“That we are now turning to algorithms to identify what we need to know is as momentous as having relied on credentialed experts, the scientific method, common sense, or the word of God.”


“Big data” describes everything from weather satellites to Google search histories and Twitter feeds. “Data exhaust” — the “waste” information we leave behind about ourselves whenever we use computers or cellphones — has become a valuable resource for commerce as well as for sociology and political analysis. Algorithms — well-defined procedures for processing information automatically — provide the key to detecting patterns in big data, and turning data exhaust into useful knowledge about people and processes. Taken together, these three phrases capture a major sociotechnical transformation manifested in politically significant phenomena such as “fake news,” Twitter bots, prediction markets, racial profiling, autonomous robotic weapons, Bitcoin, and hacked elections.

These phenomena create unprecedented policy challenges. Effective intervention starts with understanding exactly what these challenges are. The trajectory of this course runs from questions of definition through examples of the often-unexpected, difficult-to-control effects of algorithmic processes and data-centric analysis to the cultural changes associated with algorithmic systems such as Google, Facebook, and Twitter. Finally, we will explore contrasting approaches to the governance of data and algorithmic systems in the United States, the European Union, and the People’s Republic of China.

Readings are drawn from science & technology studies, information science, anthropology, communication, media studies, legal theory, sociology, and computer science, with additional contributions from psychology and philosophy. No particular technical, humanistic, or social scientific background is required, but some familiarity with basic computer science concepts is assumed.

In addition to weekly reading logs, assignments include conducting an “algorithm audit” and writing a policy brief on a topic of your choice.

Prerequisites: none
Requirements and assignments

Summary

- Attendance (you can miss a max of 2 sessions after intro)
- Participation (20 pct)
- Weekly reading responses (15 pct, must be turned in before class, minimum 4 responses required). Extra credit for turning in all 6 possible reading responses.
- Serve as lead discussant twice (20 pct)
- Algorithm audit, with a partner (10 pct)
- Policy paper or term paper/project (35 pct)

Details

- Attendance is required. Discussions are part of the work in this class. Missing more than 2 class sessions during the quarter will negatively affect your final grade, since you can’t participate if you’re not there. No employer would keep you on if you didn’t show up to work 20 percent of the time — and 2 sessions is over 20 percent of this course.

- Class participation (20 percent of grade). This is a discussion seminar. Its success depends on the commitment and involvement of all participants. You will be graded on both the regularity and the quality of your participation.

- Cold calls: I sometimes “cold call” students (ask you direct questions on the readings). I expect your answers to demonstrate your knowledge of the material and your ability to draw interesting connections among the readings. This practice is not intended to single out or embarrass anyone. Its goal is to help you learn to think and talk “on your feet,” a crucial skill required by almost any profession. Please prepare notes on the readings and come to class ready to speak out frequently.

- Weekly reading responses (15 percent of grade). A short reading response is due before each class session (starting with week 2). See the assignment for details. These cannot be turned in after the session. You must complete at least 4 of the 6 possible reading responses in order to pass the course. Extra credit for turning in all 6.

- Co-lead a class discussion twice (20 percent of grade, 10 pct for each session). Working with a partner, discussion leaders prepare a discussion plan and a handout for the class (a 1-2 page, brief summary of major points from the readings, bullet points only). Maximum time for any presentation is 20 minutes, but other elements (discussion, exercises, small-group work, games) may be added. Discussion leaders meet with the instructor before the class session to go over a draft plan. When you are serving in this role, the weekly reading response is optional.

- Algorithm audit (10 percent of grade). With a partner, you’ll identify and “audit” an algorithmic process. (See the articles by Sandvig et al. and Diakopolous in the April 18 session.) Since this is potentially a complex project and time is short, in most cases you’ll either present an unexecuted audit design, or conduct a “toy” audit. Details to follow.

- Term research paper or policy paper (35 percent of grade). A 3000-5000 word paper or policy brief on a data politics issue of your choice. The assignment has five parts.

  1. A 400-500 word prospectus, clearly describing your topic, your approach, and the sources you plan to use, is due April 26.

  2. Meet with the instructor to discuss your idea (April 30 or May 2-3).
3. A near-complete first draft (minimum 2500 words) is due May 17.

4. Our final session on May 31 will be a round-robin in which you meet with your peer reviewers to discuss your work. Submit a complete draft for peer review by May 29. Peer-review draft papers by two other students. Prepare written notes, or comment inline on an electronic version. On May 31, discuss your own project and those of your two reviewees.

5. A final version, thoroughly revised and proofread, is due by midnight on June 7. NO LATE PROJECTS.

**Required books**


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**Course Schedule**

**April 5 — Introduction: Learning from Big Data**


Data & Society Research Institute, 2014 "Workshop Primer: Algorithmic Accountability"

Strongly recommended:

Edwards, P.N. “How to Read a Book”

April 12 — Concepts: algorithmic culture, big data, information waste - Pratyusha and Sidney


Ekbia, Hamid and Bonnie Nardi. “Heteromation and Its (Dis)contents: The Invisible Division of Labor Between Humans and Machines.” First Monday 19, no. 6 (2014)


Recommended:


April 17, 6:15-8:15 PM — Concepts and methods — Nikki and Mikey —


April 26 — Machine learning - Pratyusha and Eric

Video: Zeynep Tufekci, “We’re building a dystopia just to make people click on ads,” TED talk (2017), 23 min.


Domingos, Pedro. “A Few Useful Things to Know About Machine Learning.” Communications of the ACM 55, no. 10 (2012): 78-87. This is the most technical article we’ll read. If the details bog you down, focus on the discussion.


— Term project/policy paper: prospectus due —

May 3 — Algorithm audits (student presentations)

Resources: these are not required, but they may help you in designing your own algorithm audit. I particularly encourage you to watch the video, which Christian Sandvig says is the best example he’s seen of an algorithm audit.

Video: Joy Buolamwini and Timing Gebru, “Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification,” March 2018 (~20 min). There is an associated paper that may help with details of method.

Datta et al., “Information Flow Experiments: Determining Information Usage from the Outside” — short summaries of three good audit studies.

List of algorithm audits

May 10 — Fake news and biased algorithms — Vivien and Mikey


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**May 17 — Cryptocurrency and blockchain - Nikki and Eric**

Lustig, Caitlin, and Nardi, Bonnie. 2015. "Algorithmic Authority: The Case of Bitcoin,” 48th Hawaii International Conference on System Sciences (HICSS), 743-752

Golumbia, David. Politics of Bitcoin: Software as Right-Wing Extremism. University of Minnesota Press, 2016. Also read the following reviews of this short book:

- Dupont, Quinn, review in Journal of Cultural Economy
- Optional, longer review, written by a grad student: Osborne, Andrew, “Chump Change: Decrypting Bitcoin & Blockchain” (2017)


**May 22 — Term project/policy brief: draft due —**

May 24 — Government data and data policy: US, China, EU - Sidney and Vivien

“M-13-13 — Memorandum for the Heads of Executive Departments and Agencies, Subject: Open Data Policy—Managing Information as an Asset” (2013), memo describing how US open government policies should be interpreted

Tauberer, Joshua, Open Government Data: The Book (2014). Read at least the following chapters. Also read some of the Case Studies if interested.

- Civic Hacking and Government Data
- A Brief Legal History of Open Government Data
- 14 Principles of Open Government Data
- Example Policy Language


Botsman, Rachel, “Big data meets Big Brother as China moves to rate its citizens,” Wired UK (21 October, 2017)

European Commission, “Data Protection in the EU” This website starts with an overview, but it has many links and subsections, including to full-length policy documents. Browse what interests you most.


May 31 — Project presentations and final discussion

June 14 — Term project due by midnight. NO LATE PROJECTS. —