CSCI 215
Social and Ethical Issues in Computer Science

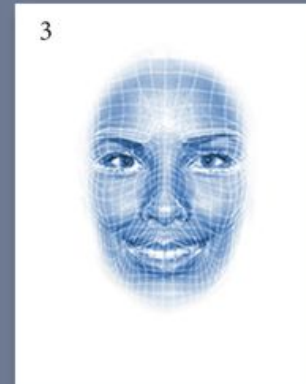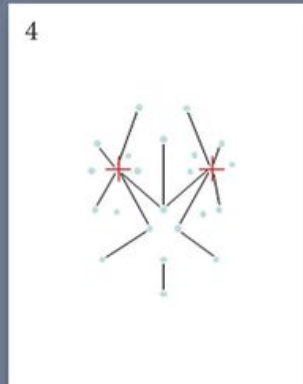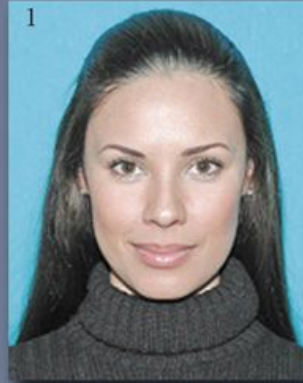Facial Recognition

Algorithmic Bias

What is facial recognition?

- Face recognition is a method of identifying or verifying the identity of an individual using their face.

- Face recognition systems can be used to identify people in photos, video, or in real-time.

- Some face recognition systems, instead of positively identifying an unknown person, are designed to calculate a probability match score between the unknown person and specific face templates stored in the database. These systems will offer up several potential matches, ranked in order of likelihood of correct identification, instead of just returning a single result.

  - depends on quality of photo/video/database
  - challenging conditions such as poor lighting, low quality image resolution, and suboptimal angle of view

https://www.eff.org/pages/face-recognition

What is facial recognition?

Source: Iowa DoT

Facial Recognition

Types of applications:
Automatic arrival and departure gates
Confirming student identity during online exams
In sports stadiums and nightclubs around the world to identify people on banned lists
Paying for items
Allowing you to hold your place in a queue for a theme park ride
Unlocking your phone or computer
Routine policing – mugshot comparison, routine stop photo comparison
Border crossing
Large event check - olympics

Taken from https://www.abc.net.au/news/2017-10-05/how-is-facial-recognition-technology-already-being-used/9019526

Facial Recognition

- https://www.techguruit.com/top-8-ways-facial-recognition-software-used-today/

Contact Tracing

- ## What is it?

- ## Generally speaking, who did you come in contact with?

  - Mount Rogers Health District officials told us there is a team of workers who assist people with positive test results.

  - The evaluations start with questions on the timeline of when symptoms started and who they were in contact with prior to those symptoms.

  - "We reach out to the positive case and talk to them about what their activities were when the symptoms started and two days prior to that," case investigator Bambi Evans said.

  - Health workers say their evaluations determine close contact as being within six feet of someone for a total of 15 minutes or more. from https://wcyb.com/news/local/health-officials-explain-process-for-contact-tracing-in-the-region

- ## Search for "Contract tracing monitoring"

Algorithmic Bias

- ## What is it?
  - Systematic HW or SW errors that create unfair outcomes
- ## How can it happen?
  - Limited test data sets
  - used for testing and used for training the system
  - if human who feed in the input is biased
  - https://www.wired.com/story/the-real-reason-tech-struggles-with-algorithmic-bias/

Quotes

"**Algorithms are harnessing volumes of macro- and micro-data to influence decisions affecting people in a range of tasks, from making movie recommendations to helping banks determine the creditworthiness of individuals**".

In machine learning, algorithms rely on multiple data sets, or training data, that specifies what the correct outputs are for some people or objects. From that training data, it then learns a model which can be applied to other people or objects and make predictions about what the correct outputs should be for them.

https://www.brookings.edu/research/algorithmic-bias-detection-and-mitigation-best-practices-and-policies-to-reduce-consumer-harms/

Ted Talk

- https://www.ted.com/talks/joy_buolamwini_how_i_m_fighting_bias_in_algorithms#t-15678

ACM Code of Ethics

- Avoid harm
- Biased algorithms can lead to decisions which can have a collective, disparate impact on certain groups of people even without the programmer's intention to discriminate

Another video

- https://www.youtube.com/watch?v=QxuyfWoVV98