Computer Ethics

Course introduction

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What is ethics?

A word on Ethics

- Difficult to define, **many meanings** over the centuries

- Deriving from the Greek word *ethos* that can be translated as 'custom' or 'morals'

- *Ethica* as the science considering what is **good** or **bad**, wise or unwise, about people's actions

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Ethics (ancient philosophy)

- **Good action** as the subject matter of ethics (generalizations holding only for the most part)

- **Ethical virtues** (justice, courage, temperance and so on) as central to a **well-lived life**

  - Complex rational, emotional and social skills

- To study ethics in order to improve our lives

Aristotle

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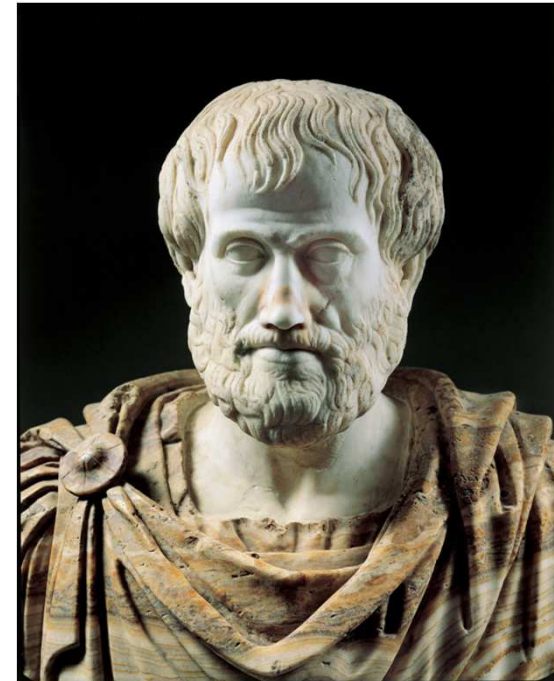
A possible dilemma?

How is it possible to deal rigorously with ethical problems if morality is subjective?

Ethics and morality

- Ethics is the **systematic reflection** on what is moral (branch of philosophy)

- **Morality** is the whole of opinions, decisions, and actions with which people, individually or collectively, express what they think is **good** or **right**

- **Systematic reflection** on morality increases our **ability** to cope with **moral problems** (also those related to technology)

- **Ethics** is **not a manual** with answers: it reflects on questions and arguments concerning the moral choices people can make

- Ethics is a **process for searching** for the right kind of morality

What is Computer Ethics?

Ethics for computers, for people using them, for people designing them, for problems arising with the use of computers, …?

Philosophical analysis and policy setting

- Analysis of the **nature** and **social impact** of **computer technology** and the formulation and justification of **policies** for the ethical use of such technology (Moor 1985)

  - **Logical malleability**: computers are shaped and molded to do any activity that can be characterized in terms of inputs, outputs, and connecting logical operations

  - Understanding logical malleability important to set **policies** for the **use** of **computers**

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WHAT IS COMPUTER ETHICS?*

JAMES H. MOOR

A Proposed Definition

Computers are special technology and they raise some special ethical issues. In this essay I will discuss what makes computers different from other technology and how this difference makes a difference in ethical considerations. In particular, I want to characterize computer ethics and show why this emerging field is both intellectually interesting and enormously important.

On my view, *computer ethics* is the analysis of the nature and social impact of computer technology and the corresponding formulation and justification of policies for the ethical use of such technology. I use the phrase "computer technology" because I take the subject matter of the field broadly to include computers and associated technology. For instance, I include concerns about software as well as hardware and concerns about networks connecting computers as well as computers themselves.

A typical problem in computer ethics arises because there is a policy vacuum about how computer technology should be used. Computers provide us with new capabilities and these in turn give us new choices for action. Often, either no policies for conduct in these situations exist or existing policies seem inadequate. A central task of computer ethics is to determine what we should do in such cases, i.e., to formulate policies to guide our actions. Of course, some ethical situations confront us as individuals and some as a society. Computer ethics includes consideration of both personal and social policies for the ethical use of computer technology.

Now it may seem that all that needs to be done is the mechanical application of an ethical theory to generate the appropriate policy. But this is usually not possible. A difficulty is that along with a policy vacuum there is often a conceptual vacuum. Although a problem in computer ethics may seem clear initially, a little reflection reveals a conceptual muddle. What is needed in such cases is an analysis which provides a coherent conceptual framework within which to formulate a policy for action. Indeed, much of the important work in computer ethics is devoted to proposing conceptual frameworks for understanding ethical problems involving computer technology.

An example may help to clarify the kind of conceptual work that is required. Let's suppose we are trying to formulate a policy for protecting computer programs. Initially, the idea may seem clear enough. We are looking for a policy for protecting a kind of intellectual property. But then a

* Editor's footnote: This article is the prize-winning essay in *Metaphilosophy*'s essay competition on computer ethics.

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Computers in the workplace

- Many workers **replaced** by computerized devices

    - Short run: computer-generated unemployment

    - Long run: more jobs than those eliminated?

- Radical **alteration** of some jobs

    - De-skilling of workers (passive observers and button pushers)

    - New jobs requiring new sophisticated skills to perform

- Health and safety in workplaces

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Computer crime

- New types of crimes

- Not the physical security of the hardware, but rather **logical security**

  - **Privacy** and **confidentiality**

  - **Integrity** (assuring data and programs are not modified without proper authority)

  - **Consistency** (ensuring data and behavior we see today will be the same tomorrow)

  - **Controlling access** to resources

Privacy and anonymity

- Huge variety of privacy related issues generated by computer technology

  - Easiness and efficiency by which information can be collected, archived, compared, shared

- **Re-examination** of the concept of privacy

- Information society as **surveillance society** influencing individual behavior and individual self-perception

- **Political problem** (and not just ethical): legislative limits to the control and collection of personal data

Intellectual property

- Intellectual property rights connected with software ownership

- Different aspects of software that can be owned

  - The **source code** (written by the programmer in a high-level computer language)

  - The **object code** (machine-language translation of the source code)

  - The **algorithm**

  - The **look and feel** of a program (the way the program appears on the screen)

- Different types of ownership

  - **Copyrights**

  - **Trade secrets**

  - **Patents**

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Globalization

- For the first time in history efforts to develop agreed standards of conduct, and to defend and advance human values, are being made in a truly global context

    - **Global laws**: if national laws become local laws, which are the laws enforced?

    - **Global education**: what will be the impact of this global education upon political dictatorships, isolated communities, coherent cultures, religious practices?

    - **Information rich** and **information poor**: will gaps between the rich and poor became even worse?

Why Computer Ethics?

- Previous scenarios illustrate the complex and fascinating character of the ethical and social issues around computer and information technologies

- The scenario suggests that living in a world constituted in part by computers may involve **distinctive** and especially challenging **ethical issues**

- It is essential to **understand** the social and ethical **implications** of our **choices** about computers and information technologies to **steer** the development of **future technologies** in a direction that is **good** for humanity (particularly for you)

New problems or the same old stuff?

- It seems that IT creates situations in which common moral principles do not seem to apply nor seem helpful in figuring out what one should do

- Computer Ethics deals with **new kinds of problems** but also with **traditional ethical problems** under a new light

  - However, even if the structure of problems is not new, computer ethics is not just applied ethics but requires new **conceptual analyses**

  - For instance to investigate ethical problems related to computer viruses' widespread diffusion it is necessary to understand what a computer virus is

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A socio-technical perspective (Johnson 2008)

"***Computer*** *experts aren't just building and manipulating hardware, software, and code, they are **building systems** that help to achieve important **social functions**, systems that constitute **social arrangements, relationships, institutions,** and **values***"

(Johnson 2008)

- **Technology** does not develop independently from **society**

- **Artefacts** (human-made material objects) are components of technology, but have no meaning or significance unless they are **embedded in social practices** and **activities** (**socio-technical systems**)

- **Technology** is **not neutral**, material objects can be **value-laden**

On speed bumps and other stuff

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What the course *is* about

It's about applying what learnt, through reading and lectures, by looking at current events through an ethical lens

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Aims and goals

- What we will do in this course

  - To analyze, understand and shape problems **created**, **aggravated** or **transformed** by **computer technology** through the use of **ethical theories**

- What you students should do

  - Becoming aware of the **moral dimension** of **technology**

  - To acquire a broad perspective on the social and ethical **impacts** and **implications** of information technology

  - To develop skills in **clarifying** and **ethically analyzing** realistic cases involving information technology

  - To **exercise** and **improve** your skills in **presenting** or **writing**

Ethical reasoning

*"The core of ethics is not about what actually happens, but about what **we should make happen** (i.e. our reflected actions and attitudes)"*

(Genova and Gonzalez 2016)

- Form of reasoning which is **neither experimental-scientific nor logical-formal**

- Form of reasoning which is a constant referral to **certain experiences** that cannot be replaced by arguments

Course organization

- Broad analysis of the concept of **responsibility**

- **Normative ethics and reasoning**

  - Relativism and Absolutism, Utilitarianism, Kantian Theory, Virtue Ethics, Care Ethics, Applied Ethics

- **Ethical questions** in the **design** of **technology**

- Ethics in IT-configured societies

  - **Information flow, privacy, and surveillance**

  - **Digital intellectual property**

  - **Digital order**

- Professional **codes of conduct** (ACM and IEEE)

- Invited lectures

Practical information

- No prerequisite required

- Bibliography

    - Scientific papers available on the course web page

- Grading on the following basis

    - 50% final project (**written paper or class presentation**)

    - 50% oral discussion of the project and topics presented in the course

- More information
  http://home.dei.polimi.it/schiaffo/CE/

- Timetable

    - Tue 13:15-15:15

    - Thur 14:15-16:15

Check the syllabus

Date	Topics	Slides and Reading Material
1. Tuesday September 18th	**Course objectives, topics, and approach** **The discipline of computer ethics and its different perspectives: the currently dominating socio-technical perspective** **Course organization and exam**	Reading: Moor, J. (1985). "What is Computer Ethics?", *Metaphilosophy* 16(4):266-275
2. Thursday September 20th	**The responsibility of engineers** **Responsibility, passive and active responsibility**	
Tuesday September 25th	**NO CLASS (LAUREE)**	
Thursday September 27th	**NO CLASS**	
3. Tuesday October 2nd	**Papers presentation (How to select a good topic; how to write a good paper; how to make a good presentation)**	
4. Thursday October 4th	**Normative ethics; ethics and morality** **Values, norms and virtues** **Relativism and Absolutism, Utilitarianism, Kantian Theory, Virtue Ethics, Care Ethics, Applied Ethics**	
5. Tuesday October 9th	**Normative argumentation** **Valid arguments (deductive and non-deductive arguments) and arguments in Ethical Theories**	
6. Thursday October 11th	**Papers and presentations supervision 1**	

References

- Bynum, T. (2009), "Computer and Information Ethics", *The Stanford Encyclopedia of Philosophy* (Winter 2009 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/win2008/entries/ethics-computer/>

- Genova, G. and Gonzalez, M.R. (2016), "Teaching Ethics to Engineers: A Socratic Experience", *Science and Engineering Ethics,* 22: 567-580

- Johnson, D. (2008), " Computer Experts: Guns-for-hire or professionals", *CACM*, 51(10)

- Johnson, D. (2009), *Computer Ethics*, Forth Edition, Prentice-Hall

- Moor, J. (1985) "What Is Computer Ethics?" *Metaphilosophy*, 16(4): 266-75