A Survey of Research Prospects for more Manageable Personal Digital Photo Collections

Nicholas Taylor

@nullhandle

what metadata matters?

- event
- location
- people
- time

the metaphorical shoebox

our digital photos are proliferating

NUMBER OF PHOTOS
TAKEN EACH YEAR

All photos

Analog photos

380 B

86 B

57 B

25 B

10 B

3 B

1 B

0

4 B

1826   1930   1960   1970   1980   1990   2000   2011

our digital photos are distributed

our digital photos are many

Lev Manovich: "Cultural Analytics visualizations on ultra high resolution displays"

we have some tools

facial recognition

geotagging

flickr: "Explore everyone's photos on a Map"

social annotation

metadata standards

"Adding IPTC Metadata with Adobe Bridge" by Flickr user StevenErat under CC BY-NC-SA 2.0
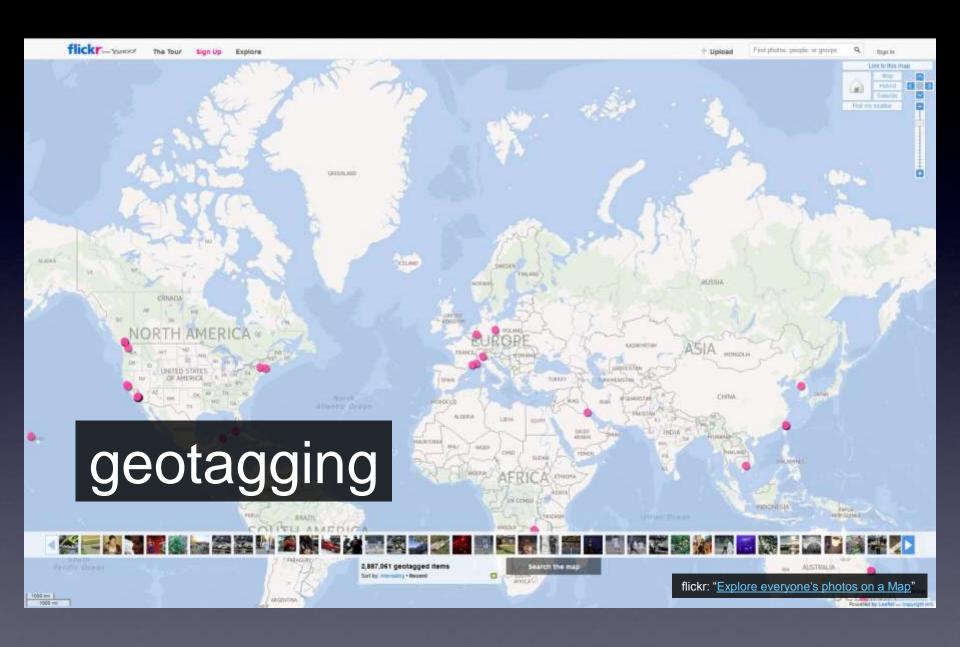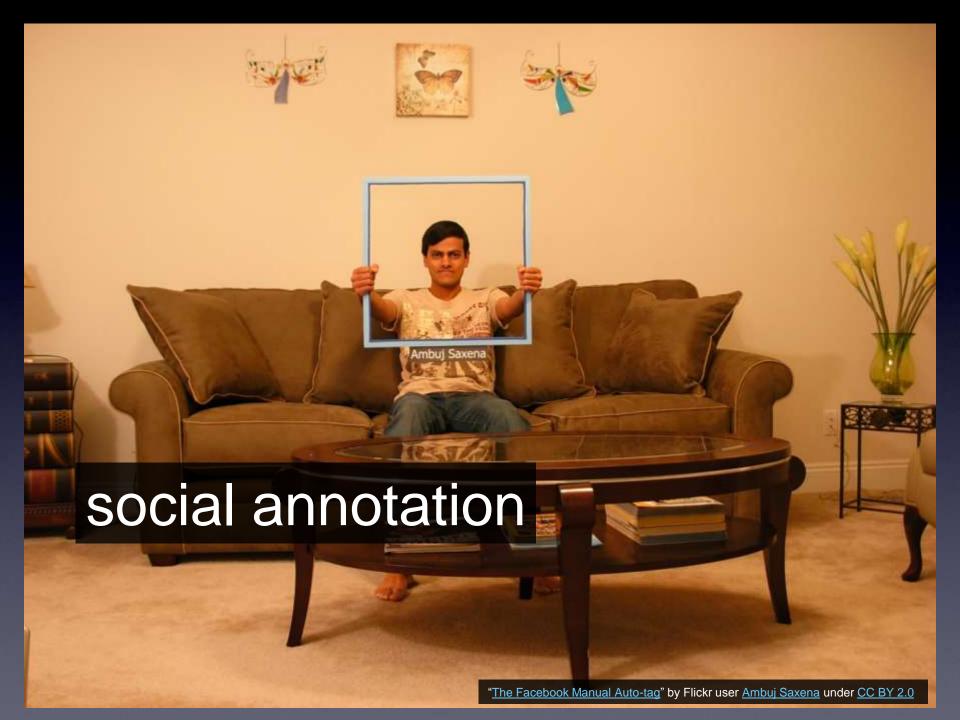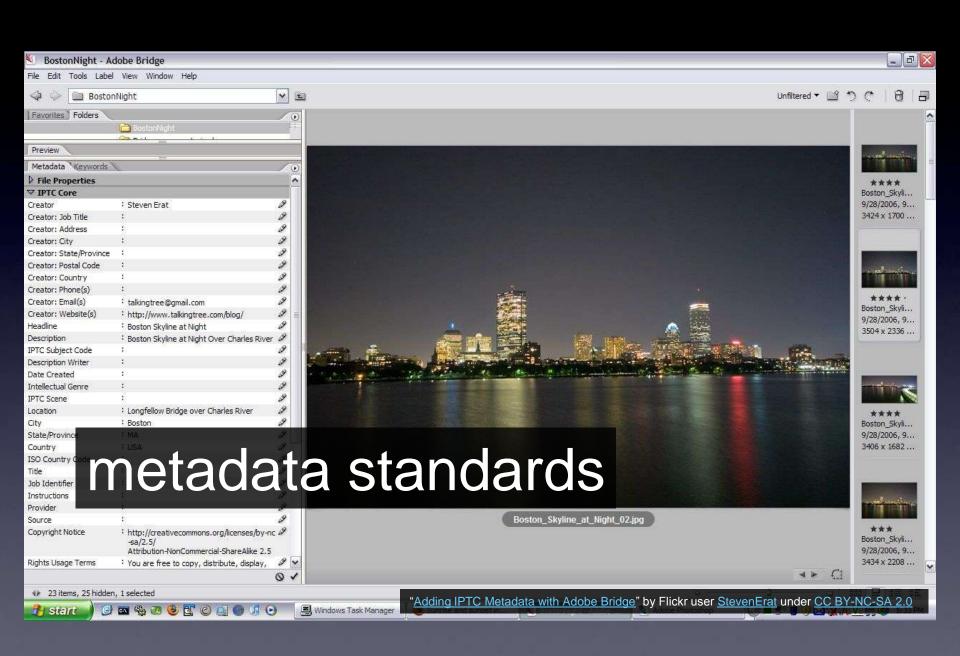
prospective tools
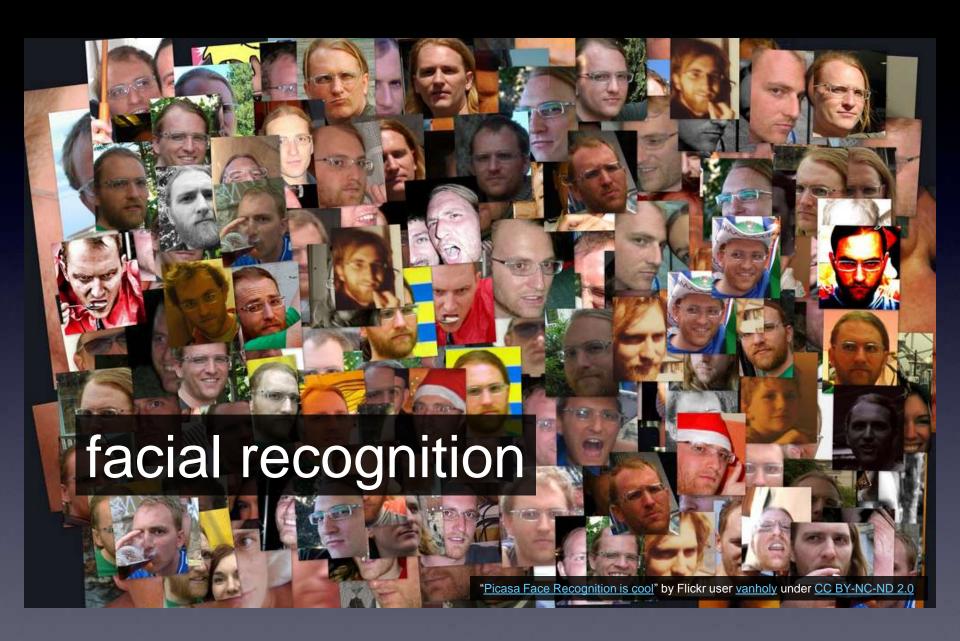
tools provenance

- forensics (security, law enforcement, counterterrorism)
- robotics (autonomous)
- consumer applications (photo management)

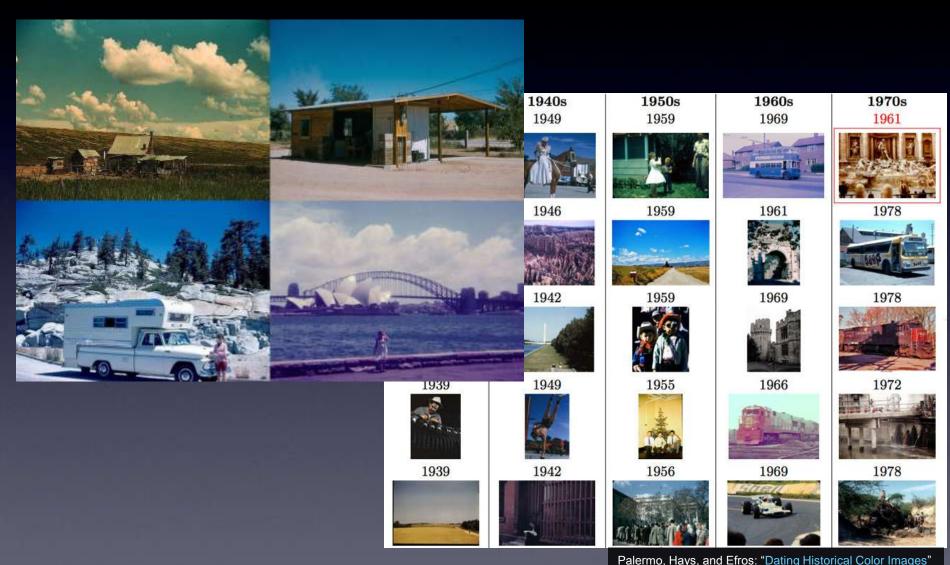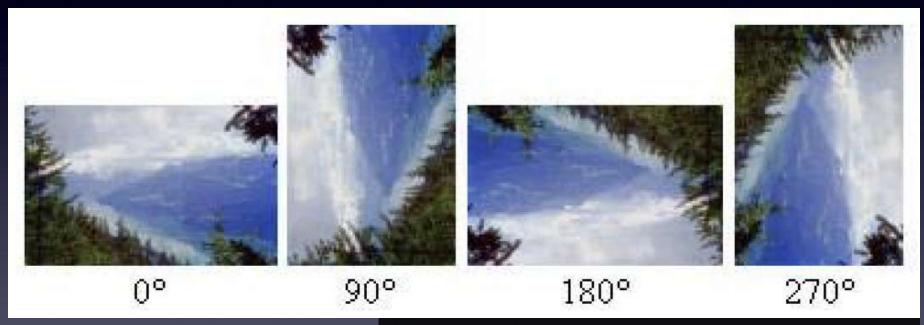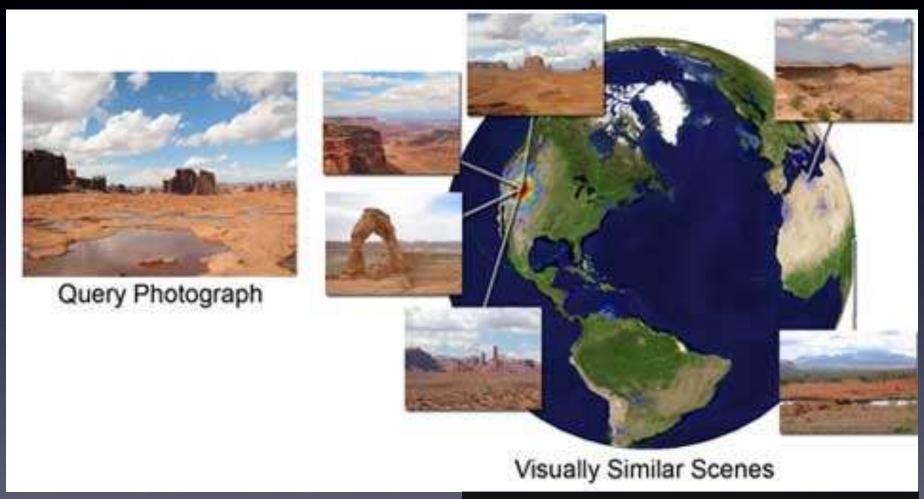# dating digitized photos by color processing technology

image orientation detection of digitized photos

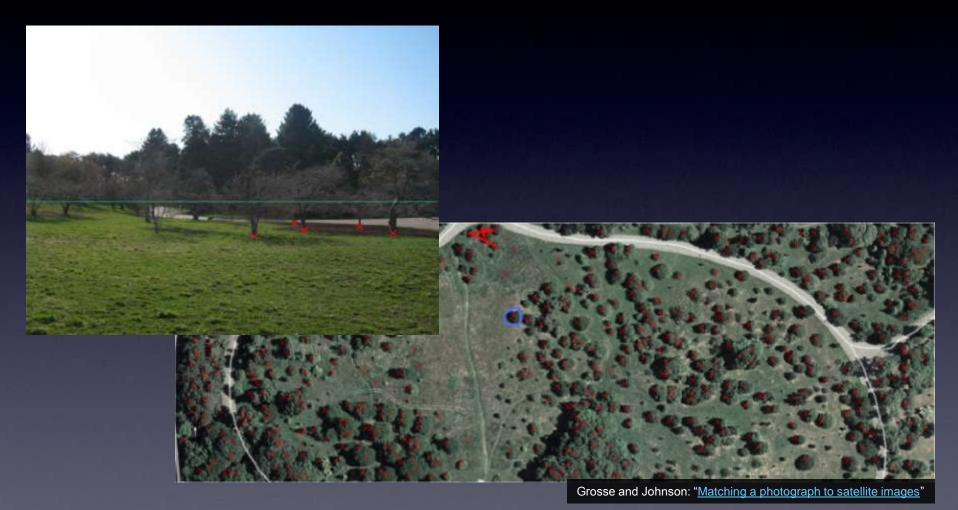0°   90°   180°   270°

Datar and Qi: "Automatic Image Orientation Detection Using the Supervised Self-Organizing Map"

probabalistic regional geotagging by visual similarity

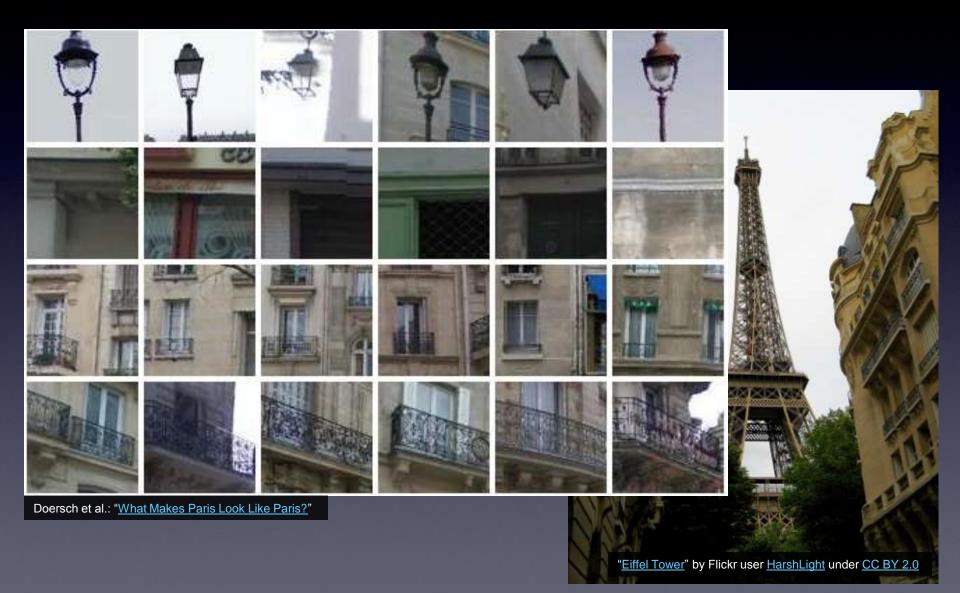Query Photograph

Visually Similar Scenes

Hays and Efros: "IM2GPS: estimating geographic information from a single image"

satellite and ground imagery corroboration for geotagging

Grosse and Johnson: "Matching a photograph to satellite images"

identifying cities by trivial visual elements

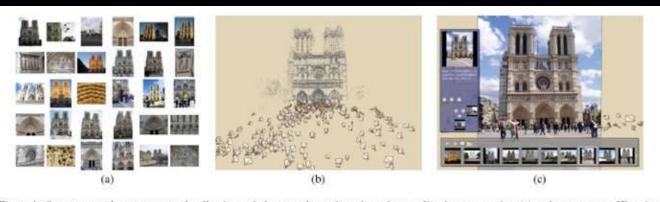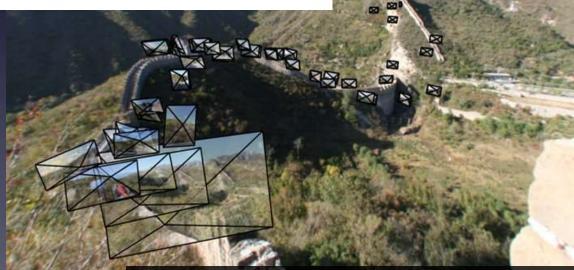# geotagging and 3D scene construction using large photo sets

Figure 1: Our system takes unstructured collections of photographs such as those from online image searches (a) and reconstructs 3D points and viewpoints (b) to enable novel ways of browsing the photos (c).

Snavely, Seitz, and Szeliski: "Photo Tourism: Exploring Photo Collections in 3D"

historical photo overlay

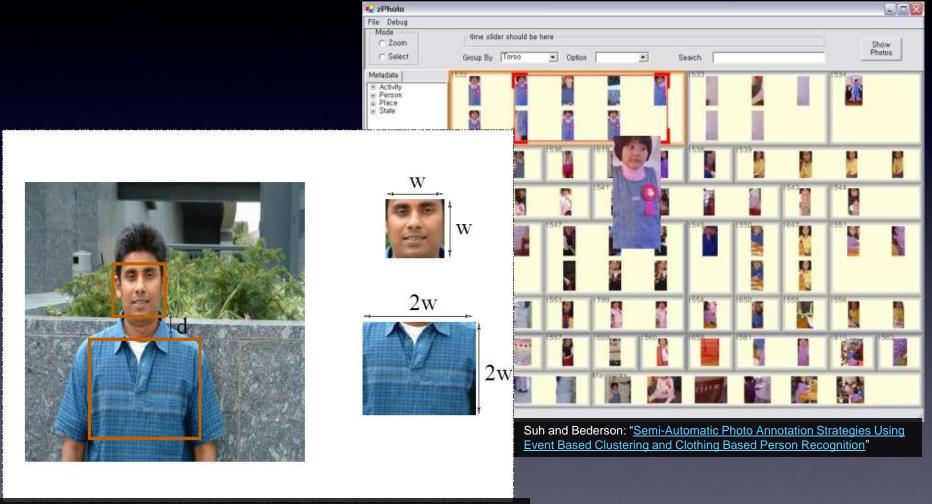WhatWasThere: "Jimmy Carter on a Campaign Stop in Plains"

automatic "event" identification by temporal and visual clustering

Cooper et al.: "Temporal Event Clustering for Digital Photo Collections"

recognizing persons using body patch matching

Suh and Bederson: "Semi-Automatic Photo Annotation Strategies Using Event Based Clustering and Clothing Based Person Recognition"
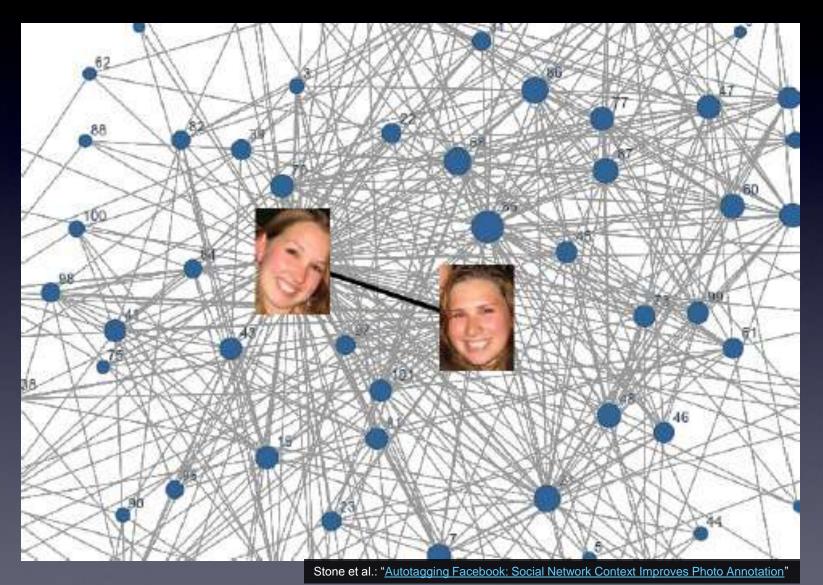
Cooray et al.: "Identifying Person Re-Occurrences for Personal Photo Management Applications"

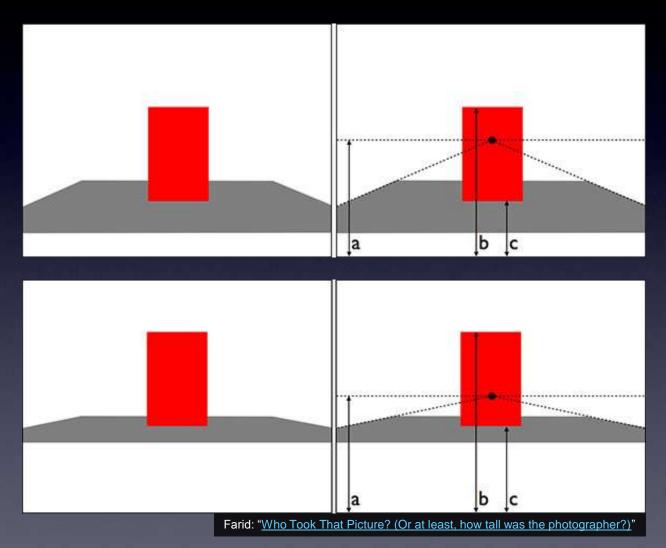# recognizing persons using social context

Naaman et al.: "Leveraging Context to Resolve Identity in Photo Albums"

recognizing persons using social network context

Stone et al.: "Autotagging Facebook: Social Network Context Improves Photo Annotation"

inferring photographer based on height of shot

Farid: "Who Took That Picture? (Or at least, how tall was the photographer?)"

graphing incidence of individuals over time

Hangal: "Muse: Revive Precious Memories Using Email."

Nicholas Taylor

@nullhandle