

# Ethical Reasoning

Garrett Dancik, PhD

Fall 2021

Course Notes: <https://gdancik.github.io>

# Ethics in Computer Science

- Ethics: the discipline dealing with what is good and bad and with moral duty and obligation (<https://www.merriam-webster.com/dictionary/ethic>)
  - In other words, making decisions based on what is "right" and "wrong"
- Many ethical decisions in computer science involve understanding the impact of technology on society? Is it ethical for social media to have a "like" button?
- It is no longer a question of *can* we do something, but *should* we



"Your scientists were so preoccupied with whether they could, they didn't stop to think if they should." ~ Ian Malcolm

# Computer technologies with ethical implications

- Facial recognition
- 3D printing
- Self-driving cars
- Social Media
- Deepfakes
- Digital Privacy

# Amazon scraps secret AI recruiting tool that showed bias against women

Public Interest

## Michigan man misidentified by facial recognition technology warns Congress of risks posed by police surveillance

 **NEWS**

TECH NEWS

## Self-driving Uber car that hit and killed woman did not recognize that pedestrians jaywalk

The automated car lacked "the capability to classify an object as a pedestrian unless that object was near a crosswalk," an NTSB report said.

# 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.

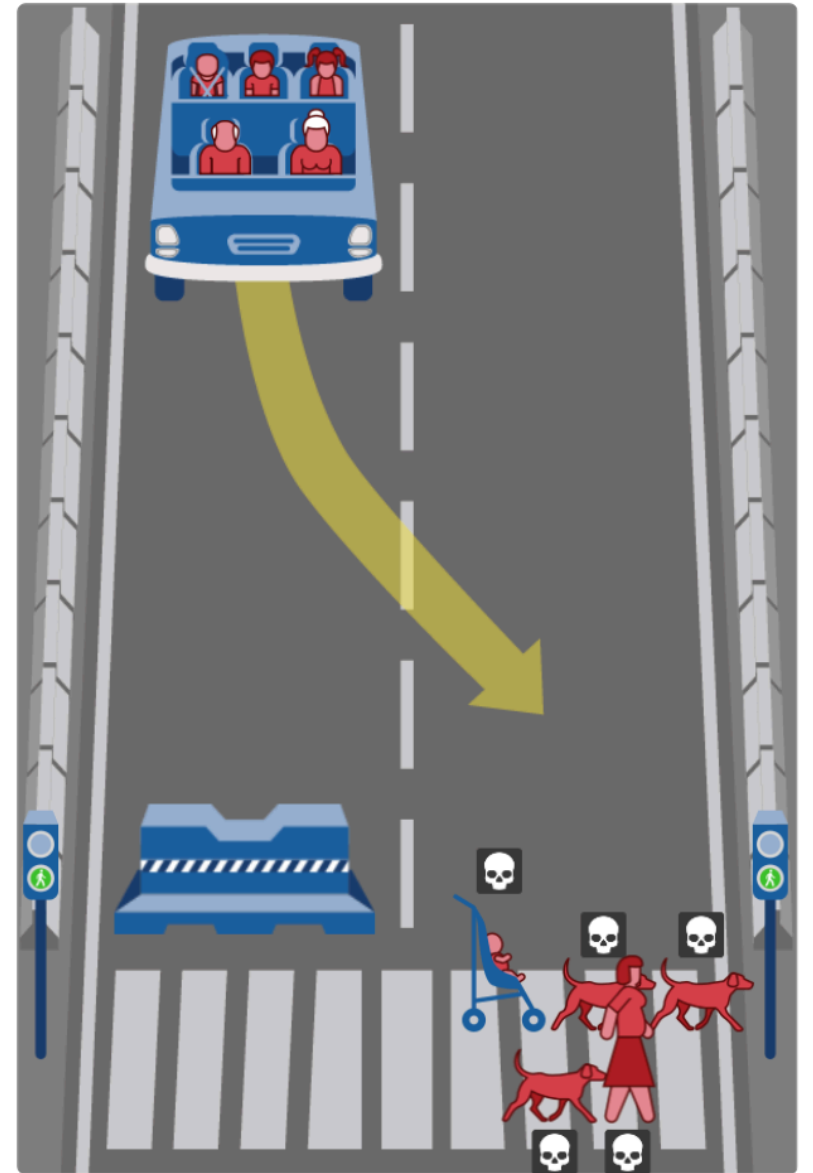
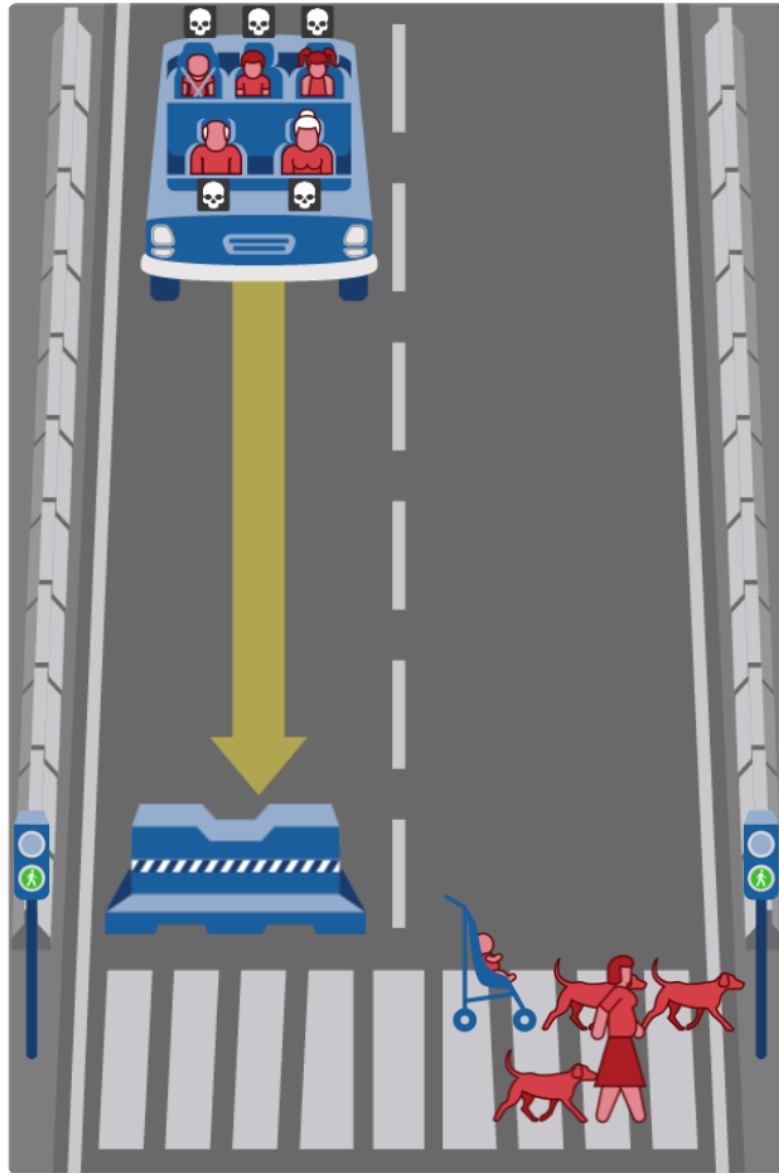
# The Trolley Problem (Fat Man Version)

- 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.

What should a self-driving car do?

More scenarios:

<https://www.moralmachine.net/>



# Ethical Reasoning – A framework

- What is the ethical dilemma and what are the choices?
- Who are the stakeholders?
- What does each stakeholder have to gain?
  - A *utilitarian* or *consequentialist* would make the choice that has the greater overall benefit (the ends justify the means)
  - What duties and responsibilities do the stakeholders have?
    - Following *deontological* ethics, actions themselves are good or bad regardless of the outcome. In particular, all humans should be treated with respect
  - Are there analogous situations that might be informative?



# Ethical Reasoning

## 1. What is the ethical dilemma and what are the choices?

- Should a university mandate that students install a cell phone app that tracks their interactions, for purposes of contact tracing for COVID-19  
(<https://www.science.org/content/article/countries-around-world-are-rolling-out-contact-tracing-apps-contain-coronavirus-how>)
- Options:
  - Yes, the app should be mandatory
  - No, but the app should be optional for those who wish to have it
  - No, the app should not be used at all

# Example

2. Who are the stakeholders?

3. What do they have to gain (and lose)

- **Students:**

- Would have privacy concerns about data being collected
- May be protected from COVID-19 if the app is successful
  - Would lead to a better educational experience (e.g., more in-person classes)
  - It is not clear how successful the app will be
- Is there a penalty for not using the app?

- **Faculty/Staff:**

- May be protected from COVID-19 if the app is successful
- Some staff may have increased workloads from contact tracing

- **Administration:**

- Would enhance Eastern's reputation if successful
- May negatively impact Eastern's reputation if the app does not work

# Example

## 4. What duties and responsibilities do the stakeholders have?

- Students: need to follow University regulations
- Faculty/Staff/Administration: Need to follow applicable laws regarding student privacy; have an obligation to provide a safe learning community for students
- Will everyone (students/faculty/staff) be treated equally?

# Example dilemma

5. Are there analogous situations that might be informative?

- Most if not all students already use apps
  - But these apps are not mandated
- Other mandates, namely vaccine mandates, already exist
  - But some exemptions are allowed
  - COVID vaccine mandates are not universally accepted
- Human contact tracing, conducted through in-person interviews, is widely accepted and important for dealing with COVID-19

# Conclusions

- There are often no easy answers to ethical questions
- The ethical reasoning framework presented here is designed to help you think through an ethical problem as you work toward an acceptable solution