SOCI 280: Data and Society
Winter 2023 Term 2

Instructor

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Course Description

Meetings: MonWed: 2:00 - 3:30pm in GEOG-200

Readings:

Please purchase the following three books prior to the start of the semester (e-book or physical copy):

Kate Crawford (2021). *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press.

Shoshana Zuboff (2019). *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. Public Affairs.

Caroline Criado Perez (2019). *Invisible Women: Data Bias in a World Designed for Men*. Abrams Press.

Other readings are available online, through the library, or on Canvas. If you are having problems accessing any of the readings let me know sooner rather than later.

Overview:

> *You wake up at exactly 7am. You roll over to silence the alarm on your phone and open your iPhone using its facial recognition lock, only to immediately see news notifications alerting you to the most recent political crisis in the U.S. and China's growing social credit system. You wonder in passing if the boxed wine you bought online last night would lower your social credit score if you lived in China. Then you wonder if your $10 donation to your friend's GoFundMe page would raise it, or lower it, or? Looking for a distraction, you scroll through your Insta feed and an advertisement for a new smoothie-maker pops up. My smoothie-maker is reaching its last legs, you think, only mildly creeped out by the relevance of the ad. When you climb out of bed, you ask Alexa what the weather is; it's*

> *sunny, with a high of 18 degrees. After getting dressed you toggle to your dreaded email. You see mostly spam from subscriptions you don't remember giving your email to. As you're brushing your teeth, your phone beeps. It's a Slack message from your boss saying they can't open your very first job report, can you please send another file type, ASAP? You freeze. You thought everyone could open .pages files. You haven't even had your morning coffee yet.*[†]

Data, algorithms, technology, information, and digital tools are increasingly integrated into every facet of our lives and daily practices. From schedules for workers at fast food chains; to the credit scores that determine whether we can rent an apartment, get a job, or take out a loan; to harmful criminal risk assessment algorithms that determine policing and sentencing, we are at a crucial moment in which technologies—created by a tiny and non-representative proportion of the population—are shaping our world in unexpected ways.[†]

Academia and industry are at a crossroads: how do we train the next generation of citizens (you!) to not only push the boundaries of information and technology, but to do so in a way that benefits everyone, not just a tiny few. On the one hand, there are many calls to integrate training around ethics into computer science and engineering courses. These courses are essential. At the same time, however, we as a society need to produce all around *digital citizens*: people who produce and use data, technology, and information *effectively* and do so in a way that *responsibly* engages in society, politics, and government. This is not simply to prepare students to succeed in today's job market or in their future academic careers, though the concepts and skills taught in this course will do that. I also believe democratizing access to digital literacies is a crucial issue for the next generation more broadly.

This course aims to do three things. First, we will explore the ways data, information, and algorithms are intertwined in society, shaped by social forces but also shaping society. We will do so with a particular focus on how data, information, and algorithms impact various forms on inequality in society. Second, you will complete two assignments that will expand your own digital toolkits and will demonstrate your knowledge of data and technology. Third, your third and final assignment will ask you to propose a future use of data and technology for the social good, demonstrating how you envision yourself as a digital citizen. All three assignments are designed to showcase your skills and knowledge and, if you so choose, could be included in your portfolio as you pursue the next step of your career, whether it be in industry or academia.

† Paragraph was co-written with Prof. Cara Mara Messina

Learning Goals

The goal of this course is to develop your abilities as digital citizens, teach you a little more about the technologies we use everyday, including your computers, give you a few more digital proficiencies, and help you develop your portfolio demonstrating your socially-informed digital, data, and technological knowledge.

This course is not a computer science course. It is not a course on computer programming. No prior programming experience or knowledge of computers or technology is required or assumed. It is primarily a social science and humanities course, with an eye toward digital technologies. If you're in the social sciences and/or humanities, this course will improve your proficiency with digital tools and technology. If you're in the computer sciences or engineering, this course will improve your understanding of how the technologies you're creating impact, and are impacted by society.

Specific skills include learning about your computer (CPUs, RAM, processors, etc.), creating non-linear digital stories using HTML and KnightLab StoryMap, and collecting and structuring your own data and producing data visualizations using Google Sheets and Datawrapper.

By the end of the course you will have a better understanding of the range of the different ways data, algorithms, and technologies are implicated in society, and how we might work together to produce a digitally-influenced society in which all of us can thrive.

Learning Outcomes

By the end of the course you should be able to:

1. Explain three or more different ways data, algorithms, and technology are shaped by society, and three or more ways they are shaping society.
2. Produce a non-linear story using KnightLab StoryMap that incorporates text, images, and map.
3. Collect and structure a small dataset using Google Sheets.
4. Define different types of variables (categorical, continuous, etc.,) and explain how these can be visualized (e.g., bar charts, scatterplots, etc.).
5. Produce one or more data visualizations from data you collected using Datawrapper.
6. Write op-ed style essays demonstrating your knowledge of how data and society are mutually implicated and how we as a society can shape that interaction going forward.

Course Requirements

Technology

Students must have access to a laptop, and you must bring it to class every day. If you do not have a laptop contact me as soon as possible and we can try to work something out.

In addition to your laptop you can bring whatever technology you would like to class, including phones, tablets, digital notetakers, e-readers, and more. Whatever helps you get your work done!

We will be using three main pieces of software in the course. All are free, but you will need to sign up for the first two.

1. Google Sheets to collect and structure data. You can also use Excel if you prefer, though we'll discuss the drawbacks of Excel.
2. KnightLab StoryMap to produce non-linear stories.
3. Datawrapper to produce data visualizations.

Grading and Assignments

20%	Semi-weekly reading quizzes and in-class tutorials and activities
35%	Daily reading responses
15%	Assignment #1: Dear (My) Data
15%	Assignment #2: StoryMap
15%	Assignment #3: Op-Ed Essay

Course Schedule

Atlas = Crawford's *Atlas of AI*
SC = Zuboff's *Surveillance Capitalism*
IW = Perez's *Invisible Women*

Session	Date	Theme	Main Readings	Notes
Week 1	January 9, 11	introduction and overview	SC: Ch2	
Week 2	January 16, 18	data	Atlas: Ch3 IW: Ch5	activity: data definitions
Week 3	January 23, 25	surveillance	SC: Ch3 IW: Ch12	tutorial: data visualization
Week 4	Jan 30, Feb 1	classification	Atlas: Ch4 IW: Ch8	activity: classification
Week 5	February 6, 8	prediction	SC: Ch7 IW: Ch10	assignment #1 due February 8
Week 6	February 13, 15	earth and labor	Atlas: Chs1 & 2	tutorial: StoryMap
Week 7	February 20, 22	midterm break	none	no class this week
Week 8	Feb 27, Mar 1	work	SC: Ch6 IW: Ch4	
Week 9	March 6, 8	social media and privacy	SC: Chs5 & 8	activity: view your own data
Week 10	March 13, 15	emotions	Atlas: Ch5 SC: Ch9	assignment #2 due March 15
Week 11	March 20, 22	the state	Atlas: Ch6 SC: Ch4	
Week 12	March 27, 29	power & society	IW: Ch16 Atlas: Concl.	
Week 13	April 3, 5	offline impacts & policy	IW: Ch9	activity: black mirror writer's room
Week 14	April 12	the future	assorted	no class Monday, April 10
Final	April 19			assignment #3 due April 19

Course Structure

This is a hands-on course that will introduce students to the intersection of data and society as well as practical tools to tell digital stories, visualize data, and convey your expertise. To facilitate learning both technical tools and domain knowledge, the course will consist of mini-lectures, discussions, and practical tutorials aimed at expanding your digital toolkit. The course will meet twice a week for 1.5 hours each meeting. Class time will be a combination of lecture, discussion, hands-on tutorials, and sandbox time.

Your grade will be based on two overarching criteria:

1. 55%: Completing the weekly reading and attending class. Your grade for this criteria will be calculated from weekly reading responses, weekly quizzes, and the completion of occasional in-class tutorials. **It is important that you complete the readings before each class and come prepared to discuss the material.** During these discussions there will be space to critique the material and these methods. It is important that we respect one another's thoughts, give everybody the space to talk, and address our comments at the ideas and not the person.
2. 45%: Completing three project-based assignments.

Assignments

The course assignments include reading responses due before each class period, short in-class quizzes based on the readings, and three project-based assignments. The reading responses are designed to help you think through the reading material and to create a structure for the class discussions. The assignments are designed to help you build your digital skills, and to convey your knowledge to the public (and potential employers!). Because they are designed to showcase your skills, you should complete them with an eye toward not just getting a good grade, but potentially being able to include them in your own portfolios.

Purposeful Reading Assignments and Quizzes

The weekly readings are designed to go deeper into topics than you might get reading headlines and popular news articles. One of the secondary goals of this course is to help you learn how to engage deeply with complicated text. The weekly reading responses are designed to do this.

Each course day you must submit a reading response consisting of the following three elements:

1. Describe the three most important aspects (concepts, issues, factual information, etc.) of the reading, justifying your choices.

2. Identify two aspects of the reading you don't understand, and briefly discuss why these confusing aspects interfered with your general understanding of the reading.
3. Pose a question to the text's author, the answer to which should go beyond the reading content and does not reflect the areas of confusion in point 2. You may bring in other readings or other topics we have discussed in class in this element.

Post your reading response with the above three elements to the appropriate Canvas discussion thread by 10am on the day of class.

I will also assign brief, semi-weekly in-class quizzes based on the readings. The quizzes are designed to be simple, not stress-inducing. If you've done the readings, you should have no problem with the quizzes.

For each of these elements, I will drop the three lowest grades. If you miss a class or have a week where you simply can't complete the readings no issue, and no need to inform me.

Assignment #1: Dear (My) Data

(thanks to Prof. Ryan Cordell for sharing his version of this assignment with me)

The assignment has four parts:

1. Spend one week, beginning no later than the third week of class, recording data about some aspect of your life, along the lines of what Giorgia Lupi and Stefanie Posavec record in Dear Data. Record and structure your data in Google Sheets (or Excel).
2. Create a custom physical visualization to communicate that data to readers, thinking about the relationship between the data itself and the mode of sharing it through visualization. This can be in the form of a postcard (which I will provide), like those in Dear Data, or another form of a physical visualization (kitting, crocheting, or other fibre arts; a small mobile or sculpture; metal work, carpentry, or glass blowing for the truly ambitious; etc.).
3. Create a digital visualization using Datawrapper.
4. Write up the process and your two visualizations, explaining the choices made and the ways this process has helped you think more deeply about data, data collection more broadly, and the rhetoric of visualization.

Assignment #2: The Geography of Technology

In this assignment you will use KnightLab's StoryMap to construct a non-linear, geographic story showing at least some of the resources—both material and human—needed to create or maintain some piece of technology in your life, including either hardware (e.g., phones, tablets, laptops) or software (e.g., Instagram, Word, browsers). While most technologies keep their fabrication process and maintenance needs hidden, you should do your best to identify some aspects of what makes your

chosen technology possible, from the raw material needed to produce it to the human labor needed to construct and maintain it.

The goal is to demonstrate the global networks needed to create something that you use here in Canada everyday. Story maps allow you to combine images and text on maps to tell a non-linear story. See here, here, and here for examples of non-linear story maps.

This assignment has two parts:

1. Create a spreadsheet in Google Sheets (or Excel) to organize the images and text you will include in your story.
2. The story you write using KnightLab's StoryMap.

Assignment #3: Op-Ed, The Future of Data and Society

You will write an op-ed style essay (800 - 1,000 words) on one of the following three topics:

1. A new form or use of data and/or algorithms that could improve society.
2. Describing something that already exists, but if it were more widely implemented could be used to improve society.
3. Identify how some form of data, algorithms, or technology is harming society and offer ways to mitigate the social harms.

For whichever topic you choose, you will need to be specific about the social configuration that is needed to successfully implement your idea and you will outline concrete steps to get us there, drawing on at least three concepts or examples from our readings, lectures, and class discussions.

Attendance and Participation

In each week we will learn concepts and skills that build on previous knowledge skills learned, so it is important to attend every class. While I will not keep attendance, if you miss a class you may miss in-class quizzes, tutorials, activities, and/or discussions that might impact your grade.

However, given the current situation I don't want you to attend class if you're sick, and your health should be your top priority. I will drop the lowest grades that depend on attendance (i.e. quizzes, tutorials, and activities). If you need to miss a class please do so, and there's no need to inform me. If you think you will need an extended absence (more than three class periods) do let me know so we can discuss options.

Questions? Discussion Board, Office Hours, and Email

If you come across technical difficulties someone else in the class has also likely come across the same problem. To democratize learning, please post technical or substantive questions to the Canvas

discussion board (start a new thread for new questions, or join a thread to expand existing questions). You may also post questions or comments about the assignments (again, if you have a question, others likely have the same question!). I encourage everyone to answer each other's questions, as this is the best way to learn complicated material. This is not the comments section on YouTube, so keep your comments respectful. Disrespect will absolutely not be tolerated.

You are also encouraged to come to my office hours. **Email should only be used for quick logistical questions or if you need to inform me of the need for an extended absence.** I will get back to emails within 16 working-hours, so plan ahead. My general philosophy is to work hard during the week, and to take weekends off. If you email me or post questions on a Friday afternoon or a weekend, I may not respond until the following Monday.

Consulting Resources

I encourage you to take advantage of the consulting resources at the UBC Library. They offer a wealth of consulting services, including data services, digital scholarship, and writing. Use them for this course, but their services can also help you throughout your time at UBC.

Note on Plagiarism

I encourage you to work together to help each other review the readings and to learn the technical skills. However, *all written and technical work must be your own*. I take academic honesty seriously, and you should too.

For more information on your rights and responsibilities as a student see:
https://academicintegrity.ubc.ca/

Code of Conduct

The course code of conduct ensures our diverse community is a safe space where we can learn from each other. I recognize that people may have good intentions, but sometimes our actions affect people differently than we anticipated. The point of having procedures to address disagreements is to foster broader understanding of people different from ourselves.

We will begin with UBC's Student code of conduct. During the first week of class we will expand this code of conduct together, to ensure everyone is able to successfully learn throughout the course.

Readings and Schedule

In this course we will do three things: 1) explore the intersection of data, algorithms, technology, and society 2) learn a few extra digital tools to expand your technical knowledge, and 3) learn how to convey your expertise to the public.

Week 1: Data and Society - An Overview

Day 1: Course Overview

Readings:

Nigel Shadbolt (2022). "'From So Simple a Beginning': Species of Artificial Intelligence"

In Class:

Introduction to course themes
Course overview
Overview and demonstration of the three course assignments
Discussion: course Code of Conduct
Tour of Canvas

In-Class References:

Social machines and FAIR data
Watson wins the Jeopardy Challenge
Boston Dynamics Robot Dog
Google's AI beats world's best GO player
How Dall-E Could Power a Creative Revolution
Microsoft's AI bot calls users
Tay Chatbot
Coded Bias

Day 2: Data and Society History and Overview

Readings:

Surveillance Capitalism, Chapter 2
Python for Everyone Chapter 1, Section "Computer hardware architecture"

In Class:

Discussion: history of data, computing, and AI
Activity: learn about your computer

In-Class References:

The Imitation Game
The Miseducation of Larry P
Blade Runner

Week 2: Data

Day 1: Too Much Data

Readings:

Atlas of AI Chapter 3, "Data"

In Class:

Mini-lecture: data and facial recognition
Activity: data definitions
Introduction to Assignment #1: Dear Data Project

In-Class References:

What is Facial Recognition?
Alex Johnson: "Playing roulette with race, gender, data and your face"
How Wrongful Arrests Based on AI Derailed 3 Men's Lives
ImageNet Roulette
Activists Turn Facial Recognition Tools Against the Police

Day 2: Not Enough Data

Readings:

Invisible Women Chapter 5, "The Henry Higgins Effect"
Kimberly R. Huyser (2020) "Data and Native American Identity." *Contexts* 19 (3): 10-15.

In Class:

Discussion: data, bias, and omissions
Brainstorm Assignment #1

In-Class References:

Code Switch: The U.S. Census and Our Sense of Self
How are Census Data Used in Canada?

Week 3: Surveillance

Day 1: Too Much Surveillance

Readings:

Surveillance Capitalism Chapter 3

In Class:

Discussion: surveillance capitalism

Mini-lecture: data collection, types of data, and data visualization

In-Class References:

What are Cookies and why are they needed?

Gender segregated ads in newspapers

Do Facebook ads discriminate?

What is the Cambridge Analytica Scandal?

Edward Tufte and Data Visualization

Bad data visualization examples

Two beautiful data visualizations

Day 2: Not Enough Surveillance?

Readings:

Invisible Women Chapter 12, A Costless Resource to Exploit

Kimberly R Huyser et al. (2021). COVID-19 Pandemic and Indigenous Representation in Public Health Data. *American Journal of Public Health*.

In Class:

Tutorial: Google Sheets and Datawrapper

In-Class References:

Google Flu Trends Overview

Google Flu Trends is no longer predicting the flu

China stops releasing COVID data

Scientists are using facial recognition software to protect seals

Week 4: Classification

Day 1: What is classification?

Readings:

Atlas of AI Chapter 4, "Classification"

In Class:

Discussion: What is machine learning?
Activity: classification

Day 2: Classification and its discontents

Readings:

ProPublica: Machine Bias
Invisible Women Chapter 8, One-Size-Fits-Men

In Class:

Discussion: bias and machine learning
Activity: bias and machine learning

In-Class References:

Rise of the machine

Week 5: Prediction

Day 1: Data and prediction

Readings:

Surveillance Capitalism, Chapter 7

In Class:

Discussion: what is prediction?
Sandbox: assignment #1 check-in

In-Class References:

Common Nighthawk Migration Animation
Visualizing Your Google Location History
Rovables
SkinBot
ChromoSkin
Inside Google's $14 Billion Futuristic City
How the LAPD Uses Data to Predict Crime

Day 2: Prediction and its discontents

Readings:

Ruha Benjamin (2019): "Assessing risk, automating racism: A health care algorithm reflects underlying racial bias in society." *Science* 366 (6464): 421-422.

Invisible Women Chapter 10, The Drugs Don't Work

Optional: Ziad Obermeyer et al. (2019). "Dissecting racial bias in an algorithm used to manage the health of populations." *Science* 36 (6464): 447-453.

In Class:

Assignment #1 small-group presentations

Discussion: prediction and bias

In-Class References:

Week 6: Earth and Labor

Day 1: Earth

Readings:

Atlas of AI Chapter 1, "Earth"

Charlotte Trueman: Why data centers are the new frontier in the fight against climate change

In Class:

Discussion: environmental impact of data and algorithms

Introduction to Assignment #2

In-Class References

Chile's lithium: Indigenous community fights multinational miners

Gobi mega-mine puts Mongolia on brink of world's greatest resource boom

Microsoft reveals its MASSIVE data center

The environmental impact of smartphones

Repairing – not recycling – is the first step to tackling e-waste from smartphones

Day 2: Labor

Readings:

Atlas of AI Chapter 2, "Labor"

The Laborers Who Keep Dick Pics and Beheadings Out of Your Facebook Feed

In Class:

Discussion: the labor that makes AI work
Tutorial: KnightLab's StoryMap

In-Class References

Making Marvels—Reproduction of the Chess Player (The Turk)
Chess Robot The Turk
Facebook content moderators break NDAs to expose shocking working conditions
Exclusive: OpenAI Used Kenyan Workers on Less Than $2 Per Hour to Make ChatGPT Less Toxic
Kenyan workers work for less than $2 per hour to filter harmful content on ChatGPT
Inside story of Foxconn shrouded in secrecy
Why are workers at China's Foxconn factory protesting?
Cecile – Manager, Computer Vision/Machine Learning Hardware Acceleration

Week 7: Midterm Break, No Class

Week 8: Work

Day 1: Surveillance and Work

Readings:

Surveillance Capitalism Chapter 6

In Class:

Discussion: surveillance and work

In-Class References:

Amazon robots
Jobs of the future?
Day in the life of a Amazon warehouse worker

Day 2: The Future of Work

Readings:

Invisible Women Chapter 4, "The Myth of Meritocracy"
Wired: Future of Work
AI is the Future of Hiring

In Class:

Discussion: the future of work

In-Class References:

Use of AI in Hiring
AI Chatbot is helping CEOs think
Rate My Professor and gender bias in evaluations

Week 9: Social Media and Privacy

Day 1: Social Media

Readings:

Surveillance Capitalism Chapter 5
Tressie McMillan Cottom: Credit, Life Chances, and Algorithms

In Class:

Mini-lecture: the future of social media
Discussion: what is social media to you?
Sandbox: assignment #2 check-in

In-Class References:

Power of the Imagination
Competing Visions of Social Media

Day 2: Privacy

Readings:

Surveillance Capitalism Chapter 8
Janet Vertesi: Data Free Disney

In Class:

Discussion: should a right to privacy be foundational to democratic societies?
Discussion: fair information guidelines/policies
Activity: view your own data

In-Class References:

Summary of privacy laws in Canada
PIPEDA in brief
PIPEDA fair information policies

Week 10: Emotions

Day 1: Classifying Affect

Readings:

Atlas of AI Chapter 5, "Affect"

In Class:

Discussion: classifying affect
Sandbox: assignment #2 check-in

In-Class References:

Day 2: Emotions and Surveillance

Readings:

Surveillance Capitalism Chapter 9

In Class:

Small-group presentations of assignment #2
Discussion: Emotions and surveillance

In-Class References:

Week 11: The State

Day 1: The State 1

Readings:

Atlas of AI Chapter 6, "State"

In Class:

Discussion: the role of the state

In-Class References:

Citizenfour

Day 2: The State 2

Readings:
Surveillance Capitalism Chapter 4

In Class:
Discussion: different roles of the state

In-Class References:

Week 12: Power

Day 1: Power and Society

Readings:
Ruha Benjamin (2019): *Race After Technology: Abolitionist Tools for the New Jim Code*, Introduction
Invisible Women Chapter 16, It's Not the Disaster that Kills You

In Class:
Discussion: power and society

In-Class References:

Day 2: Who benefits from data and AI?

Readings:
Atlas of AI Conclusion, "Power"

In Class:
Discussion: power

In-Class References:

Week 13: Offline Impacts & Policy

Day 1: Real-world impacts

Readings:
Cathy O'Neill (2016): *Weapons of Math Destruction*, "Introduction"
Invisible Women Chapter 9, "A Sea of Dudes"

In Class:

Discussion: Real-world impacts
Activity: black mirror writer's room

In-Class References:

Day 2: Policy

Readings:

What is the GDPR
Benoit Deshaies and Dawn Hall. "Responsible use of automated decision systems in the federal government."
Skim the AI Policy Toolkit

In Class:

Mini-lecture: policy
Discussion: benefits and drawbacks of regulation
Sandbox: assignment #3 check-in

In-Class References:

Congress Was Confused by the Internet During Hearing with Google CEO | NowThis

Week 14: The Future

Day 1: Easter Monday, No Class

Day 2: Imagining Futures

Readings:

Catherine D'Ignazio and Lauren Klein: *Data Feminism* Chapter 2, Collect, Analyze, Imagine, Teach

In Class:

Discussion: imagining futures
Course summary and wrap-up
Sandbox: assignment #3 check-in

In-Class References:

Radical Tech Futures
Can a Sensor-Laden Hoodie Protect Vulnerable Communities