COGS 9 - Introduction to Data Science
Winter 24

Week 4 Discussion

Slides can be found here: https://github.com/PrasannaKumaran/COGS-9---WI24

Agenda for Today

- Quick overview of the Readings for this week
    - A Mulching Proposal
    - Data's day of reckoning
- Questions

Reading: A Mulching Proposal

- Discusses the application of FAT framework to a proposed algorithm
- Algorithm tackles food security and population ageing
- Drastically increased the algorithm's adherence to the FAT framework

Reading: A Mulching Proposal

- **F**airness, **A**ccountability, **T**ransparency Framework
    - Fair: lacing biases which create unfair outcomes
    - Accountable: answerable to the people who subject to them
    - Transparent: open about how and why a particular decision was made
- When satisfied, harmful outcomes by an algorithm are minimized

Reading: A Mulching Proposal

- Premise
    - Multiple ongoing crises
        - Aging population in Western Society
        - Reduction in arable farmlands due to climate change
- Developed program where elderly people are rendered down into fine nutrient slurry
    - Addresses both the above mentioned issues
    - Elderly are well compensated

Reading: A Mulching Proposal

- Proposed algorithm
  - Social credit
    - Based on social media and communications data
    - Identifies subjects with low levels of social connectivity
  - Photos of subjects below threshold are run through a system to identify age
    - > 60 are identified and spotted using UAVs
  - Brought to the nearest LNI processing centre

Reading: A Mulching Proposal

- Problem:
    - Participants responded negatively to the idea
    - LNI reached out to seek expertise to resolve anxiety of both consumers and those to be consumed
    - Given full access to the development team

Reading: A Mulching Proposal

- Fairness
    - Checked out demographic fairness
    - Did the system event distribute False Positives and Negatives across race and gender
    - Need to include transgender people
    - Algorithm disproportionately tagged cis-men as worthy of mulching
    - Collected additional data with more women, trans and people of color
        - Improved fairness

Reading: A Mulching Proposal

- Accountable
  - Ability to address any failure of inaccuracy produced by system
    - Important in the context of misclassification
  - Undertook formalized user testing, soliciting feedback from mulchees and relatives and friends prior to and after mulching
  - Pre-mulching involves drone itself for selected participants
    - Offered a 10s window to give feedback
    - In case of error, put through human operator at LNI who discusses
    - Use feedback to improve algorithm accordingly
  - Post-mulching reaches out to friends and family of the mulchee
    - Inform of the decision and provide serial nos. of food product
      - Next-of-kin was given 30d window to appeal

Reading: A Mulching Proposal

- Transparency
    - Are users aware of how the decision was made?
    - Pre-mulching:
        - Drone provides comprehensive list of variables considered
            - Phone, SMS, Facebook, Christmas cards, scores
    - Feedback gathered through user testing

Reading: Data's day of reckoning

- Discusses the benefits and tension data has created
- What does it mean to take responsibility for building, maintaining, and managing data, technologies and services
- For instance the physics community had to grapple with implications of the atomic bomb

Reading: Data's day of reckoning

- Ethics and Security Training
  - Ideas taught in ethics classes are often disconnected from existing projects or course work
  - Don't learn how to implement principles leading to ill-preparedness
  - Not trained to think about how design and ethics are connected
  - Software security and ethics frequently go hand in hand
    - SQL injection attacks are not discussed in database classes
    - Submitted project might not address this and not graded based on it
  - Incorporate ethics within the core curriculum

Reading: Data's day of reckoning

- Ethical training for AI practitioners and students is a necessary part
- Are easily avoided when on a time crunch/rush
- Preparing a checklist can be crucial in not forgetting ethical issues
    - Tech can be attacked or abused?
    - Studied possible sources of bias?
    - User content?
    - Tested for fairness?
- Follow the FAT framework

Reading: Data's day of reckoning

- Ethics need to be part of an organization's culture
- Security is becoming part of corporate culture
    - Security teams are critical to an organization
- Incorporating ethics into corporate culture is challenging
    - Individual needs to be empowered
    - Anyone should be able to escalate issues without fear of retaliation
    - Part of Hiring Process
    - Product reviews must ask questions about product's impact
    - Teams must reflect diversity of thought, exp., race, background
    - Corporations must make their own principles clear
        - Google's "Don't be evil"

Reading: Data's day of reckoning

- Regulations
  - In some industries, ethical standards imposed by law and regulations
    - Nuremberg Code in response to Nazi atrocities
      - Focuses on individual consent to participation
  - Policy development process nearly always lags pace of innovation
  - Committees that make policy often lack experts with tech. background

Questions?

Make sure you filled out the attendance form

Attendance