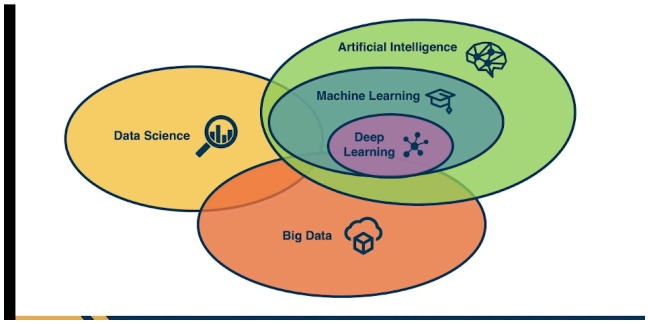
Module 1 – Data, Individuals and society

Sunday, May 21, 2023 8:15 PM

- Such programs are typically promoted as fair and free of human biases; but humans, humans that make mistakes, are programming, calibrating, and evaluating their performance.

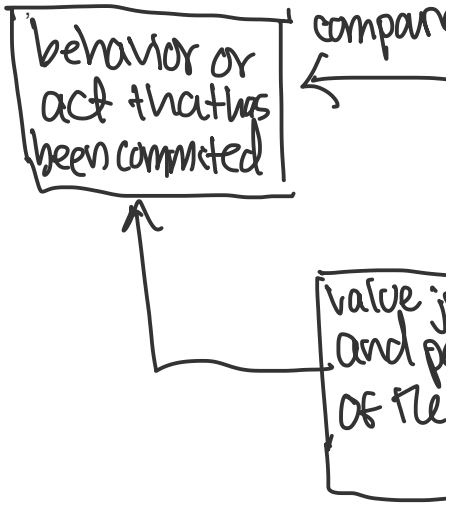
Module 1

- China's Social credit system:
  - Critical on citizens every day behavior
  - Any little mistake could impact future opportunities
  - Running a red light, jay walking
  - Busting low level offenders
  - Public shaming on nearby screens
  - Smoking on trains
  - Buying too many video games
  - Can be banned from getting a loan, buying plane tickets, renting a house
  - On list of untrustworthy people
  - Police wearing glasses to help them identify faces
  - Trying to clear your name or fight your score is near impossible because there is no real due process
- Big Data
  - What is it
    - Big data is the term increasingly used to describe the process of applying serious computing power – the latest in machine learning and artificial intelligence – to seriously massive and often highly complex sets of information
    - Doesn't matter what the definition – more about what you are doing with the data
- AI/ML algorithms impact on us:
  - Filtering applicants for jobs, admissions,..
  - Approving applicants for loans, bank credit, credit cards...
  - Predicting risk levels for insurance, health benefits,…
  - User profiling for policing purposes and to predict risk criminal recidivism,…
  - Identifying risk of developing mental health problems,…
  - 

  - Stats
- Targeted messaging:
  - Sponsored ads
  - Companies have identified you
  - Do they have you identified as the right person for their product?
  - No filters really on what they can collect on you
  - How unique are you
- Whats the problem:

    - Humans are biased
    - Garbage in = garbage out
    - Physiognomy
        - The practice of using people's outer appearance to infer inner character. In physiognomy, there is the belief that there are inferior "types" of people, identifiable by their facial features and body measurements
        - 1876 – using precise measurements that could be measured with instruments to find physical traits indicative of a criminal (Lombroso)
- AI and unintended consequences:
    - Face recognition applications:
        - Blinking eyes – Taiwanese decent
        - Asian person – passport system unable to detect if eyes were open or not
        - Google labeled a black person as "gorillas" (2018)
        - Alexa and Google home – disparities in how people from different parts of the US are understood
        - Microsoft neo-nazi sexbot (2019)
    - Search engine mirrors frequency of content
    - Search engines reinforce stereotypes – exaggerating our own biases – some of blame in AI use is blamed on users or producers of content
    - Predictive – reflecting decisions made in the past (amplifying biases) - predicting future criminals
- Relationship between ethics and law
    - Law:
        - Is the system of rules of conduct established by the government of a society to maintain stability and justice
        - Defines the legal rights and duties of the people and provides the means of enforcing these rights and duties
    - Ethics
        - defined as the set of moral principals that distinguish what is right from what is wrong
        - Moral standards: rules about the kinds of actions that are morally right or wrong, as well as the values placed on what is morally good or bad
        - https://gatech.instructure.com/courses/320388/pages/relationship-between-ethics-and-law?module_item_id=3135410
        - Laws carry sanctions of a governing authority; ethics do not
        - A relationships exists between law and ethics. In some instances, law and ethics overlap (related) and what is supposed as unethical is also illegal.
        - In other situations, they do not overlap. In some cases what is supposed as unethical is still legal, and in others, what is illegal is perceived as ethical
        - As a result, ethics and law will sometimes conflict
- Types of US Law
    - Civil – governs nation or state; manages relationships/conflicts between organizational entities and people; recorded in volumes of legal "code" available for review by the average citizen
    - Criminal – addresses violations harmful to society; actively enforced by the state
    - Private – regulates relationships between individuals and organizations; encompasses family law, commercial law and labor law

- Public – regulates structure/administration of government agencies and relationships with citizens, employees, and other governments; encompasses criminal, administrative and constitutional law
- Regulated domains in law
  - Business practices involving marketing and advertising
  - Purpose of regulations is to achieve certain publicly desired goals that the market may fail to realize (I.e. protect the public)
  - Credit – equal credit opportunity act
  - Education – education amendment of 1972 Civil rights act of 1964
  - Employment Civil Rights act of 1964
  - Housing and public accommodation (Fair housing act, civil rights act 1964)
- Discrimination Law
  - Law prohibits unfair treatment/decisions based on human characteristics
  - Discrimination is prohibited on the basis of membership in a protected class-group which has historically been discriminated against
  - Forms of discrimination (or bias):
    - Intentional: deliberate and conscious, based on negative stereotypes about group
    - Unconscious: not deliberate, but unconsciously based on negative stereotypes
  - Statistical or direct evidence
  - Equality of opportunity v. Equality of outcome
    - Opportunity:
      - Typically concerned with ensuring that decision-making processes treat similar people similarly on the basis of relevant features, given their current degree of similarity
    - Outcome:
      - Notion of equality of opportunity that forces decision-making to treat seemingly dissimilar people similarly, on the belief that their current dissimilarity is the result of past injustices



Ethical Decision Making

- Vital life interests – food, water
- Quality-of-life interests – health, happiness
- Cultural differences create difficulty in determining what is and is not ethical
- Difficulties arise when one community's ethical construct conflicts with ethics of another community.

Codes of ethics

- ACM: association of computing machinery code of ethics.
- Computer ethics institute

Ethical issues for big data

- Privacy: right of Individual to control personal information
- accuracy: who is responsible for the authenticity, fidelity, and accuracy of information
- Property: who owns the information? Who controls access?
- accessibility: what info does an org have the right to collect? Under what safeguards? What can they do with it after?
- Framework for ethics:
  - What motivates us to new issues a certain way?

    - Are we consistent in the way we approach ethical issues?
    - What approach do we use to resolve conflicts?
- Philosophical approaches to ethics:
    - Consequence- based ethics
        - Priority is given to choices that lead to a "good" outcome
        - The outcome outweighs the method
        - Utilitarian view :the "right choice" delivers the greatest good to the most people
        - Individualism view: the "right choice" is best for long-term self-interest
    - rule based ethics:
        - Priority is given to following the rules without undue regard to the outcomes
        - Rules often thought to codify principles truthfulness, right to freedom, justice, etc.
        - Morale rights view:
            - The "right choice" is that which respects fundamental rights shared by all human beings
        - rule-based/ Justice view:
            - The "right choice" is that which is impartial, fair, and equitable in treating people; exists for the benefit of society and should be followed,

Data collection

Facebook Cambridge analytica data scandal

- Data mining, unfair advantage it targeting users for Trump campaign
- They might not have gotten much info
- App - this is your digital life
- User data passed unknowingly passed to political strategy group
- Using likes could target you and friends w/political ads

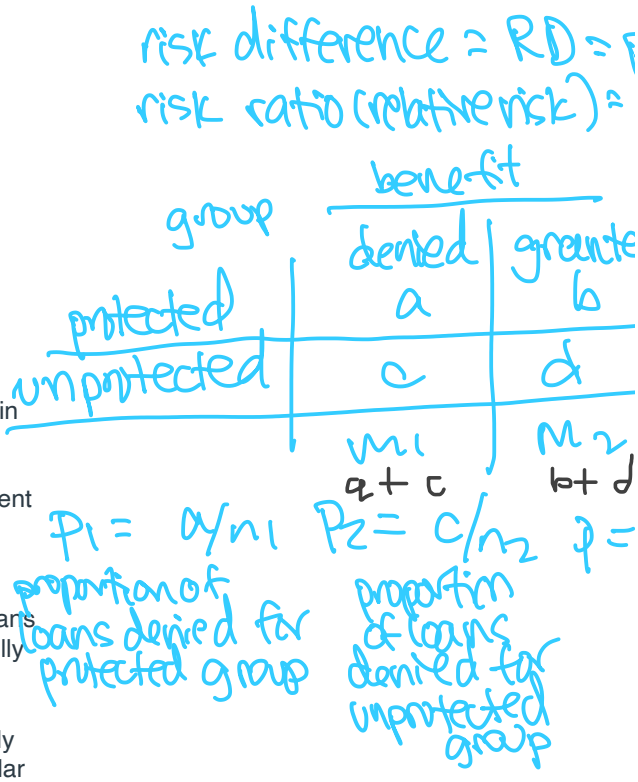
Information privacy

- Data privacy: relationship between the collection and dissemination of data, tech, the public expectation of privacy, legal, and political issues surrounding them.
- Merging this data with other non-personal types of info result in archives of info that were previously unheard of
- financial services modernization act (gramm-leach- Bailey act of 99)
    - Due notice to request info not be shared with third parties
    - Privacy policies are fully disclosed
- Federal privacy act of 1974
    - Regulates govt in protection of individual privacy
- Electronic communications privacy act 86
    - Regulates interception of wire, electronic and oral communications
- Privacy of customer information section of the common carrier regulation
    - proprietary into used for services not marketing
    - carriers cannot disclose info except for providing services.
- Health insurance portability and accountability act of 1996 (hippa)
    - Restrict dissemination of personal health data
- GDPR eu opt in data privacy

Algorithmic bias

- Stereotype, prejudice, discrimination
- If algorithmic inputs include only objective elements they should not be biased - false
- Algorithms are considered proprietary info, outside regulators jurisdiction
- Incomplete, incorrect or outdated
- Poorly selected
- Perpetuating or promoting historical bias
- Assume correlation implies causation
- Disproportionately represent populations
- Hard to understand

- Bias introduced:
  - Data inputs
  - Algorithmic processing
  - Collection of data sufficient representation
  - Measurement of data
  - pre-existing biases in data
  - Limited and coarse features
  - Sample site disparity
  - Skewed sample
  - Tainted examples
  - Features that act as proxies
  - Conscious prejudice
  - Difficult to identify which group has bias against them
  - connection between bias and privacy - hard to detect because hard to ignore inferences
    - Similar to trying to reconstruct a column from a privacy scrubbed dataset



Fairness

- How can you ensure that our algos act fair?
- Vague and circular
- Related to accountability - supervising
- Related to transparency - why does an algorithm behave in a certain way? Can we understand its decisions? Can it explain itself?
- Related to AI safety
- tensions: different notions of-fairness, fairness and accuracy, different methods for achieving fairness
- Principles for fairness:
  - Group fairness (statistical parity)
    - Requiring that the same percentage of A and B receive loans
    - When we make an error, the direction of that error is equally likely for both groups
  - Individual fairness (consistency):
    - Treat similar examples similarly, a consistent or individually fair algorithm is one in which similar people exponent similar outcomes
    - Compare protected group against unprotected group
    - Consistency might also result in everyone being equally treated badly

Regulated domain in law

Civil rights act 1964 - credit, education, employment,housing