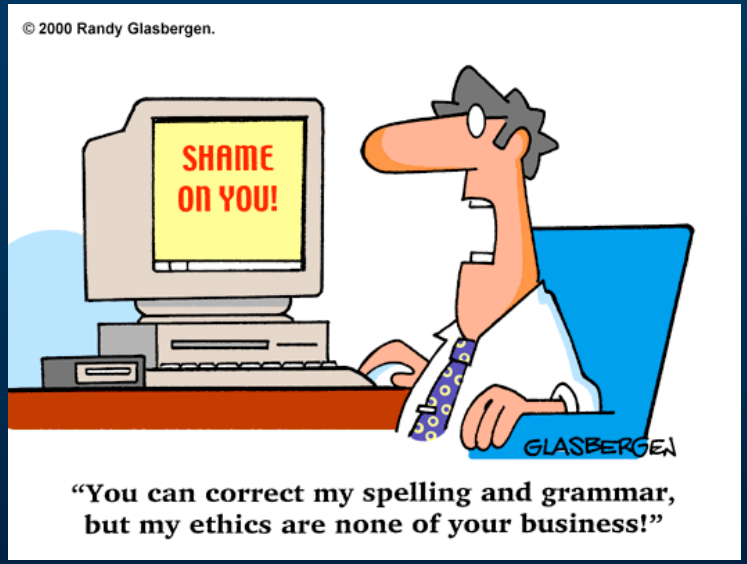
D0020E PROJECT I COMPUTER SCIENCE 2023/2024 LECTURE 3.1: ETHICS



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LTU 02.11.2023

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WHAT IS ETHICS?

- Ethics vs. morality
  - These are exchangeable, both have to do with manners
  - Commonly used distinction
    - Ethics – professional and public live, societal norms
    - Morality – private life, human character properties
- Ethics vs. laws
  - Ethics/morality often coincides with laws
  - Laws reflects conception of ethics/morality in the society
    - Consequently, different societies may have slightly different laws
    - Computer science is fairly global, making computer ethics more or less the same worldwide – **TRUE/FALSE?**
  - Ethics/morality often more stringent than laws

ETHICAL ISSUES IN COMPUTER SCIENCE

- Working with computers
  - Can be a health and well-being problem…
  - Relates to ergonomics, repetitive tasks (sameness)
- Computer security
  - Protecting personal (e.g., GDPR) and classified information
  - Protecting computers from virus, worms, trojans, attacks….
- Integrity and privacy
  - Computers are powerful in processing large amounts of information to find relationships that otherwise would be kept hidden
  - IPRED/NSA – Great, we can find criminals before they commit crime!
  - Bad luck may strike anyone?
    - "It appeared that many of your relatives over the past 100 years have a mental issue potentially dangerous * to others. Hence, we need to lock you in for at least some years to make sure you haven't inherited that"

Games (and on-line betting) are based on giving frequent rewards to attract users

Can gamification/ serious gaming become a health problem?

ETHICAL ISSUES IN COMPUTER SCIENCE, CONT.

- Immaterial property rights (IPR)
  - What can be own?
    - Software, information, content, concept models..
  - File sharing challenges this (of course)
- Responsibility
  - Computer scientists (generally) possess more knowledge in the area than the general public
  - They (we) are hence more capable of challenging and defying ethical conditions, for good and bad
  - Makes the case for computer ethics?

CODES OF ETHICS

- Association for Computing Machinery:
  ACM Code of Ethics and Professional Conduct
- British Computer Society: BCS Code of Conduct & Code of Good Practice
- League of Professional System Administrators: Code of Ethics
- Australian Computer Society: ACS Code of Ethics
- IEEE: IEEE Code of Ethics
- Computer Ethics Institute: Ten Commandments of Computer Ethics
- Sveriges Ingenjörer, Hederskodex
  - http://www.sverigesingenjorer.se/Om-forbundet/Sa-tycker-vi/hederskodex/

ACM CODE OF ETHICS

1. **GENERAL MORAL** IMPERATIVES.

1.1 Contribute to society and human well-being.

1.2 Avoid harm to others.

1.3 Be honest and trustworthy.

1.4 Be fair and take action not to discriminate.

1.5 Honor property rights including copyrights and patent.

1.6 Give proper credit for intellectual property.

1.7 Respect the privacy of others.

1.8 Honor confidentiality.

2. MORE SPECIFIC **PROFESSIONAL RESPONSIBILITIES**.

2.1 Strive to achieve the highest quality, effectiveness and dignity in both the process and products of professional work.

2.2 Acquire and maintain professional competence.

2.3 Know and respect existing laws pertaining to professional work.

2.4 Accept and provide appropriate professional review.

2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.

2.6 Honor contracts, agreements, and assigned responsibilities.

2.8 Access computing and communication resources only when authorized to do so.

ACM CODE OF ETHICS, CONT.

3. **ORGANIZATIONAL LEADERSHIP** IMPERATIVES.

3.1 Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities.

3.2 Manage personnel and resources to design and build information systems that enhance the quality of working life.

3.3 Acknowledge and support proper and authorized uses of an organization's computing and communication resources.

3.4 Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements; later the system must be validated to meet requirements.

3.5 Articulate and support policies that protect the dignity of users and others affected by a computing system.

3.6 Create opportunities for members of the organization to learn the principles and limitations of computer systems.

4. COMPLIANCE WITH THE CODE.

4.1 Uphold and promote the principles of this Code.

4.2 Treat violations of this code as inconsistent with membership in the ACM.

ACM CODE OF ETHICS, CONT.

1. GENERAL MORAL IMPERATIVES.

1.1 Contribute to **society and human well-being**.

1.3 Be **honest and trustworthy**.

1.7 **Respect the privacy** of others.

2. MORE SPECIFIC PROFESSIONAL RESPONSIBILITIES.

2.1 Strive to achieve the **highest quality, effectiveness and dignity** in both the process and products of professional work.

2.2 Acquire and maintain **professional competence**.

FOUR BIG AREAS OF COMPUTER ETHICS

Business Ethics – De George, Richard T. .Englewood cliffs, NJ: Prentice Hall, 1995

1. Computer crime
   Need be intelligent enough to manipulate a computer system..
   We are capable of challenging and defying ethical conditions.
   What happens when ethics and keeping up laws are **IN CONFLICT**?
2. Responsibility for computer failure
   Buggy software, who is responsible?
   When making a release, how honest should we be?
   And, do we **REALLY** know the status of the system?
3. Protection of computer property, records, and software
   Do we **REALLY** know the level of security built into our system?
4. Privacy of the company, workers, and customers
   Do we **REALLY** know and take action to protect information,
   and/or expose weaknesses for people using the system?

AND NOW… MACHINE LEARNING ETHICS

Machine learning ethics: what you need to know and what you can do

Richard Gall, September 23, 2019; https://hub.packtpub.com/machine-learning-ethics-what-you-need-to-know-and-what-you-can-do/

- Types of Machine learning and algorithmic bias
  - Pre-existing and data set biases
    - Embedded in the data on which we choose to train algorithms
    - There will always be something “missing”
  - Technical and contextual biases
    - How an algorithm is programmed, e.g. for what context
    - Example: plagiarism checker for English text uses an algorithm trained to identify strings of texts, which means it would target non-native English speakers over English speaking ones, who were able to make changes to avoid detection.
- Algorithmic impact assessments
  - ALGORITHMIC IMPACT ASSESSMENTS: A PRACTICAL FRAMEWORK FOR PUBLIC AGENCY ACCOUNTABILITY, Dillon Reisman, Jason Schultz, Kate Crawford, Meredith Whittaker, AINOW, APRIL 2018
- Tools for assessing bias and supporting ethical engineering
  - E.g. fairML, “an end-to-end toolbox for auditing predictive models by quantifying the relative significance of the model’s inputs”
- The future of artificial intelligence and machine learning depends on developers taking responsibility

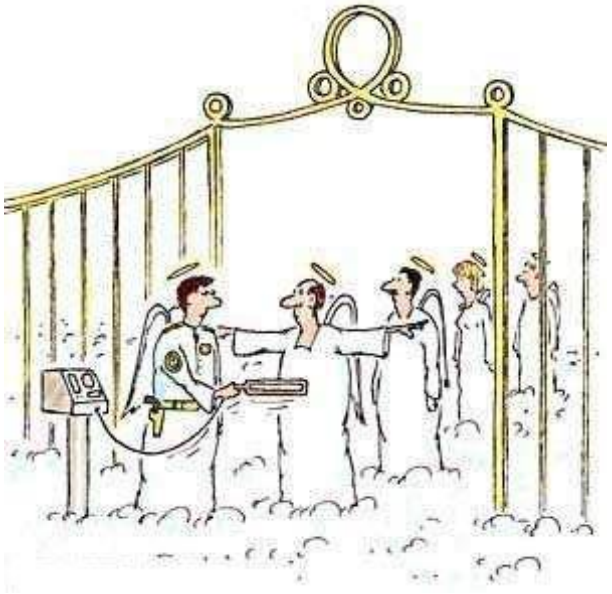
ETHICAL DILEMMAS

Someone pays our work and thus takes final decisions at software release… we are however likely to eventually be hold responsible

ACM – Code of Ethics

- Contribute to **society and human well-being**
- Be **honest and trustworthy**
- Strive to achieve the **highest quality, effectiveness and dignity**
- Acquire and maintain **professional competence**

Given available conditions…



APPLYING ETHICS IN D0020E

- Projects design, plan, develop, and test software…
- And report on results
  - Reports presents results in form of statements
  - Claims, indications, firm statements, descriptions…
  - Words matters, be **honest and trustworthy**
  - Three means for backing-up presented results
    - Own results – Be honest, make sure to KNOW (testing)
    - References – Use correctly, not more not less
    - Discussion – Make it clear that no proof is provided (weaker wording)

ETHICS AND CORPORATE CULTURE

Corporate culture is surely important….

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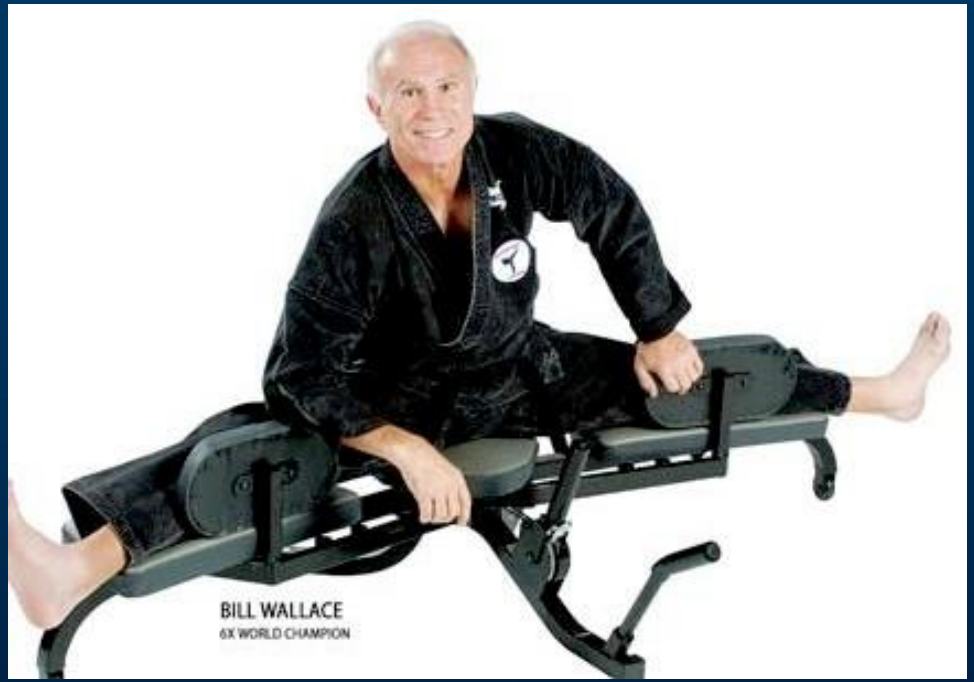
BREAK – LEG STRETCHER

(swe: Rast – bensträckare)



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