



Welcome to CSE 440/441/540

ML and Society

Please have a face mask on

Masking requirement



UB requires all students, employees and visitors – regardless of their vaccination status – to wear face coverings while inside campus buildings.

<https://www.buffalo.edu/coronavirus/health-and-safety/health-safety-guidelines.html>

Introduction format

Preferred Name

One very boring thing about you

Why did you pick this class? Be honest!

What do you know about ML? Be honest!

What do you hope to learn in this course?

I'll go first

Atri

This is my 15th year at UB

Because I'm teaching the course

Actually not much (I can fake it though!)

Hope to get fresh perspectives from y'all!



Akash

Kiran

Warren

Your turn

Preferred Name

One very boring thing about you

Why did you pick this class? Be honest!

What do you know about ML? Be honest!

What do you hope to learn in this course?

My office hours

Tuesdays: 2-2:50pm (in-person)

(There'll be OH today)

Things to remember

ATTEND, SUBMIT ALL THINGS ON TIME!

DO NOT CHEAT!

READ CAREFULLY!

Take care of yourself!

Be respectful of your classmates!

Academic Dishonesty

All your submissions must be your own work

Penalty:

Minimum: An **grade reduction in course**

Possible: **F** (or higher penalty) if warranted

YOUR responsibility to know what is cheating, plagiarism etc.

If not sure, come talk to me

Excuses like “I have a job,” “This was OK earlier/in my country,” “This course is hard,” etc. **WON’ T WORK**

I DO NOT HAVE ANY PATIENCE WITH ANY CHEATING :

**YOU WILL GET A GRADE REDUCTION IN THE COURSE
FOR YOUR FIRST MISTAKE**

Accessibility Resources

Information included in the syllabus

In short, let me know and consult with [Accessibility Resources](#)

Preferred Name

If you prefer using name diff from UB records

Let me know and we'll make a note of it.

Critical Campus Resources

Sexual Violence

UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB's Title IX Coordinator at ☎ 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Services Campus Advocate at ☎ 716-796-4399.

Mental Health

As a student you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other issues you may experience. You can learn more about these programs and services by contacting:

Counseling Services

- 120 Richmond Quad (North Campus), ☎ 716-645-2720
- 202 Michael Hall (South Campus), ☎ 716-829-5800

Health Services

Michael Hall (South Campus), ☎ 716-829-3318

Health Promotion

114 Student Union (North Campus), ☎ 716-645-2837

One Stop-shop for the course

CSE 440/441/540 Syllabus Piazza **Schedule** Autolab Notebooks Project - Impossible Project Bonus Points Resources -

CSE 440/441/540 Spring 2022 Schedule

Spring 2022 schedule for the *ML and Society* course.

<http://www-student.cse.buffalo.edu/~atri/ml-and-soc/spr22/index.html>

1. No this is **NOT** a April's fool joke!

⚠ Future Lectures
The topics for lectures in the future are tentative and subject to change.

⚠ Future Listening/Reading/Watching Assignments
All listening/reading/watching assignments for future lectures are tentative till the **week before** the lecture. You can definitely listen/read/watch up on the future assignments but your discussion summaries will have to be based on the final reading assignments.

Date	Topic	Notes
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Questions/Comments?

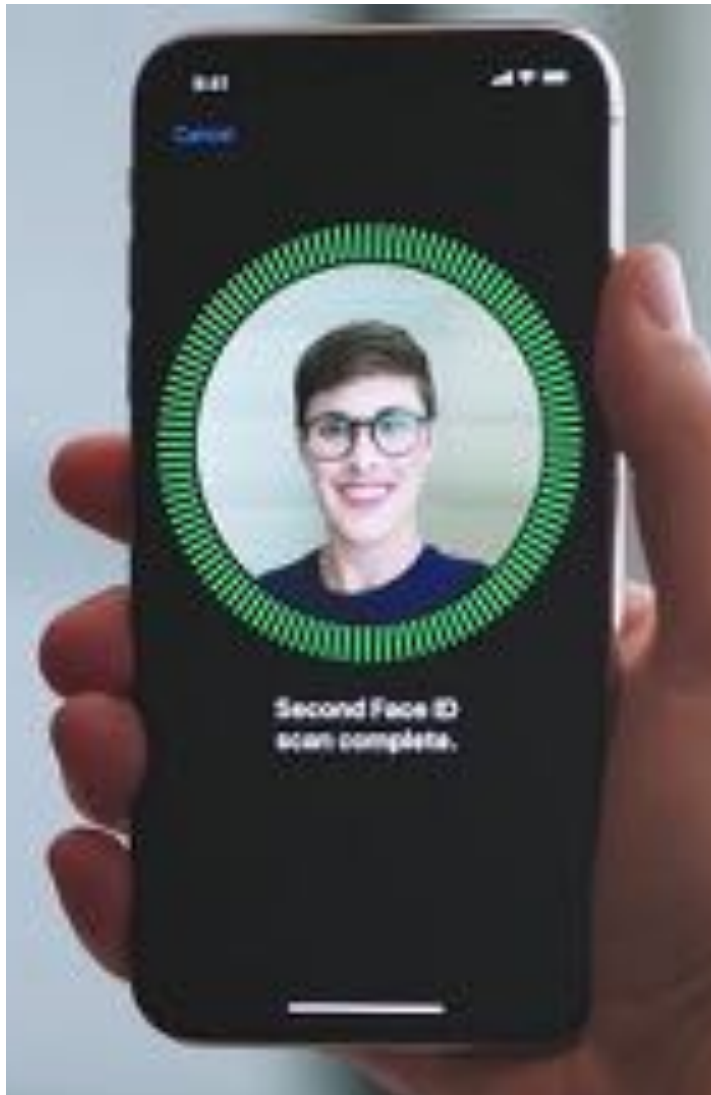


More course logistics in 2nd half of today



Why this course?









C O D E D B I A S

 **Play**   

2020 **TV-MA** 1h 25m **HD**

This documentary investigates the bias in algorithms after M.I.T. Media Lab researcher Joy Buolamwini uncovered flaws in facial recognition technology.

Genres: Social & Cultural Docs, Documentary Films, Science & Nature Docs

This movie is: **Investigative**

One Month, 500,000 Face Scans: How China Is Using A.I. to Profile a Minority

In a major ethical leap for the tech world, Chinese start-ups have built algorithms that the government uses to track members of a largely Muslim minority group.

Flawed Algorithms Are Grading Millions of Students' Essays

Foiled by gibberish and highly susceptible to human bias, automated essay-scoring systems are being increasingly adopted, a Motherboard investigation has found

Research is scarce on the issue of machine scoring bias, partly due to the secrecy of the companies that create these systems. Test scoring vendors closely guard their algorithms, and states are wary of drawing attention to the fact that algorithms, not humans, are grading students' work. Only a

Meanwhile, it tended to underscore African Americans and, at various points, Arabic, Spanish, and Hindi speakers—even after attempts to reconfigure the system to fix the problem.

“The BABEL Generator proved you can have complete incoherence, meaning one sentence had nothing to do with another,” and still receive a high mark from the algorithms.

Slide by Kenny Joseph

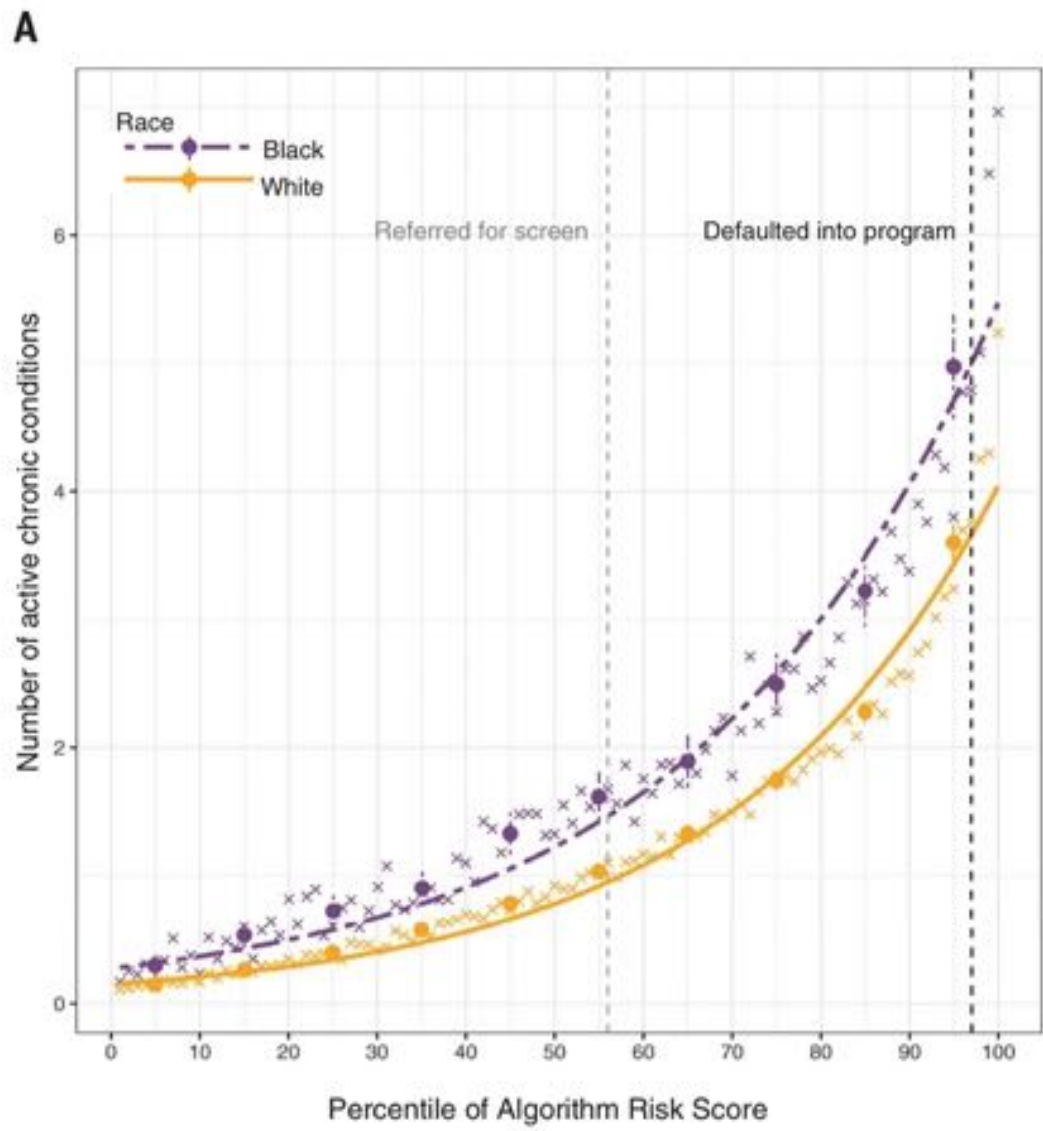


Fig. 1. Number of chronic illnesses versus algorithm-predicted risk, by race. (A) Mean number of chronic conditions by race, plotted against

Slide by Kenny Joseph

Obermeyer, Z., Powers, B., Vogeli, C., & Mullainathan, S. (2019). Dissecting racial bias in an algorithm used to manage the health of populations. *Science*, 366(6464), 447–453. <https://doi.org/10.1126/science.aax2342>



Where the Tweets have no name liked
Anna Lauren Hoffmann @annaeveryday · 33m

How it started: How it's going:



1 60 147

Slide by Kenny Joseph

What's going on? Let's dive in!



There was immediate push-back



Ryan Saavedra ✓

@RealSaavedra



Socialist Rep. Alexandria Ocasio-Cortez (D-NY) claims that algorithms, **which are driven by math,** are racist



♥ 9,455 3:27 AM - Jan 22, 2019



💬 9,204 people are talking about this



Before we go into who is right...

Disagree with what someone SAID **NOT** who you think they ARE



Same principle replace “race” by other topic

Amazon Basics Microwave, Smart microwave, Works with Alexa

by Amazon

★★★★☆ - 1,783 customer reviews | 564 answered questions

Price: **\$59.99** ✓prime

AmazonBasics Microwave

Question: Since you have to stand there to put popcorn or whatever in the microwave, why does it need to be voice controlled?

Answer:

[Redacted answer content]

By Diane Fillmore on November 24, 2018

✓ See more answers (25)

▲
134
votes
▼



Microwave
\$59.99
✓prime

with Dot (Charcoal)
\$109.99
✓prime

with Dot (Heather Gray)
\$109.99
✓prime



WORKS WITH ALEXA

Control this with your device:



✓ See More

When you disagree with someone

First, pause to see if you understand **WHAT** they are saying

Then, try to understand **WHY** they are saying it

ALWAYS ask for clarifications to make sure you are not missing something

Questions/Comments?



One Stop-shop for the course



CSE 440/441/540: ML and Society

It's just math. But whose math is it?

Spring 2022

<http://www-student.cse.buffalo.edu/~atri/ml-and-soc/spr22/index.html>

Under Construction

This page is still under construction. In particular, nothing here is final while this sign still remains here.

Feedback is more than welcome!

If you have any feedback about the course content, please email them to me.

Acknowledgment

The development of the material in this course is supported by a Mozilla Responsible Computer Science award  as well as support from the UB Honors college  faculty fellow program. Spring 21 instructor, Kenny Joseph, is partially supported by NSF grant IS-1939579 . The current instructor Atri Rudra is partially supported by NSF grants CCF-1763481  and IS-1939579 .

The support is gratefully acknowledged.

Read the syllabus carefully!

CSE 440/441/540

Syllabus

Piazza

Schedule

Autolab

Notebooks

Project+

Impossible Project

Bonus Points

Resources +

CSE 440/441/540 (Machine Learning and Society) Syllabus

Spring 2022

Tuesdays and Thursdays, 9:30-10:50am, [Davis](#) 101.

Under Construction

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Please note

It is **your responsibility** to make sure you read and understand the contents of this syllabus. If you have any questions, please contact the instructor.

Academic Integrity

Questions/Comments?



Grading Policy

Here is the split of grades:

Course Component	% of grade
Project	50%
In-class discussions	25%
Impossible Project	15%
Attendance	10%
Bonus	Up to 5%

Project

CSE 440/441/540 Syllabus Piazza Schedule Autolab Notebooks Project+ Inpos

Project Details

This page contains all the details related to the ML and Society course p

Under Construction
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A Request
I know I am biased in favor of [references](#) that appear in the computer science literature. If you think I am missing a relevant reference (outside or even within CS), please email it to me.

Different expectation from CSE majors vs non-majors

Background and Motivation

In this course we will cover various aspects of how algorithms and society interact. In class, we will do this via lectures, activities and discussion. However, you do not really get the material unless you get "your hands dirty." The project in this course is meant as an opportunity for you to make to a deep-dive into a specific (somewhat narrow) topic related to the broad topic of the course. The hope is that y'all will be able to connected your chosen project to the material we cover in class and indeed, take advantage of the latter to improve your project!

One (potential) project deadline THIS Th

Project Topics

Here are the four proposed projects (each link leads you to the page for the specific project, which has more details on what each project will entail):

1. Human acceptance of algorithmically controlled systems
2. Incorporating multiple notions of fairness
3. Algorithmic Auditing
4. Creating more teaching tools for ML and Society course

Highly recommended

We **strongly** encourage y'all to pick from the project topics listed above since we have put some thought into creating projects that are (1) fun but (2) also feasible within the time frame of a semester.

However, see the point below.

If you want to propose your own project

While we hope that y'all will pick from one of the topics listed above, we do want to give y'all a chance to propose your own project *if you have a strong reason to do so* (e.g. such a project will be very closely related to your major and/or you took this course because you had a specific project in mind).

If you go down this path, you need to let Atri know by 5pm on THURSDAY February 3, 2022. *If you miss this deadline, then you will have to choose from one of the above topics.*

Attendance on Autolab

AUTOLAB

You need to sign in or sign up before continuing.

Autolab Homepage

SIGN IN WITH MYUB

<https://autograder.cse.buffalo.edu/>

This is what you should see when you login

Courses

Current

CSE4/545:
Coding Theory
(s22)

First Submission

COURSE PAGE GRADE
SECTION

CSE440/441/540:
Machine
Learning and
Society (s22)

COURSE PAGE

You should see a link for attendance

Assignments

Attendance

February 1

You need to enter a pass-phrase

What is the pass phrase for today?

I affirm that I have complied with this course's academic integrity policy as defined in the syllabus.

SUBMIT QUERY

Pass-phrase for today: **Joy Buolamwini**



Fast Company Cover - Most Creative People in Business



Coded Bias Documentary (Netflix/PBS)



Ted Talk - 1M+ views Fighting Bias in Algorithms



#DecodeTheBias Olay Campaign

Time for a break!



Who does my machine
learning model serve?

How do I know?

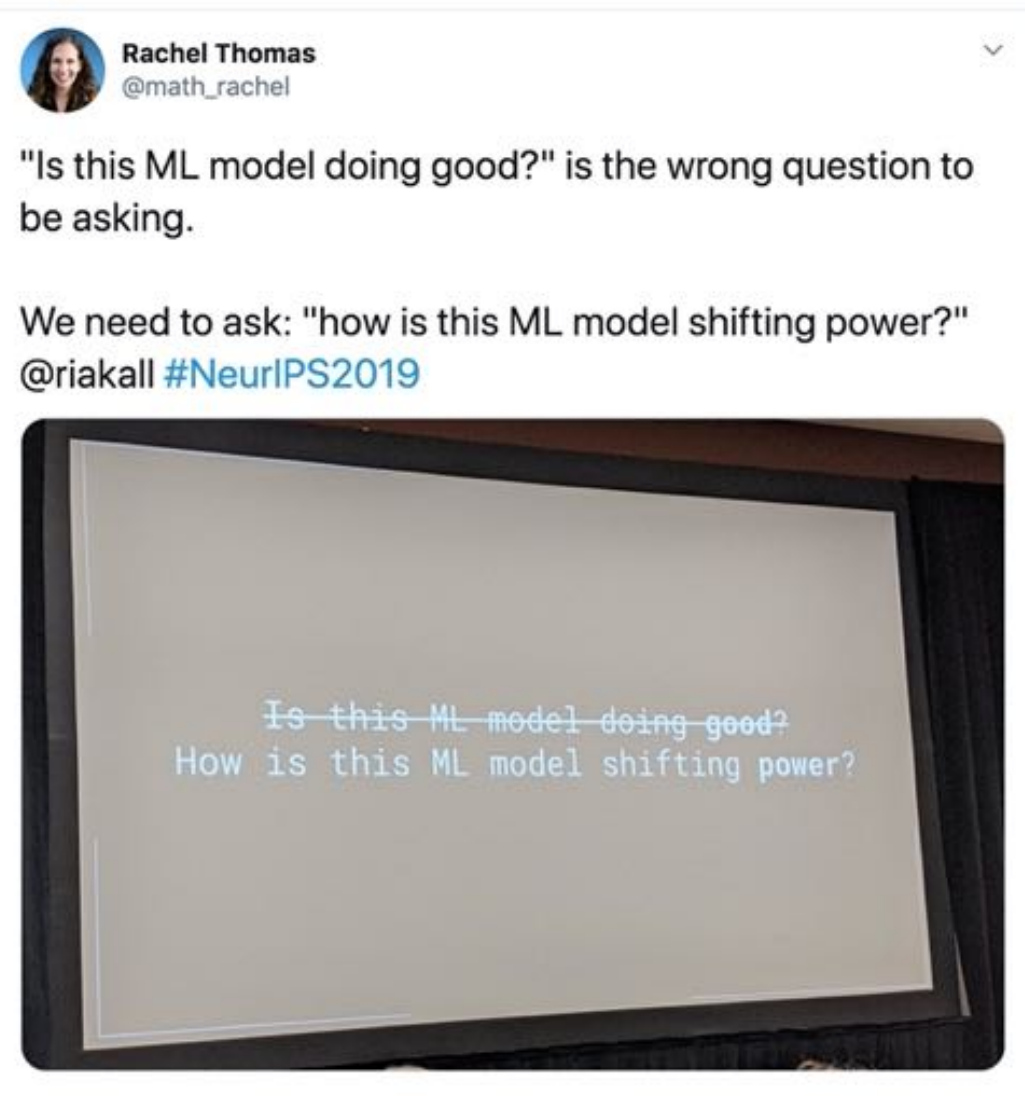
**What can I do
about it?**

The CSE 199 Ideal – Get folks to understand...

Computing **for**, **in**, and
ideally, **with** and **by** society

We're past CSE 199 now

- It will not be sufficient in this course to understand that “ML is biased” or that it can be “used for good”
- We will focus on **why** ML is biased, what “**social good**” means, and how to **really build technology for, in, and with/by society**



Slide by Kenny Joseph

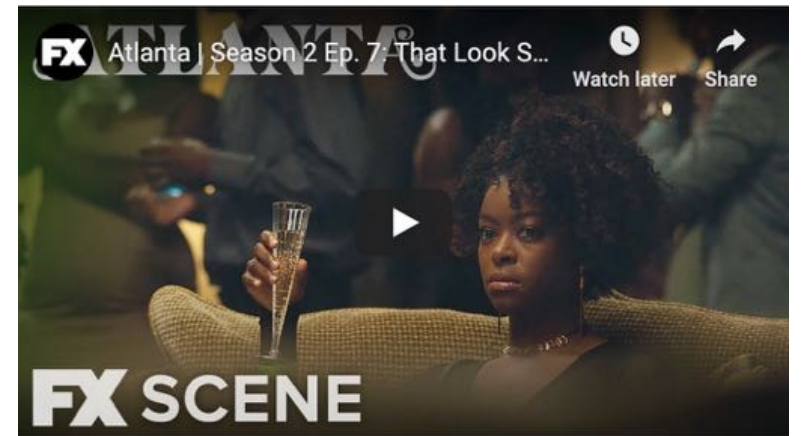
Back to Algorithms and Bias....



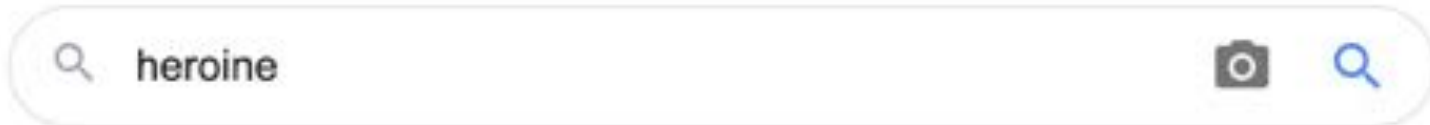
Thanks to..



Jenny Korn



Search #1: heroine



My search results

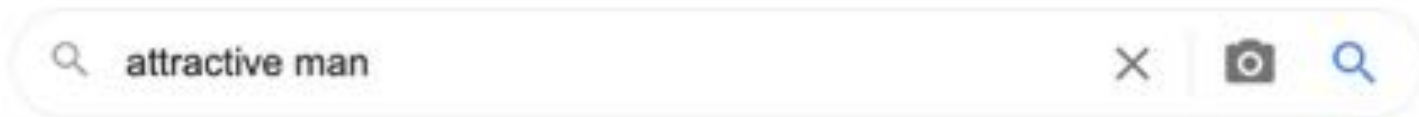
Notice any pattern?



Search #2: attractive woman



Search 3: attractive man



My search results

The image shows a Google search results page for the query "attractive men". At the top, the Google logo is on the left, and the search bar contains the text "attractive men". To the right of the search bar are icons for voice search, image search, and a green profile icon. Below the search bar, there are navigation tabs for "Images", "Videos", "News", "Shopping", and "More". A horizontal row of image thumbnails follows, representing different categories of attractive men. The main content area consists of three rows of image thumbnails. The first row includes a large article thumbnail on the right with the text "DO YOU HAVE ATTRACTIVE HABITS?". The second row features a variety of images, including a couple, a man in a white shirt, a man in a plaid shirt, and a man in a suit. The third row shows more portraits of men, including one in a yellow shirt and another in a dark suit. Each image has a small caption below it, such as "The Most Attractive Man: A Guide for a..." and "Attractive Men Found The Struggle Of...".

Questions to ponder

Questions to ponder

Do you think the above result are biased?

If not, why not?

If so,

- What do you think could be the reason for this bias?
- Do you think Google Images is responsible?
- Should Google Images do something to fix the bias?

Search #4: ceo



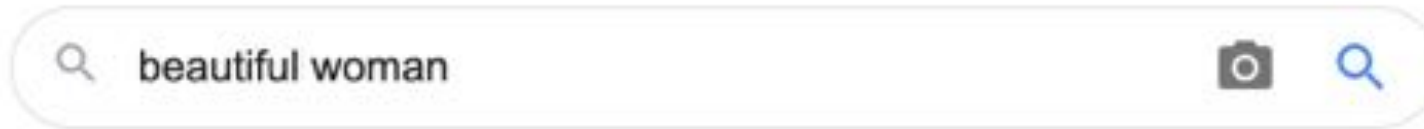
My search results (Spring 2020)



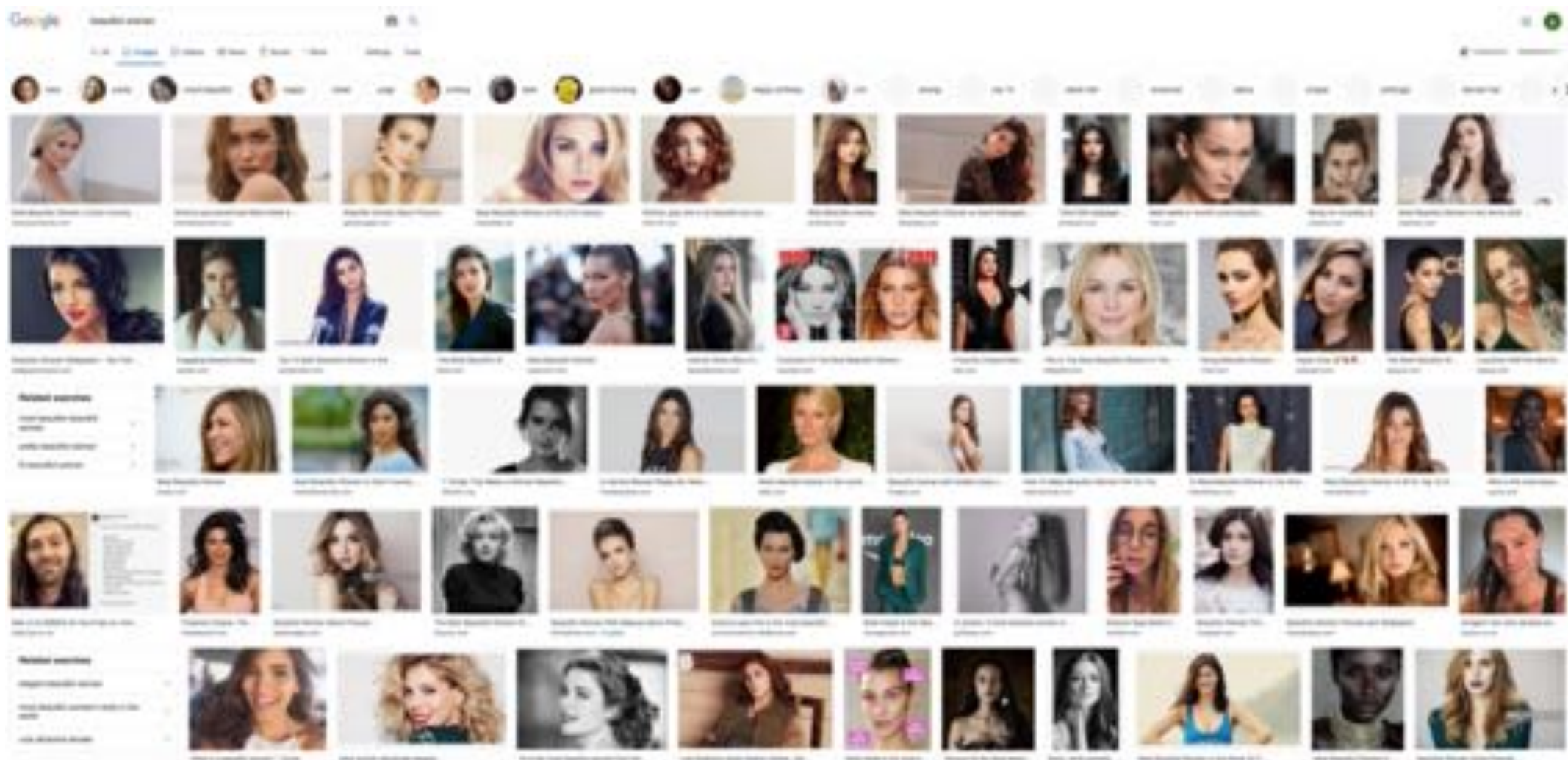
My search results (Spring 2022)



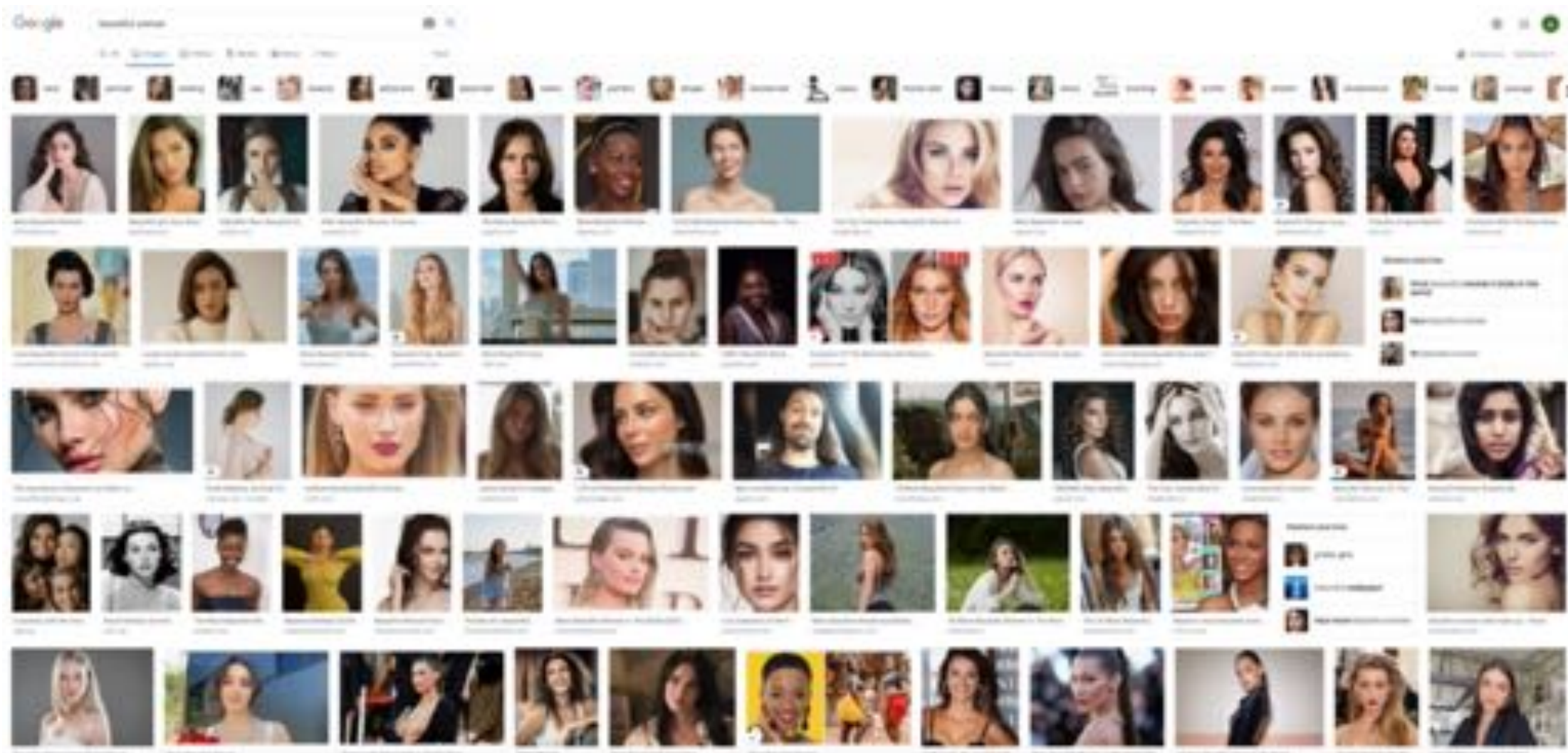
Search #5: beautiful woman



My search results (Spring 2020)



My search results (Spring 2022)



Questions/Comments?

