A Quick Comment on Processing

- We have written two kinds of Processing programs –
  - static, which only draw a picture
  - dynamic, which keep drawing a picture

```
size(100,100);
background(255);
fill(0, 0, 255);
ellipse(50, 50, 30, 30);
```

```
void setup() {
  size(100,100);
  background(255);
}
void draw() {
  ellipse(50, 50, 30, 30);
}
void mousePressed() {
  fill(0, 0, 255);
}
```

What’s The Difference?
Digital Footprints: The Web, Social Media, and your privacy!
Blown 2 Bits. Ch. 2. *1984 is here and we like it*
What are you supposed to learn?

- What is a digital footprint?
- What technology advances in the last ten years have made ‘Big Brother’ possible
- Which organizations try to protect your privacy.
- Why you should read the “Terms and Conditions” for every app you download
  - You never know what they might say. Example: Pulse App asks you to give permission for them to track every number you call
- Why you should consider what you put onto public sites like Facebook.
  - Are you sure your privacy settings are as you want?
- Name three recent cases of information going viral that could never have happened ten years ago.
Privacy: A Definition

**Privacy**: The right of people to choose freely under what circumstances and to what extent they will reveal themselves, their attitude, and their behavior to others.

- It’s a human right – explicit in many countries
- You do the revealing, no one else
- You can’t live like a hermit; you must reveal
- With strong privacy protections – the US has almost none – it’s OK to reveal, because the receivers of the information must keep it private
Technology doesn’t violate privacy. People violate privacy. ..... Technology just makes it a lot easier/faster
Start with a story.....

Living & Working in Operational Environments

Dialog Clarifies Interaction

Spoken Language Generation

Communicator creates dialog-based user interfaces for Warfighters to obtain information in the battle space
But really we did travel planning ;->>
## Sample Dialogue

### System Utterances

- **S00:** Welcome to the Communicator Travel Demonstration System. Please say your name.
- **S01:** Hello Jane, how may I help you?
- **S02:** Can you provide the approximate departure time?
- **S03:** United Airlines flight 169 departs Boston at 7:00 am and arrives San Francisco at 10:35 am. Can I help you with something else?
- **S04:** American Airlines flight 195 departs Boston at 8:00 am and arrives San Francisco at 11:33 am. Is there something else I can do for you?

### User Utterances

- **U00:** Jane Smith.
- **U01:** I'd like to fly from Boston to San Francisco.
- **U02:** I'd like to leave in the morning on Friday.
- **U03:** I need an American flight American Airlines.
- **U04:** Yeah I need to come back I think the following Wednesday.
### Sample Dialogue (cont.)

<table>
<thead>
<tr>
<th>System Utterances</th>
<th>User Utterances</th>
</tr>
</thead>
<tbody>
<tr>
<td>S05: Can you provide the approximate departure time?</td>
<td>U05: Um yeah I suppose I should leave sometime early in the morning.</td>
</tr>
<tr>
<td>S06: Can you provide the approximate departure time?</td>
<td>U06: I'd like to leave around 7 in the morning.</td>
</tr>
<tr>
<td>S07: American Airlines flight 196 departs San Francisco at 7:30 am and arrives Boston at 4:09 pm. What else can I help you with?</td>
<td>U07: Please book the flights.</td>
</tr>
<tr>
<td>S08: I have booked the flights. Is there anything else?</td>
<td>U08: No thanks.</td>
</tr>
<tr>
<td>S09: Did you get the information you were seeking?</td>
<td>U09: Yes I did.</td>
</tr>
<tr>
<td>S10: Goodbye Jane. A copy of your itinerary has been emailed to you. Thank you for using the Communicator Travel Demonstration System.</td>
<td></td>
</tr>
</tbody>
</table>
Then at the last project meeting, we had a special presentation about a ‘followon program’
Total Information Awareness

- http://privacyos.org/tia
Total Information Awareness

- Pharmacy purchases
- Elementary school attendance records
- Doctors Visits

- Application: School absences and pharmacy records could lead CDC to identify bioterrorism
- Assistant to Poindexter: “We were surprised that privacy was an issue”
- “The government can’t collect this information but we can pay Johns Hopkins to do it. They have a medical school.”
Data Aggregators: Computational Advertising is getting to be a big business
What is YOUR digital footprint?

- Where are you revealing stuff you’d rather not have open to the world?
- Facebook
- Credit card information
- Cookies tracking transaction data
- Amazon purchases
- Embarrassing stuff. Facebook youtube
- Porn downloads tracking
What is YOUR digital footprint?

- Where are you revealing stuff you’d rather not have open to the world?
- Location information
- General search and site history
- Tracking cookies in general
- Email
- Every app you download on your phone
- Tumblr
What is the scariest thing in the chapter?

- Your ideas here!
.... How did we get here?

What technological innovations have brought us where we are today?
Just like the neurons, but built out of transistors
Integrated Circuits: Millions of logical gates

Cheaper fabrication, greater and greater complexity per inch
=> Miniaturization!!!!!
=> Everyone can afford!!
First: This meant there could be Personal Computers

- Ken Olsen, Founder of DEC “There is no reason for any individual to have a computer in their home [1977]”
- Xerox Star, 1981. First PC. First mouse. Failed
- Apple Macintosh, 1984: first commercially successful personal computer to feature a mouse and a graphical user interface rather than a command-line interface.
- But only YOUR data on YOUR hard drive. Transfer with Floppys. LAN
Eventually ICs => Miniaturization: Phones, Smartdust
The Internet

- Invented in 1969 for military purposes, it took almost 20 years to get out of the lab
- Communication by FTP (file transfer protocol).
- Ascii Terminal interface
- E.g. 1983 War Games Film
Message: The Internet is a general mechanism to communicate digital data – it doesn’t matter what it is: music, email, video ...
WWW + http: Early 90’s changed everything

- WWW: An INTERFACE!!
- All computers “speak” a common language: hyper-text transfer protocol. HTTP
- Content points to other content
  - (Google page rank, later)
  - UTF ensures content of pages in any language can be displayed
Everything that humanity knows is now online!!

- Newspapers
- Scientific Articles
- Books
- Encyclopedias (Wikipedia)
- Dictionaries and Thesauri (Wordnet, Framenet, Sentiwordnet, Freebase)
- Penn Treebank: a million words of parsed and semantically labelled news, books etc.
- Plus current and historic (10 years) opinions, reactions, emotions (opinion mining)
Why the WWW is so brilliant

- WWW = The Servers + The Data
- All computers use one standard protocol (http) meaning that every computer in every country where people all speak different languages can communicate
- Publishing and accessing information is completely decentralized – no one limits what you put out or search for
- Critical mass of data => Too much personal Data?
Seeing Other People’s Digital Info

Message: WWW exploits one protocol, neutralizing differences at endpoints; the Internet’s universal medium lets us look at other people’s digital info.
Digital Footprint: Where you go, What you do on web

- A digital footprint is a collection of activities and behaviours recorded when an entity (such as a person) interacts in a digital environment. It may include the recording of activities such as system login and logouts, visits to a web-page, accessed or created files, or emails and chat messages. The digital footprint allows interested parties to access this data; possibly for data mining, or profiling purposes.
- Inputs to digital footprint include attention, location, time of day, search results and key words, content created and consumed, digital activity and data from sensor, and from the users social crowd. Some data can come from deep IP and Internet data, such as footprinting.
- Value created from the collection of inputs and analysis of the data are **recommendation, protection, personalisation, ability to trade or barter** and contextual adaptation.
Surprising Digital Footprint. Harry Potter.

- Shortly before release, photos of all 759 pages of the U.S. edition were leaked and transcribed, leading Scholastic to look for the source that had leaked it.
- EXIF metadata on pix
Use of Security Cameras Exploded after 9/11

By Allison Linn
Senior writer

When riots broke out in London this month, it didn’t take long before police began using security cameras to identify the alleged thugs.

And when a little boy went missing in New York City, security cameras were quickly used to track his last movements, although they didn’t end up saving his life.

In the wake of the 9/11 terrorist attacks, the market for video surveillance cameras boomed in the United States and around the world. Shocked by the worst attack on U.S. soil in 60 years, everyone from small-business owners to executives of giant multinationals rushed to get advanced security measures in place.

A decade later, there haven’t been any more major terrorist attacks in the United States, but there are an estimated 30 million more security cameras. Instead of being used to prevent terrorist attacks, experts say cameras are more often used for mundane purposes like nabbing criminals or calling out bad behavior at the office — if they’re used at all.

Of course the use of security cameras predated 9/11, but the market exploded in the fear-tinged months following the attack. A wave of new security businesses sprang up, and existing security providers rushed to land new government and corporate contracts installing security systems.
Slouching towards Hell: the London bombers caught together on camera

By David Harrison, Melissa Kite and Sean Rayment
12:01AM BST 17 Jul 2005

Police last night released the first photograph to show the four London bombers together on their way to kill and maim on London's transport network.

The picture, taken from CCTV footage, shows the terrorists carrying rucksacks containing 10lb bombs as they entered Luton station at 7.21am on the day of the attacks - looking like any casual travellers. Moments after the image was...
London Riots
So how did we get here?

- ICs =>
  - Personal
  - Miniaturization
- Internet
- WWW
- Digitization of Content
- Mobile

The same technology that is incredibly useful and often fun! (so we like it), also affords ‘Big Brother’
Runkeeper: Courtesy of Prof. Jhala
It’s easier than you think for your privacy to be violated without you knowing it.
Calls get recorded: instant broadcast?

Thanks to its unrivalled App Store, the iPhone can record your guitar playing, order your shopping for you and even check your blood pressure. The iPhone 4S (or the iPhone 4, if you're naughty) will do practically anything you want, simply by shouting at it.

One thing it won't do, however, which has left many iPhone adopters flummoxed, is record phone calls — a task that some mobiles, such as the venerable Sony Ericsson K850i, have managed with ease since 2007.
Where you’ve been, who you’ve called


Security researchers have discovered that Apple’s iPhone keeps track of where you go – and saves every detail of it to a secret file on the device which is then copied to the owner’s computer when the two are synchronised.

The file contains the latitude and longitude of the phone’s recorded coordinates along with a timestamp, meaning that anyone who stole the phone or the computer could discover details about the owner’s movements using a simple program.

For some phones, there could be almost a year’s worth of data stored, as the recording of data seems to have started with Apple’s iOS 4 update to the phone’s operating system, released in June 2010.

"Apple has made it possible for almost anybody – a jealous spouse, a private detective – with access to your phone or computer to get detailed information about where you’ve been," said Pete Warden, one of the researchers.

Only the iPhone records the user’s location in this way, say Warden and Alasdair Allan, the data scientists who discovered the file and are presenting their findings at the Where 2.0 conference in San Francisco on Wednesday. "Alasdair has looked for similar tracking code in [Google's] Android phones and couldn’t find any," said Warden. "We haven’t come across any instances of other phone manufacturers doing this."
Cell phone mikes can be remotely activated

- **Cell Phone Tap story** on you tube
Laws to catch up with technology lag the tech

Smart Dust

http://robotics.eecs.berkeley.edu/~pister/SmartDust/

SMART DUST
Autonomous sensing and communication in a cubic millimeter

Prof. Kris Pister
Co-investigators: Joe Kahn, Bernhard Boser
Subcontract: Steve Morris, MLB Co.

Supported by the DARPA/MTO MEMS program

This project finished in 2001, but many additional projects have grown out of it. Among these are

- Berkeley Webs
- NEST
- Center for Embedded and Networked Sensing at UCLA

If you are interested in commercial applications, you should check out Crossbow Technologies and Dust Networks. (N.b. I have a financial interest in both!)

Quick progress update. Another update.
29 Paltris demo of air-emplaced 1" scale motes detecting vehicles.
Latest photos and press coverage.
My view of sensor networks in 2010.
Mobile Monitor: a scary app!


track virtually every facet of an iPhone's usage remotely, completely unknown to the user of the device. Full video inside...
Who tries to protect your privacy?

- American Civil Liberties Union
- Electronic Privacy information Center
- Electronic Frontier Foundation
- Center for Democracy and Technology
- Cycle of surprising privacy violation, lobbying for laws, new laws, but new technology or new twist, then cycle…
New Law: Franken, in the Senate now

We brought you word earlier this month that Sen. Al Franken was trying his hand at passing a privacy bill again. The Location Privacy Protection Act would require any and all app makers to request permission to track users before being able to do so. His first attempt at passage in 2011 failed, but it's looking a bit more optimistic this time around.

The Hill reports that the Senate Judiciary Committee voted in favor of Franken's bill on Thursday. Now the bill can be brought up in the senate for a vote later this month before the current Congress ends at the beginning of January. Franken argues that the bill is not only important to protect an individual's privacy, but also to protect the privacy of children who are increasingly using connected mobile devices:

“I believe that Americans have the fundamental right to control who can track their location, and whether or not that information can be given to third parties. But right now, companies – some legitimate, some sleazy – are collecting your or your child’s location and selling it to ad companies or who knows who else.”
Are you revealing only what you want to reveal?
What are you supposed to learn?

- What is a digital footprint?
- What technology advances in the last ten years have made ‘Big Brother’ possible
- Which **organizations** try to protect your privacy.
- Why you should read the **“Terms and Conditions”** for every app you download
  - You never know what they might say. Example: Pulse App asks you to give permission for them to track every number you call
- Why you should **consider what you put onto public sites** like Facebook.
  - Are you sure your privacy settings are as you want?
  - Name three recent cases of information going viral that could never have happened ten years ago.
Digital Footprints: The Web, Social Media, and your privacy!
PART 2.
Are you revealing only what you want to reveal?
Interacting On The WWW

- Mostly we think of our small circle of friends & organizations when we are online...
- But really the whole world has access
- And, to some degree, we were anonymous
- So ... we can behave however we like, right?

NOT
Facebook: NYPD Professional/Private overlaps

N.Y.C. Police Maligned Paradegoers on Facebook

By WILLIAM GLABERSON
Published: December 6, 2011

They called people “animals” and “savages.” One comment said, “Drop a bomb and wipe them all out.”

Hearing New York police officers speak publicly but candidly about one another and the people they police is rare indeed, especially with their names attached. But for a few days in September, a raw and rude conversation among officers was on Facebook for the world to see — until it vanished for unknown reasons.
How Much Do YOU Want To Reveal

- Even though we do the "revealing" we may be wise not to reveal "all"

- People have lost jobs based over FB posts

- Five Guidelines: Watch what you say about behavior, schedule, biases, employer, and the drama in your life
The Problem

- What you place on FB and Tweet can usually be widely accessed
  - Grandmother (a FB user, too!), HR department, etc.
- Digitization, copying: it doesn’t go away ... even if you try deleting
- When people first meet you, they may check you out online ... what sort of image do you want to present?
- You’re not really anonymous after all
Guidelines – Think Twice About …

- Behavior – text or photos on socially unacceptable behavior has cost people jobs
- Schedule – posting or tweeting where you are not – “Off to Hawaii” – is direct help to burglars
- Biases – “hating” others is easy enough to do, but is that how you want your public image?
- The boss may follow your thoughts on your job
- Drama – the drama in our lives often consumes us; it’s hard not to tweet, post about it, but it often reveals information about others
“Offensensitivity”

- A good guideline for online behavior is
  [www.css-discuss.org/policies.html#offensensitivity](http://www.css-discuss.org/policies.html#offensensitivity)

**Offensitivity**

(The word "offensitivity" was, so far as I’m aware, first used by Berke Breathed in *Bloom County*.)

When posting to css-discuss, remember that your message will be sent to (literally) thousands of people all over the world. They all have likes and dislikes as individuals, and are not offended by certain things which you may not find remarkable. While you can’t foresee every potential area of conflict, there are certain guidelines that are fairly obvious: avoid swears, proselytizing, and things of that nature. If you wouldn’t say it out loud in front of your grandmother while in a place of worship, then you probably shouldn’t say it on the list either.

At the same time, recognize that you are receiving messages from (literally) thousands of people all over the world. They all have likes and dislikes as individual as your own. They might not share the same assumptions and points of view that you do, so you might be sensitive to things by which you may be offended. Odds are that they probably didn’t set out to offend you on purpose, so try taking a deep breath and counting to a nice high number if you feel your temper rising. If you still feel you must say something, e-mail the poster directly (and not on the list) to explain your feelings calmly, reasonably, and above all clearly without attacking the effect of their words, so this is your chance to educate them. If you just slag them for being "insensitive," you may get flamed in return and create a resolve to keep offending you (from their point of view).

Above all, remember that other people are about as likely to change their basic natures and habits as you are to change yours. You may at some point have to make a choice between participating in the list. Please make this choice privately, and follow through quietly. Thank you.
“Offensensitivity”

- Key points – when writing in online discussion
  - Thousands of people will see it
    - You can easily and unintentionally offend them
    - They can easily and unintentionally offend you
  - The collision comes from different cultures, social norms, backgrounds, assumptions, religions
    - You’re not wrong; they’re not wrong ... just different
    - They’re no more likely to change their thinking than you
  - Tolerance, open-mindedness, patience needed
Privacy violations: For good or evil?
Directly related to the essay due Sat 1/26 5PM
post-surreptitiously acquired information on the Web.

For us, “surreptitiously acquired” means information that has been taken without the creator’s or owner’s knowledge.

Read two tiny sections from Blown To Bits chapter 1: pp. 1-2, 14-16. Reread chapter 2. [Note, download the chapter1.pdf and chapter2.pdf available at http://www.bitsbook.com/excerpts/, add 3 to each page number.]

See the Julian Assange Documentary: WikiRebels: The Documentary | WikiLeaks & Julian Assange http://www.youtube.com/watch?v=IPvXI8Bi3Dc
(It runs nearly an hour, but the most important information from the point of view of the essay is in the last half … so please watch it all the way through.)

Assignment. Considering the definition of privacy, the material in Blown To Bits, any further information that you gather on Star Wars Kid, Numa, Numa Guy, Tyler Clementi and similar cases, together with the information in “WikiRebels: The Documentary”, write a two-page essay on your thoughts concerning the ethics of this matter. (If you want to write more, go for it, but keep it as crisp as you can!) Write down your reading (and watching) response in the essay (like “what do you think about online privacy”). This will be a structured, formal essay with introduction, supporting arguments and conclusion. The length should be around 1500 – 2000 words. If you’re using Word, choose “single space” for line spacing.

To Turn In. Write the essay using a word processor, name it <your name>essay and turn it in on the https://ecommons.ucsc.edu/ site as per instructions on Homework 1.
Surreptitious Recordings

- Can public distribution of surreptitiously obtained information ever be justified?
  - surreptitious: obtained, done, made, by stealth;
    - secret or unauthorized
  - Information taken without knowledge of subject or creator
  - Information is video recordings, audio, documents, pictures

- Sample cases
  - Alexandra Wallace
  - Tony Bologna NYPD
  - Wikileaks
Contrast Two Videos: Surreptitious, Not

- **Star Wars Kid**
  - A/K/A Ghyslain Raza
  - Just messing around in drama studio at school
  - Other kids found and uploaded
  - [http://www.youtube.com/watch?v=HPPj6vilBmU](http://www.youtube.com/watch?v=HPPj6vilBmU)

- **Numa Numa Guy**
  - A/K/A Gary Brolsma
  - [http://www.youtube.com/watch?v=W9m9UFhEARg&feature=fvwrel](http://www.youtube.com/watch?v=W9m9UFhEARg&feature=fvwrel)
More Recent Cases

- Tyler Clementi, a Rutgers student whose roommate recorded him during a sexual encounter and uploaded it to the Internet
  - Result: Clementi jumped off a bridge
- Two days later a college student’s phone accidentally dialed his buddies while he was engaged in sex; they uploaded it to YouTube
  - Result: Embarrassment

Associated Press found at least 12 cases in the U.S. since 2003 in which children and young adults between 11 and 18 killed themselves after falling victim to some form of "cyberbullying" - teasing, harassing or intimidating with pictures or words distributed online or via text message.
Recent Incidents: Cell phone videos

- **Occupy Wall Street pepper spray**

NEW YORK (AP) — An internal New York Police Department review has found an official violated department guidelines when he used pepper spray on Occupy Wall Street protesters last month, a person with knowledge of the investigation said Tuesday.

Deputy Inspector Anthony Bologna faces discipline of a loss of 10 vacation days after the Sept. 24 incident near Union Square, shortly after the now-global protests began in a tiny private plaza in lower Manhattan, the person said. The person had direct knowledge of the review but was not authorized to speak publicly and spoke to The Associated Press on condition of anonymity.
His personal details leaked by Anonymous

- **Huffington Post Tony Bologna followup**
- As an act of retribution, the hackers group Anonymous identified Bologna and leaked his personal information including his address, phone number, and names of known family members.
Recent Incidents: Cell phone videos

- **Davis Pepper Spray**
  - Changes the process of democracy
  - Right to free speech, to protest
  - Can’t go undetected
Posting Audio/Video Online: Good or Evil?

Alexandra Wallace original. 2.52 minutes
Jimmy song: Raised Money for Charity?

- Jimmy Response with humor!!
Death Threats Persuade Alexandra Wallace To Leave UCLA

Over the weekend Alexandra Wallace, the UCLA student that was ostracized after uploading a racist rant against Asians to YouTube shortly after the tsunami in Japan, apologized and announced that she would no longer be attending UCLA.

Her apology, and the news of her leaving the school, was published in The Daily Bruin, UCLA’s online news source. The full letter, as printed in The Daily Bruin, is as follows:

In an attempt to produce a humorous YouTube video, I have offended the UCLA community and the entire Asian culture. I said the hurtful words I said and the pain it caused to anyone who watched. Especially in the wake of the ongoing disaster in Japan, I would do back my insensitive words. I could write apology letters all day and they wouldn’t erase the video from your memory, nor would they act in inappropriate action.

I made a mistake. My mistake, however, has lead to the harassment of the publishing of my personal information, death threats, and being an entire community. Accordingly, for personal safety reasons, I will no longer attend classes at UCLA.

Alexandra Wallace
Issues

- Surreptitiously capturing behavior => privacy violations
- Capturing potentially criminal behavior => evidence
- But what about innocent until proven guilty?
- What about classic methods for ensuring a fair trial, like change of venue?
  - When the internet is involved, changing the venue doesn’t help
- People do something stupid/bad
  - Retribution? --- it can never really be deleted
  - Reveal their private details online – where they live, their family, pictures, bikini model experience, etc.
  - Alexandra Wallace had to change her name, drop out of UCLA
WikiLeaks – Changing democracy?

- **WikiLeaks Documentary.**
- 55 minutes long.
- First five minutes, plus from time 30 min – 35 minutes in class
- Watch whole thing for homework!
Privacy violations: For good or evil?
How technology is changing democratic processes
What are you supposed to learn?

- What is a digital footprint?
- What technology advances in the last ten years have made ‘Big Brother’ possible
- Which organizations try to protect your privacy.
- Why you should read the “Terms and Conditions” for every app you download
  - You never know what they might say. Example: Pulse App asks you to give permission for them to track every number you call
- Why you should consider what you put onto public sites like Facebook.
  - Are you sure your privacy settings are as you want?
- Name three recent cases of information going viral that could never have happened ten years ago.
More --- what are you supposed to learn?

- What was the TIA program?
- What kind of data was TIA interested in?
- What do the TIA program and computational advertising companies have in common?
- How do computational advertising companies get paid?
- How is privacy defined in the United States?
- How are security cameras being used in law enforcement?
- How is the web being used in the democratic process?
2 Homeworks this week! Plus next week!

- Coloring the Robot Due Next Tuesday.
- Privacy Essay: Due next Saturday. But do it today while it's all fresh in your mind??

**Homework 4: Privacy and Social of the Web**

Goal: The purpose of this exercise is to think carefully about privacy, and explain your thoughts of privacy.

- Blinky Stars + Blinky in two parts. One part is due next Thursday!