Welcome to Philosophy of Science and Technology (GBI)

Welcome to Philosophy of Science (DMD)

Welcome to Reflections on IT (SWU)

Session 5: Computer Ethics

Judith Simon

IT UNIVERSITY OF COPENHAGEN

Course Overview

L1: Introduction (Vasiliki & Christopher)	L7: Workshop
L2: Conceptions of Technology (Vasiliki)	L8: Surveillance (Christopher)
L3: Post-Phenomenology & Technology (Finn Olesen)	L9: The Relevance of Algorithms (Vasiliki)
L4: Laboratories and non-human actors in STS (Christopher)	L10: Topic course-specific (Main lecturer)
L5: Computer Ethics (Judith)	L11: Topic course-specific (Main lecturer)
L6: Values in Design (Judith)	L12: Overview (Main lecturer)

Structure

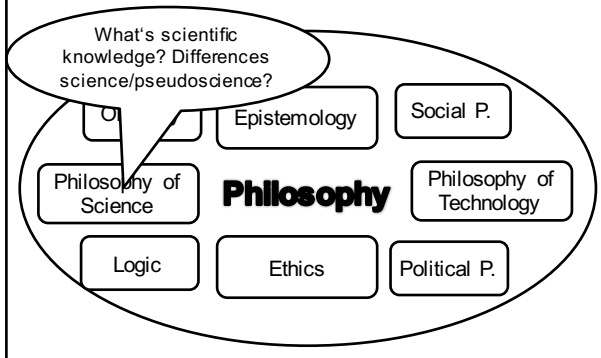
1. What is ethics?
2. What are the main ethical theories?
3. What is computer ethics?
4. A short history of computer ethics
5. Some recent topics

Philosophical Disciplines

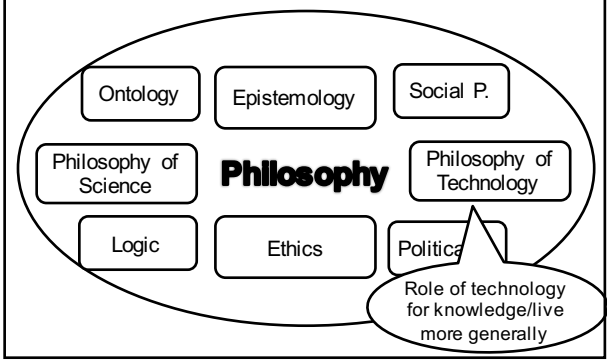
Ethics

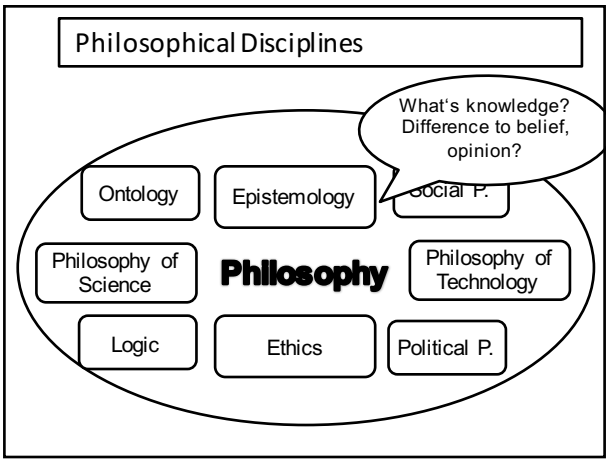
What's right or wrong? Study of morality

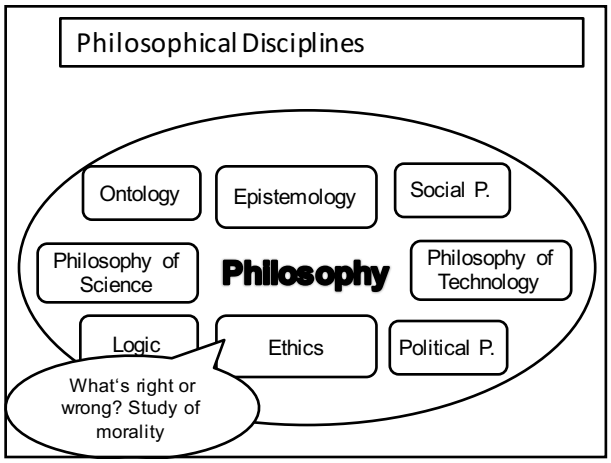
Philosophical Disciplines

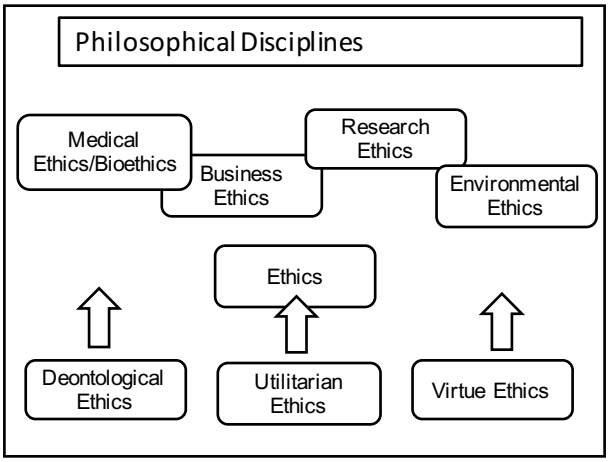


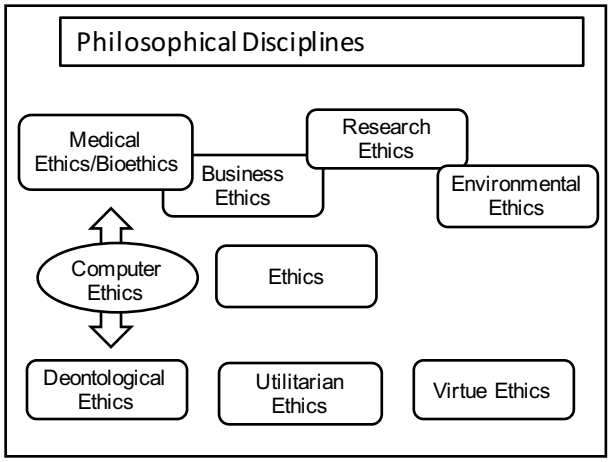
Philosophical Disciplines











Tavani: What's Ethics?

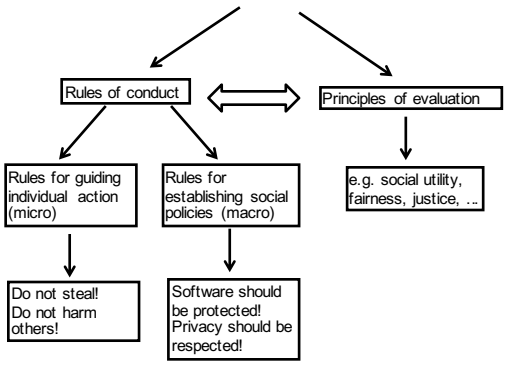
What's ethics?

- Morality versus ethics
  - Morality as a code of conduct
  - Ethics as the study of moral values and moral systems

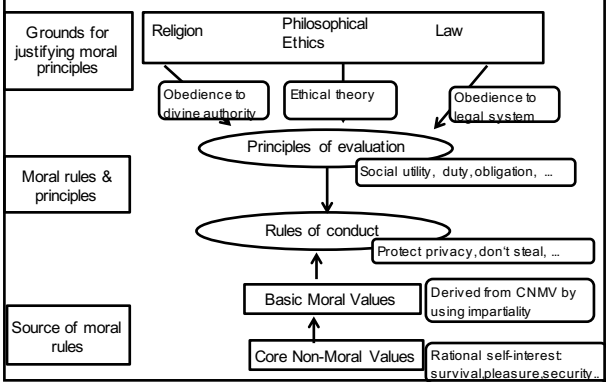
Tavani

- Morality: defined as system of rules for guiding human conduct & principles for evaluating those rules.
- Purpose: to prevent harm & evils <> promote human flourishing
- Moral system (Gert 1998):
  - Public: rules are known to members
  - Informal: rules as informal, not like laws
  - Rational: system based upon principles of logical reason accessible to all members
  - Impartial: system is not partial to any group/individual (ideal)

Tavani: Basic Components Moral System



Tavani



Tavani

4 Discussion Stoppers:

1. People disagree on solutions to moral issues
2. Who am I to judge others?
3. Morality is simply a private matter
4. Morality is simply a matter for individual cultures to decide

Tavani

1. People disagree on solutions to moral issues

- Is a meaningful discourse about morality therefore impossible? Meaningless?
- Disagreement exists also in other fields, this does not render them meaningless
- There is agreement on answers to some moral questions
  - Murder, lying, stealing vs. death penalty, human cloning, …
- Distinguish disagreement between general principles and factual matters
  - IPR: not whether stealing is wrong, but whether unauthorized copying is stealing

Tavani

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Tavani

2. Who am I to judge others?

- Making judgments versus being judgmental
- Judgment versus condemnation
- Are we ever required to make judgments about others?
  - E.g. child abuse, basic human rights violations, …

Tavani

3. Morality is simply a private matter

Tavani

3. Morality is simply a private matter

Essentially oxymoron/contradiction in terms.

- Moral system (Gert 1998):
  - Public: rules are known to members
  - Informal: rules as informal, not like laws
  - Rational: system based upon principles of logical reason accessible to members
  - Impartial: system is not partial to any group/individual (ideal)

Tavani

4. Morality is simply a matter for individual cultures to decide

- Cultural relativism
  - Different cultures have different beliefs about what constitutes morally right and wrong. (descriptive)

  versus
  - What is morally right and wrong can only be determined by that culture. (normative)
- Moral relativism

Major ethical theories

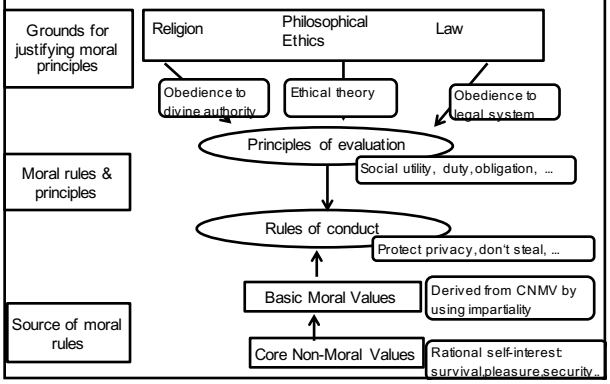
Ethical Theories

- Ethics as something that comes into play when moral rules are broken/in conflict , when we need to reconsider how to act
- Ethics as the discussion & reflection on what is morally correct

Ethical Theories

- Different ethical theories:
  - Utilitarianism (Mill & Bentham)
  - Deontological Ethics (Kant)
  - Virtue Ethics (Aristotle)

Tavani



Ethical Theories

- Different ethical theories:
  - Utilitarianism (Mill & Bentham)
  - Deontological Ethics (Kant)
  - Virtue Ethics (Aristotle)

Ethical Theories

- Different assessment of cases in different ethical theories:
  - Utilitarianism (Mill & Bentham)
  - Deontological Ethics (Kant)
  - Virtue Ethics (Aristotle)
- Examples: a) same outcome, different reasoning:
  - We should protect privacy, because....
  - We should not steal, because ....
- Examples: b) different outcome:
  - Virtual child pornography is permissable/not permissable

Utilitarianism

John Stuart Mill (1806-1873)
Jeremy Bentham (1748-1832)

Utilitarianism: "The ethical theory that holds that the action that is morally right is the one that results in the greatest possible utility (or greatest possible happiness) for the greatest number of people." (Beck Holm: 207)

→ Beck Holm, A. (2013): Philosophy of Science - An Introduction for Future Knowledge Workers: Samfundslitteratur. Chapter 12.

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Consequentialism: "The view that the moral quality of an action is determined solely on the basis of its outcome. This view is primarily represented by utilitarianism."

Utilitarianism

- Critique:
  - Ethics of lowest common denominator?
  - Is any happiness better than the other? (e.g. junk food/entertainment versus quality food/entertainment)
  - Limits of one's happiness – harm to others
  - Sheriff & the lynchmob
  - → fundamental problem: one-sided focus on utility makes theory blind to fundamental, inviolable rights.

Kant's deontological ethics

Ethics of disposition: "The ethical theory that holds that the moral qualities of an action are determined by the motives pf the moral agent." (Beck Holm: 212)

The categorial imperative: "Kant's moral law. The point of this law is that we must always act in such a way that we can accept the consequences that would occur if all others were to act in the same way." (Beck Holm: 213)

The practical imperative: "Understanding the categorial imperative means never using other human beings purely as a means to achieving your own goals, but always respecting them as an end in themselves; i.e. treating them as persons with the same rights and dignitiy as yourself. (Beck Holm: 214)

Kant's deontological ethics

- Kant's ethics of disposition & duty (deontological ethics) – Critique

- Lying to protect someone from a killer knocking on your door?

Virtue Ethics (Aristotle)

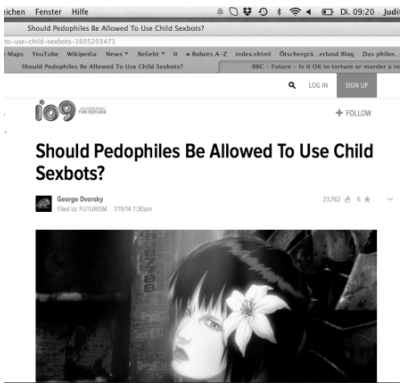
Virtue Ethics: "The ethical theory that views ethics as being a question of a person's character traits (virtues); i.e. the actions and dispositions of a person viewed over a longer period of time, in principle throughout an entire life." (Beck Holm: 216).

- Golden mean: virtue as the middle ground between two extremes
  - E.g. courage: vs recklessness or cowardice
- Good life as a virtuous life, i.e. in moderation, among friends in a well-governed society.
- Ethics as a question of character as the sum of actions & dispositions over a lifetime

Ethical Theories

- Different assessment of cases in different ethical theories:
  - Utilitarianism (Mill & Bentham)
  - Deontological Ethics (Kant)
  - Virtue Ethics (Aristotle)
- Sometimes same decision, but for different reasons

Ethical Theories & Recent Debates



Ethical Theories & Recent Debates

Arkin said that while he doesn't approve of child sex bots for recreational use, he'd like to see them used for research purposes. "Child-like robots could be used for pedophiles the way methadone is used to treat drug addicts," said Arkin. He said research should be done to test the effectiveness of such a treatment. "There are no presumptions that this will assuredly yield positive results – I only believe it is worth investigating in a controlled way to possibly provide better protection to society from recidivism in sex offenders," he said. "If we can save some children, I think it's a worthwhile project."

Ethical Theories & Recent Debates

Another important issue is that of consequences. At what point, if any, is anyone actually being harmed? Yes, there's a definite "yuck factor" aspect to such a socially deviant act, but a sex doll or mindless robot cannot experience harm or an indignity. In that sense, a child sexbot could be seen a kind of "outlet". But even this is not completely satisfactory; the mutilation of a corpse is illegal in many jurisdictions. Intentions — and the upholding of social values — matters. What's more, engaging in such behaviors could work to diminish a person's respect for minors, while also potentially inspiring pedophiles to perform sexual acts on real children.

Moor 1985: Computer Ethics

Moor (1985)

- What is computer ethics?
  - Premise: CT as special technology, which raises special ethical issues
  - New capabilities
    - →New choices for action
    - →New/changing values?

Moor (1985)

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  - New capabilities
    - →New choices for action
    - →New/changing values?

→ Policy vacuum: no policies/inadequate policies
→ Conceptual vacuum: e.g. what is a computer programme?

- Role of CE:
  - propose conceptual frameworks for understanding ethical problems involving CT, those frameworks establish facts & enable policy guidelines

Moor (1985)

- The revolutionary machine
  - Computers as universal tools
  - Logical malleability
    - »Syntactic: number/variety of possible states & operations
    - »Semantic: states of computer can represent anything

Computers are more than mere number crunchers!

Moor (1985)

- The revolutionary machine
  - Computers as universal tools
  - Logical malleability
    - »Syntactic: number/variety of possible states & operations
    - »Semantic: states of computer can represent anything

„Computers are logically malleable in that they can be shaped and molded to do any activity that can be characterized in terms of inputs, outputs, and connecting logical operations. Logical operations are the precisely defined steps which take a computer from one state to the next. The logic of computers can be massaged and shaped in endless ways through changes in hardware and software."

Moor (1985)

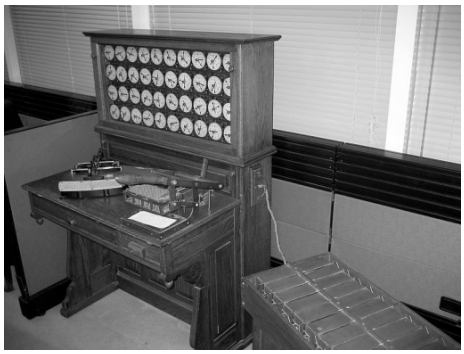
Anatomy of the computer revolution

1. Introduction Stage
   - How well does a computer do an activity? How well does a computer count votes/money?
2. Permeation Stage: transformations of basic nature + purpose of institutions and activities
   - What is the nature/value of an activity? What is a (fair) election/money?

Examples:

–Elections (→ Casati 2010, Project Demtech)
–Work
–Finance/Money
–Education
–...

Example: Elections



https://de.wikipedia.org/wiki/Herman_Hollerith

Example: Elections

https://en.wikipedia.org/wiki/Electronic_voting

Example: Elections

DemTech

Main Menu
Home
News
Calendar
DemTech overview
DemTech in the press
Research projects
Research staff
Publications
PhD courses
Funding
Our partners
Development
Contact

Executive summary

Over the last four decades, information technology has begun to transform the electoral process---perhaps the most foundational process upon which democratic societies are built. Computers are gradually replacing manual parts of the democratic process by, for example, tallying results in Excel spreadsheets, predicting exit polls, or by computing seat assignments to parties in parliament (since 1962 in Denmark). With every such transformation, the overall process becomes more efficient, informative, and economical. However, there is a risk of the process becoming less trustworthy. The deployed technology tends to be complex and therefore prone to programming error and vulnerable to malicious attacks. These problems have an adverse effect on the very foundations of democracy. Voters are less likely to trust the electoral process, which inevitably leads to lower voter participation and cynicism.

Hypothesis

The hypothesis of this research project is the following:

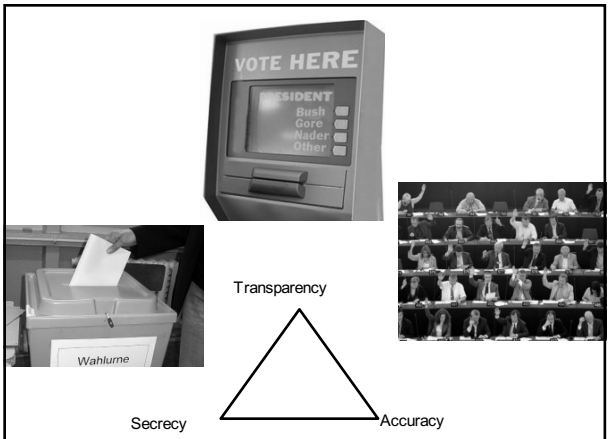
Is it possible to modernize the electoral process while balancing the trust of the people on the trustworthiness of the deployed technology?

In order to provide evidence in support of this hypothesis, we propose first to design a rigorous software engineering principle, which we call trust by design that reproduces the trust-instilling elements of the conventional process in an electronic infrastructure. Second, we develop electronic election technology based on the trust by design principle. Third, the municipalities of Frederiksberg, Aarhus, and Copenhagen will help us evaluate the technology empirically in order to analyze the social, political and cultural implications inherent in digitally transforming the democratic process. The results of this project will provide KL and other decision makers important and invaluable insights into how to modernize the democratic process without jeopardizing the fundamental principles upon which democracies rest.

The DemTech project if financed through a generous grant from The Danish Council for Strategic Research by the Programme Commission on Strategic Growth Technologies.

Example: Elections

- Casati (2009): Trust, secrecy and accuracy in voting systems: the case for transparency



Example E-Voting (Casati 2009)

The case for transparency: an epistemic argument

- Trust in secrecy & accuracy in ballot voting resides in an understanding of the voting process
- Voter herself is the link between registration and voting, she ensures accuracy and secrecy of her vote
- The voting process is transparent to the voter
- Implicit understanding of the statistical and physical properties of the urn enables trust in secrecy of ballot voting
- In case of doubt, ballots and records are kept and can be recounted

→ Factors to ensure accuracy and secrecy are transparent to usual voter

Example E-Voting (Casati 2009)

- E-Voting Systems lack this transparency
- Even if accuracy and (big if) secrecy can be guaranteed, the average voter would not be able to assess this!

„The main reason for keeping manual voting is related to ist intrinsic open structure, which can be checked simply and effectively at all crucial junctions by every voter, thereby enhancing trust. No matter what the benefits of electronic voting, these will never be enough to overcome the wide epistemological gap between them and the manual voting on the issue of trust". (Casati 2009: 22)

Moor (1985)

The invisibility factor

- Invisible abuse
  - » Theft, privacy, surveillance (→ NSA scandal, different types of privacy)
- Invisible programming values
  - » Intended/unintended bias (→ Friedman & Nissenbaum)
- Invisible complex calculations
  - » Trust, transparency, opacity (→ Big Data)

Moor (1985)

Moor's argument for the practical importance of CE

„The revolutionary feature of computers is their logical malleability. Logical malleability assures the enormous application of computer technology. This will bring about the Computer Revolution. During the Computer Revolution many of our human activities and social institutions will be transformed. These transformations will leave us with policy and conceptual vacuums about how to use computer technology. Such policy and conceptual vacuums are the marks of basic problems within computer ethics. Therefore, computer ethics is a field of substantial practical importance."

1985

Moor (1985)

- How has CT changed since 1985?
- What did a computer look like it 1985? What were it's capabilities? Pervasiveness?
- What were the major milestones of the last 30 years?
- …

Moor (1985)

- How can/must Moor (1985) be reconsidered nowadays?
  - Does his characterization of the permeation stage hold?
  - Introduction/permeation may be blurry
  - From reforms to continous updates
  - Programming practices: From monolithic systems to modularity to agile development
  - Economic systems related to CT/ICT changed (providing data instead of paying)

Bynum: Roots of Computer Ethics

Bynum (2008)

- History & Roots of Computer Ethics

Terry Bynum

Bynum (2008)

- Defining Computer Ethics

„*Computer and information ethics*, in the broadest sense of this phrase, can be understood as that branch of applied ethics which studies and analyzes such social and ethical impacts of ICT."

- More narrowly: application of received philosophical theories (utilitarianism, deontological ethics, virtue ethics) to ethical cases involving computers/ICT by philosophers
- Professional ethics for computer scientists

Bynum (2008)

- Norbert Wiener (1894 – 1964)
  - American mathematician and philosopher
  - Professor of mathematics at MIT
  - Originator of Cybernetics
- Founding Books for CE
  - Wiener, N. (1948), Cybernetics: or Control and Communication in the Animal and the Machine
  - Wiener, N. (1950), The Human Use of Human Beings: Cybernetics and Society
  - Wiener, N. (1964), God & Golem, Inc.: A Comment on Certain Points Where Cybernetics Impinges on Religion

Bynum (2008)

- Norbert Wiener (1894 – 1964)
  - Predicted a" second industrial revolution", an automation age with „enormous potential for good and evil"..
- Topics
  - computers and security, computers and unemployment, responsibilities of computer professionals, computers for persons with disabilities, computers and religion, information networks and globalization, virtual communities, teleworking, merging of human bodies with machines, robot ethics, artificial intelligence,...

Bynum (2008)

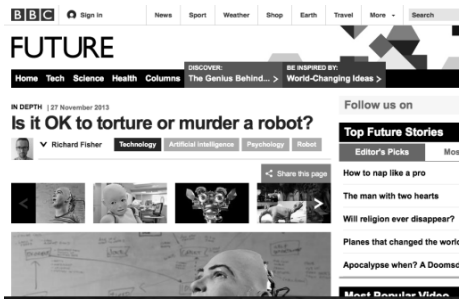
- Development of a discipline
  - 1976: Maner's Starter Kit for CE
  - 1985: Johnson's textbook „Computer Ethics"
  - 1985 Moor's seminal article „What is computer ethics?"
  - 1990ies: CE as professional ethics (ACM, IEEE, etc)
  - Since 1990ies:
    - Conferences: Ethicomp, CEPE, IACAP, ...
    - Journals: Ethics in Information Technology, International Review of Information Ethics, ...

Bynum (2008)

- Example Topics in Computer Ethics
  - Computers in the Workplace: Computers/robots as threat to jobs? New jobs? Different Jobs?
  - Computer Crime: viruses, hacking, malware, issues regarding privacy, integrity, consistency, control/access
  - Privacy and Anonymity: census, tax, military, welfare, health records, ...
  - Intellectual Property: IPR & software ownership, copyright, trade secret, patents → SWU Session 11
  - Professional Responsibility: relations to employers, clients, etc.
  - Globalization: global vs. national laws, global business requirements, global education, digital divides, etc.
  - ...

Recent Debates

Recent Debates



Recent Debates

http://www.vocativ.com/culture/science/robot-ethicists-dog-kicking-video/

Recent Debates

Recent Debates

White House Predicts Robots May Take Over Many Jobs That Pay $20 Per Hour

The robots are coming! The robots are coming!

02/24/2016 06:17 pm ET

2.2 K

Shahien Nasiripour
Chief Financial and Regulatory Correspondent, The Huffington Post

http://www.huffingtonpost.com/entry/whitehouse-robots_us_56cd8d9ce4b028f5a6de955

Recent Debates

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"In a report to Congress this week, White House economists forecast an 83 percent chance that workers earning less than $20 per hour will lose their jobs to robots. Wage earners who receive up to $40 in hourly pay face a 31 percent chance they'll be replaced by robots, while workers who are paid more than $40 an hour face much lower odds -- about 4 percent -- of losing their jobs to automation."

http://www.huffingtonpost.com/entry/whitehouse-robots_us_56cd8d9ce4b028f5a6de955

Recent Debates

The Moral Character of Cryptographic Work*

Phillip Rogaway

Department of Computer Science
University of California, Davis, USA
rogaway@cs.ucdavis.edu

December 12, 2015

Abstract. Cryptography rearranges power: it configures who can do what, from what. This makes cryptography an inherently *political* tool, and it confers on the field an intrinsically *moral* dimension. The Snowden revelations motivate a reassessment of the political and moral positioning of cryptography. They lead one to ask if our inability to effectively address mass surveillance constitutes a failure of our field. I believe that it does. I call for a community-wide effort to develop more effective means to resist mass surveillance. I plead for a reinvention of our disciplinary culture to attend not only to puzzles and math, but, also, to the societal implications of our work.

Recent Debates

Smart Citizens, Smarter State

Sponsored: Stanford Center on Philanthropy and Civil Society

A public talk and book reading by Beth Simone Noveck, Co-Founder and Director of The GovLab at New York University

February 22, 2016 | 5:30 pm – 7:00pm
Paul Brest Hall | 555 Salvatierra Walk
Stanford, CA 94305

RSVP for this Event

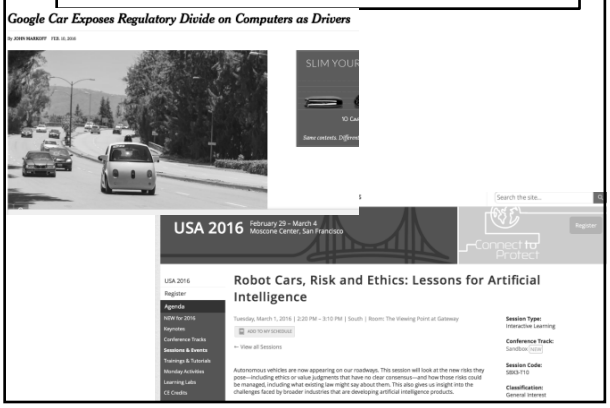
Event Overview

Government "of the people, by the people, for the people" expresses an ideal that resonates in all democracies. Can we get closer to this ideal using new technologies of engagement?

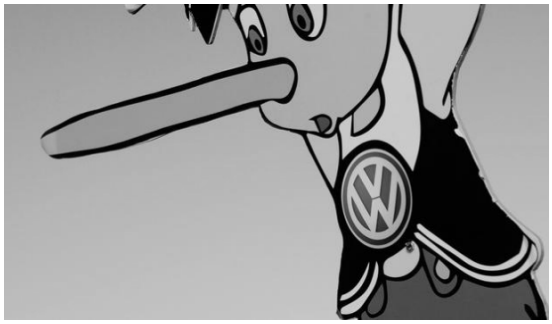
Can institutions built around closed forms of expertise open up and benefit from petitions, crowdsourcing, and wikis to improve how governments work? Beth Noveck will discuss these questions and read from her new book, *Smart Citizens, Smarter State: The Technologies of Expertise and the Future of Governing*. Noveck is the founding director of the GovLab at NYU and was the first Deputy Chief Technology Officer of the United States and is a former director of the White House Open Government Initiative.

Recent Debates

Recent Debates



Recent Debates



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Summary & Outlook

Summary: What is Computer Ethics?

- Professional Ethics
- Ethics of Usage
- Ethics of Design

Summary: What is Computer Ethics?

- Professional Ethics
- Ethics of Usage
- Ethics of Design

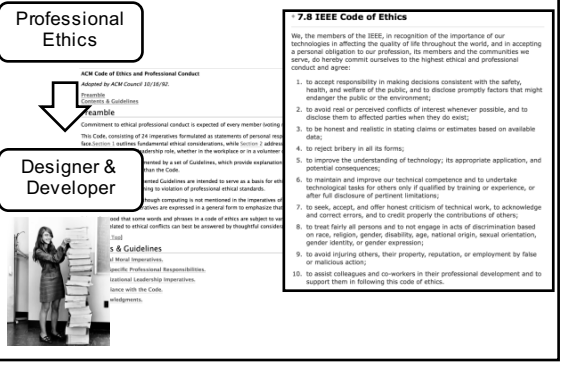
⇩

- User & Usage

Summary: What is Computer Ethics?

Professional Ethics

Designer & Developer



Summary: What is Computer Ethics?

Professional Ethics

Ethics of Usage

Ethics of Design

Designer & Developer

User & Usage

IT Artefacts

Outlook

Next week:
Lecture 5 on
"Values in Design"

Ethics of Design

IT Artefacts

Thank you all very much for your attention!