantages of face-to-face photo-sharing is the narrative flexibility the sharer, and receiver has. Our goal is to enable and extend this flexibility in a digital medium.

Our interface will support the following tasks:

- Construction and modification of photo-narratives using drag-and-drop of photos and input of text on the line between them

- Views of other related photo-narratives that use photos you use in one's own narrative (arcs that intersect one's own)

- Suggestions for photos to add to one's photo-narrative, based on time of capture and other available metadata (e.g. location, others present, content tags, etc.)

Figure 1. A screenshot of one of our brainstormed ideas for the PhotoArcs interface
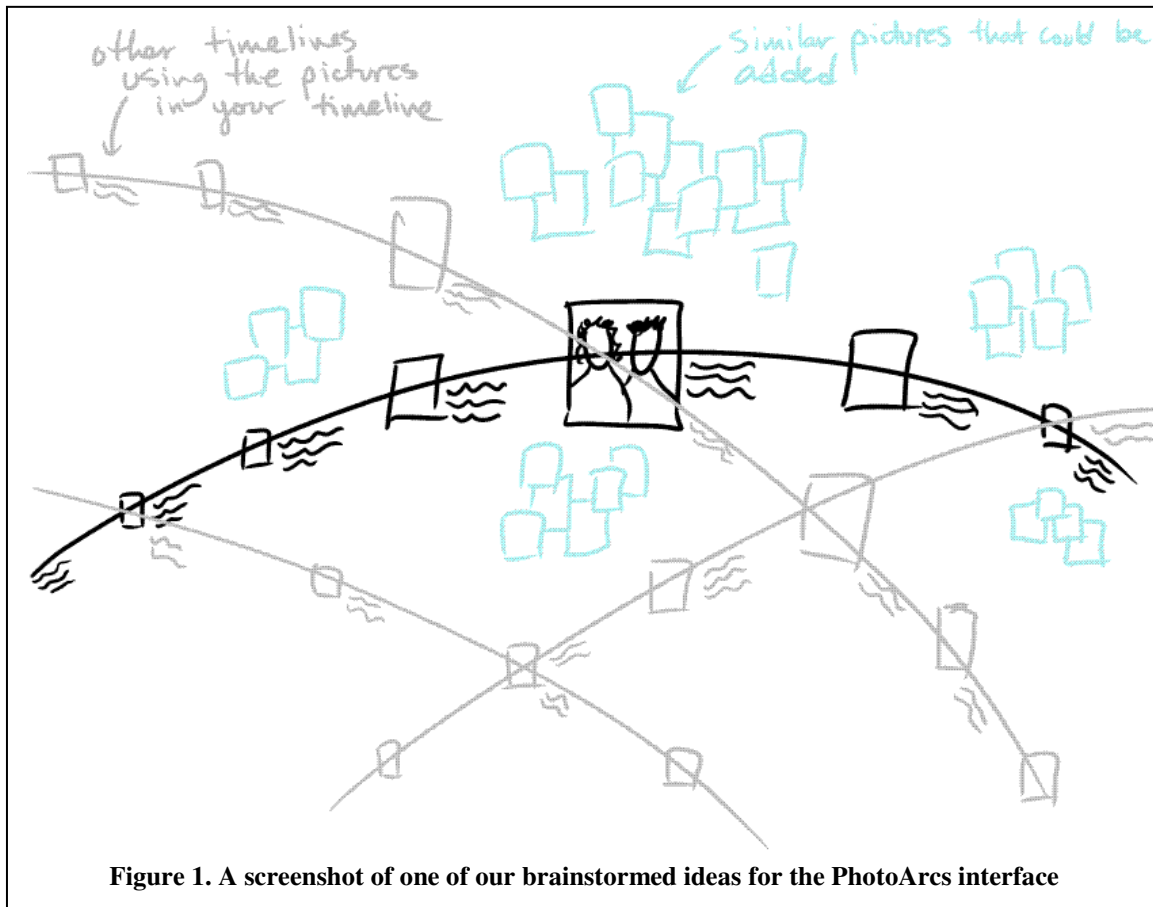
Related Work

Interfaces that inform this project fall into these categories: tools for digital photos and photo-sharing, general digital narrative techniques, and timeline interfaces.

Digital Photography

Many tools exist to help people organize and retrieve their digital photographs, though few explicitly help in sharing and only one explicitly supports narratives. Bederson's PhotoMesa interface provides a unique photo visualization using quantum treemap organiztion and focus+context interaction [3]. PhotoTOC [10] and Timequilt [8] use representative thumbnails to provide an overview of pictures and organize them by date. Harada et al. also provide a timeline interface and an event-based interface for interacting with photos on PDAs [7]. Photofinder enables annotation of parts of a picture for searching and "storytelling" purposes. MediaBrowser integrates many of the above ideas and provides many views, including a time-based view, and many interaction mechanisms, including a two-level fisheye and easy selection by group or keywords [4]. Fotofile incorporates narrative-making, as well as bulk annotation, a hyperbolic tree view, and some automatic feature extraction, into a digital album-making system, but for the purposes of archiving rather than sharing [9].

Picasa [1] and other commercial photograph organizers also provide some of this functionality. Picasa in particular gives a timeline view of all photos, similar to the preliminary sketch of our interface above.

Balobanovic et al. created a tool explicitly for narratives and sharing digital photos [2]. Audio can be recorded over a photostream to create a multimedia narrative. Though the interface is best with copresent others, these images and audio files can be sent to distant others.

Digital Narratives

Many people create their own digital narratives of their lives in blogs and photoblogs. Narrative photoblogs in particular are the most similar to the interface we are proposing, and such narratives could potentially be automatically converted into PhotoArcs.

Some tools exist to assist in the creation of narratives. CounterPoint is a zooming presentation tool that allows users to define multiple narratives through slide-based presentations [6]. We will further investigate research on narratives and photographs in other fields.

Timeline Interfaces

As mentioned above, Picasa provides a photograph timeline view in its interface, and many photo systems organize photographs chronologically. Lifestreams is a chronologically-based filesystem [5], and now Nokia provides a similar system in its LifeBlog, which automatically captures SMS and cameraphone pictures and organizes them chronologically.

Data Collection

We will start prototyping using our own photo collections, and those of friends who volunteer theirs.

We will then work on extending our prototypes to the MMM2 dataset. Though it is no longer growing, this dataset has several advantages. First, the large number of pictures taken by participants at group events provides many opportunities to construct overlapping narratives and to easily incorporate others' images into narratives. Second, the metadata collected with the pictures can assist in finding suggested additions to photo-narratives.

In addition to MMM2, we hope to extend our prototype to Flickr (perhaps starting with our friends' Flickr accounts), where we could take advantage of tags and other data to provide more suggestions for photo-narrative construction.

Tools

We would like to implement a working version of the prototype in Java embedded in HTML, using an appropriate visualization package such as Piccolo or Prefuse. For earlier prototypes and mock-ups, we may use Flash and Photoshop.

Development Timeline

1) Data analysis
   a) Date
   b) Subject (person, event, object, other)
   c) Photo type (digital, cameraphone, scans)
2) Needs assessment and task analysis
   a) User type
   b) User needs, priorities, and goals
   c) User tasks
3) Visualization brainstorms
4) Lo-fi prototype and testing
5) Prototype development

Results

We hope to:

- Discover whether users want to create a narration layer for their photos, and what type of narration they would want to use (textual, visual,   linear, non-linear, static, dynamic)

- Develop specifications for adding a narrative layer to photos

- Develop a visualization for photo narratives and connections with other photo narratives, including others' photos

- Provide suggestions for photos to add to narratives using metadata, including time, location, others present, and Flickr's tags

Scope and Future Work

Given the temporal limitations of a one-semester project, we probably will not be able to develop a standalone application or evaluate our prototype's use beyond of short-term user studies. We will also focus on working out the layout and interaction details of just one visualization, rather than developing alternate views (e.g. a photo-blog view, a photo-sorter view, a graph view) and related visualizations (e.g. a similarity-based tag swarm), as we are tempted to do. We feel that focusing our efforts on one particular view will both result in a better, more thought-out visualization and will also best fulfill the objectives of the project assignment.

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