

Exploring Algorithmic Bias with a Summer Bridge Program

Date, Time, Classroom	Tuesday, August 7 th , 2018 1:30-2:30 (18 Google CSSI-Extension Students) Class met in the library eClassroom (36 computers)
Preparation	Met with professor. Students will learn about Imposter Syndrome before coming to the library. Find bad examples of Google Image search results and Autocomplete suggestions. The web is always changing! Update the worksheets as needed.
Materials	PowerPoint slides, Google Autocomplete worksheet, Suggested Readings handout
Student Learning Outcomes	<ol style="list-style-type: none">1. Students will discuss the effects of algorithm bias in order to articulate how some individuals or groups of individuals may be misrepresented or systematically marginalized in search engine results.2. Students will develop an attitude of informed skepticism in order to critically evaluate Google search results.
IL Frames	Information has Value Authority Is Constructed and Contextual
Homework or Pre-lesson videos	Choose one or watch all of them: Challenging the Algorithms of Oppression Safiya Noble (12:18) https://youtu.be/iRVZozEEWIE Algorithms of Oppression: Faculty Focus: Safiya Umoja Noble (3:43) https://youtu.be/6KLTpoTpkXo This is very brief if you want to play this at the beginning of class. How I'm fighting bias in algorithms Joy Buolamwini (8:44) https://youtu.be/UG_X_7g63rY The moral bias behind your search results Andreas Ekström (9:18) https://youtu.be/_vBggxCNNno

Introduction

(3 min)

Agenda

1. Algorithmic Bias
2. Google Scholar [See Jennifer's Lesson plan in CORA](https://www.projectcora.org/users/jmasunaga)
<https://www.projectcora.org/users/jmasunaga>

Welcome Google CSSI-Extension Students and incoming computer science majors!

Today we are going to critically evaluate our Google search results.

Computer science is centered upon the study of algorithms — well-defined sequences of steps that accomplish something of value. Algorithms are everywhere in our daily life. Amazon makes recommendations for books, Netflix recommends movies; news and trending stories appear on our twitter and Facebook feeds. Siri and Alexa make recommendations too. Algorithms determine what information you see, and in what order. This includes search engines like Google, Google Scholar and library databases. A 2012 survey, from Pew Research Center found that 66% of people believed that search engines were “fair and unbiased.” But are they? Algorithms are designed by humans, and reflect the assumptions and biases of their designers.

Presentation slide #1

Algorithms are not neutral. This doesn't mean they are not useful tools for research, but it helps to know their limitations and biases.

Algorithmic bias occurs when a computer system reflects the implicit values of the humans who are involved in collecting, selecting, or using data. Algorithmic bias is found across platforms, including but not limited to search engine results and social media platforms, and can have impacts ranging from inadvertent privacy violations to reinforcing social biases of race, gender, sexuality, and ethnicity. – **Wikipedia**

Google Images

(8 min)

Slides #2-3

Go to Google Images <https://images.google.com/> and do a search a search on...

Professor Style (other options: Professor) See Dr. Noble's work: [Algorithms of Oppression](#) for more search examples.

Slide #4:

1. What do you see? Men dressed in jackets & ties
2. Who do you see? Fictional characters: Indiana Jones, Robin Williams (Dead Poets Society), Professor X (X-Men), stereotypes, no diversity. White males mostly.
3. Who do you expect to see? / Who is missing? More women, more people of color, people of all ages, more diversity, real-life professors

4. How does the information provided by these images influence you? Professors all dress alike in tweed/corduroy jackets, with patches on the elbow, ties, etc. Professors are easily identified by how they dress. Reinforces stereotypes.
5. Does this tell us anything about how population is represented or misrepresented? Wrong! Very dated, vintage clothing. Most professors at my university don't dress this way. Professors are individuals and dress accordingly.

*Questions adapted from M. Brown-Salazar's lesson plans in CORA <https://www.projectcora.org/users/mbrownsastmarys-caedu> which are based on Dr. Noble's work: [Algorithms of Oppression](#)

Slides #5-7

Think-Pair-Share

Go to Google Images <https://images.google.com/> and do a search a search on...

Computer Scientist (other options: Computer Engineer, mathematician)

1. What do you see?
2. Who do you see?
3. Who do you expect to see? / Who is missing?
4. How does the information provided by these images influence you?
5. Does this tell us anything about how population is represented or misrepresented?

Keep the PowerPoint side up during the activity so that the students can read questions 1-5 while looking at Google Image results on their computer.

If students finish early, they can explore and try to find other examples in Google Images.

Imposter Syndrome

(3 min)

Slide #8

Did you learn about Imposter Syndrome last week? What does imposter syndrome mean?

"Impostor syndrome strikes all kinds of people, but evidence suggests it's especially prevalent among those who are **underrepresented** in their fields—for example, **women and minorities working in tech**. When you're the only woman or person of color in the room, it can sometimes feel like you're in the *wrong* room." -- Melinda Gates

Slide # 9

Is there a relationship between **Google Image results** and **Imposter Syndrome**? What do you think? What if young girls are Googling college majors or investigating possible computer careers? (The computer engineer results – first 4 rows – no women)

Call on students to share their thoughts. Mini discussion.

**Google
Autocomplete**

Slides #10-11

Introduce Google Autocomplete (or autofill). Pass out worksheet. Work with a partner.

(9 min)

Choose a second autocomplete example (or find one on your own) to discuss with your partner too.

Write the following examples on the white board:

- Vaccinations cause
- Climate change is
- College students are
- College dropouts are
- High school students are
- Artists are
- Chemists are
- Statisticians are
- Interracial couples are
- Interracial dating is

Students complete worksheet with a partner. If the students finish early, they can try more than two. They can try to find other examples not listed above.

Mini discussion. Collect worksheet?

Worksheet questions:

1. Do you think that the autocomplete suggestions are accurate based on your past search history? Y or N
2. Do you think that the Google search predictions are biased? Why or why not?
3. Can Google's search predictions change the way you think about the world?

* Are these results fair, credible, and neutral? Is Google a neutral resource?

Slides #12-15

Further Readings Slides #16-23

& Library

Resources

(5 min)

Need a research topic for fall semester?
Hint, hint...

Most Rhetorical Arts classes require a research topic with an ethical or social justice component. Algorithms increasingly shape modern life and can perpetuate bias and discrimination.

Briefly highlight further readings on the PowerPoint slides (handout)

Assessment

Collect the worksheets and read their responses. This will give us the opportunity to hear from the quiet students who didn't speak up. See where students struggled doing the activity. (We did not collect worksheets year 1)

The professor sends out a daily survey on all the "soft skills" workshops and the students ranked our workshop from 1-10, and wrote comments.

Next Time...

Incoming first-year students were shy and quiet. Do more Think-Pair-Share and less all class discussion. The instructor should model the Google Images activity first (Professor Style), then let students do the second activity (Computer Scientist) together in pairs. The students liked "partner time." This was a summer bridge program, so we decided to keep the worksheets short and the activities social (students talking to each other).

Assign the Homework or Pre-lesson video(s) before class.