Plan:

1. Discuss Data Science Ethics
2. Explain the first 4 ways to *not* ruin people's lives with data science
3. Discuss research ethics

Data Science Ethics I

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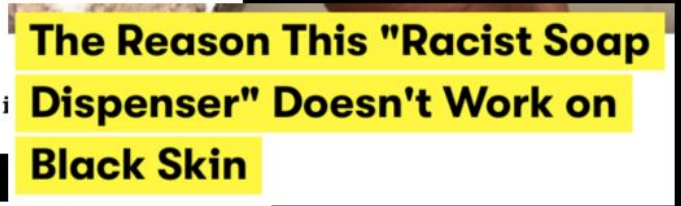
"Big data and analytics technology can reap huge benefits to both individuals and organizations – bringing personalized service, detection of fraud and abuse, efficient use of resources and prevention of failure or accident. So **why are there questions being raised about the ethics [of data science]**?"

Source: IBM

YouTube vows to recommend fewer conspiracy theory videos

Site's move comes amid continuing pressure over i platform for misinformation and extremism



The Reason This "Racist Soap Dispenser" Doesn't Work on Black Skin

Amazon Prime and the racist algorithms

MACHINES TAUGHT BY PHOTOS LEARN A SEXIST VIEW OF WOMEN

Facial recognition software is biased towards white men, researcher finds

Biases are seeping into software

YouTube's Restricted Mode Is Hiding Some LGBT Content [Update]

Google Translate's Gender Problem (And Bing Translate's, And Systran's...)

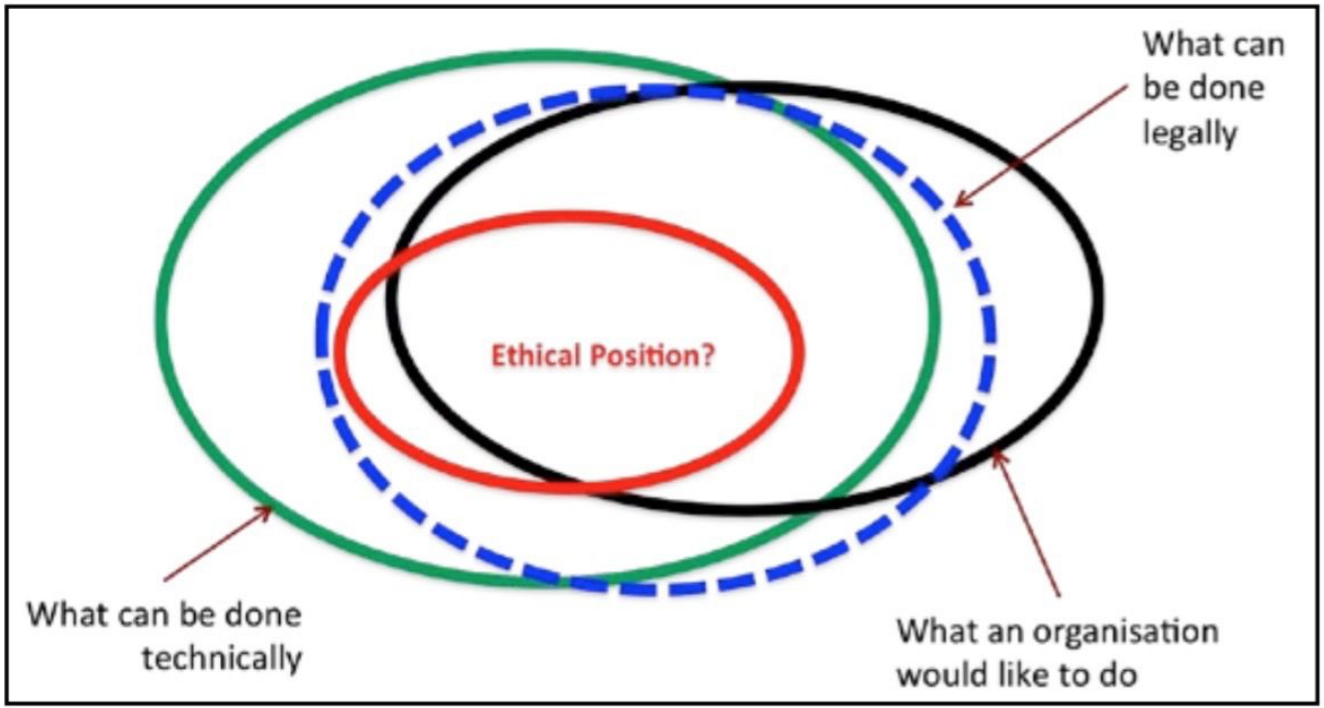
Always consider ethics.

ETHICS

“Moral principles that govern a person's behaviour or the conducting of an activity.”

Source: Oxford Dictionary

Big Data Ethics



Source: IBM

adapted from Brad Voytek

Ethical Data Science

Data science pursued in a manner so that is equitable, with respect for privacy and consent, so as to ensure that it does not cause undue harm.

On INTENT and OBJECTIVITY

- Intent is not required for harmful practices to occur
- Data, algorithms and analysis are not objective.
  - It is done by people, who have biases
  - It uses data, which have biases
- Data Science is powerful
- Bias & discrimination driven by data & algorithms can give new scale to pre-existing inequities

NINE THINGS TO CONSIDER TO NOT RUIN PEOPLE'S LIVES WITH DATA SCIENCE

1. THE QUESTION
2. THE IMPLICATIONS
3. THE DATA
4. INFORMED CONSENT
5. PRIVACY
6. EVALUATION
7. ANALYSIS
8. TRANSPARENCY & APPEAL
9. CONTINUOUS MONITORING

NINE THINGS TO CONSIDER TO NOT RUIN PEOPLE'S LIVES WITH DATA SCIENCE

adapted from Thomas Donoghue

1. THE QUESTION

- What is your question? Is it well-posed?
- Do you know something about the context and background of your question?
- What is the scope your investigation? What correlates might you inadvertently track? Is it possible to answer this question well?

Case Study: Labelling Faces

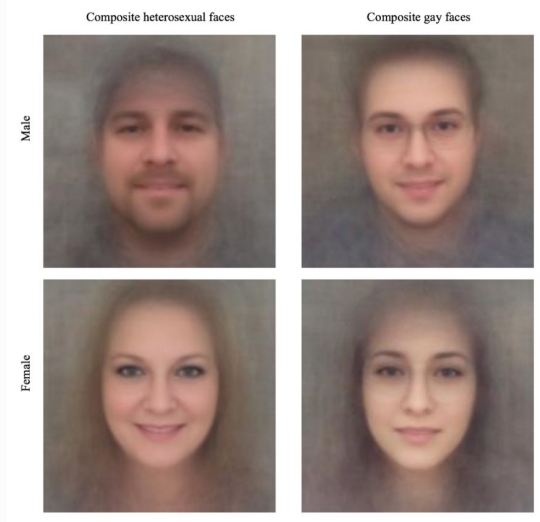
Detecting criminality from faces [link, paper]

(a) Three samples in criminal ID photo set S_c.

(b) Three samples in non-criminal ID photo set S_n

Figure 1. Sample ID photos in our data set.

Detecting Sexual Orientation From Faces with computer vision [link, paper]



2. THE IMPLICATIONS

- Who are the stakeholders? How does this affect them?
- Could the information you will gain and/or the tool you are building be co-opted for nefarious purposes?
  a. If so, can you protect them from that?
- Have you considered potential unintended consequences?

Case Study: Abuse of social networks

Facebook has been co-opted by military personnel to spread misinformation, hate speech, and promote ethnic cleansing [news link, UN Report]

3. THE DATA

- Is there data available? Is this data directly related to your question, or only potentially related through proxies?
- Who do you have data from?
- Do you have enough data to make reliable inferences?
- What biases does your data have?
- If you do not have, and can not get, enough good, appropriate data, you may just have to stop.

Case Study: Biomedical Science

Biomedical research has often excluded female subjects

This was based on a (faulty) assumption that females would be more variable

These findings do not generalize as well

Sources: link, link, link

4. INFORMED CONSENT

INFORMED CONSENT: the voluntary agreement to participate in research, in which the subject has an understanding of the research and its risks

Informed consent can be withdrawn at any point in time

Case Study: Emotional Contagion

Facebook conducted an experiment investigating whether they could manipulate people's emotions by manipulating the content displayed on one's newsfeed. [link, paper]