Applications of Data Science Exercises (7/28/23)

Exercise 1
How would you define “data science”?

Exercise 2
Name other applications of data science that you notice in your daily life

Exercise 3
Which problem(s) are not currently well-solved by data science?

Exercise 4
Choose a data science application that hasn’t had success yet. Which of the following attributes are missing?

1. Quantifiability
2. Data availability
3. Data quality
4. Predictability

Exercise 5
Which principles were violated in each example? How?

1. Scraping Facebook data and merging with Harvard records
2. Emotional contagion among Facebook users
3. Measuring censorship with Encore

Principles:

- Respect for Persons
- Beneficence
- Justice
- Respect for Law and Public Interest

Exercise 6
Car insurance fraud case study
A car insurance company is losing too much money due to fraudulent claims, despite investigating 30% of claims.
Brainstorm potential predictive modeling solutions to address this problem.

- What would you be trying to predict?
- What would be the input data?
- How would this help address the problem?

Exercise 7
If you have built predictive models in the past: How did you decide which complexity of algorithm to use? If you haven’t, how would you decide?

Exercise 8 (Homework)
Brainstorm ideas of applications that could be addressed with data science. Ideas could come from:

- Work
- Personal life
- Outside inspiration

Consider whether the application is suitable for data science based on the frameworks we discussed. What would you consider predicting? How would this model “solve” the problem?