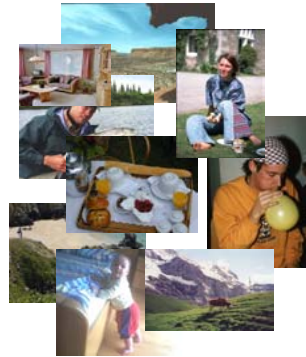


Human Factors in Image Retrieval



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Usage Context



- **Multiple input devices:** digital stills cameras, digital video cameras, scanners, etc
- **New viewing devices:** TV, future portable audio/video jukebox, cells, PDA, etc.
- **New storage devices:** set top box, DVD/HD, portable audio/video jukebox, etc.
- **Multiple personal photos management tools**

Human Factors objectives

- **Understand the photo usage:**
 - Why do people take pictures ? How they organize their collections ?
 - How they manage their (current) paper prints and digital photo collections ?
 - How people behave today ? How they will behave tomorrow ?
 - How teens behave ? Which differences with seniors ?
 - What do they seek precisely ?
- **Identify « real-world » problems**
- **Specify realistic user requirements**
- **Employ appropriate techniques to evaluate IR systems.**
Recall and precision are good measurement tools for sophisticated technologies, but don't take into account the user satisfaction

Human Factors Methods

- **INQUIRY:** obtain information about user's likes, dislikes, goals and needs. Inquiry phases allow test concepts and usage understanding. Main methods are field observations, observations in « Home labs », focus groups, interviews, questionnaires, etc.
- **TESTING:** representative users work on typical tasks using the product (or mock-up). Main methods are observation in « Usability labs » - direct or indirect, video recorded – thinking aloud, etc.
- **INSPECTION:** usability experts examine usability-related aspects of a product (or mock-up). Inspection are based on norms, guides and criterions. Main methods are cognitive walkthrough, feature inspection, heuristic evaluation, etc.

Projects

- **2002 – Photomaster (internal project)**
 - Very little research on personal photo collections
 - Research focused on search activity, quite nothing on browsing
 - PC-based organization proposed by tools
 - ⇒ **Questionnaire by mail All Users Rennes (105 people answered)**
 - ⇒ **State of the art: articles and surveys (external and internal)**
- **2003 – Annapurna (RIAM project)**
 - Participants: Thomson, LTU Technologies, IRISA and CLIPS-IMAG
 - Development of a consumer system relying on automatic annotations
 - 4 human factors specialists (1 Thomson / 3 Clips-Imag)
 - ⇒ **Participative techniques : 5 families involved in a global design process**
- **2004 – aceMedia (IST project – 14 partners)**
 - Development of a system integrating knowledge, semantics and content for user-centred intelligent media services
 - Thomson focused on Personal Content Services on TV
 - ⇒ **User-centred approach : user requirements from in-home interviews (work in progress)**

Why do people take photographs ?

People take photos to save memories, remember, share and tell stories

- **Importance of Storytelling activity**

Let the people tell a story, and compose beautiful albums with digital collections (ex: automatic classification of “good” and “bad” pictures), add other media like music

- **Importance of Reminiscing talk**

Help people to remember and re-live experiences

Help people to annotate photos in order to keep the memories

- **Importance of « Photo-talk »**

Let the people converse around photographs (give to people a feedback and conversation around photos they sent)

- **Importance of paper**

When a photo is considered as beautiful or meaningful, people print them and hang them on the walls and/or put them into albums

How do people view their collections ?

Context and frequency of viewing
are largely dependant of their format

- Paper prints are viewed often, alone or with family/friends
- Digital photos are viewed on the PC the most of time alone
- PC screen is not the good vehicle for sharing and viewing
- **BUT** the Home Office is the preferred (quiet) place to manage digital collections : *don't specify same features for a PC and for a TV*
- PC seems to be better accepted by teens for “instant” viewing (Chat, IM, etc.) : *don't specify just for « seniors »*
- Digital photos are viewed on the TV with family and friends (with the help of a DVD player) : *make the TV screen THE viewing device for family*
- New usage is observed with mobile devices : *Imagine new usage patterns (ex: active selection of special sets of photos for instantaneous particular social purposes)*

How do people classify their collections ?

It's no accident that piles is main repository

- Archiving is considered as a complex, time consuming, tedious and non attractive task
- **AND** people have fun searching, people have fun coming across an unexpected photo (emotional kick of the surprise): *let the people stumble across an unexpected photo*
- Generally a first organization immediatly, and favorite and « good » pictures into albums or « album-like » on a CD : *let the people « rate » their photos*
- Paper prints: albums are generally organized by events and date
- Digital collections:
 - organization by events, date and people
 - folders are named and photos are rarely named
- Annotations are important for people and places, especially for old collections

What and how do people search ?

People know their own collections and they strongly use their memory

- Search is dominant activity concerning digital collections, because it is goal-driven: send by email for instance
- People search generally a person, an individual remembered photo, a set of photos sharing something (a person, an event, etc.)
- People generally find photos in their collections thanks to the chronological order, physical appearance of their albums (*allow people to differentiate physically their digital albums*), named folders and (for the moment !) relative small size of collections
- Browsing by thumbnails to scan the collection is the most used strategy to search something : people know their collections, and they have approximative date in mind (absolute or relative – an event occurs to others). Browsing allows a quick visual recognition.

So ? No 1 USER for 1 USAGE

- Keep in mind what we know (observed constant facts)
 - importance of keeping and sharing memories
 - importance of storytelling activity
 - importance of reminiscing task
 - importance of chronological order (human memory)
 - importance of visual recognition (albums – thumbnails)
 - etc.
- AND keep in mind different observed usage
 - some people are « all-digital », some are « mixed-one »
 - teens don't use their photos like their parents
 - some classify, some don't
 - when they classify, criteria are very personal (even in the same family, each member can have a different classification schemes)
 - etc.

So ? No 1 USER for 1 USAGE

- people are OK for an help, like automatic classification for instance , but they want to be able to keep the control
- if you propose a sophisticated technology, it must be reliable or « transparent » : if you are not able to classify correctly 100% of pictures, tell people this fact
- for everyday life, there is no minor and major features: there is just functions that really simplify your life (for instance, automatic rotation of photos, or preserve the originals)