F22 - CS 349 - MW 9:30

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CS349 - Contemporary Issues in Computer Science

Fall 2022, Mondays and Wednesdays, 9:30 am – 10:45 am and 11:00 am - 12:15 pm

Location: UTC 3.104 and UTC 3.124

Instructor: Tina L. Peterson, Ph.D. (peterson@cs.utexas.edu);

Office hours: Tuesdays 11:30 am - 12:30 pm in GDC 4.314 and Wednesdays 1:15 pm - 2:15 pm at https://utexas.zoom.us/j/2526426436 (https://utexas.zoom.us/j/2526426436)

TA: Jeffrey Onyediri (jonyediri@gmail.com (mailto:jonyediri@gmail.com))

COURSE DESCRIPTION

Computer scientists have a great deal of power in the twenty-first century; they have duties both to society and their own profession to wield that power wisely and responsibly. In this discussion- and reflection-oriented course students will master fundamentals of moral philosophy and principles of social responsibility; they will apply these modes of reflection and reasoning to current issues in computer science. These include but are not limited to algorithmic fairness and decision-making; surveillance and privacy; biased data and machine-learning outcomes; autonomous systems and human casualties; and diversity and inclusion in the tech industry.

Writing about ethical issues will help us reason about them and support decisions we make. We will therefore devote considerable time to writing and revising our own work, and critiquing that of our peers.

LEARNING OBJECTIVES

During this course students will:

- Develop an understanding of major schools of thought in moral philosophy
- Master principles of social responsibility related to technology
- Apply principles of moral philosophy to recent case studies in the tech industry
- Develop an awareness of potential consequences of their decisions as computer science professionals
- Develop and refine skills to produce clear and effective written communication

ON WHAT WILL MY GRADE BE BASED?

This course is based on discussion and reflection, and opinions and perspectives may vary widely. Students will not be awarded points based on whether their expressed perspective or analysis agrees with those of the instructor, but on how eloquently, thoughtfully and critically they answer questions posed, and how well they support their positions with high-quality evidence. They will also be assessed on the quality of writing in assigned papers. The point breakdown will be as follows:

Midterm exam	80
Participation (details below)	40
Final group project or individual paper	45
Reading quizzes (8 will be given; lowest 2 grades will drop)	30
Analysis paper on “Black Mirror” episode (rough draft)	20

Analysis paper on “Black Mirror” episode (final draft)	30
Response paper on 24-hour addictive apps ‘unplug’	20
Response paper to "The Questions Concerning..." (rough draft)	15
Response paper to "The Questions Concerning..." (final draft)	15
Completion of eCIS (course evaluation)	5
Maximum possible points:	300

PARTICIPATION (40 points)

Online forum posts *5 posts x 4 points each = 20 points possible*

Articles, other materials, and discussion prompts will be posted to the class’s Canvas at least 8 times over the course of the semester. These prompts will be announced via Piazza. Students will be expected to post a minimum of 5 one-paragraph critical responses. Points will be awarded based on eloquence and quality of critical thought.

Student-led reading highlights and discussions *1 assigned week, 20 points possible*

For 13 classes over the course of the semester, a group of 3 – 4 students will be assigned to present highlights from that day’s assigned readings for about 5 minutes, and then to lead their peers in a 10- to 15-minute discussion. Group members may also incorporate additional readings related to the topic if they wish. These groups will be assigned during the second week of class.

CLASSROOM SAFETY AND COVID

To mask or not to mask...will be up to each student. Your instructor is fully vaccinated/boosted and will not wear a mask during class. If you're sick and/or test positive for COVID, use good judgment and ***don't come to class***.

ATTENDANCE

In-person attendance is required in this course, as it is heavily discussion-oriented. You can't listen, think, and discuss if you're not present. You may have heard that this class is an 'easy A.' That's true only if you show up every day and do the work. I will pass around an attendance sheet at the start of every class; if your signature is not on that sheet by the time the TA collects it, you will not receive credit for having attended. Excused absences will be considered on a case-by-case basis; students must e-mail the instructor a week in advance of the relevant date.

Unexcused absences will result in penalties as follows:

1 to 2 absences	No penalty
3 absences	10-point deduction from total points for the course
4 absences	30-point deduction from total points for the course
5 absences	50-point deduction from total points for the course
More than 5 absences	Automatic failure of the course

READING QUIZZES

Quizzes on the readings will be given randomly at the start of eight classes throughout the semester; each student’s lowest two quiz grades will be dropped.

CALCULATION OF FINAL GRADES

Point totals will be converted into percentages, and final grades will be awarded as follows.

A	100 – 93.0	B+	89.9 – 86.0	C+	79.9 – 76.0	D+	69.9 – 66.0
A-	92.9 – 90.0	B	85.9 – 83.0	C	75.9 – 73.0	D	65.9 – 63.0
		B-	82.9 – 80.0	C-	72.9 – 70.0	D-	62.9 – 60.0

DEVICE USE DURING CLASS

As this course is heavily based on discussion and reflection, it doesn't work if people aren't paying active attention. We will use laptops to do group collaboration and research regularly during class, but outside of these times, I expect laptops and other devices to be closed/put to the side.

ACCOMMODATIONS FOR DISABILITY

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Services for Students with Disabilities (SSD). Please refer to SSD's website for contact and more information: **http://diversity.utexas.edu/disability/ (http://diversity.utexas.edu/disability/)** . If you are already registered with SSD, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

SLIP DAYS

Life hands us unexpected challenges even when we do our best to plan ahead. To provide the margin of error some of you may need this semester, I grant you **THREE** slip days to be used ONLY to submit final drafts of written assignments late if necessary. They may not be used for rough drafts, or to reschedule the midterm. It's up to you to:

1) Use these three days judiciously (i.e. not until you absolutely need them)

2) Alert your TA when you're using one or more so that they can add a note to your assignment in Canvas, and track how many slip days you have left. You may not add this note yourself - I will only honor slip days when the relevant note is posted by your TA.

PIAZZA

The TAs and I will answer questions and post announcements on the course Piazza: **piazza.com/utexas/fall2022/cs349 (http://piazza.com/utexas/fall2022/cs349)**

All students will be responsible for knowing what's posted on Piazza; the information won't be shared elsewhere.

COURSE MATERIALS

All readings are linked to in the course schedule. No textbook purchase is required. I will do everything in my power to give students access to articles and other media free of paywall obstacles; please report any problems accessing the readings to me via e-mail at peterson@cs.utexas.edu at least 24 hours ahead of the class meeting for which the reading is due.

Filter bubble acknowledgment: I try to incorporate a wide variety of sources in our course readings. But, like every other human who uses the Internet in the 21st century, I encounter information inside a filter bubble that can be difficult to transcend. If you would like to submit a reading on a course topic that offers a different perspective, please e-mail the reading to me at peterson@cs.utexas.edu and I will consider it.

COURSE SCHEDULE AND REQUIRED READING

This schedule will be updated regularly. All readings should be done **before** the class for which they are listed.

22 August Small group brainstorm

Review syllabus and expectations for course

The trolley problem and abstracted power

UNIT 1: TECH & HUMAN NATURE

24 August Human nature + computers = ?

Reading:

- **Parker (2012). "The Story of a Suicide." The New Yorker. (https://www.newyorker.com/magazine/2012/02/06/the-story-of-a-suicide)**

Assigned: Response paper to "The Questions Concerning Technology"

29 August Moral philosophy: Utilitarianism

Autonomous vehicles, human casualties, and the tragedy of the commons

Reading/viewing:

- **Crash Course Philosophy: Utilitarianism (https://www.youtube.com/watch?v=-a739VjqdSI)**

(https://www.youtube.com/watch?v=-a739VjqdSI)

- **Amendolare (2017). "What is the tragedy of the commons?" TED-Ed. (https://www.youtube.com/watch?v=CxC161GvMPc)**

(https://www.youtube.com/watch?v=CxC161GvMPc)

- **Bonnefon, Shariff and Rahwan (2016). "The social dilemma of autonomous vehicles." Science.** (https://utexas.instructure.com/courses/1339018/files/67097683/download?download_frd=1)

31 August In-class writing workshop

Due 9:00 am: Response paper to "The Questions Concerning Technology" (rough draft)

5 September Labor Day; no class

UNIT 2: ETHICS, DATA, AND ACCOUNTABILITY

7 September Algorithmic accountability and explainability

Reading:

- **Knight (2017). "The Dark Secret at the Heart of AI." MIT Technology Review.** **(http://ezproxy.lib.utexas.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=122578122&site=ehost-live)**
- **Diakopoulos et al. (no date). Principles for Accountable Algorithms and a Social Impact Statement for Algorithms.** **(https://www.fatml.org/resources/principles-for-accountable-algorithms)**

9 September **Due 11:59 pm: Response paper to "The Questions Concerning Technology" (final draft)**

12 September Machine learning in criminal justice

Reading:

- Angwin et al. (2016). “Machine Bias.” ProPublica (https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing) .
- Hao (2019). “AI is sending people to jail—and getting it wrong.” MIT Technology Review (https://www.technologyreview.com/2019/01/21/137783/algorithms-criminal-justice-ai/) .

14 September Machine learning in employment decisions

Reading:

- Dastin (2018). “Amazon scraps secret AI recruiting tool that showed bias against women.” Reuters. (https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G)
- Gershgorn (2018). “Companies are on the hook if their hiring algorithms are biased.” Quartz. (https://qz.com/1427621/companies-are-on-the-hook-if-their-hiring-algorithms-are-biased/)
- Eastwood (2020). "Exploration-based algorithms can improve hiring quality and diversity." MIT Sloan School of Management. (https://mitsloan.mit.edu/ideas-made-to-matter/exploration-based-algorithms-can-improve-hiring-quality-and-diversity)

21 September Moral philosophy: Rawls’ Theory of Justice

Machine learning in health care

Readings:

Readings:

- Nordling (2019). "A fairer way forward for AI in health care." Nature. (https://www.nature.com/articles/d41586-019-02872-2)
- Wetsman (2021). "WHO outlines principles for ethics in health AI." The Verge. (https://www.theverge.com/2021/6/30/22557119/who-ethics-ai-healthcare)

UNIT 3: TECH & EXPLOITATION

26 September Moral philosophy: Kant's Categorical Imperative

Surveillance and privacy

Reading/viewing:

- Crash Course Philosophy: Kant and Categorical Imperatives (https://www.youtube.com/watch?v=8blys6JoEDw)

(https://www.youtube.com/watch?v=8blys6JoEDw)

- Chang (2019). "What Women Know About the Internet." The New York Times. (https://www.nytimes.com/2019/04/10/opinion/privacy-feminism.html)
- Lynch (2015). "The philosophy of privacy: why surveillance reduces us to objects." The Guardian. (https://www.theguardian.com/technology/2015/may/07/surveillance-privacy-philosophy-data-internet-things)

28 September Addictive apps

Cognitive biases

Behavioral engineering

Readings:

- Andersson (2018). "Social media apps are 'deliberately' addictive to users." BBC. (https://www.bbc.com/news/technology-44640959)
- Weigert (2019). "How the Internet Amplifies Our Cognitive Biases." Hacker Noon. (https://hackernoon.com/in-the-digital-age-cognitive-biases-are-running-wild-420b8f4f7cb5)
- Berlinquette (2019). "I Used Google Ads for Social Engineering. It Worked." The New York Times. (https://www.nytimes.com/2019/07/07/opinion/google-ads.html)

Assigned: 24-hour addictive app 'unplug' and response paper

3 October Targeted advertising and users as commodities

Reading:

- Matsakis (2018). "Facebook's targeted ads are more complex than it lets on." Wired. (https://www.wired.com/story/facebooks-targeted-ads-are-more-complex-than-it-lets-on/)
- Cox (2017). "The Dark Side of Targeted Advertising." D/SRUPTION. (https://disruptionhub.com/targeted-advertising-discriminatory/)

5 October The app-based gig economy

Readings:

- Volkin (2020). "Why The Gig Economy Will Drive The Future Of Employment." Forbes (https://www.forbes.com/sites/forbescoachescouncil/2020/03/27/why-the-gig-economy-will-drive-the-future-of-employment/#76ae2bc24f52) .
- Semuels (2020). "'It's a Race to the Bottom.' The Coronavirus is Cutting Into Gig Worker Incomes as the Newly Jobless Flood Apps." Time. (https://time.com/5836868/gig-economy-coronavirus/)
- Scheiber (2017). "How Uber Uses Psychological Tricks to Push Its Drivers'

Buttons." New York Times. (https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html)

Due 11:59 pm: 24-hour addictive app 'unplug' and response paper

10 October MIDTERM EXAM (to be given online via Gradescope; format TBA)

UNIT 4: TECH AS INFRASTRUCTURE; TRUST IN SOCIETY

12 October Tech as infrastructure

Filter bubbles, misinformation, and alienation

In-class activity: escape your filter bubble

Reading/viewing:

- Lessig (2000). "Code is Law." Harvard Magazine. (https://harvardmagazine.com/2000/01/code-is-law-html)
- Pariser (2019). "What obligations do social media platforms have to the greater good?" TED. (https://www.ted.com/talks/eli_pariser_what_obligation_do_social_media_platforms_h 310568)

17 October Social media, civic institutions, and democracy

Readings:

- Tiku (2017). "How Russia 'pushed our buttons' with fake online ads." Wired. (https://www.wired.com/story/how-russia-pushed-our-buttons-with-fake-online-ads/)
- Leetaru (2018). "Without Transparency, Democracy Dies In The Darkness Of Social Media." Forbes. (https://www.forbes.com/sites/kalevleetaru/2018/01/25/without-transparency-

democracy-dies-in-the-darkness-of-social-media/#19612d677221)

- Melugin (2021). "Should social-media companies be considered 'common carriers?'" National Review. (https://www.nationalreview.com/2021/04/should-social-media-companies-be-considered-common-carriers)

19 October Deepfakes

Readings:

- Benjamin (2019). "Deepfake videos could destroy trust in society – here's how to restore it." The Conversation. (https://theconversation.com/deepfake-videos-could-destroy-trust-in-society-heres-how-to-restore-it-110999)
- Cole (2018). "There is no tech solution to deepfakes." Motherboard. (https://motherboard.vice.com/en_us/article/594qx5/there-is-no-tech-solution-to-deepfakes)

UNIT 5: INSIDE AND OUTSIDE THE TECH INDUSTRY

24 October Deliberate law-breaking via software

Whistleblowers

Readings:

- Isaac (2017). "How Uber Deceives the Authorities Worldwide." The New York Times (https://www.nytimes.com/2017/03/03/technology/uber-greyball-program-evade-authorities.html) .
- Neate (2015). "Volkswagen under investigation over illegal software that masks emissions." (https://www.theguardian.com/business/2015/sep/18/epa-california-investigate-volkswagen-clean-air-violations) The Guardian (https://www.theguardian.com/business/2015/sep/18/epa-california-investigate-volkswagen-clean-air-violations) .

26 October "Move fast and break things" vs. professional ethics

Readings:

- **The ACM Code of Ethics (draft 3, 2018) (https://ethics.acm.org/2018-code-draft-3/)**
- **Kaste (2019). "After Boeing Crashes, New Attention on The Potential Flaws of Software." NPR. (https://www.npr.org/2019/03/24/705966447/software-is-everywhere-but-its-not-always-an-upgrade)**

Assigned: "Black Mirror" episode analysis paper (rough draft)

31 October Diversity and inclusion in the tech industry

Role-playing tough workplace conversations

Readings:

- **Luckie (2015). "What it's actually like to be a Black employee at a tech company." The Medium. (https://medium.com/@marksluckie/what-it-s-actually-like-to-be-a-black-employee-at-a-tech-company-e32bb222818b)**
- **Myers (2018). "Women and Minorities in Tech, by the Numbers." Wired. (https://www.wired.com/story/computer-science-graduates-diversity/)**
- **Vardi (2018). "How We Lost the Women in Computing." Communications of the ACM. (https://cacm.acm.org/magazines/2018/5/227192-how-we-lost-the-women-in-computing/fulltext)**
- **Mundy (2016). "Why is Silicon Valley So Awful to Women?" The Atlantic. (https://www.theatlantic.com/magazine/archive/2017/04/why-is-silicon-valley-so-awful-to-women/517788/)**

2 November The tech industry and gentrification

The carbon footprint of computing

Readings:

- Florida (2017). “Tech Made Cities Too Expensive. Here’s How to Fix It.” Wired. (https://www.wired.com/2017/04/how-to-save-the-middle-class/)
- Rheude (2018). “4 Obvious Pros and 4 Disconcerting Cons for Whatever City Wins Amazon's HQ2.” Entrepreneur. (https://www.entrepreneur.com/article/310961)
- Dykes (2020). "The carbon footprint of AI and cloud computing." Geographical. (https://geographical.co.uk/nature/energy/item/3876-the-carbon-footprint-of-ai-and-cloud-computing)

Due: “Black Mirror” episode analysis paper (rough draft)

UNIT 6: ROBOTS VS. HUMANS

7 November Groups assigned and moderators selected for debate on autonomous weapons

In-class research and planning for debate

9 November In-class debate on autonomous weapons

14 November Automation and the future of work

Readings:

- Vardi (2016). “Are robots taking our jobs?” The Conversation (https://theconversation.com/are-robots-taking-our-jobs-56537) .
- Porter (2019). "Don't fight the robots. Tax them." New York Times. (https://www.nytimes.com/2019/02/23/sunday-review/tax-artificial-intelligence.html)
- Dzieza (2020). "How hard will the robots make us work?" The Verge. (https://www.theverge.com/2020/2/27/21155254/automation-robots-unemployment-jobs-vs-human-google-amazon)

Assigned: final group projects or individual papers

16 November Topic: TBD

Due 11:59 pm: “Black Mirror” episode analysis paper (final draft)

Due 11:59 pm: "Black Mirror" episode analysis paper (final draft)

21 & 23 November: Fall break/Thanksgiving. No class.

28 November Individual final presentations

30 November Individual final presentations (continued)

Group presentations

5 December **Due: Individual final papers and group project write-ups**

Group presentations (continued)

Re-visit first week's brainstorm

Course Summary: