



Ethical Issues in Web Archive Creation and Usage

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Towards a Research Agenda

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- Web archiving is an essential activity to ensure valuable content is being preserved
- Web Archives contain a wealth of extremely valuable information

But:

- Currently most archives are closed to public
- Mostly due to legal reasons
- Need a legal solution

Is this all?

- What should such a legal solution look like?
- Is it only a legal problem?

- There are things that are legal, but ethically dubious
- There are things that are illegal, but ethically acceptable

- Privacy is an essential good
- Most countries are increasingly privacy-aware
- Are there ethical concerns, and if so
 - Are we aware of them?
 - Can we do something to address them?
- Is there a danger of a moratorium on Web Archiving?

- Hypothesis: there are a number of potentially ethically sensitive issues related to Web Archiving, and particularly to access provision

- In order to be able to unlock the value of Web Archives we need to
 - Understand them
 - Try to address them
 - And, provided we have appropriate technical solutions, have them reflected in the legal regulations

- Try to start this process via some (incomplete) considerations

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- Introduction: do we have ethical issues?
 - Assumptions underlying & motivating Web Archiving
 - Research questions to assist in solving a privacy dilemma
 - A quick glimpse at a case study:
automatically identifying private content
 - Conclusions and next steps
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Assumptions and a number of questions:

- The Web is a new publication medium?
- The ephemeral nature of Web pages is a “design fault”?
- A Web Archive is merely a collection of publicly available information

Assumptions underlying Web Archiving

- The Web is a new publication medium?
 - Are people “publishing”
(conscious decision, effort invested,...)
 - If so, are they aware of it?
 - Are kids allowed to publish?
 - Which parts of the Web are publishing,
which are communication?
(ako chatting-in-the-bus?)
 - Do we have a choice of NOT putting some things on the
Web?

Assumptions underlying Web Archiving

- The ephemeral nature of Web pages is a “design fault”?
 - Post-it notes are based on a “faulty” glue
-> should we put real glue onto them?
 - If the Web is a publication medium: may there be some who use it as such BECAUSE it is ephemeral?
(art, temporary announcements, CV, ...)
 - Does being ephemeral make it more a communication medium in the perception of some people?
 - Does society need an ephemeral way of communicating with larger communities in an ephemeral manner?
(speaker’s corner, graffiti, ...)

Assumptions underlying Web Archiving

- A Web Archive is merely a collection of publicly available information
 - True, but what about Holism?
(The whole is more than the sum of it's parts)
 - Does the ease of use, or the new possibilities of use, change the nature of an information collection?
(full-text search, semantic analysis, IR as opposed to conventional archive catalogs)
 - Specialized person profile search engines, used by HR departments
(special profile generation services to counter-act this)
 - Technical possibilities will increase in the future
(video analysis, semantic analysis, reasoning, ...)

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Research questions

- What are the *ethical constraints*, and how they can be more precisely *defined or formalized*,
- Which *approaches* users of Web archives with *potentially dubious intentions* might employ to obtain information that should not be provided by privacy-respecting archives,
- In how far *technological solutions* such as query analysis, machine learning and data mining can help in identifying potentially harmful queries, potentially incriminating content on Web pages, information worth of protection, or combinations thereof,
- How *legal regulations* might be formulated in order to allow (partial) access to Web archive content in a safe, ethically correct, and useful manner

Research questions

- Formalizing ethical constraints and risks
 - Risk analysis and threat scenarios
 - Types of information
 - Types of creators
 - Types of Web usage
 - Aggregation of information
 - Risk of NOT providing certain information

Research questions

- Understanding potentially dubious usage
 - Who may be misusing a Web Archive?
 - For what purpose may it be misused?
 - How would the misuse look like?
 - What is the potential damage?
 - Can we detect it before misuse happens?
 - Can we put up barriers to misuse – and what would be the impact of these on normal usage
 - Is the analysis of usage ethically questionable as well?

Research questions

- Technological approaches to solutions
 - Content mining to identify sensible information?
(sites, pages, paragraphs, text tokens, ...)
 - Query analysis to identify patterns?
 - Site analysis to identify creators & purpose of creation?
(children, private comment / communication, ephemeral information)
 - Technical means of controlling access and means of access?

Research questions

- Legal solutions
 - Which legal solutions are also technically feasible?
 - How can policies be formulated, enacted and controlled?
 - How good a solution is “good enough” to be ethically acceptable, and thus legally safe to specify and act upon?

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Case Study

- Identifying potentially private information segments
- Proof of concept, meta-information
- NOT as basis for limiting/blocking access or excluding from archive, etc.
- Approach:
 - Take text documents
 - Pages
 - Paragraphs
 - Identify which ones are potentially private
 - Train a classifier (SVM, Bayesian Networks, ...)
- Similar to Genre Classification

Two text collections:

- Santini 7-genre corpus:
 - 1400 documents (200 per genre, balanced corpus)
 - *Blog, Personal Homepage, E-Shop, FAQ, Listings, Newspaper Frontpage and Search Page*
- Product review pages
 - 50 pages amazon top-100-books 2007
 - 20 pages amazon video reviews
 - Analyzed on paragraph level:
 - description / review
 - description + professional review / “private” review
 - Using model trained on Santini 7-genre-corpus

Case Study

Features:

- Text statistics (averages)
 - # words, +syllables, word-length
- Tokens (rel. frequ.)
 - word-, symbol-, space-, number-, punctuation-, control-tokens
- Readability Indices
 - Flesh Reading Ease, Flesh-Kincaid Grade Level
- Look-ups (rel. frequ.)
 - places, time/date, person names, currencies, addresses, company names, abbreviations, telephone/fax numbers
- Part-of-Speech (rel. frequ.)
 - nouns, verbs, adjectives, adverbs, modal verbs, conjugations, pronouns, personal pronouns, articles, prepositions, exclamations, list elements
- Presentation (rel. frequ.)
 - links, headings, paragraphs, text formatting, lists, tables, graphics, frames, forms, multimedia elements

Case Study

Results:

- Classification Santinin 7-genre corpus using SVM

Genre	Precision	Recall	F2
Blog	93,17	87,22	90,01
Homepage	89,59	48,33	62,79
Private total	91,38	67,78	76,40

- Classification product pages, Naïve Bayes, 7-g model

Corpus	Precision	Recall	F2
top-100-books	77,91	84,07	80,87
top-100-books-b	78,27	85,75	81,84
video games	87,66	96,02	91,65

Case Study

Results:

Emily, 22, an assistant in nearby Stone clothes shop, witnessed the aftermath. She said: "There were two guys lying on the floor who had been stabbed. They looked like they were in a lot of pain."

A family friend, who asked not to be named, said the murdered teenager was a "good boy who would never hurt anyone".

She said: "I have known Naz since he was a toddler. When boys get murdered sometimes you hear bad things about them but you would never hear anything bad about Naz. He was loved by the community, he was a peacemaker. He was a good family boy."

Speaking outside the terrace Victorian family home in Highbury, his older brother said: "He was a very good boy, loved by everyone. He was doing his A-levels and never in trouble. We are just shocked and saddened by this. We can't really speak about it now."

An 18-year-old man was arrested in the area following the lunchtime attack. He remains in custody in a north London police station.

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20 people have commented on this story so far. Tell us what you think below.

Another murder in Nu Lab's Britain. And once again the scum have been allowed to kill a decent person! Will this useless government ever wake up to the problems facing this country?

- David Simpson, Heckmondwike ← probability: 0.95

No doubt these gangs must be pandered to and their human rights respected. ← probability: 0.87

- Phil Davy, Eltham, London ← probability: 0.82

Yet another murder. Deepest condolences to this young man's family. One of these days we will have a party in power who say "to hell with these rights, those rights etc let's get back to old fashioned rules and values" and I will be the first to have helped vote them in! ← probability: 0.97

Conclusions

- Web Archives contain valuable information that would be very useful to make freely available to the public
- We do believe there are ethical issues with (providing access to) Web Archives
- We need a legal solution to these problems
- For a legal solution we need an understanding of
 - The problems and challenges
 - Risks and their consequences
 - Technical means to automatically counter these and to enforce legal regulations
- Otherwise we may face the risk of having a moratorium / legal regulation stopping Web Archiving all together....
....or at least feel very bad continuing doing it

Conclusions

- **What we want are**
 - privacy-aware
 - ethically responsible
 - comprehensive
 - powerful and
 - freely available

Web Archives to serve the needs of society now and in the future

- This is not to stop / hinder Web Archiving, but to help it to benefit society and to become / remain useful
- Comments, feedback, directions & discussion are more than welcome and needed!