# HCI: ETHICS

Dr Kami Vaniea

# First, the news…

- http://money.cnn.com/2016/10/11/technology/pokemon-go-exercise-health/index.html

# Today we are going to discuss research ethics

This slide deck is highly biased towards USA laws, ethics, and regulations.

Why?

1) because I was trained in the USA
2) the British guidance has similar content and goals

# British Psychology Society Code of Human Research Ethics

1. Respect for the autonomy, privacy and dignity of individuals and communities
2. Scientific integrity
3. Social responsibility
4. Maximizing benefit and minimizing harm

# The Belmont Report (1974)

- Respect for persons
  - protecting the autonomy of all people and treating them with courtesy and respect and allowing for informed consent. Researchers must be truthful and conduct no deception

- Beneficence
  - The philosophy of "Do no harm" while maximizing benefits for the research project and minimizing risks to the research subjects

- Justice
  - ensuring reasonable, non-exploitative, and well-considered procedures are administered fairly — the fair distribution of costs and benefits to *potential* research participants — and equally.

http://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html

# Respect for persons

- Treat individuals as autonomous agents
- Persons with diminished autonomy are entitled to protection
- Applications
    - Participation should be voluntary
    - Participants should be fully informed of the costs and benefits of participation

# Beneficence

- Do not harm

- Maximize the possible benefits and minimize the possible harms

- Applications
  - Systematic analysis of the risks and benefits of the research to both the individual and to society at large

# Justice

- Who should bear the burdens of research and who should receive the benefits?
  - To each person an equal share
  - To each person according to individual need
  - To each person according to individual effort
  - To each person according to societal contribution
  - To each person according to merit
- Application
  - Selection of research participants

# Case studies in Ethics and Computer Science

# Therac-25 (1982)

Radiation therapy machine

6 people given overdoses of radiation resulting in 3 deaths

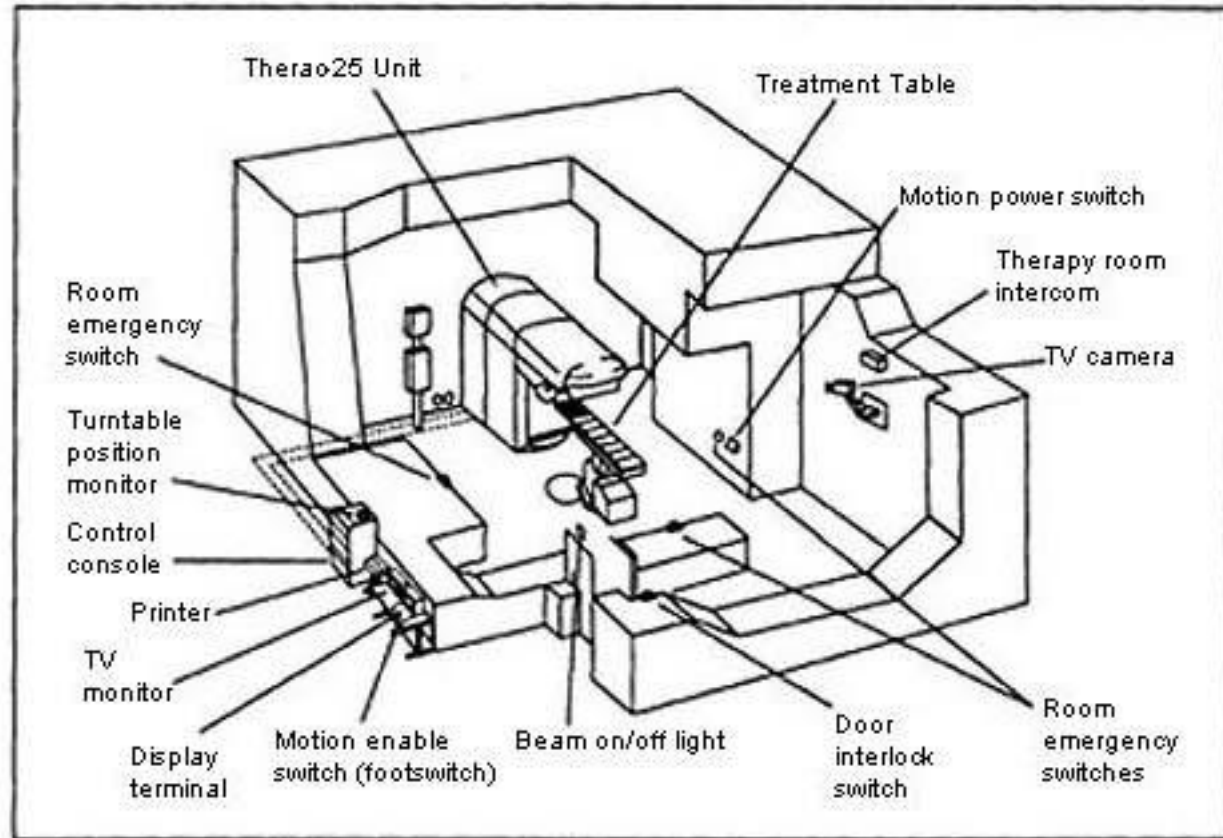Cause: concurrent programming error (race condition)



Figure 1. Typical Therac-25 facility

# What happened?

- Concurrency issue (race condition)
- System checked the content of a UI element
- If the element was different it would update the backend variable
- Some users would
- Make errors and set the radiation beam to high by mistake
- When they got to the bottom of the screen they would notice their error and go back up and fix it really quickly
- If they changed it and hit "enter" fast enough a race condition would be triggered and the high setting would remain AND the safety check would think it was set to low

# Experimental evidence of massive-scale emotional contagion through social networks

by Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock

# Aka Facebook emotion contagion study

"We show, via a massive ($N$ = 689,003) experiment on Facebook, that emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. We provide experimental evidence that emotional contagion occurs without direct interaction between people (exposure to a friend expressing an emotion is sufficient), and in the complete absence of nonverbal cues."

http://www.pnas.org/content/111/24/8788.full

# **The study**

- All Facebook users who spoke English qualified
- Two groups: positive and negative emotions
- Positive/negative posts where then suppressed from the news feed
- 689,003 participants randomly selected by user id
- Saw an impact
  - When positive posts withheld the participant's posts got more negative
  - When negative posts withheld the participants posts got more positive
  - Withdrawal effect: people who saw less emotion posts less likely to express themselves for several days

# **Think-pair-share**

- Does the Facebook Emotion Contagion study fit the requirements of the Belmont Report?

# **The Belmont Report (1974)**

- Respect for persons
  - protecting the autonomy of all people and treating them with courtesy and respect and allowing for informed consent. Researchers must be truthful and conduct no deception

- Beneficence
  - The philosophy of "Do no harm" while maximizing benefits for the research project and minimizing risks to the research subjects

- Justice
  - ensuring reasonable, non-exploitative, and well-considered procedures are administered fairly — the fair distribution of costs and benefits to *potential* research participants — and equally.

http://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html

# Browser Cookies

# Which of the following gives you the most control over being tracked by advertisers?

- Android phone
- Apple iPhone
- Firefox
- Chrome

"One of the problems faced in the early years of the web was how to create websites that had "memory" for individual users. "

"The problem in 1994 was a lack of mechanisms to identify a user individually."

http://www.montulli-blog.com/2013/05/the-reasoning-behind-web-cookies.html

# Think-pair-share

- How would you build a system that solves the two problems below?
- What features must the system have to be ethical?

- Problem: How to give the internet a memory?
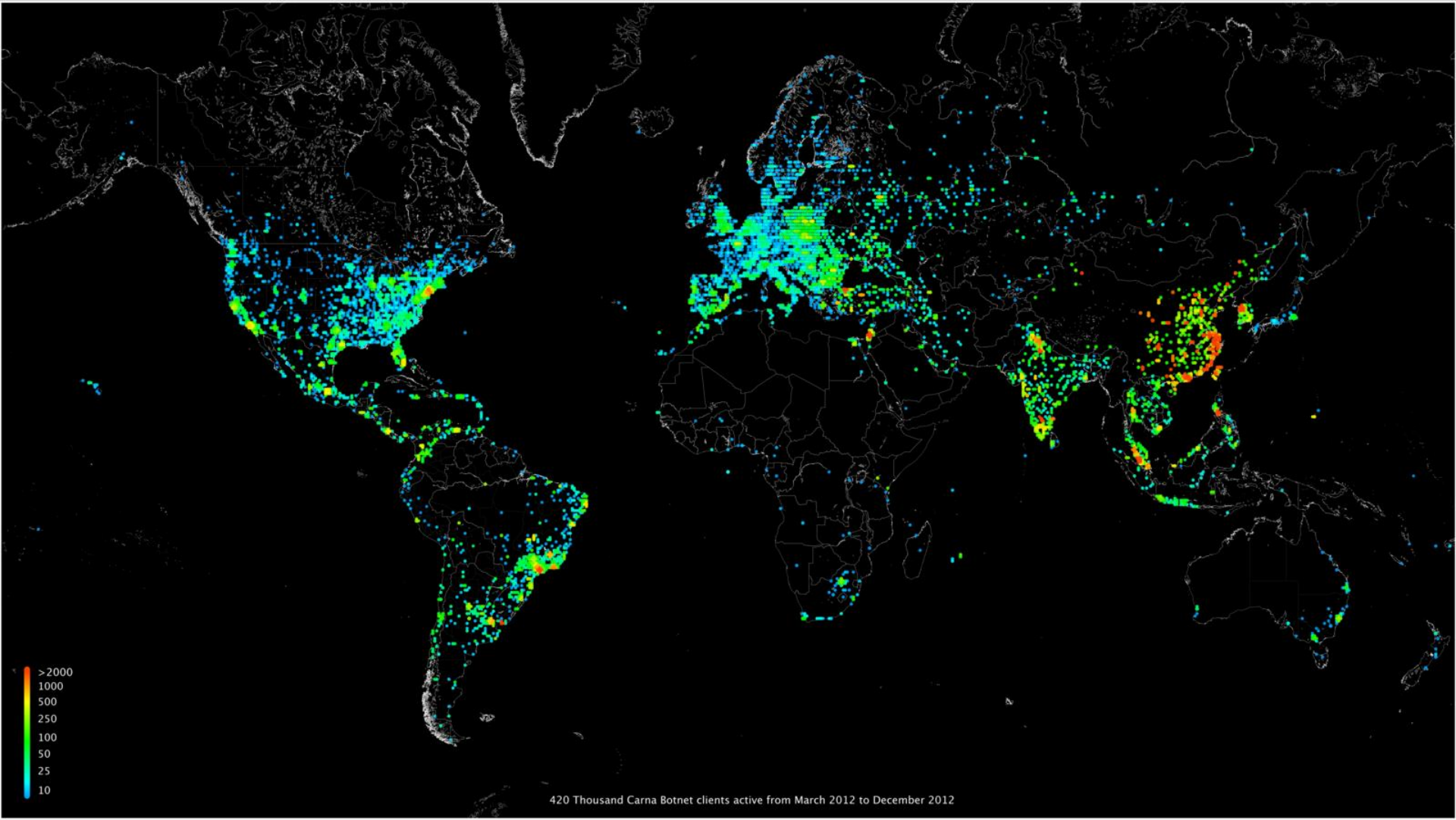- Problem: How to identify users?

# Solution: Cookies!

- Cookies are small text files set by a website

- When you visit the website again the cookie text is sent along with the website request

- You can delete each cookie individually

- Sites cannot share cookies

- There is no global ID
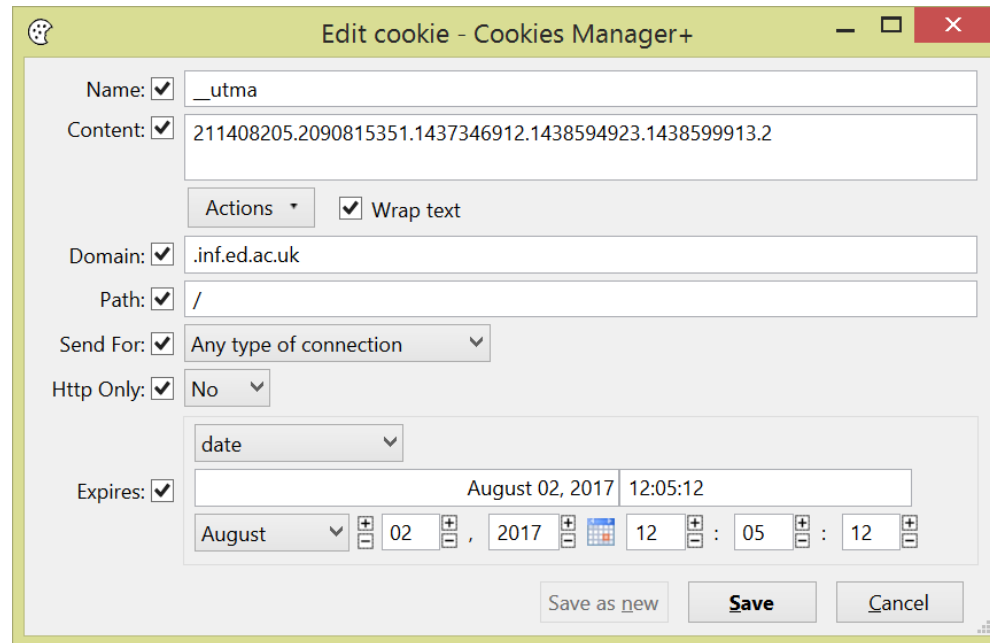
# Mapping the internet

**Someone made the most detailed map of the internet ever by hacking into just under half a million computers**

>2000
1000
500
250
100
50
25
10

420 Thousand Carna Botnet clients active from March 2012 to December 2012

25

# Is it ethical to use this data to do good things?

# The Emperor's New Security Indicators:
# An evaluation of website authentication and the effect of role playing on usability studies

Stuart E. Schechter, Rachna Dhamija, Andy Ozment, and Ian Fischer

http://www.usablesecurity.org//emperor/emperor.pdf

**Will bank customers enter their passwords even if their browsers' [security UI element] is missing?**

# Study design

- Participants recruited using on-campus flyers
- Flyers said the participant could "earn $25 and make online baking better"
- No mention of security or privacy in any advertising materials or consent form (deception study)
- Participants came to the lab and used a lab computer
- Computer was pre-setup to attack the connection between the bank and the user

# To handle ethics the researchers:

- Notified participants that their actions would be recorded

- System did not record passcodes or other private data

- Care was taken with the technical design to make sure the participant's bank credentials remained safe

- Participant was debriefed after the study

- Participant was told how to protect themselves in the future

# Brown University P2P

Andy Pavlo

https://hardware.slashdot.org/story/09/04/13/0120226/grad-student-project-uses-wikis-to-stash-data-miffs-admins

"Two graduate students at the Ivy League's Brown University built a P2P system to use abandoned wiki sites to store data. The students were stealing bandwidth from open MediaWiki sites to send data between users as an alternative to BitTorrent. There was immediate backlash as site operators quickly complained to the University. The project appears to be shutdown, but many of the pages still remain on the web. The project homepage was also taken down and the students posted an apology this afternoon."

https://hardware.slashdot.org/story/09/04/13/0120226/grad-student-project-uses-wikis-to-stash-data-miffs-admins

# Questions