CS 115: COMPUTING FOR THE SOCIO-TECHNO WEB
TECHNOLOGIES FOR PRIVATE (AND NOT-SO-PRIVATE) COMMUNICATIONS

BROWSER CHATTER

Browsers chatter about
- IP address, domain name, organization,
- Referring page
- Platform: O/S, browser
- What information is requested
  - URLs and search terms
  - Cookies

To anyone who might be listening
- End servers
- System administrators
- Internet Service Providers
- Other third parties
  - Advertising networks
- Anyone who might subpoena log files later

COOKIES AND BEHAVIORAL TRACKING

What are cookies?
Who sends you cookies?
Are cookies good or bad?
What are third party cookies?

COOKIES 101

Cookies can be useful
- Used like a staple to attach multiple parts of a form together
- Used to identify you when you return to a web site so you don’t have to remember a password
- Used to help web sites understand how people use them

Cookies can do unexpected things
- Used to profile users and track their activities, especially across web sites
SHOPPING CARTS

Want to remember “state” or history
Because new service depends on previous

LIKE A COAT CHECK

HOW COOKIES WORK - THE BASICS

A cookie stores a small string of characters
A web site asks your browser to “set” a cookie
Whenever you return to that site your browser sends the cookie back automatically
WHAT’S IN OUR COOKIE JAR?

Firefox -> Preferences -> Privacy

Chrome -> Preferences (Show advanced settings) -> Privacy

- clear cookies
- show cookies
- Name: [field]
  Value: [field]
  set cookie

HOW COOKIES WORK - ADVANCED

Cookies are only sent back to the “site” that set them – but this may be any host in domain

- Sites setting cookies indicate path, domain, and expiration for cookies

User: Joe
Email: Joe@x.com
Visits=13

Send me with any request to x.com until 2008

Send me with requests for index.html on y.x.com for this session only

Database
User=457
Email=6904309

COOKIE TERMINOLOGY

- Cookie Replay – sending a cookie back to a site
- Session cookie – cookie replayed only during current browsing session
- Persistent cookie – cookie replayed until expiration date
- First-party cookie – cookie associated with the site the user requested
- Third-party cookie – cookie associated with an image, ad, frame, or other content from a site with a different domain name that is embedded in the site the user requested

- Browser interprets third-party cookie based on domain name, even if both domains are owned by the same company

BEHAVIORAL TARGETING

Publishers
Advertisers
Ad network
The New York Times
Okupid
Google
Google AdWords

Get your ad on Google today

Be seen by customers at the very moment that they're searching on Google for the things you offer. And only pay when they click to visit your website or call.

Start now
Free phone support: 1-866-607-9439

Facebook Audience Network

Create an ad on Facebook. Show it across the Web.

More people, more places, more results

Extend your campaigns beyond Facebook

DoubleClick

Get connected

Connect with the right people, in the right moments, with DoubleClick integrated solutions.

Make digital work on your own terms

DoubleClick’s integrated solutions have you covered. Connect to a world of possibilities while focusing on the areas that you care about most.

WHAT AD NETWORKS MAY KNOW...

Personal data:
- Email address
- Full name
- Mailing address (street, city, state, and Zip code)
- Phone number

Transactional data:
- Details of plane trips
- Search phrases used at search engines
- Health conditions
“WEB BUGS”

- Invisible “images” (1-by-1 pixels, transparent) embedded in web pages and cause referrer info and cookies to be transferred
  - Also called web beacons, clear gifs, tracker gifs, etc.

- Work just like banner ads from ad networks, but you can’t see them unless you look at the page source

- Also embedded in HTML formatted email messages, MS Word documents, etc.

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“It was not necessary for me to click on the banner ads for information to be sent to DoubleClick servers.”

- Richard M. Smith, CTO Privacy Foundation testifying in congress

GOOGLE ADSSENSE

**AD TARGETING DoubleClick cookies**

**Opting out**

If a user opts out using the Ads Settings, the unique DoubleClick cookie ID on the user’s browser is overwritten with the phrase “OPT_OUT”. Because there is no longer a unique cookie ID, the opt-out cookie can’t be associated with a particular browser.
DO NOT TRACK

Specify opt-out preference with an HTTP header
Support provided by your browser
• Again Firefox->Preferences->Privacy
• Chrome->Preferences->setting->advanced->privacy

HTTP://DONOTTRACK.US/

SUPER-COOKIE

The meanest of them all
A supercookie is a cookie with an origin of a top-level domain (such as .com) or a public suffix (such as .co.uk).
Typically they are blocked by the browser.
Supercookies can be a potential security concern and are therefore often blocked by web browsers.
For example, a supercookie with an origin of .com, could maliciously affect a request made to example.com, even if the cookie did not originate from example.com. This can be used to fake logins or change user information.
SPYWARE

- Spyware: Software that employs a user’s Internet connection, without their knowledge or explicit permission, to collect info
  - Most products use pseudonymous, but unique ID
  - Over 800 known freeware and shareware products contain Spyware, for example:
    - Beeline Search Utility
    - GoZilla Download Manager
    - Comet Cursor
  - Often difficult to uninstall!
  - Anti-Spyware Sites:
    - https://www.malwarebytes.com/antimalware/mac/
    - http://grc.com/oo/spyware.htm
    - http://www.adcop.org/smallfish
    - http://www.spychecker.com
    - http://cexx.org/adware.htm

In certain countries, it is illegal to track users without their knowledge and consent. For example, in the United Kingdom, customers must consent to use of cookies/local shared objects.

Cookies or similar devices must not be used unless the subscriber or user of the relevant terminal equipment:

1. is provided with clear and comprehensive information about the purposes of the storage of, or access to, that information; and
2. is given the opportunity to refuse the storage of, or access to, that information.

—Information Commissioner’s Office