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”
Perfect Reach

• “process and understand all the information in the world”
Perfect Reach

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Perfect Reach

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Perfect Reach

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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”
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...
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 search results for Michael Zimmer]

Try your search on Yahoo, Ask, AllTheWeb, Live, PicSearch, Ditto, Creatas, FreeFoto, WebShots, NASA, Flickr.
Audiovisual Search

Google Advanced Image Search

<table>
<thead>
<tr>
<th>Find results</th>
<th>related to all of the words</th>
<th>related to the <strong>exact phrase</strong></th>
<th>related to any of the words</th>
<th>not related to the words</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>zimmer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Content types</th>
<th>Return images that contain</th>
<th>any content</th>
<th>news content</th>
<th>faces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>Return images that are</td>
<td>any size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filetypes</td>
<td>Return only image files formatted as</td>
<td>any filetype</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coloration</td>
<td>Return only images in</td>
<td>any colors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain</td>
<td>Return images from the site or domain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SafeSearch</td>
<td>No filtering</td>
<td>Use moderate filtering</td>
<td>Use strict filtering</td>
<td></td>
</tr>
</tbody>
</table>

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Audiovisual Search
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
Would you like to comment?

Sign up for a free account, or sign in (if you're already a member).
A couple, moments before/after kissing on a subway platform in Vienna.
Manual...
...Automatic
Face Recognition

User: Michael_Zimmer
Face Recognition

User: Random_Stalker
Face Recognition

Scanning for matching faces...

definite match
not a match
maybe

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
...to the Crowds
...to the Crowds
...to the Crowds

<table>
<thead>
<tr>
<th>Yuna Min (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 person says this is...</td>
</tr>
<tr>
<td><strong>Yuna Min</strong></td>
</tr>
<tr>
<td>- Found: 1 day ago by pvenditti</td>
</tr>
<tr>
<td>- Show more pictures of this person</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Yuna Min (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 person says this is...</td>
</tr>
<tr>
<td><strong>Yuna Min</strong></td>
</tr>
<tr>
<td>- Location: original image found at <a href="http://build.tripod.lycos.com/...">http://build.tripod.lycos.com/...</a></td>
</tr>
<tr>
<td>- Found: 2008-01-30 by pvenditti</td>
</tr>
<tr>
<td>- Show more pictures of this person</td>
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<table>
<thead>
<tr>
<th>Yuna Min (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 person says this is...</td>
</tr>
<tr>
<td><strong>Yuna Min</strong></td>
</tr>
<tr>
<td>- Location: original image found at <a href="http://pvenditti.tripod.com/...">http://pvenditti.tripod.com/...</a></td>
</tr>
<tr>
<td>- Found: 2008-01-30 by pvenditti</td>
</tr>
<tr>
<td>- Show more pictures of this person</td>
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</table>
...to the Crowds
Street-Level Mapping

- Aid navigational searches
  - Amazon BlockView (2005)
  - 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
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

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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 ≠ Secrecy
- Privacy ≠ 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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