Edinburgh Napier UNIVERSITY

School of Computing, Engineering & the Built Environment

Computing in Contemporary Society

Edinburgh Napier UNIVERSITY

School of Computing, Engineering & the Built Environment

Ethics and Computer Ethics

Lecture one

Jyoti Bhardwaj

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

This week's reading and listening

- "What is Computer Ethics?" Seminal article by James Moor
- "The Bottom Line: Google DeepMind's Demis Hassabis" BBC radio 4, link also on Moodle
- "Is modern life ruining our powers of concentration?": Guardian article from January 2023

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

This lecture is about:

- Aim, structure and assessment of the module
- The dictionary definition of Ethics
- Computer ethics (Moor, 1985)
- The moral vacuum associated with technological innovation
- Technological neutrality *vs* Technological determinism *vs* Social determinism (actor-network theory) *vs* Social shaping of technology

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Aims and key activities on the CCS module

- Critically explore the role and impact of technology
- Become familiar with some important ethical and philosophical perspectives
- Cover some interesting or controversial aspects of current society from a technological perspective
- Learn some of the key skills for writing a literature review
- Prepare for the Honours project by writing a literature review on a current technology-related topic

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Structure of the module

You have four hours of classes a week during weeks 2-8

- Two one-hour lectures per week on ethics, societal issues in technology, privacy and the law, professionalism in IT
- Six two-hour workshops/tutorials on how to plan, structure and write a literature review, including developing a topic, searching for sources, using a referencing tool, laying out a report, and writing an abstract

The final tutorial is in Week 8; after that, it is lectures only

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Assessment

- **Friday 22nd March at 3pm**: Submit a 2,000 word literature review on a contemporary issue selected from a list of three topics, worth 40% of the module; details in tutorial one this week
- **Week 14 or 15**: Centrally-timetabled two-hour exam on lecture topics, worth 60% of the module

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Something to listen to

- ACLU Ordering Pizza

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Ethics *(noun, pl)*

— "The science of morals...the department of study concerned with the principles of human duty"
— "The moral principles of a school of thought
— The moral principles by which a person is guided
— The rules of conduct recognised in certain associations or departments of human life"

(Oxford English Dictionary)

Kizza (2017) defines ethics as: "a theoretical examination of morality"

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Why examine *computer* ethics?

- We can agree that technology is changing many aspects of human existence and endeavour
- What are disputed are the social and ethical implications of these changes, and the multiple ways in which one can conceptualise and interpret the technology/society interrelationship
- At the centre of this technology/society interrelationship we find many complex questions about the nature of human agency, autonomy and freedom
- This module is about some of these issues

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Why examine *computer* ethics?

- Tech developers (in particular "Big Tech" corporations) have been criticised for:
  - lacking empathy
  - lacking a sense of responsibility regarding the social problems that their technologies have created or exacerbated
- Decisions made by technology corporations have negatively impacted society's capacity for:
  - civil dialogue
  - privacy
  - ? Fairness…. What else?

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Computer ethics

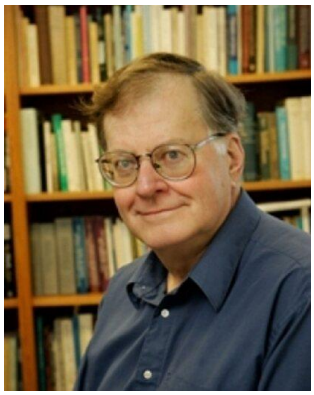
"The growth of the Internet and social networks; the ability to capture, store, and analyse vast amounts of personal data; and a greater reliance on information systems in all aspects of life, have increased the risk that information technology will be used unethically.

In the midst of the many IT breakthroughs in recent years, the importance of ethics and human values has been underemphasised—with a range of consequences."

(Reynolds, 2018)

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Computer ethics



- "The mark of a problem in computer ethics is one in which computer technology is essentially involved and there is uncertainty about what to do and even about how to understand the situation" (Moor, 1985)
- Moor argued that computers show up policy vacuums that require new thinking and the establishment of new policies

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Computer ethics

- Baym (2015) discusses the "cultural anxiety" associated with new technology
- Technology has become thought of as the default means to solve a whole raft of technical and social problems such as health provision, security, governance, etc
- Technology is to a great extent synonymous with society's view of modernisation and progress

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

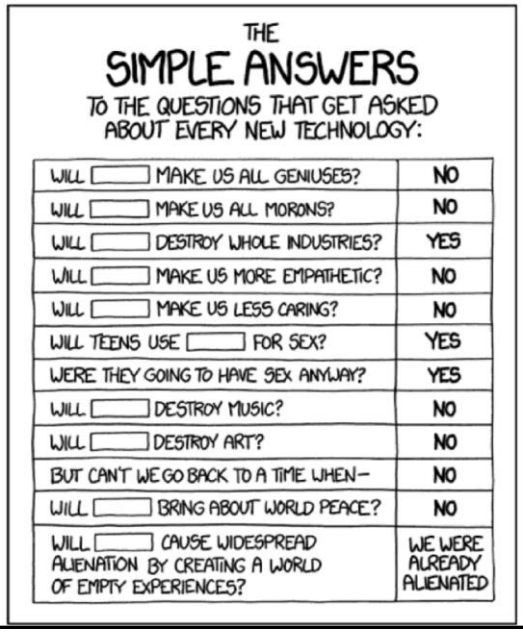
Computer ethics

- As Baym discusses (2015) using mobile phones as an example, our reaction to a technological innovation takes two forms:
  - to express concern (eg, that communication is shallow, or that mediated communication threatens the sanctity of personal relationships), or
  - to welcome opportunity (eg, for more connection with a more people, leading to stronger and more diverse relationships)
- Before the technology becomes so normalised as to be invisible, the **time of flux** is the time for thinking critically

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Computer ethics

- As Moor predicted (1985) every new technology creates a moral vacuum into which commentators pour their views
- Baym (2015) calls them Utopian vs Dystopian perspectives – either doom laden where the innovation is totally evil, or evangelical where it is completely wonderful



Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

So what questions *should* we ask?

- Who stands to benefit from a particular technology?
- Who stands to suffer under it?
- Whom might it empower?
- Whom might it oppress?

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Technological neutrality – it's "just a tool"

- The most common view of computer technology is that it is an artefact or tool simply available, to use or not use, in order for humans to achieve their objectives and outcomes, much like, say, a hammer
- Danks argues against the neutrality thesis because, in contrast with relatively inert physical artifacts like hammers, digital technologies sometimes make ethical decisions themselves
- Autonomous and semi-autonomous technologies "typically have the capability to plan, decide, and act in the world. These systems make ethical choices, in some cases, literally matters of life-and-death", such as self-driving cars or autonomous weapons systems (Danks, 2022)

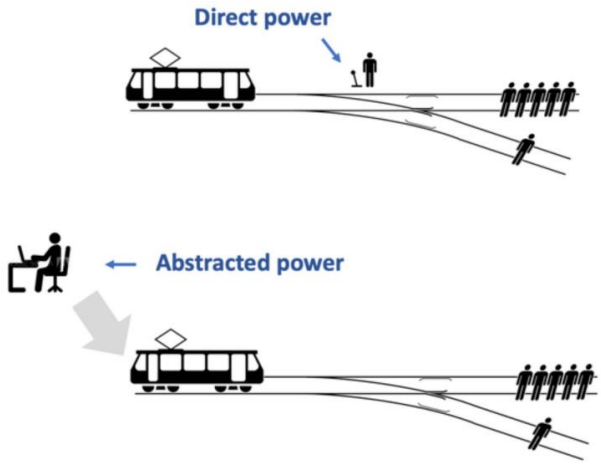
Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Power abstracted by technology

- Peterson, Ferreira & Vardi propose (2023) that technology can distance developers and users perceptually from the consequences of their action
- They define abstracted power as “a human actor’s influence or control over a system, process, or dataset which, as a function of the technology that enables it, obscures or distances the human actor from consequences of that influence or control”
- “The emotional consequences […] are obscured by a technological intermediary – a lever, joystick, keyboard or other user interface” (p. 96)
- They contend that consequences still occur, but at a remove, so the human may find them easy to dismiss

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

What is happening here?



Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Technological intermediation and computational thinking

- Peterson et al argue that **technological intermediation** and **computational thinking** are two factors inherent in computer science that contribute to distancing
- Technological intermediation means that technologies have changed to allow greater opacity between tech developers and their users – they are huge, faceless, global corporations with subtle but enormous influence
- Computational thinking trains computing students and developers to think in abstractions (variables, data types, algorithms), not emotional or social impacts or messy, unpredictable humans (Peterson & al, 2023)

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Technological determinism

- The most common view of computer technology is that it is an artefact or tool simply available, to use or not use, in order for humans to achieve their objectives and outcomes
- Technological determinism (also known technological constructivism) is the view that technology appears and more or less causes certain ways of doing, activities and processes; for example, the question “What impact does X/Twitter have on political discourse” assumes that Twitter has a determinate effect (obeys the laws of causality)
- Technological determinism assumes an inevitable, one-directional relationship between technology and society

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Social determinism (eg, Actor-Network Theory)

- Social determinism proposes that a complex network of human relations, connections and action alone shapes technology (actor-network theory)
- Actor-Network Theorists favour the term network because it implies no hierarchy, no a priori order relation, and no permanence in relationship
- Difficulty arises when, in its efforts to avoid a single explanatory trajectory for technological innovation, it treats all elements in the network of actors as equal, describes phenomena rather than explaining them, and fails to identify significant factors or agents in the network

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Social shaping of technology

- This can be seen as a more neutral or balanced approach between technological determinism and actor-network theory
- Baym (2015) proposes that technology affects society by affordances, constraints, preconditions, and unintended consequences

—Affordances: technology makes tasks easier in our lives

—Constraints make (some) tasks harder

—Preconditions limit who can use technology and how

—Unintended consequences are unintended impacts

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

Practical ethics

- Practical ethics deals with individuals or groups making decisions that have future impacts, one way or the other
- There may be personal uncertainties and conflicts of opinion, eg, “Is it better to use technology in this way or that?”, “Have we thought through its impact?” “Just because something has always happened, does that make it right?”
- Ethics therefore requires that we decide on what is right or wrong in any given situation in order to decide what action to take
- Next week’s lectures discuss ethical theories

Edinburgh Napier UNIVERSITY | School of Computing, Engineering & the Built Environment

References

- Baym, N. K. (2015). *Personal connections in the digital age*. (2nd ed.) John Wiley & Sons.
- Danks, D. (2022). Digital ethics as translational ethics. In I. Vasiliu-Feltes, & J. Thomason, *Applied ethics in a digital world* (pp. 1-15). IGI Global.
- Kizza, J. (2017). *Ethical and social issues in the information age*. (6th ed.). Switzerland: Springer.
- Peterson, T. L., Ferreira, R., & Vardi, M. Y. (2023). Abstracted Power and Responsibility in Computer Science Ethics Education. *IEEE Transactions on Technology and Society*, *4*(1), 96-102.
- Reynolds, G. (2018) *Ethics in Information Technology*. (6th ed.). US: Cengage.
- Tavani, H. (2015) *Ethics and Technology: Controversies, Questions, and Strategies for Ethical Computing*. (5th ed.). US: Wiley.