IDS 704: Data Science Ethics | Spring 2019 | Tue/Thur 1:25 – 2:40

Faculty

Professor: Joshua August Skorburg, Ph.D.
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Office: Gross Hall 240A
Office hours: Monday, 12:-2:00, and by appointment.

There are also two Teaching Assistants to provide feedback on your work under my direction.

Description

This course introduces some ethical, legal, and social implications of data science. The course will examine ethical problems that arise throughout the data life cycle: from collection, to processing, analysis, visualization, and interpretation. More specifically, we will consider issues such as privacy, surveillance, security, classification, discrimination, autonomy, opacity, and responsibility. Case studies will be used to explore these issues across various domains.

Learning Outcomes

1. Develop the ability to think broadly and critically about the ethical, legal, and social implications of data science.
2. Develop the ability to anticipate, identify, and resolve ethical and legal issues as they arise in data science.
3. Develop the ability to communicate clearly and confidently about ethical and legal issues in data science.

Faculty Bio

Joshua August Skorburg holds a PhD in Philosophy with specializations in ethics and moral psychology. At Duke, in addition to MIDS, he has taught data ethics courses at the Fuqua School of Business, and has appointments in the Department of Philosophy and the Kenan Institute for Ethics. His work is both theoretical and empirical, and focuses on ethical and legal issues related to emerging technologies. He has taught a range of courses in formal logic, informal logic, critical thinking, ethical theory, moral psychology, business ethics, and medical ethics.

Class Policies

The course website is on Sakai. All course material will be available there. In general, you should:

1. Complete readings before class.
2. Submit assignments before the deadline.
3. Show up to class on time.
4. Be present and engaged.

Late Work

This course moves quickly and it is important that you complete the assignments on time. Thus, **late work will not be accepted**. All of your assignments must be uploaded to Sakai (as .doc, .docx, or .pdf

only). Assignment submissions will close at the deadline specified in the schedule below. That said, if you foresee a potential issue with turning in an assignment on time (such as an interview, wedding, funeral,

etc.), **let me know in advance** and we can work out a mutually agreeable solution. I will of course make reasonable exceptions for rare instances involving unforeseen emergencies.

Attendance

You are expected to attend every class, to show up on time, and be actively engaged throughout the class. It is extremely distracting for everyone when students arrive late to class.

Assignments

Your grade in the class is comprised of four components: (1) Weekly Writing Assignments, (2) Group White Paper, (3) Final Exam, (4) Participation.

1. Weekly Writing Assignments (20% of final grade)

Each week, you will submit a written assignment of **around one page** to a prompt I will provide. The deadlines are indicated in the schedule below. The responses are intended to (1) demonstrate your engagement with the materials and (2) help guide the lectures toward topics of most interest and relevance to you, **so they should not be mere summaries of the reading**. I will sometimes quote from your writing assignments in my lectures, so please take them seriously. You can access the grading rubric for weekly responses on Sakai, and each week, I will post a few exemplars to help you improve your writing.

2. Group White Paper (35% of final grade) **DUE 11:59 PM, Saturday, April 13**

Your team assignment for this course is a white paper. The primary purpose of the white paper is to position your group as a thought leader with respect to increasingly hot-button issues in data ethics. That is, your white paper should demonstrate that your group has taken seriously - not just given lip service to - the ethical, legal, regulatory, political, etc., issues in data science that are likely to arise in your work.

The white paper should be no more than 10 pages in length (including references) and it should incorporate themes, concepts, distinctions, case studies, and materials from the course as they relate to your work. The best white papers will: State honestly, clearly, and succinctly the kinds of ethical, legal, and regulatory problems that might arise in your area; Develop aspirational but realistic responses to these problems; Differentiate your group as forward-thinking and pro-active about legal and ethical issues in analytics; Build trust with your audience by establishing humble, but authoritative perspectives on how you will handle these issues; Engage with the best and latest empirical sources; Use specific and concrete examples; Create appealing, engaging, readable, and memorable content.

Grading rubrics, templates, and exemplar white papers will be available on Sakai, and we will discuss successful writing strategies in class. Your grade will reflect the team's submission (everyone on the team receives the same grade).

3. Final Exam (30% of final grade)

The final exam for this course is take-home. Exam questions will cover all material from the assigned readings, as well as the in-class lectures and exercises. More details about the exam, including distribution and due dates, will be discussed in class.

4. Participation (15% of final grade)

Important parts of your learning in this course will take place through class discussion. Attending classes and being prepared to discuss the cases are essential. Because of this, it is not possible to make up for an absence. In exceptional circumstances, I will assess on a case-by-case basis for those instances where a student has to miss a class. **I will cold-call in the course, for which you will be prepared if you complete the readings and engage with the lectures and cases**. Part of your participation grade will also be determined by the quality of your work in doing in-class case studies and exercises.

Grading

This course involves ethical and legal reasoning, so the instructor and TAs will, of course, be responsive to arguments and reasons. Please note, however, that there is a subjective element to grading. To help alleviate this, we will grade according to a defined rubric and will also verify the scores by ensuring the rubric grades are consistent with the performance ranking within the class. Because of this, **there generally is not room for grades to be changed unless we misunderstood something that was fairly clearly explained**. But in the event you think your grade should be changed, here is the re-grading policy: First, you must submit a re-grade request to me via e-mail, which contains the following: (1) Your original submission, (2) Your original grade, (3) Feedback/comments from me (or the TAs), and (4), most importantly, *an argument* – with reasons and evidence to support the conclusion that the grade should be changed. For example, "I think I deserve a higher grade" is not a (good) reason. "The feedback on my paper indicated that I did not discuss the distinction between *X* and *Y*. But on the second page, I do use examples *A* and *B* to illustrate the distinction between *X* and *Y*" is a (much better) reason. After you submit a re-grade request with the following elements, I will review your request and promptly let you know about my decisions (and the reasons for it).

Reading

There is no assigned textbook for this course. All of the readings will be posted in the "Resources" folder on Sakai. It is important to note at the outset that some of the readings for this course are long and dense. **An important skill for you going forward will be an ability to skim, and extract the gist from, long and dense material**.

Thus, I usually recommend a two-step approach: First, read through the entirety of the article. Don't get hung up or linger too long on something that you don't understand. Simply flag the places where something is noteworthy, or where you get stuck. Just push through the reading until you have a general understanding of what's at stake. Then, take 2-3 minutes (no more!) and write down your main takeaways. Second, take a break. Go for a walk. Have a snack. Then return to the places you flagged as noteworthy or difficult. Re-read them quickly. Then, take another 2-3 minutes (no more!) and re-visit, and re-write the main takeaways.

Schedule (subject to change)

Unit 1: Foundational Concepts: Data, Algorithms, Ethics

Tuesday, March 5: Course Introduction

- No assigned reading

Thursday, March 7

- **READ:** Mittelstadt et al. (2016). The ethics of algorithms: Mapping the debate. *Big Data & Society, 3*(2): 1-21

Assignment: Weekly Writing Assignment 1 (DUE: 11:59 PM, Friday March 8)

Additional Literature

- Leonelli (2016) Locating ethics in data science: Responsibility and accountability. *Philosophical Transactions of the Royal Society of London Series A*, *374*: 1-12.
- Moor, J. H. (2005). Why we need better ethics for emerging technologies. *Ethics and Information Technology, 7*(3), 111-119.
- Lemov, R. (2017). Big data is people! *Aeon*. (11 pgs)

March 12 & 14 SPRING BREAK: NO CLASS

Unit 2: Opacity

Tuesday, March 19

- **READ:** Burrell, J. (2016). How the machine 'thinks': Understanding opacity in machine learning algorithms. *Big Data & Society, 3*(1): 1-12

Thursday, March 21

- **READ:** Goodman & Flaxman (2016). Algorithmic decision-making and a "right to explanation" *arXiv* (9 pgs)

Assignment: Weekly Writing Assignment 2 (DUE: 11:59 PM, Friday, March 22)

Additional Literature

- Lipton, Z. C. (2016). The mythos of model interpretability. *arXiv* (9 pgs)

Unit 3: Privacy

Tuesday, March 26

- **READ:** Nissenbaum, H. (2011). A contextual approach to privacy online. *Daedalus, 140*(4), 32-48.

Thursday, March 28

- **READ:** Popper, B. (2017). The empathy layer. *The Verge.* (20 pgs)

Assignment: Weekly Writing Assignment 3 (due 11:59 PM, Friday, March 29)

Additional Literature

- Altman et al. (2018). Practical approaches to big data privacy over time. *International Data Privacy Law 8*(1): 29-51
- Rachels, J. (1975). Why privacy is important. *Philosophy & Public Affairs 4*(4): 323-333

Unit 4: PII in the US vs EU

Tuesday, April 2

- **READ:** Schwartz & Solove (2014). Reconciling personal information in the United States and European Union. *Bloomberg BNA - Privacy and Security Law Report* (7 pgs).

Thursday, April 4: TBD, Professor Skorburg out of town.

Assignment: Weekly Writing Assignment 4 (DUE: 11:59 PM, Friday, April 5)

Unit 5: Bias and Discrimination

Tuesday, April 9

- **READ:** Barocas & Selbst (2016). *Big Data's disparate impact*, Introduction and Part I (pp. 673-692)

Thursday, April 11

- **READ:** Caliskan, A., Bryson, J. J., & Narayanan, A. (2017). Semantics derived automatically from language corpora contain human-like biases. *Science, 356*(6334), 183-186.

Assignment: Weekly Writing Assignment 5 (DUE: 11:59 PM, Friday, April 12); **GROUP WHITE PAPER (DUE: 11:59 PM, Saturday, April 13)**

Additional Literature

- Bryson (2017) Three kinds of bias and how to fix them.
- Angwin et al. (2016). Machine bias. *ProPublica* (15 pgs)

- Corbett-Davies et al. (2016) It's actually not that clear. *Washington Post* (6 pgs)

Unit 6: Responsibility

Tuesday, April 16

- **READ:** Matthias, A. (2004). The responsibility gap: Ascribing responsibility for the actions of learning automata. *Ethics & Information Technology, 6*(3): 175-183.

Assignment: Weekly Writing Assignment 6 (DUE: Friday, April 19)

TAKE HOME FINAL EXAM: Distribution Data and Due Date TBA.