

Privacy and Audiovisual Search

a Faustian Bargain?



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Audiovisual Search: Regulatory Challenges for
Audiovisual Abundance

April 12, 2008

Outline

1. Perfect Search Engine

- Reach & Recall
- Faustian Bargain

2. Audiovisual Search

- New Trends
- New Bargain?

3. Regulatory Challenges

- Rights
- Policy
- Design

Perfect Search Engine

- Web search engines are vital tools for access to knowledge
- Quest for the “perfect search engine”
 - “process and understand all the information in the world”
 - perfect reach
 - “understand exactly what you mean and give back exactly what you want”
 - perfect recall
- *“Like the mind of God”*

Perfect Reach

- *“process and understand all the information in the world”*

The image shows a screenshot of a web interface for an Archie search engine. The title "Archie Query Form" is written in a blue, serif font and is underlined with a red line. To the right of the title is a magnifying glass icon with a wooden handle and a blue lens. Below the title and icon, the text "Search for:" is centered. Underneath this text is a white rectangular input field with a thin blue border, intended for entering search terms.

Archie Query Form

Search for:

Perfect Reach

- *“process and understand all the information in the world”*



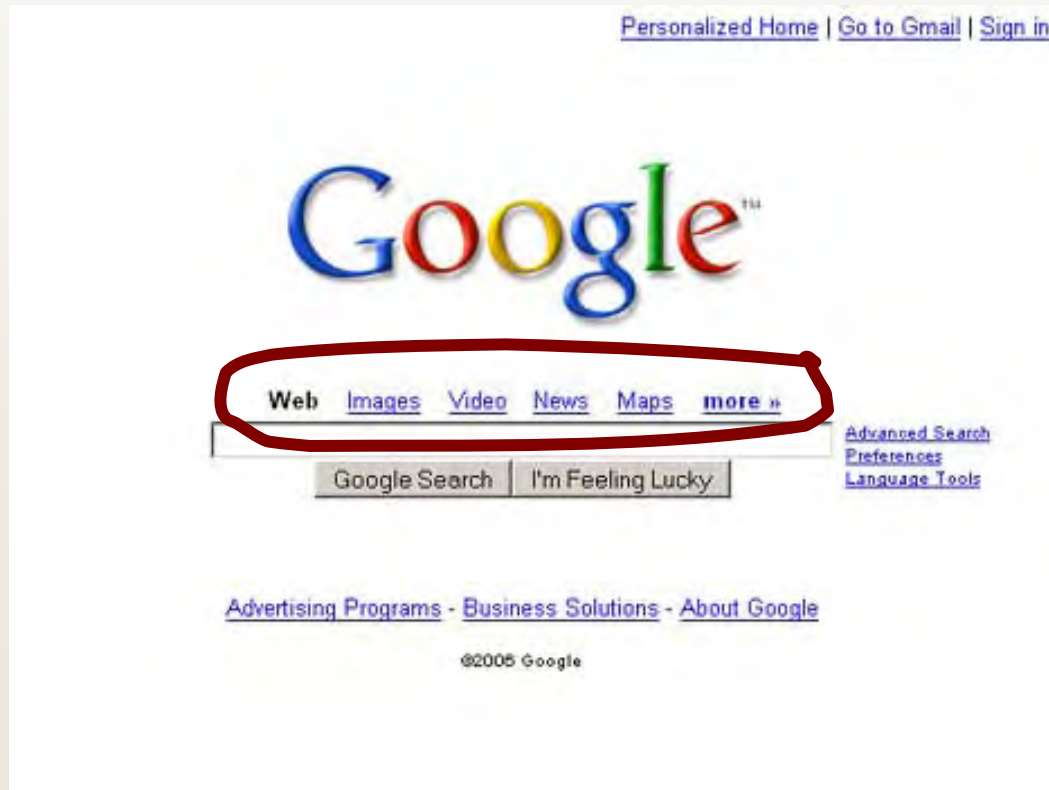
Perfect Reach

- *“process and understand all the information in the world”*



Perfect Reach

- *“process and understand all the information in the world”*



Perfect Reach

- *“process and understand all the information in the world”*

The image shows a side-by-side comparison of two search engines: Google on the left and Yahoo! on the right. The Google interface includes a search bar with the Google logo, navigation links for Web, Images, Video, News, and Maps, and a search button. Below the search bar are sections for 'More Google Products' and 'Search', which lists various services like Alerts, Blog Search, Book Search, Checkout, Desktop, Earth, Finance, GOOG-411, iGoogle, Images, Maps, News, Notebook, Patent Search, and Product Search. There is also an 'Explore and innovate' section with links to Code, Custom Search, and Labs. The Yahoo! interface features a top navigation bar with categories: All Yahoo!, Connect, Find, Learn, and Organize. Below this is a grid of alphabetical links from 0-9 to Z, each with a list of services. For example, 'A' includes Account Information, Address Book, Alerts, Alibaba, Answers, Audio Search, Autos, and Avatars. 'Z' includes Zimbra.

Google Web Images Video News Maps more » Search the Web

More Google Products

Search

- Alerts**
Get email updates on the topics of your choice
- Blog Search**
Find blogs on your favorite topics
- Book Search**
Search the full text of books
- Checkout**
Complete online purchases more quickly and securely
- Desktop**
Search and personalize your computer
- Earth**
Explore the world from your computer
- Finance**
Business info, news, and interactive charts
- GOOG-411**
Find and connect with businesses from your phone, for free
- iGoogle**
Add news, games and more to the Google homepage
- Images**
Search for images on the web
- Maps**
View maps and directions
- News** - now with [archive search](#)
Search thousands of news stories
- Notebook**
Clip and collect information as you surf the web
- Patent Search**
Search the full text of US Patents
- Product Search**
Search for stuff to buy

Explore and innovate

- Code**
Download APIs and open source
- Custom Search^{New!}**
Create a customized search experience for your community
- Labs**
Explore Google's technology playground

Communicate, show & share

- Blogger**
Share your life online with a blog, for free
- Calendar**
Organize your schedule and share it
- Docs**
Create and share your projects and documents from anywhere
- Gmail**
Fast, searchable email with less clutter
- Groups**
Create mailing lists and discussion groups
- Orkut**
Meet new people and stay in touch
- Picasa**
Find, edit and share your photos
- Reader**
Get all your blogs and news feeds in one place
- SketchUp**
Build 3D models quickly and easily
- Talk**
IM and call your friends through your browser
- Translate**
Translate text between languages

All Yahoo! **Connect** **Find** **Learn** **Organize**

0-9
360

A
Account Information
Address Book
Alerts
Alibaba
Answers
Audio Search
Autos
Avatars

B
Babel Fish Translations
Bix
Bookmarks
Broadway
Buzz

C
Calendar
Chat
Company Info
Creative Commons Search

D
del.icio.us
Developer Network
Directions
Directory
Domains
Downloads
DSL/Dial-Up

E
Ecards
Education
Elections

F
Family Accounts
Finance
Flickr
Food

G
Games
GeoCities
Global Trade
Green
Greetings
Groups

H
Health
Help
Holiday Events
Horoscopes

I
Image Search
International
Internet Access

J
Jobs
Jumpcut

K
Kids

L
Live
Local
Lottery

M
Mail
Maps
Member Directory
Message Boards
Messenger
Mobile
Movies
Multiplayer Games
Music
My Yahoo!
MyBlogLog
MyWeb

N
News
News Search
Next
Notepad

O
omg! OpenID

P
Parental Controls
People Search
Personals
Pets
Pipes
Publisher Network

R
Real Estate
Reference

S
Search
Search Marketing
Security Center
Shine
Shopping
Small Business
Sports

T
Tech
Tickets
Travel
TV

U
Upcoming

V
Video
Voice

W
Weather
Web Hosting
Widgets
Wireless
Women

Y
Yahoo! Comp
Yahoo! for Go
Yahoo! for Te
Yahoo! Searc
Yahoo! Toolb
Yellow Pages

Z
Zimbra

Perfect Reach

- God-like omnipotence
 - Powerful crawlers indexing nearly everything available on the Web
 - Wide array of services to capture and organize the rest, including offline content

Perfect Recall

- “understand exactly what you mean and give back exactly what you want”



Sponsored Links

[4 Star Hotel Paris Centre](#)

Deals on 4 Star **Hotel Paris Centre**.
Book this **hotel** at huge discounts!

FranceBookings.com/HiltonHotelParis

[Paris Hotel Discounts](#)

Up to 70% off on **Paris France Hotel**
Check out our Special Deals & Save!

www.Hotels-And-Discounts.com



Sponsored Links

[Paris Hilton Info](#)

Free Artist Videos, Photos, Music
Clips, and More at AOL® Music.

Music.AOL.com

[Paris Hilton](#)

Video News, Articles, Blogs & More.
Get 24/7 Entertainment News at TMZ!

TMZ.com

“Paris Hilton”

Perfect Recall

- *“understand exactly what you mean and give back exactly what you want”*
- Recall past user activity to personalize services
 - Track and record user activity across multiple services
 - Mine user data to provide results that suit the context and intent of the search query
 - Behavioral-targeted advertising
 - Yahoo SmartAds & AMP!

123.45.67.89-25/Mar/2003 10:15:32-

http://www.google.com/search?

q=Paris+Hilton+sex+video

Firefox 1.0.7; Windows NT 5.1 -

740674ce2123e969

Perfect Recall

- Recall broadened by the powerful Reach
 - Dozens of products & services linked via cookies & user accounts
 - Contacts, news, blogs, books, stocks, appointments, e-mail, friends, computer files, discussion groups, URLs...

The image shows two web interfaces side-by-side. On the left is the Google homepage, and on the right is the Yahoo! homepage. The Google interface includes a search bar with navigation links for Web, Images, Video, News, and Maps. Below the search bar are sections for 'More Google Products' and 'Search', listing services like Alerts, Blog Search, Book Search, Checkout, Desktop, Earth, and Finance. The 'Explore and innovate' section lists Code, Custom Search, and Labs. The 'Communicate, show & share' section lists Blogger, Calendar, and Docs. The Yahoo! interface features a navigation bar with 'All Yahoo!', 'Connect', 'Find', 'Learn', and 'Organize'. Below this is a grid of service categories: 0-9 (360), A (Account Information, Address Book, Alerts, Alibaba, Answers, Audio Search, Autos, Avatars), B (Babel Fish Translations, Bix, Bookmarks, Broadway), E (Ecards, Education, Elections), F (Family Accounts, Finance, Flickr, Food), G (Games, GeoCities, Global Trade, Green, Greetings, Groups), J (Jobs, Jumpcut), K (Kids), L (Live, Local, Lottery), M (Mail, Maps, Member Directory, Message Boards), O (omg!, OpenID), P (Parental Controls, People Search, Personals, Pets, Pipes, Publisher Network), R (Real Estate, Reference), S, U (Upcoming), V (Video, Voice), W (Weather, Web Hosting, Widgets, Wireless, Women), and Y (Yahoo! Comp, Yahoo! for Go).

Perfect Recall

- God-like omniscience
 - Know as much as possible about users
 - Personalize to suit the context and intent of the searcher

Like Mind of God?

- Omnipotence:
 - Perfect reach promises breadth, depth, “organize the world’s information”
- Omniscience:
 - Perfect recall promises only relevant results (and advertising), personalized to your wants and desires

Faustian Bargain

Anyone who has studied the history of technology knows that technological change is always a Faustian bargain:

Technology giveth and technology taketh away, and not always in equal measure.

A new technology sometimes creates more than it destroys. Sometimes, it destroys more than it creates. But it is never one-sided.

~ Neil Postman



Privacy viz. Perfect Reach

- Loss of “privacy via obscurity”
 - Obscure webpages
 - Usenet posts
 - Court documents
 - Old (incorrect?) news articles
 - PDFs, Word docs, PowerPoint slides
 - Web 2.0 profiles & personal data streams

Privacy viz. Perfect Recall

- Infrastructure of dataveillance
- Database of intentions
 - “This information represents, in aggregate form, a place holder for the intentions of humankind - a massive database of desires, needs, wants, and likes that can be discovered, subpoenaed, archived, tracked, and exploited to all sorts of ends.”

~ John Battelle

Faustian Bargain

- Perfect search engine promises breadth, depth, efficiency, and relevancy
- But Reach and Recall bring privacy concerns
 - Loss of “privacy via obscurity”
 - Enables the widespread collection of personal and intellectual information

“both giveth and taketh away”

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Audiovisual Search

Google **Advanced Image Search** [About Google](#)

Find results related to **all** of the words
related to the **exact phrase**
related to **any** of the words
not related to the words

Content types Return images that contain any content news content faces

Size Return images that are

Filetypes Return only image files formatted as

Coloration Return only images in

Domain Return images from the site or domain

SafeSearch No filtering Use moderate filtering Use strict filtering

Audiovisual Search

[Web](#) [Images](#) [Maps](#) [News](#) [Shopping](#) [Gmail](#) [more](#) ▼



michael zimmer
[SafeSearch is off](#)

Search Images

Sea

Images Showing:

Try your search on [Yahoo](#), [Ask](#), [AllTheWeb](#), [Live](#), [PicSearch](#), [Ditto](#), [Creatas](#), [FreeFoto](#), [WebShots](#), [NASA](#), [Flickr](#)

Showing only images con



Michael Zimmer has had over twenty

...
150 x 225 - 6k - jpg
www.zalkin.com



Michael Zimmer is a Post-Doctoral

...
150 x 165 - 63k - jpg
www.law.yale.edu



Michael Zimmer has been a practicing ...

185 x 229 - 9k - jpg
ccgovernment.carr.org

Trends in Audiovisual Search

- Images
 - User-generated content
 - Meta-data
 - Face recognition for the masses
- Street-level Mapping
 - Navigational searches
- Ambient Audio Identification
- Video Fingerprint Analysis
- PhotoSynth


User-Generated Content

YAHOO! SEARCH [Web](#) | [Images](#) | [Video](#) | [Local](#) | [Shopping](#) | [more »](#)


Search

SafeSearch is off ([turn on](#))


Image Results



michael zimmer
By [Michael Zimme...](#) on Flickr
www.flickr.com

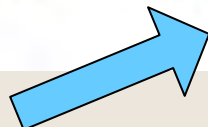


michael zimmer
By [davidsilver](#) on Flickr
www.flickr.com



Alle_in_Michael...er.jpg
448 x 296 | 23.6kB
bildung.freepage.de

zir
18



Meta-Data



- Taken in [Vienna, Vienna \(map\)](#)
- Taken with a [Nokia N82](#).
[More properties](#)
- Taken on [February 24, 2008](#)
- [14 people](#) call this photo a favorite
- Viewed 356 times

Latitude:	N 48° 13' 39.64"
Longitude:	E 16° 21' 51.06"
Altitude:	208.7

A couple, moments before/after kissing on a subway platform in Vienna.

Manual...



Would you like to comment?

[Sign up](#) for a free account, or [sign in](#) (if you're already a member).



This photo also belongs to:



Tags

- aoir
- aoir8
- conference
- michael zimmer



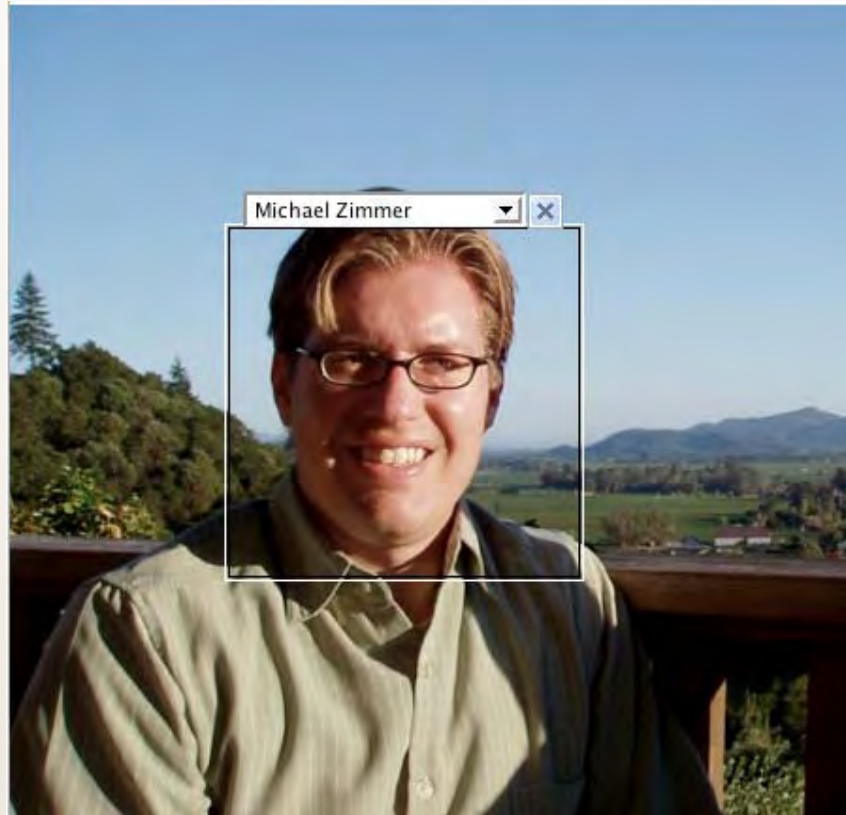
Additional Information

Some rights reserved.

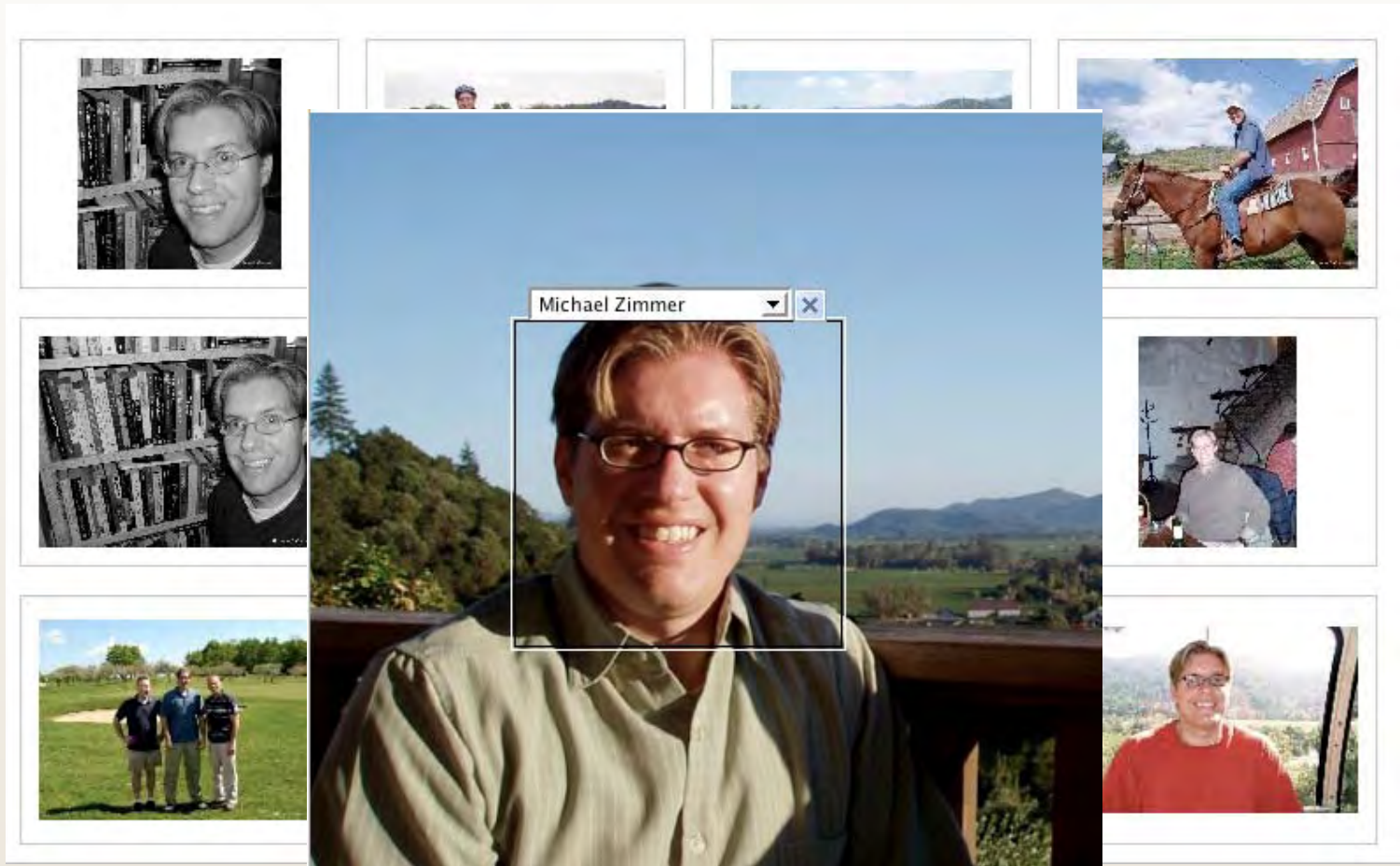
This photo is public

- Taken with a [Canon PowerShot SD450](#).
[More properties](#)
- Taken on [October 19, 2007](#)
- Viewed 22 times

...Automatic



Face Recognition



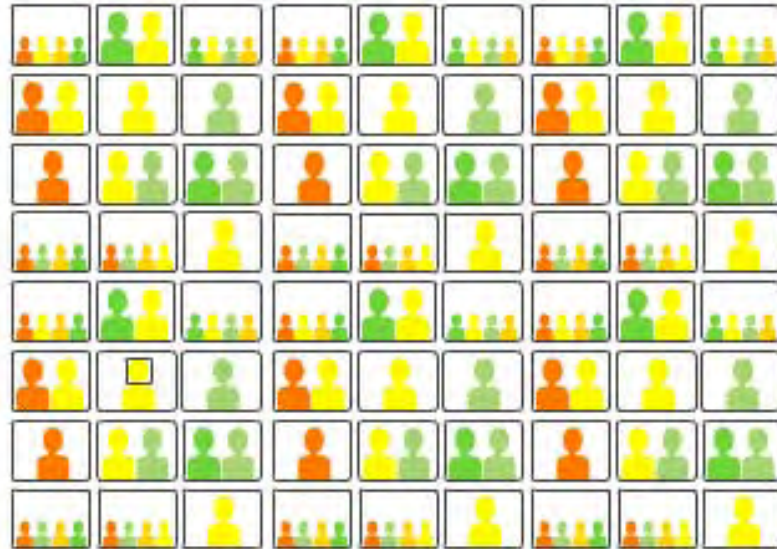
User: Michael_Zimmer

Face Recognition

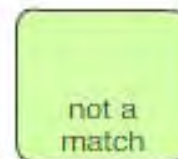


User: Random_Stalker

Face Recognition



Scanning for matching faces..



This may take a few minutes depending upon the number of photos you have. Please don't hit back or refresh.

Face Recognition



User: Random_Stalker

...to the Web



All Web [People](#) [Objects](#) [Tags](#) [My Photos](#)

Jill Murray

SEARCH

[Advanced](#)

Faces Recognized: 2 [RUN REC](#)

To Do: [Add](#) [Train](#) [Share](#)

[My Photos](#) | [Albums](#) | [People](#) | [Time](#) | [Locations](#) | [My Friends' Photos](#)

Show results for



1 - 20 of 155 Photos

Sort By

- ▶ Riya Rank
- [Date and Time](#)
- [Popularity](#)

Show Only

People

- [Jill murray](#) (155)
- [Brad murray](#) (47)
- [Caitlin murray](#) (17)
- [Kevin murray](#) (15)
- [Kristi stana...](#) (15)
- [More >>](#)

Album

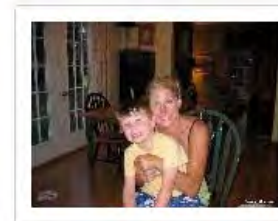
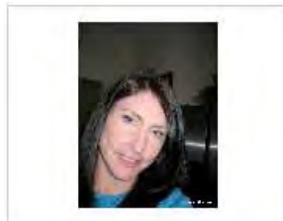
- [Curacao](#) (10)
- [Hi pix](#) (17)
- [Pix](#) (14)
- [June 2004](#) (10)
- [Temp pix](#) (10)
- [More >>](#)

Time

- [2004 November](#) (21)
- [2002 February](#) (16)
- [2004 July](#) (10)
- [2004 June](#) (10)
- [2003 July](#) (9)
- [More >>](#)

Location

- [16 penningto...](#) (5)
- [Pennington nj](#) (5)
- [Princeton nj](#) (4)
- [Allentown nj](#) (2)



...to the Crowds



The screenshot shows a portrait of Fridtjof Wedel-Jarlsberg Nansen. In the top right corner, there are four circular icons numbered 1, 2, 3, and 4, with the third icon (3) highlighted. A small orange flower icon with a dropdown arrow is positioned over the portrait. A black overlay box with a close button in the top right corner contains the text "We don't know who this is..." followed by a text input field containing "Fridtjof Wedel-Jarlsberg Nansen". Below the input field are two buttons: a green "Save" button and a "Cancel" button.

You can enter the persons name into the text input field and save.

Polar Rose 

...to the Crowds

flickr

Home You Organize Contacts Groups Explore

IMG_0377, People's Palace, Glasgow, Greenock, Scotland

ADD TO FOLIOS BLOG THIS ALL SIZES



We don't know who this is...

Enter name

Save or Cancel

Possible matches: (opens in a new window)

- 
- 

Search for:

- [Pictures of this person on the internet](#)
- [Pictures of this person on this site](#)
- [Pictures of people who look similar](#)

or

- [Someone else!](#)

This is a museum about... is a great place for local... See set comments for...

...to the Crowds

Yuna Min (1)



1 person says this is...

Yuna Min

- Location: [original image](#) found at <http://www.facebook.com/...>
- Found: 1 day ago by [pvenditti](#)
- [Show more pictures of this person](#) | [View detailed information](#)

Yuna Min (2)



1 person says this is...

Yuna Min

- Location: [original image](#) found at <http://build.tripod.lycos.com/...>
- Found: 2008-01-30 by [pvenditti](#)
- [Show more pictures of this person](#) | [View detailed information](#)



1 person says this is...

Yuna Min

- Location: [original image](#) found at <http://pvenditti.tripod.com/...>
- Found: 2008-01-30 by [pvenditti](#)
- [Show more pictures of this person](#) | [View detailed information](#)

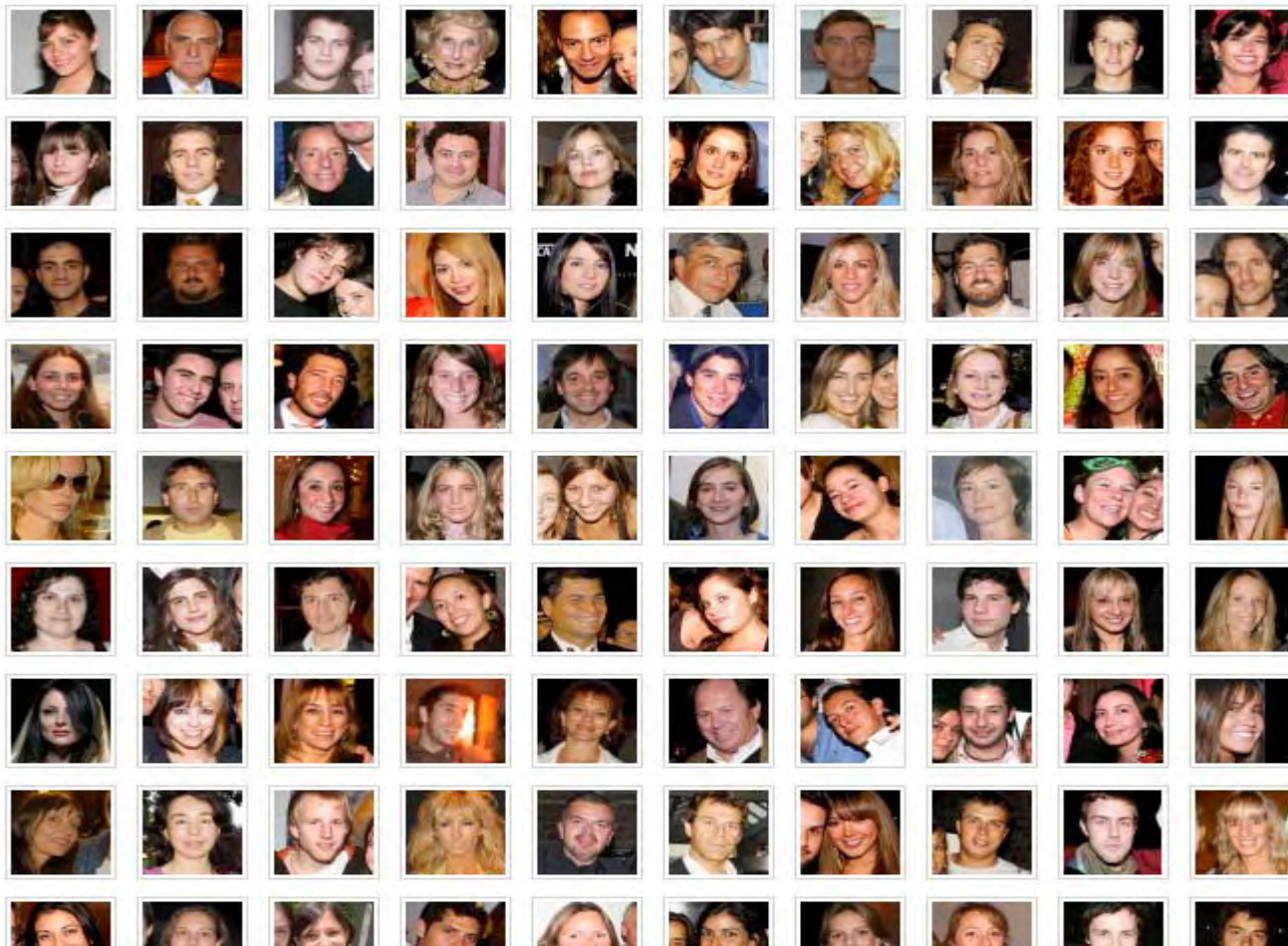
...to the Crowds

Recently found...

Find someone...

View page as: [List](#) | [Grid](#)

Size: [Large](#) | [Small](#)



Street-Level Mapping

- Aid navigational searches
 - **Amazon BlockView** (2005)
 - **Microsoft Live Search Maps** (2006)
 - **Google Street View** (2007)



Faustian Bargain?

- Audiovisual search promises new depth & breadth for the perfect search engine
- But does it “both giveth and taketh away”?



Reach of UGC & Privacy

- Individuals lose control of their likeness online
 - Might never know/consent to photo being taken and put online to be indexed & searched



The screenshot shows a Yahoo! Search results page for the query "michael zimmer". The search bar at the top contains the text "michael zimmer" and a notification that "SafeSearch is off (turn on)". Below the search bar, the "Image Results" section displays two image thumbnails. The first thumbnail shows a man sitting at a table, and the second shows a man pointing at a presentation screen. Both images are attributed to "michael zimmer" and are linked to Flickr profiles.

YAHOO! SEARCH michael zimmer
SafeSearch is off (turn on)

Image Results


michael zimmer
By Michael Zimme... on Flickr
www.flickr.com


michael zimmer
By [davidsilver](#) on Flickr
www.flickr.com

Reach of UGC & Privacy

- Individuals lose control of their likeness online
 - Images meant for one context (Facebook) searchable by anyone

Yuna Min (1)




1 person says this is...

[Yuna Min](#)

- Location: [original image](#) found at <http://www.facebook.com/...>
- Found: 1 day ago by [pvenditti](#)
- [Show more pictures of this person](#) | [View detailed information](#)

Yuna Min (2)



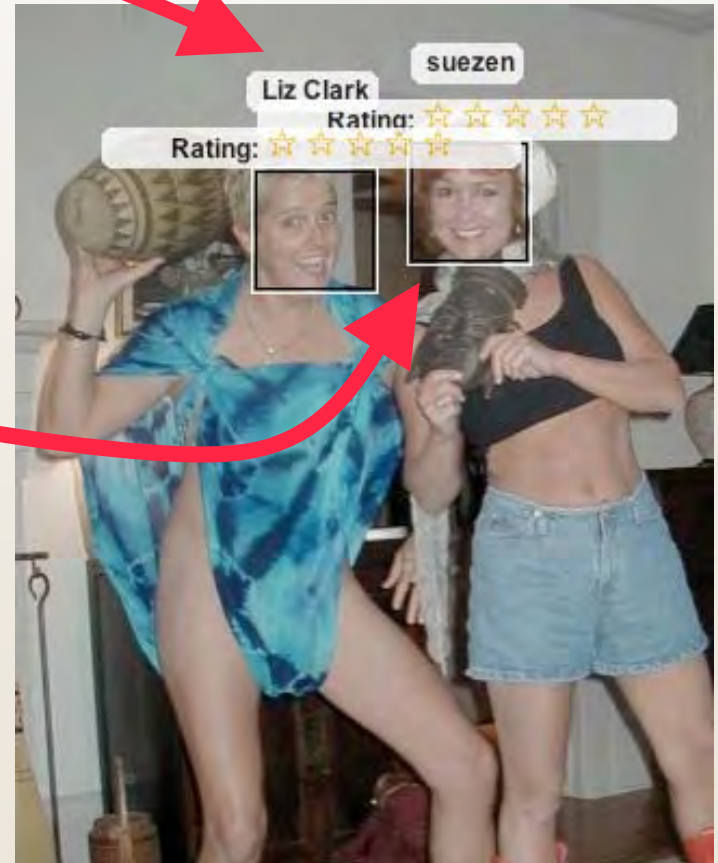
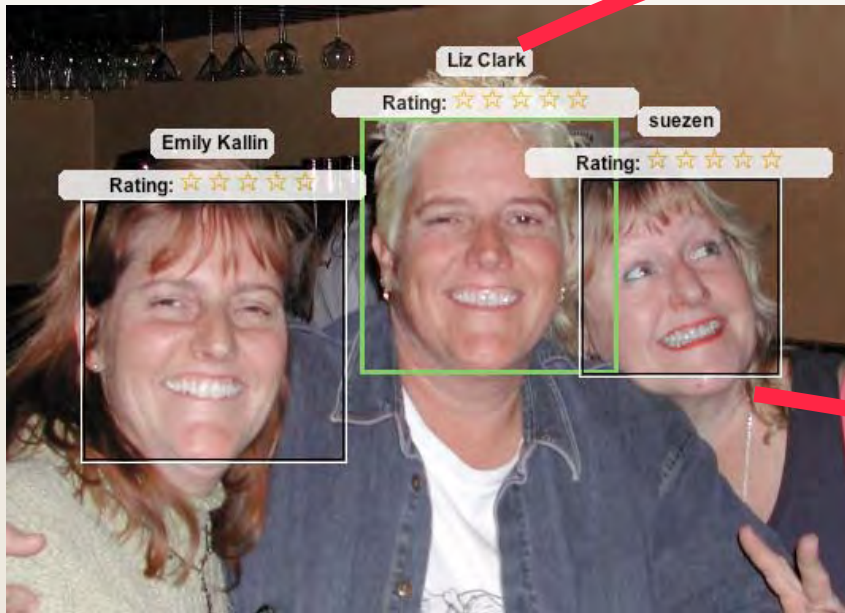
1 person says this is...

[Yuna Min](#)

- Location: [original image](#) found at <http://build.tripod.lycos.com/...>
- Found: 2008-01-30 by [pvenditti](#)
- [Show more pictures of this person](#) | [View detailed information](#)

Reach of Face Recognition

- Linkable face recognition tools eliminate any planned scattering of images



Reach of Meta-Data

- Detailed meta-data removes barrier of lack of detailed information of other people's private lives

GPS:
40.75704, -
73.98597
(Times
Square)

Date:
10-Sept-2007

Time:
20:25

Camera:
Nokia N95



Surveillance Protest



False Associations

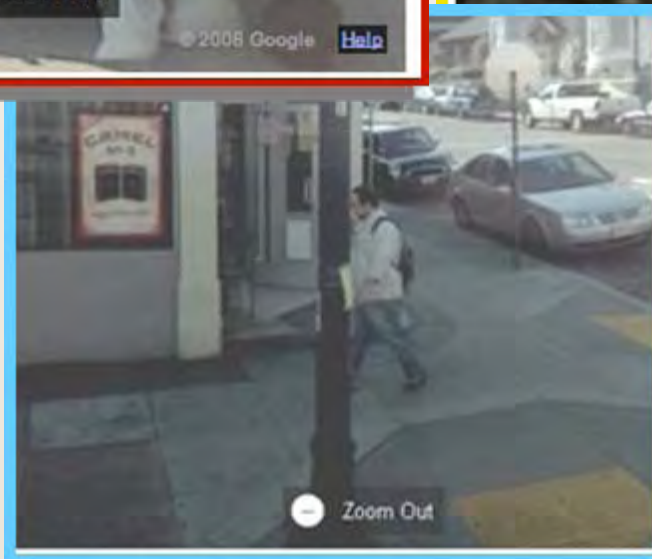


Gay Pride March



Reach of Street-Level Mapping

- Random public acts now viewable by millions, sometimes identifiable

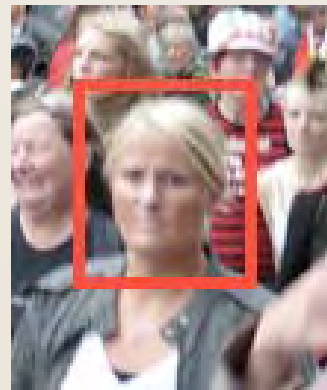


Privacy Threats: Reach

- Great value in user-contributed images and street-level mapping
- And image recognition systems make Perfect Search more powerful
- But must not allow a new Faustian bargain to emerge
 - Just because in public doesn't mean image should be identified, indexed and searched
 - Unfounded association, assumptions, discrimination, etc.

Privacy Threats: Recall

- An audiovisual database of intentions
- Tying AV search queries to users
 - Porn
 - “Holocaust denial video”
 - “Muhammad cartoons”
- Tying tagged images to users
 - Personalization based on association with gay pride parade?



Faustian Bargain in AV Search

- Audiovisual search promises to enhance the Perfect Search Engine
 - Make available multimedia content
 - Tap into UGC & Web 2.0's data flows
- But bring new privacy concerns
 - More loss of “privacy via obscurity”
 - Subjects further removed from both content & context
 - AV database of intentions

“both giveth and taketh away”

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- Policy
- Design

Privacy Rights Challenged

- Rhetoric of “no expectation of privacy” for images posted to social networks or of public acts
- “The Street View feature includes only those photos taken from public grounds. The imagery is not different from anything each of us can photograph themselves – the kinds of things you’d see when you walk the streets.” ~ *Google*

Privacy as Contextual Integrity

- Privacy \neq Secrecy
- Privacy \neq Dichotomy of public/private
- Privacy is contextual
- Governed by norms of information flow
 - Social, legal, physical, technological
- If norms are breached, contextual integrity of personal data is violated
- Useful framework to re-conceptualize privacy right

(Nissenbaum)

Policy Challenges

- External policy & regulation
 - Ban publishing/indexing of people's likeness without consent
 - Require blurring of any identifiable data
 - Harmonize EU/Canada with US?
 - Create regime for takedown notices
 - Who owns my likeness? *My biometric?*
- Internal policy
 - Prevent external scrapping
 - vs 2.0 logic of openness?
 - Ease of flagging privacy-invading images
 - When/how to implement blurring

Design Challenges

- Value-conscious design
- Design options
 - Search tools
 - Interface for flagging images for removal
 - Send notice when image or tag of self appears
 - Privacy-enhancing technologies
 - Personal biometric tool to search for self on the Web?
 - Auto blur?

Summary

- Audiovisual Search
 - Promises to enhance the Perfect Search Engine
- Faustian Bargain
 - New threats to privacy, of users and random public actors
- Regulatory Challenges
 - Re-conceptualize privacy rights
 - Arrive and policy frameworks
 - Consider design options

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