

Chapter 6

Ethics and Professionalism of Emerging Technologies

Outline

- *Technology and ethics*
- *Digital privacy*
- *Accountability and Trust*

Learning outcomes

After completed this chapter, Students will be able to:

- Distinguish the link between ethics and technology.
- Understand general, professional and leadership ethical questions.
- Explain what digital privacy is, its components and why it is important.
- know the importance of accountability and trust in emerging technologies.
- ~~Identify the threats and challenges we face in developing and utilizing emerging technologies.~~

Technology and Ethics

- The Internet boom has provided many **benefits** for society
- However, the Internet also created new challenges about **privacy**, **spam** and **viruses**.
- Moreover, even as it serves as a medium for communication across the globe, it threatens to cut off people who lack access to it.

Technology and Ethics

- Technology can serve to promote or restrict human rights.
- The Information Society should foster the use of emerging technologies to maximize the benefits that they provide while minimizing the harms.

Technology and Ethics

- Code for professional ethics is based on five basic principles:
 - *Integrity*
 - *Objectivity*
 - *Competence and due care*
 - *Confidentiality*
 - *Professional behavior*
- However, the emergence of new technologies raises some new challenges for the profession to address.

New ethical questions

- The increasing use of big data, algorithmic decision-making, and AI can enable more consistent, evidence-based and accurate judgments or decisions more quickly and efficiently.
- However, these strengths can potentially have a darker side too, throwing up questions around the ethical use of these fairly new technologies.
- For example, outputs can be based on biased data, which could lead to discriminatory outcomes.

New ethical questions

- Questions are being asked regarding the interaction between computers and humans.
 - How much dependence can we place on data and models?
 - What is the role of human judgment?
 - How do we ensure that we understand the decision-making process?
- Whatever the power of the machine, humans will still need to be involved, so that people can be held accountable, or explain the reasons behind a decision

New ethical questions

- The main problem of the **ethics** of technology is that it tends to **arrive too late**.
- In many cases, ethical issues are only recognized when the technology is already on the market and problems arise during its widespread use.
- Ethics can then become a tool to clean up a mess that might have been avoidable.
- It is probably not argumentative to say, it would be desirable to have ethical input at the earlier stages of technology design and development.

New ethical questions

1. General Ethical Principles

- ❖ Contribute to society and to human well-being
- ❖ Avoid harm.
- ❖ Be honest and trustworthy.
- ❖ Be fair and take action not to discriminate
- ❖ Respect the work required to produce new ideas, inventions, creative works, and computing artifacts.
- ❖ Respect privacy.
- ❖ Honor confidentiality

New ethical questions

2. Professional Responsibilities

- ❖ Strive to achieve high quality in both the processes and products of professional work.
- ❖ Maintain high standards of professional competence, conduct, and ethical practice.
- ❖ Know and respect existing rules pertaining to professional work.
- ❖ Accept and provide appropriate professional review.
- ❖ Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.

New ethical questions

2. Professional Responsibilities

- ❖ Perform work only in areas of competence.
- ❖ Foster public awareness and understanding of computing, related technologies, and their consequences.
- ❖ Access computing and communication resources only when authorized or when compelled by the public good.
- ❖ Design and implement systems that are robustly and useably secure.

New ethical questions

3. Professional Leadership Principles

- Ensure that the public good is the central concern during all professional computing work.
- Articulate, encourage acceptance of and evaluate fulfillment of social responsibilities by members of the organization or group.
- Manage personnel and resources to enhance the quality of working life.
- Articulate, apply, and support policies and processes that reflect the principles of the Code.

New ethical questions

3. Professional Leadership Principles

- Create opportunities for members of the organization to grow as professionals.
- Use care when modifying or retiring systems, Interface changes, the removal of features, and even software updates have an impact on the productivity of users and the quality of their work.
- Recognize and take special care of systems that become integrated into the infrastructure of society.

Digital Privacy

- Digital Privacy is the protection of **personally identifiable or business identifiable information** that is collected from respondents through information collection activities or from other sources
- It is a collective definition that encompasses three sub-related categories;
 - Information privacy
 - Communication privacy
 - Individual privacy

Digital Privacy

Information Privacy

- Information privacy is the notion that individuals should have the freedom or right to determine how their digital information, mainly that pertaining to **personally identifiable information**, is collected and used.

Digital Privacy

Communication Privacy

- It is the notion that individuals should have the freedom or right to communicate information digitally with the expectation that their communications are secure.
- Messages and communications will only be accessible to the sender's original intended recipient.
- However, communications can be intercepted or delivered to other recipients without the sender's knowledge, in a multitude of ways.
- Communications can be intercepted directly through various hacking methods

Digital Privacy

Individual Privacy

- Individual privacy is the notion that:
 - individuals have a right to exist freely on the internet
 - They can choose what types of information they are exposed to
 - unwanted information should not interrupt them.
- Below are examples of breach of individual privacy
 - an internet user receiving unwanted ads and emails/spam
 - a computer virus that forces the user to take actions they otherwise wouldn't

Digital Privacy Principles

Data Minimization:

- Collect the minimal amount of information necessary from individuals and businesses consistent with the department's mission and legal requirements.

Transparency:

- Notice covering the purpose of the collection and use of information will be provided in a clear manner.
- Information collected will not be used for any other purpose unless authorized or mandated by law.

Digital Privacy Principles

Accuracy:

- The collected Information will be maintained in a sufficiently accurate, timely, and complete manner to ensure that the interests of the individuals and businesses are protected.

Security:

- Adequate physical and **IT security measures** will be implemented to ensure that the collection, use, and maintenance of information are properly safeguarded

Accountability and Trust

- When emerging technology creates far-reaching and rapid change, it can also bring new **risks**.
- understanding and mitigating them will help to build **confidence**.
- Often legal and regulatory frameworks haven't kept pace with digital transformation, and organizations are seeking **guidance**

Accountability and Trust

- Emerging technologies can provide **improved accuracy, better quality and cost efficiencies** for businesses in every sector
- They can enhance trust in the organization's operations and financial processes, which is crucial for sustainable **success**.
- But, the solutions that can be used to better manage risk, increase transparency and build confidence are often themselves **the source of new risks**, which may go unnoticed.

Accountability and Trust

- Accountability includes
 - The obligation of an individual to account for its activities
 - accepting responsibility
 - disclosing the results in a transparent manner.
 - responsibility for money or other entrusted property.