THE PEOPLE VS THE ROBOTS

LESSON RATIONALE:

Assessment of Lessons 1-4: Messy Data, Biased Data,
Humans vs. Robots
"The People Versus The Robots"

The usage of algorithms is expanding. They are currently being used to determine criminal status, sort applicants in the job hiring process and create playlists on our favorite streaming services. But what happens when those algorithms cause harm to particular communities, identity groups and individuals? What happens if they sway elections or determine the wrong person to be guilty? While algorithms can help streamline and make processes quicker and more efficient for its users, there are still errors programmed into them.

In this assessment lesson, students will use the context of a court case to practice using Messy Data, Biased Data and Human vs. Robots to (a) analyze and evaluate a particular algorithm and (b) publicly articulate their analysis and evaluation.

INTRODUCTION (5 MINS)

Welcome students to class. Have students reflect on their learning about algorithms so far.

Has their stance on algorithms changed?

**Is it possible to use algorithms ethically?**

THE PEOPLE VS THE ROBOTS VIDEO (10 MINS)

Introduce and Play "The People Vs. the Robots Video"

Explain to students that they will continue to practice analyzing and evaluating particular algorithms, but this time in the context of a court case. The video and worksheets will provide a step-by-step blueprint on how to construct their legal arguments for, or against, algorithms.

Play the People Vs. the Robots Video

Pause the video when directed.
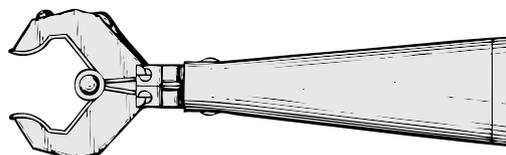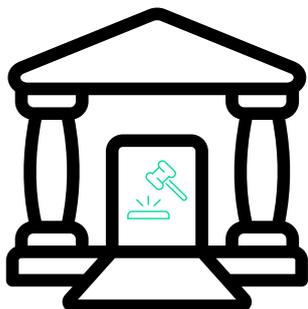
GRADE LEVEL
High School
Grades 9-12

TIME
45-50
minutes (mins)

COMMON CORE STANDARDS

CCSS.ELA-LITERACY.SL.9-10.1
CCSS.ELA-LITERACY.W.9-10.9
CCSS.ELA-LITERACY.RH.9-10.4

MATERIALS
Paper
Writing utensil
The People Vs. the Robots Video
Legal Briefs on Employment Algorithms

Lesson Objective(s):

Analyze and evaluate a particular algorithm in terms of Messy Data, Biased Data and Human vs. Robots.

Explain and defend your evaluation of a particular algorithm.

Essential Questions:

How do you use Messy Data, Biased Data and Human vs. Robots -- together -- to analyze an algorithm?

How do you evaluate the pros and cons of a particular algorithm?

Key Vocabulary

Algorithm
Biased Data
Messy Data

Classroom set up

Students will be collaborating in teams and watching videos. Desks should be set up to best support teamwork

THE PEOPLE VS. THE ROBOTS: SET UP (2 MINS)

Put the students into three teams: A, B, and C.
Hand out Legal Briefs: Employment Algorithms to all the teams.

Explain to the students that each team (A, B, C) will be responsible for arguing (for, or against) a specific part of an algorithm (using Messy Data, Biased Data, and Humans Vs. Robots). Before each section, the video will give them a specific question to argue.

THE PEOPLE VS. THE ROBOTS: ARGUMENT PREPARATION (10 MINS)

Explain to students they will now be following the example provided in the video to make their arguments (pro and con) for the Axis of Bias and the Axis of Storytelling.

Instruct the students to begin reviewing their team's (A, B, or C) assigned Legal Brief. Have them think about what evidence will be useful to argue their case.

THE PEOPLE VERSUS THE ROBOTS: BIASED DATA (8 MINS)

Play The People Vs. The Robots video. Press pause when instructed.

Following the question asked in the video, have teams A and B argue for and against the Axis of Bias. Start with Team A. Give them 3 minutes to share their case. Then, give Team B three minutes to respond. Encourage the students to use the research in the Legal Briefs to make their argument.

THE PEOPLE VERSUS THE ROBOTS: HUMANS VS ROBOTS (WHO GETS TO TELL YOUR STORY?) (8 MINS)

Play The People Vs. The Robots video. Press pause when instructed.

Following the questions asked in the video, have teams C and D argue for and against the Axis of Storytelling. **Start with Team C.** Give them 3 minutes to argue. Then give Team D three minutes to respond. Encourage the students to use the research in the Legal Briefs to make their argument.

THE PEOPLE VERSUS THE ROBOTS: HUMANS VS ROBOTS (WHO GETS TO TELL YOUR STORY?) (8 MINS)

Play The People Vs. The Robots video. Press pause when instructed.

Following the questions asked in the video, have teams C and D argue for and against the Axis of Storytelling.

Start with Team C. Give them 3 minutes to argue. Then give Team D three minutes to respond. Encourage the students to use the research in the Legal Briefs to make their argument

THE PEOPLE VERSUS THE ROBOTS: JURY VOTING (2 MINS)

Play The People Vs. The Robots video. Press pause when instructed.

Have the students take a vote on which side -- the plaintiff or the defense -- made the best case.

THE PEOPLE VERSUS THE ROBOTS: CONCLUSION (5 MINS)

Play The People Vs. The Robots video

When it ends, ask the students which arguments -- along with Messy Data, Biased Data and Humans vs. Robots-- **were the most important or least important in their decision?**
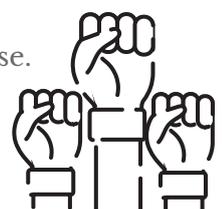
LEGAL BRIEFS: THE PEOPLE VERSUS THE ROBOTS:

EMPLOYMENT ALGORITHMS

Team A:
ATTORNEYS ARGUING FOR EMPLOYMENT ALGORITHMS WITH AXIS OF BIAS

Employment Algorithms Improve Employee Retention, Which Helps Diversity

The study, which was conducted by Mitchell Hoffman, Lisa B. Kahn and Danielle Li, observed over 300,000 hires across 15 companies that employ low-skill workers such as call center operators or data entry employees….Before the study, the average worker hired across these 15 companies lasted just 99 days in the position. Retention rates are among the most important metrics to consider in recruiting, due to the high cost of hiring new workers—one study estimates that replacing a single employee costs companies an average of six to nine months' salary, between recruitment efforts, training costs and productivity losses. Because of the cost associated with low retention rates, you'll understand that it's a big deal that this study concluded that retention rates increased by 15 percent when an algorithm chose the hire.

Humans, Not Algorithms, Are Biased When Making Employment Decisions

"Humans are inherently biased—and machine learning capabilities can end up perpetuating that bias because that data itself might be biased, " said Amy Hodler, director, Graph Analytics and AI Programs at Neo4j. "At the end of the day, the ML models are written by a human. AI today is effective for specific, well-defined tasks but struggles with ambiguity which can lead to subpar or even disastrous results.

Employment Algorithms Help With Diversity

"What we've found is regardless of [the industry], whether it's restaurants, retail, call centers—it actually increases the diversity of the population," says Jason Taylor, Infor's chief scientist for human capital management. In Infor's forthcoming report, they found that using an algorithm to help with hiring increased their wholesale clients' Hispanic hires by 31 percent. For their restaurant clients, African American hires increased by 60 percent. "What a systematic process does is it knows no color, no race, no ethnicity," says Taylor. "When [a hiring manager] doesn't know a person and they don't know what to look for, they basically hire people like themselves. It's 'We have something in common,' or 'Oh, I like you,' then it's 'Okay you're hired.' What this does is it provides them with an objective piece of information that shows the probability that they're going to be successful in the role. So it helps to qualify that pool."

1 Christina Boode, "Algorithms Hire Better Than Humans," *Quora*, December 1, 2015. https://goarya.com/blog/algorithms-hire-better-than-humans/

2 R. Dallon Adams, "Inclusive AI: Are AI Hiring Tools Hurting Corporate Diversity," Techrepublic, June 25, 2020. https://www.techrepublic.com/article/inclusive-ai-are-ai-hiring-tools-hurting-corporate-diversity/

3 Bouree Lam, "For More Workplace Diversity, Should Algorithms Make More Hiring Decisions," The Atlantic, June 22, 2015. https://www.theatlantic.com/business/archive/2015/06/algorithm-hiring-diversity-HR/396374/

LEGAL BRIEFS:
THE PEOPLE VERSUS THE ROBOTS:

TEAM B:
ATTORNEYS ARGUING AGAINST EMPLOYMENT ALGORITHMS
VIA THE AXIS OF BIAS

EMPLOYMENT ALGORITHMS DISCRIMINATE AGAINST DISABLED PEOPLE "BY DEFAULT"

"The problem that people with disabilities face through this kind of AI is, even if they have a strong set of positive qualities for certain jobs, the AI is unlikely to highlight those features and could generate low scores for those individuals. Characteristics such as typical enunciation and speaking at a specific pace are qualities that might correlate with effective salespersons. Further, perhaps leaning forward with one arm on the table signals an interpersonal comfort that prior high-performing salespersons often display. The AI system would have identified this relationship from the "training data"—the video interviews and the sales outcomes collected from current employees. However, people with disabilities will not benefit if their qualities manifest physically in a way the algorithm has not seen in that training data. If their facial attributes or mannerisms are different than the norm, they get no credit, even if their traits would be as beneficial to the job."

EMPLOYMENT ALGORITHMS DISCRIMINATE AGAINST WOMEN AND PEOPLE OF COLOR

"In some cases, however, the chances of getting the job for which you have applied for are systematically biased. For example, it has been shown that in the US labour market, African-American names are systematically discriminated against, while white names receive more callbacks for interviews. However, we observe bias not only because of human error, but also because the algorithms increasingly used by recruiters are not neutral; rather, they reproduce the same human errors they are supposed to eliminate. For example, the algorithm that Amazon employed between 2014 and 2017 to screen job applicants reportedly penalised words such as 'women' or the names of women's colleges on applicants' CVs."

EMPLOYMENT ALGORITHMS DISCRIMINATE IN JOB ADVERTISING

"These predictions can lead jobs ads to be delivered in a way that reinforces gender and racial stereotypes, even when employers have no such intent. In a recent study we conducted together with colleagues from Northeastern University and USC, we found, among other things, that broadly targeted ads on Facebook for supermarket cashier positions were shown to an audience of 85% women, while jobs with taxi companies went to an audience that was approximately 75% black. This is a quintessential case of an algorithm reproducing bias from the real world, without human intervention."

4 Alex Engler, "For Some Employment Algorithms, Disability Discrimination By Default," *Brookings Insttitue,* October 31, 2019. https://www.brookings.edu/blog/techtank/2019/10/31/for-some-employment-algorithms-disability-discrimination-by-default/
5 Julius Schulte, "AI-Assisted Recruiting Is Biased. Here's How To Make It More Fair," World Economic Forum, May 9, 2019. https://www.weforum.org/agenda/2019/05/ai-assisted-recruitment-is-biased-heres-how-to-beat-it/
6 Miranda Bogen, "All the Ways Hiring Algorithms Can Introduce Bias," *Harvard Business Review*, May 6, 2019. https://hbr.org/2019/05/all-the-ways-hiring-algorithms-can-introduce-bias

LEGAL BRIEFS: THE PEOPLE VERSUS THE ROBOTS:

TEAM C:
ATTORNEYS ARGUING FOR EMPLOYMENT ALGORITHMS USING THE AXIS OF STORYTELLING

ALGORITHMS MAKE BETTER HIRES THAN HUMAN

The study also showed that the use of human discretion—that is, the use of the hiring manager's own judgement to overrule the algorithm's recommendations—was strongly correlated with worse hires. The tendency to trust one's gut feeling over a machine's recommendation, also known as "algorithm aversion", is a widely observed practice, even though it's likely hurting business practices. "It's human nature to think that some of that information you're learning in an interview is valuable," said Danielle Li, one of the researchers that worked on the study. "Is it more valuable than the information in the test? In a lot of cases, the answer is no."

ALGORITHMS MAKE BETTER HIRING DECISIONS THAN HUMANS

Job testing technologies enable firms to rely less on human judgement when making hiring decisions. Placing more weight on test scores may improve hiring decisions by reducing the influence of human bias or mistakes but may also lead firms to forgo the potentially valuable private information of their managers. We study the introduction of job testing across 15 firms employing low-skilled service sector workers. When faced with similar applicant pools, we find that managers who appear to hire against test recommendations end up with worse average hires. This suggests that managers often overrule test recommendations because they are biased or mistaken, not only because they have superior private information.

7 Christina Boode, "Algorithms Hire Better Than Humans," *Quora*, December 1, 2015. https://goarya.com/blog/algorithms-hire-better-than-humans/
8 R. Dallon Adams, "Inclusive AI: Are AI Hiring Tools Hurting Corporate Diversity," *Techrepublic,* June 25, 2020. https://www.techrepublic.com/article/inclusive-ai-are-ai-hiring-tools-hurting-corporate-diversity/

LEGAL BRIEFS:
THE PEOPLE VERSUS THE ROBOTS:

TEAM D:
ATTORNEYS ARGUING AGAINST EMPLOYMENT ALGORITHMS
USING THE AXIS OF STORYTELLING

EMPLOYMENT ALGORITHMS PERPETUATE SYSTEMIC BIAS IN HIRING

"There is a significant risk that predictive hiring models may build in existing patterns of discrimination. So, even though an algorithm may seem to be objective, the information that humans have selected for consideration may incorporate biases that will screen out certain groups that have been historically underrepresented in a workplace. If algorithms are fed information and data points about a company's top performers, the algorithm will produce a profile and then predict who will be a successful candidate based on their similarity to that profile. The algorithm is matching characteristics of people rather than factors causally linked with job performance, such as ability or skills. When the data used to train the algorithm aren't diverse, the analytical models may build in barriers to groups that have been underrepresented —including candidates who could perform the job as well, or better, but have a very different profile than the current top performers."

EMPLOYMENT ALGORITHMS USE NUMBERS TO HIDE BIAS

So will algorithms rid the hiring process of bias? Scholars warn that big data's supposed objectivity can mask other biases built into the algorithms. Chelsea Barabas, a researcher at MIT's Center for Civic Media, writes: Decisions based on algorithms, are becoming "used for everything from predicting behavior to denying opportunity" in a way that "can mask prejudices while maintaining a patina of scientific objectivity." These concerns are echoed by other scholars such as Kate Crawford, who has made incisive arguments against the claim that big data doesn't discriminate against social groups ... The peril of these algorithms is that they mask deep seated biases behind the promise that the numbers "speak for themselves."

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9 Emily Peiffer, "Algorithms Risk Perpetuating Bias in Hiring. How Can Employers Use Them To Make Hiring More Inclusive," *Urban Institute*, November 8, 2018. https://www.urban.org/urban-wire/algorithms-risk-perpetuating-bias-hiring-how-can-employers-use-them-make-hiring-more-inclusive
10 Bouree Lam, "For More Workplace Diversity, Should Algorithms Make More Hiring Decisions," The Atlantic, June 22, 2015. https://www.theatlantic.com/business/archive/2015/06/algorithm-hiring-diversity-HR/396374/