Data and Ethics
DS Connector Course (2 Units)

Mondays / 12:00pm-2pm
210 South Hall

Instructor: Dr. Anna Lauren Hoffmann
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Office Hours: Wednesdays / 11:30am-1:00pm
Office Hours Location: South Hall 302

Course Description

This course provides an introduction to critical and ethical issues surrounding data and society. It blends social and historical perspectives on data with ethics, policy, and case examples—from Facebook's "Emotional Contagion" experiment to search engine algorithms to self-driving cars—to help students develop a workable understanding of current ethical issues in data science. Ethical and policy-related concepts addressed include: research ethics; privacy and surveillance; data and discrimination; and the "black box" of algorithms. Importantly, these issues will be addressed throughout the lifecycle of data—from collection to storage to analysis and application.

Course Objectives

Upon completion of the course, students will 1) identify and articulate some basic ethical and policy-based frameworks; 2) understand the relationship between data, ethics, and society; and 3) be able to critically assess their own work and education in the area of data science. In particular, course assignments will emphasize researcher and practitioner reflexivity, allowing students to explore their own social and ethical commitments as future data scientists and information professionals.

Course Schedule

Week 1 (August 29)
Module 1 – Situating "Data" I: What are data?
Objective: to "shake loose" the idea of data as an object for critical and ethical inquiry
Reading(s):

- Kitchin, R. (2014). Conceptualising Data. In *The data revolution* (pp. 1-26). New York: SAGE. (Read pages 1-12)
- Lemov, R. (2016, June 16). "Big data is people!" *Aeon*. Available at https://aeon.co/essays/why-big-data-is-actually-small-personal-and-very-human

Week 2 (September 5)
Labor Day. No class.

Week 3 (September 12)
Module 2 – Situating "Data" II: A pre-history of data

Objective: to explore some historical precedents of today's "big data" moment
Case(s): Censuses
Reading(s):

- Kitchin, R. (2014). Conceptualising Data. In *The data revolution* (pp. 1-26). New York: SAGE. (Read pages 12-26)
- Seltzer, W., & Anderson, M. (2001). The dark side of numbers: The role of population data systems in human rights abuses. *Social Research, 68*(2), 481-513.

Week 4 (September 19)
Module 3 – Ethical Toolbox I: Research and applied ethics
Objective: introduce and explore applied ethical frameworks for thinking about data
Case(s): Facebook's emotional contagion experiment; OK Cupid match rank testing
Reading(s):

- The Belmont Report. (1979). *The Belmont Report: Ethical principles and guidelines for the protection of human subjects of research.* Retrieved from http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html
- Gray, M. (2014, July 9). When science, customer service, and human subjects research collide. Now what? *Culture Digitally.* Retrieved from http://culturedigitally.org/2014/07/when-science-customer-service-and-human-subjects-research-collide-now-what/

Week 5 (September 26)
Module 4 – Ethical Toolbox II: Concepts of privacy and publicity
Objective: explore basic concepts of privacy and anonymity (access, control, and context)
Case(s): student privacy
Reading(s):

- Tavani, H. (2012). Privacy and cyberspace. In *Ethics and technology: Controversies, questions, and strategies for ethical computing,* 4th Edition (pp. 131-168). Hoboken, NJ: Wiley.
- boyd, d. (2015, May 22). Which students get to have privacy? *The Message.* Available at https://medium.com/message/which-students-get-to-have-privacy-e9773f9a064#.urtohca12

Week 6 (October 3)
Module 5 – Privacy and Ethics, cont'd; Issues in data storage and security
Objective: explore ethical and privacy issues in data, information, and computer security
Case(s): data breaches
Reading(s):

- Brey, P. (2007). Ethical aspects of information security and privacy. In M. Petković & W. Jonker (eds.), *Security, privacy, and trust in modern data management* (pp. 21-36). New York: Springer.

- 2nd reading: Student's choice. Identify an example of a data breach, choose one news or magazine article about the breach, come to class ready to discuss the case. (Examples include Target, U.S. Office of Personnel Management, Ashley Madison, etc….)

Week 7 (October 10)
Module 6 – Lifecycle of Data I (Part I): Issues in data collection and data mining
Objective: attend to ethical questions in the collection and mining of online data
Case(s): social games; Target pregnancy case
Reading(s):

- Willson, M., & Leaver, T. (2015). Zynga's FarmVille, social games, and the ethics of big data mining. *Communication and Research Practice, 1*(2), 147-158.
- Hill, K. (2012, February 16). How Target figured out a teen girl was pregnant before her father did. *Forbes*. Available at http://www.forbes.com/sites/kashmirhill/2012/02/16/how-target-figured-out-a-teen-girl-was-pregnant-before-her-father-did/#7089a99434c6

Week 8 (October 17)
Module 7 – Lifecycle of Data I (Part II): Issues in data collection and data mining
Objective: (cont'd from Week 5)
Case(s): data collection, personal fitness trackers, and the Quantified Self
Reading(s):

- Duus, R., & Cooray, M. (2015, December 27). Wearable fitness trackers: the dark side. *The Independent*. Available at http://www.independent.co.uk/life-style/health-and-families/health-news/wearable-fitness-trackers-the-dark-side-a6787171.html

Choose one:

- Eveleth, R. (2014, December 15). How self-tracking apps exclude women. *The Atlantic*. Retrieved from http://www.theatlantic.com/technology/archive/2014/12/how-self-tracking-apps-exclude-women/383673/

OR

- Watson, S.M. (2014, September 25). Stepping down: Rethinking the fitness tracker. *The Atlantic*. Retrieved from http://www.theatlantic.com/technology/archive/2014/09/hacking-the-fitness-tracker-to-move-less-not-more/380742/

Week 9 (October 24)
Module 8 – Lifecycle of Data II (Part I): Issues in analyzing and exploring data
Objectives: discuss ethical issues in data analysis
Case(s): "Spurious Correlations," app design, data inclusion
Reading(s):

- boyd, d., & Crawford, K. (2012). Critical questions for big data. *Information, Communication, and Society, 15*(5), 662-679. (Introduction and Section 1 "Big Data changes the definition of knowledge")

- Carr, N. (2014, April 16). The limits of social engineering. *MIT Technology Review*. Retrieved from http://www.technologyreview.com/review/526561/the-limits-of-social-engineering/
- Ananny, M. (2011, April 14). The curious connection between apps for gay men and sex offenders. *The Atlantic*. Retrieved from http://www.theatlantic.com/technology/archive/2011/04/the-curious-connection-between-apps-for-gay-men-and-sex-offenders/237340/

Look at the website for "Spurious Correlations": http://www.tylervigen.com/spurious-correlations

Week 10 (October 31)
Module 9 – Lifecycle of Data II (Part II): Issues in analyzing and exploring data
Objectives: (cont'd from Week 8)
Case(s): Hurricane Sandy, marginalized populations, data exclusions
Reading(s):

- Lerman, J. (2013, September 3). Big data and its exclusions. *Stanford Law Review Online, 66*, 55-63.
- Crawford, K. (2013, April 1). The hidden biases in big data. *Harvard Business Review*. Retrieved from https://hbr.org/2013/04/the-hidden-biases-in-big-data/

Week 11 (November 7)
Module 10 – Lifecycle of Data III (Part I): Ethics of algorithms and automated systems
Objectives: building on weeks 8/9, examining consequences of automation and implementation
Case(s): algorithms; search engines
Reading(s):

- Gillespie, T. (2014). The relevance of algorithms. *Media technologies: Essays on communication, materiality, and society*. (Read the introduction and conclusion and ONE of the sections listed on p. 2)
- Noble, S.U. (2012, Spring). Missed connections: What search engines say about women. *Bitch Magazine, 54*, 37-41. Retrieved from https://safiyaunoble.files.wordpress.com/2012/03/54_search_engines.pdf
- Gibbs, S. (2015, July 8). Women less likely to be shown ads for high-paid jobs on Google, study shows. *The Guardian*. Available at https://www.theguardian.com/technology/2015/jul/08/women-less-likely-ads-high-paid-jobs-google-study

Watch:

- Slavin, K. (2011). How algorithms shape our world [video]. *TEDGlobal 2011*. Retrieved from http://www.ted.com/talks/kevin_slavin_how_algorithms_shape_our_world

Week 12 (November 14)
Module 11 – Lifecycle of Data III (Part II): Ethics of algorithms and automated systems
Objectives: (cont'd from week 10)

Case(s): Google search, redlining, race, and gender
Reading(s):

- Jeong, S. (2016, March 25). How to make a bot that isn't racist. *Motherboard*. Available at http://motherboard.vice.com/read/how-to-make-a-not-racist-bot
- Barr, A. (2015, July 1). Google mistakenly tags black people as 'gorillas,' showing limits of algorithms. *WSJ Bits Blog*. Retrieved from http://blogs.wsj.com/digits/2015/07/01/google-mistakenly-tags-black-people-as-gorillas-showing-limits-of-algorithms/
- Mock, B. (2015, September 28). Redlining is alive and well—and evolving. *CityLab*. Retrieved from http://www.citylab.com/housing/2015/09/redlining-is-alive-and-welland-evolving/407497/

Week 13 (November 21)
Module 12 – Lifecycle of Data IV: Issues in dissemination and evaluation of data
Objectives: Trace ethical challenges in the evaluation and communication of results
Case(s): Google Flu trends
Reading(s):

- Harris, J. (2014, May 22). Distrust your data. *Source.opennews.org*. Retrieved from https://source.opennews.org/en-US/learning/distrust-your-data/
- Madrigal, A.C. (2015, October 6). The deception that lurks in our data-driven world. *Fusion*. Retrieved from http://fusion.net/story/202230/true-data-can-lie/
- Lazer, D., & Kennedy, R. (2015, October 1). What we can learn from the epic failure of Google flu trends. *Wired*. Retrieved from http://www.wired.com/2015/10/can-learn-epic-failure-google-flu-trends/

Week 14 (November 28)
TBD

Assignments
Against an ever-evolving terrain of technology, tools, and methods, data scientists often encounter ethical gray areas—that is, ethical issues where there is little absolute or clear-cut guidance. Because of this, assignments will revolve around cultivating students' critical and investigative capacities, as making ethical decisions with data requires not only domain knowledge, but sharp and effective information literacy skills as well.

At the beginning of the semester, students will select (from a list) a scholarly book on a topic relevant to data and society. These books will form the basis of assignments for the duration of the term. Students will be sorted into small reading groups based on their selections—these groups will collaborate, discuss, and provide support as we carefully assess these selected texts. Course assignments revolve around short, accessible styles of writing. Emphasis is placed not on writing for academics, but in writing for one's peers or for broad potential audiences—for example, co-workers, clients, or the general public. These short writing assignments will be aimed at deepening students' engagement with a particular ethical issue in data science. With

the exception of the final essay, written contributions will be posted online, where they will receive feedback from classmates and the instructor. Final essays will be submitted individually to the instructor.

Assignment 1: *Judge a book by it's cover*. In this short post (~150 words), students will—based on a cursory, first-glance impression—note what they think the book is about, their opinions on the subject, and why they think the subject is important. We will use these initial impressions as a baseline for seeing how our understanding of an issue deepens and changes over time.
Assignment 2: *Situating the book.* In this short post (~200 words), students will conduct some basic basic research to assess the background of the author, the context of the book and its audience, and any discernible goals or aims of the text.
Assignment 3: *Unlocking key concepts*. In this post (~400-600 words), students will identify and discuss one (1) key concept of social or normative significance introduced in the book (for example, "privacy," "power," "transparency," etc…). Analyses will pay attention to how the chosen key term is defined, how sources are used as support, and how other keys terms relate to it.

Assignment 4: *Beyond the book*. In this post (~400-600 words), students will consult two sources cited in the book (ideally, these sources will be relevant to the key concept discussed in Assignment 3). Students will carefully examine the sources and compare their discussion of key terms and issues.

Assignment 5: *Putting it all together*. In this final essay (~900 words), students will review the book and describe its relevance for doing ethical data science today.
In addition to the short writing assignments, students will be graded on attendance and participation.

Attendance: Students should attend all scheduled sessions during the specified class time. However, students are granted one (1) unexcused absence during the term without it negatively impacting their grade. Other absences (for example, for University-sanctioned reasons) may also be permissible, but must be discussed in advance with the instructor.

Participation: Students' participation will be graded based on three criteria. First, students must actively participate in in-class discussions and activities. Second, students must post one (1) question about the weekly readings to a specified discussion board. (These questions do not need to be long and they will only be graded on a "did do/did not do" basis.) Third, students should participate in the online discussion for their reading groups.

More details for each assignment will be posted to individual assignment pages online. Final grades will be determined according to the following weights:

Assignment 1	5%
Assignment 2	5%

Assignment 3	15%
Assignment 4	15%
Assignment 5	20%
Attendance	15%
Participation	25%

Letter grades will be assigned according to the following scale:

A	94.0 - 100.0
A-	90.0 - 93.9
B+	86.0 - 89.9
B	83.0 - 85.9
B-	80.0 - 82.9
C+	76.0 - 79.9
C	73.0 - 75.9
C-	70.0 - 72.9
D+	66.0 - 69.9
D	63.0 - 65.9
D-	60.0 - 62.9
F	0.0 - 59.9

Academic Integrity

The high academic standard at the University of California, Berkeley, is reflected in each degree that is awarded. As a result, every student is expected to maintain this high standard by ensuring that all academic work reflects unique ideas or properly attributes the ideas to the original sources. Individual departments often have their own ways of citing and attributing work, so it is the responsibility of each student to seek that information out if it is not otherwise provided through a syllabus, course website, or other means.

These are some basic expectations of students with regards to academic integrity:

- Any work submitted should be your own individual thoughts, and should not have been submitted for credit in another course unless you have prior written permission to re-use it in this course from this instructor.
- All assignments must use "proper attribution," meaning that you have identified the original source and extent or words or ideas that you reproduce or use in your assignment. This includes drafts and homework assignments!
- If you are unclear about expectations, ask your instructor or GSI.
- Do not collaborate or work with other students on assignments or projects unless you have been given permission or instruction to do so. For more information visit: http://sa.berkeley.edu/conduct/integrity

UC Berkeley Statement on Diversity

These principles of community for the University of California, Berkeley are rooted in a mission of teaching, research and public service and will be enforced in our classroom this term.

- We place honesty and integrity in our teaching, learning, research and administration at the highest level.
- We recognize the intrinsic relationship between diversity and excellence in all our endeavors.
- We affirm the dignity of all individuals and strive to uphold a just community in which discrimination and hate are not tolerated.
- We are committed to ensuring freedom of expression and dialogue that elicits the full spectrum of views held by our varied communities.
- We respect the differences as well as the commonalities that bring us together and call for civility and respect in our personal interactions.
- We believe that active participation and leadership in addressing the most pressing issues facing our local and global communities are central to our educational mission.
- We embrace open and equitable access to opportunities for learning and development as our obligation and goal.

For more information, visit UC Berkeley's Division of Equity, Inclusion & Diversity page: http://diversity.berkeley.edu/vcei

Learning Accommodations & Access

If you need accommodations for any physical, psychological, or learning disability, please speak to me after class or during office hours.

Additional Campus Resources

These additional campus units my, at times, prove helpful during the course of the semester:

- Student Learning Center
- Counseling & Psychological Services
- University Health Services
- Disabled Students' Program
- Gender Equity Resource Center