Ethics in Computing

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What are some ethical issues in computer science?

- Use of AI

- Negative environmental impact

- Misuse of personal and sensitive data

- 'Deep Fakes' and Misinformation

- Use of autonomous technology

- Best practices
  - Be accountable
  - Respect privacy
  - Act fairly and equitably
  - Promoting honesty and transparency

Source: https://online.keele.ac.uk/ethical-challenges-in-computer-science/

What ethical guidelines do computer scientists have?

- https://www.acm.org/about-acm/acm-code-of-ethics-and-professional-conduct
  - 1.1 Contribute to society and human well-being…
  - 1.2 Avoid harm.
  - 1.5 Honor property rights including copyrights and patents.
  - 1.7 Respect privacy
  - And more…

- But…. *Code of ethics doesn't influence decisions of software developers*
  - https://www.sciencedaily.com/releases/2018/10/181009113617.htm
  - "While we believe maintaining an up-to-date, robust code of ethics is an admirable thing for ACM to do, we were unable to find any effect of the code of ethics on developer decision making. The question now becomes: What can the computing profession do to promote ethical behavior?"

The Trolley Problem (Classic Version)

- There is a runaway train (trolley) barreling down the tracks, upon which 5 people are tied to the tracks and unable to move. The trolley is headed straight for them. Nearby is a lever that will switch the train to a different set of tracks, where one person is tied up. What do you do?

(A) Do nothing: the train kills the five people on the main track

(B) Pull the lever: the train changes tracks and one person is killed.

The Trolley Problem (Fat Man Version)

- There is a runaway train (trolley) barreling down the tracks, upon which 5 people are tied up and unable to move. The trolley is headed straight for them. You are on a bridge above the tracks, next to a very large man. What do you do?

(A) Do nothing: the train kills the five people on the main track.

(B) Push the man off the bridge and onto the track: the man will be killed, but the five people will be saved.

Ethics in Computer Science?

- Should a self-driving car ever sacrifice its passenger to prevent fatalities of multiple pedestrians? (http://moralmachine.mit.edu/)
  - https://www.researchgate.net/publication/301293464_The_Social_Dilemma_of_Autonomous_Vehicles

- Digital ethics and the future of humans in a connected world
  - https://www.youtube.com/watch?v=bZn0IfOb61U

- How should ethical decisions be evaluated?
  - https://www.ted.com/talks/damon_horowitz

How should ethical decisions be evaluated

- Deontological ethics – we are morally obligated to act according to rules, principles, and categorical imperatives (e.g., do not lie) regardless of outcome
  - Rules can come from religious doctrines, or laws
  - Rules can come from "reason" (Kantian ethics)
    - Can I rationally will that *everyone* act as I propose to act? If the answer is no, then we must not perform the action.
    - Does my action respect the goals of human beings rather than merely using them for my own purposes? Again, if the answer is no, then we must not perform the action.
- Utilitarianism / consequantialism (John Stuart Mill)- decisions should be judged based on their likelihood of increasing overall human happiness.
  - "The ends justify the means"
- The Rights approach, Virtue approach, and others (https://www.brown.edu/academics/science-and-technology-studies/framework-making-ethical-decisions)

Ethical Reasoning

- Who are the stakeholders?
- What does each stakeholder have to gain/lose (utilitarian step)
- What duties and responsibilities are important to the stakeholders (deontological step)
- Can an analogous situation provide clarity? (reasoning by analogy)
- Make a decision or repeat previous steps

Game Theory and the Prisoner's Dilemma

- Two members of a gang are arrested
- There is not enough evidence to convict both members on a serious charge, but there is enough to convict on a lesser charge
- Lesser charge = 1 year in prison
- If A testifies against B, then A goes free and B gets 3 years in prison….
- But if A and B agree to testify against each other, they each get 2 years in jail.

	Prisoner B	
Prisoner A	**Cooperates (stays silent)**	**Defects (testifies)**
Cooperates (stay silent)	A: 1 year B: 1 year	A: 3 years B: goes free
Defects (testifies)	A: goes free B: 3 years	A: 2 years B: 2 years

Prisoner's Dilemma

- Nash equilibrium
  - No player can improve strategy, assuming other player's keep their strategy constant
  - In Prisoner's dilemma, Nash equilibrium = both player's defect

	Prisoner B	
Prisoner A	**Cooperates (stays silent)**	**Defects (testifies)**
Cooperates (stay silent)		
Defects (testifies)		