Studying the role of minority groups and AI-assisted recruiting

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Luis de la Espriella

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On my honor as a University Student, I have neither given nor

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Luis de la Espriella

Approved _____ Date _____

Bryn Seabrook, Department of Engineering and Society

Artificial Intelligence effect on minority groups

Artificial Intelligence (AI) technologies are being developed for many tasks such as driving, getting help from an assistant and hiring. Currently, in high technology industries, Hispanic and black people represent each about 7% of the population, women represent 35.68% and white people represent 68.53%. Given the gap between majority and minority groups how can we, as a society ensure AI technologies are used ethically to improve this difference? Currently we cannot predict whether AI-assisted recruiting will benefit or disadvantage minority groups, but we can focus on what causes may influence either direction. For this we must understand how the technology works and how this technology may affect the role of minority groups.

Artificial Intelligence assisted recruiting is used to find fitting candidates by analyzing massive amounts of data. Since most companies are looking for those who fit in, the algorithm will rightly so be using data from current employees to make a prediction on the next best candidate. The main issue with this idea is that people tend to bias towards their own social group and if the algorithm aims to hire solely based on current employees then the algorithm will reproduce human bias and be no better than the current hiring process. AI-assisted recruiting is predicted to be a very influential technology and we must make sure this tool is built ethically to give the same opportunity to everyone.

Can diverse teams and broad leadership roles benefit bias?

For this research, the main question is "How we can ensure Artificial Intelligence assisted recruiting is built ethically and without disadvantaging minority groups" This paper will be studying specific articles which aim to answer this question and study how AI can be of advantage/disadvantage for recruiting purposes. I will study Amazon's AI recruiting algorithm to study what potential problems could arise from this technology and I will study diverse leadership such as Satya Nadella's to analyze what companies are currently doing to promote inclusive recruiting and promote diversity in current hiring process. I will also be studying how having diverse teams and broad leadership roles can benefit the algorithm's bias in the long run. In terms of studying how manipulating the data can solve bias I will be studying how data scientists are able to reduce bias in previous work.

AI bias penalizing minority groups

Currently companies such as Amazon, PepsiCo and Cisco are beginning to use AI to help recruiters identify potential candidates. One of the biggest questions this technology faces is whether AI-assisted recruiting will put minority groups at a disadvantage. In fact, this technology has already had some consequences in the tech industry. A report from released in 2018 suggests Amazon's AI recruiting tool shows bias against women. The article states the following "Amazon's idea is to have a system that would facilitate the work recruiters are doing and to take in some number of resumes and "spit out" the top candidates. Amazon's system taught itself that male candidates were preferable. It penalized resumes that included the word "women's," as in

"women's chess club captain." (Dastin, 2018) It can be noticed immediately how this technology can have serious consequences on minority groups. As this tool penalized women, it could do the same for other minority groups. The algorithm preferred to hire men who form 68.53% of tech population. If the algorithm is built in disregard to ethical guidelines it will bias towards the majority group and could potentially penalize other words such as Latino, Black and more. As 55% of Hiring Managers expect AI to be a regular part of their work within the next five years (Team, 2018) As a society, we must greatly consider an implementation of ethical guidelines which can ensure the gap between minority and dominant groups is not increased further. "If AI is to become an essential and, most importantly, ethical recruitment tool, it is crucial to first recognize its limitations in making sound judgments without oversight" (Low J. J., 2019) iIt is necessary to ask ourselves what ethical guidelines and strategies must be followed as this technology is built. An article from Forbes which emphasizes on diversity roles in tech caught my attention as it states "The best way to make sure these technologies are built for all of us is to make sure developers have a broad mindset and can bring different input from diverse social groups. In order to build a product that serves everyone, you need voices and input from all types of people" (Council, 2018) AI-assisted recruiting is a product that will soon impact the entire world and in order to positively impact the world it should be built for everyone. For this to happen I must agree with the quote above that in order to build a product like this we must need people from many different cultures who can bring different input and voices to this technology's requirements. In this research I would like to explore how having a diverse team creating this technology can have great benefit and I would like to alert everyone about the consequences this technology could possess if built inadequately.

AI and Society Correlation

As this AI-assisted recruiting makes decisions, it will return a result of people to hire which will inevitably be part of the new training data fed to the algorithm. This will create a recurring effect where the technology has great impact on social groups by choosing who gets which job, how much money and much more. In the long term this recurring effect will greatly influence the input data which will inevitably improve or worsen bias and alter the end result of the algorithm. I will call this recurring effect on each other "Technology and society Correlation"

There are two main ideas as to how we can reduce bias. The first is allow developers to manipulate this input data and the second is to reduce bias over time. In fact, these are two ways where society can alter the future of this technology and benefit minority groups. Due to the Correlation between Technology and society I will be using the STS framework technological momentum. The idea of technological momentum as explained by Hughes is as follows "technological momentum infers that social development shapes and is shaped by technology" (Hughes, 1969) This research framework is perfect for this research as we are analyzing the impact this technology and society will have on each other over a certain period of time. I will be using this framework to study both the technology and society individually and then put them together to analyze the effect both will have on each other and eventually find an answer as to how we can make sure this technology is used to benefit minority groups. I do not believe I will find the perfect answer. I hope to bring it to everyone's attention that this is a very important subject and I hope to find possible solutions that will help reduce bias and that will increase the presence of the minority population. The technological momentum framework will help me

study the best approach so that the technology benefits us in the long run. Hughes clearly states technological momentum depends on time. This dependency will fit with my topic as we are analyzing the long run of the technology and what we can do as a society to make sure the technology remains unbiased during its existence.

Culture Improvement vs Data manipulation

After careful investigation, there are two ways Artificial Intelligence (AI) assisted recruiting can be used to benefit diversity. One of these is by ensuring the algorithm recruits from diverse talents pools and the second is by improving company culture and promoting diversity in leadership teams to further assist the needs of AI assisted recruiting in the long run. It is important to know the first solution deals with the data itself and the second deals with the social aspects. The most promising long-term solution is the second.

In truth we do not have a concrete answer to whether AI-assisted recruiting will increase or reduce bias in the near future. There are many possible outcomes and this research is intended to guide us in the right direction. In terms of data manipulation, bias is a common Machine Learning problem many data scientists need to work around and there is something to learn from the tasks they do to reduce bias. Data Scientists must often choose a representative training data set to ensure all groups are weighted according to their importance. As mentioned on a Tech Crunch article focusing on ethics and Machine Learning Bias "Making sure the training data is diverse and includes different groups is essential" (Lynch, 2018) Making sure our data comes from diverse talents pools is key to ensuring a representative training data set and to weight minority groups as important as the rest.

The solution above deals strictly with how we can reduce bias in the algorithm itself and is a great solution to reducing bias in AI-assisted recruiting. However, not only does the technology affect individuals and society but AI is greatly affected by the role people play. An article focused on how the United States combats bias in AI assisted recruitment explains how decisions made by people can affect results from this AI technology as the article mentions "What happens when these data are 'fed' into the algorithm? It will learn and repeat the processes that result in 'successful hires'. As a result, AI replicates biased thought processes that are, at times, conscious or subconsciously made by people." (Low J. J., 2019) This statement suggests that the algorithm will learn from previous experience and possibly repeat these decisions even if they were wrongly biased or ethically wrong. A main point to make is that in the long run the algorithm will bias towards its own past decisions. Not even AI can be perfect and inevitably without any sort of management this technology's results would be completely unpredictable.

It is reasonable to assume any company working on AI-assisted recruiting will have teams working on this technology as long as it is running and as such it supports the reasoning to use the STS framework Technological momentum to study the effect people and AI-assisted recruiting have on each other over time. Throughout its lifetime, this technology will keep getting adjusted and groups will tend to change. Due to this strong relationship between technology and society it is crucial to come up with a structured solution to aid minority groups in the long run. In order to come up with the best solution we should look at past experiences. Even though AI-assisted recruiting is very new, recruiting is not. It is important to study current leaders that have been successful at promoting diversity and inclusion.

Diverse leaders are leaders who come from a diverse background and focus on improving inclusiveness and culture at their respective company. Diverse leaders are in fact crucial to AI-

assisted recruiting. The reason these leaders are essential is not because they increase diverse numbers but because they devote their time to improve cultural performance. Currently one of the best examples of a diverse leader is Satya Nadella, originally from India and Current CEO of Microsoft. Satya Nadella began his CEO position at a time where Microsoft's culture was rigid and very poor. What was great about his position is the different mindset he had from many others who were also eligible for the job. One of his main goals is as he states in his book Hit Refresh "we are at our best when we actively seek diversity and inclusion. If we are going to serve the planet as our mission states, we need to reflect the planet" Diverse leaders as Satya Nadella bring in a new perspective and focus their tasks on building inclusiveness and culture rather than focusing directly on results. Microsoft keeps working on changing the culture and as of last year Microsoft reported a 17.3 percent increase in its total number of African American/Black employees and a 12.5 percent increase in the number of Hispanic/Latinx employees. (Bishop, 2019) Microsoft's success has been rapidly increasing the past few years and this trend can greatly be credited to the culture change that transformed the entire company. Having diverse leaders be in charge of AI-assisted recruiting can be one of the best decisions a company can make. Diverse leaders committed to the company's culture tend to pass along their vision of the importance of diversity to everyone on their team. This can indeed have serious benefits to promote inclusiveness values across the entire company. A Forbes article furthermore analyzes the effect team members have on technologies and suggest how important they can be to the success of the technology as stated in a Council article "The best way to make sure these technologies are built for all of us is to make sure developers have a broad mindset and can bring different input from diverse social groups. In order to build a product that serves everyone, you need voices and input from all types of people" (Council, 2018) Minority groups and organizations will mutually be benefited by

improving diversity and as such The success of AI-assisted recruiting will greatly be affected by the mindset of those who build it.

The effect diverse teams and diverse leadership can have on AI-assisted recruiting is outstanding. A Forbes article from award winning scientist DR. Anna Powers states a study found that Companies that have more diverse management teams have 19% higher revenue due to innovation (Powers, 2018) In fact increasing the diversity of leadership teams leads to more and better innovation and improved financial performance. These studies clearly suggest the benefits diverse leadership can have on the creation of AI-assisted recruiting. Diverse teams can provide a wider view on the effects AI-assisted recruiting will have all over the world, innovate this technology accordingly and reduce chance of bias against minority groups. Furthermore, Diverse leaders will pass on their values to the rest of the team and make improving inclusion and diversity a main objective while building this technology.

Whichever solution the company decides to use, it is of utmost importance to know that there is no right solution that will lead to a successful forever implementation of an AI-assisted recruiting technology. In fact, the solution is going to be one that will have to be shifted and restructured over time due to current performance. Furthermore, bringing back the idea of technological momentum, the effect this technology and people will have on each other will be forever lasting and if neither is managed correctly it is very likely several social groups will face disadvantage. From the moment of its creation, it is important this technology and the cultural effect on it are being studied closely. In fact, a very small change on either technology or society will cause a shift that can disadvantage social groups. Companies should realize how important it is to build this technology ethically as everyone in the world will depend on this and this technology should reflect the world itself. At some point in the future it is likely that every

company will be using AI to hire individuals and it would be extremely unfair for minority groups to be labeled as less important due to having a smaller population than bigger groups. It would also be unfair to companies as diverse individuals are key to bringing a wide mindset to many problems and teams of diverse people are key to coming up with creative solutions that serve any social group rather than creating a technology focused on a specific group.

The biggest limitations throughout this research is the lack of available resources about the given topic. AI-assisted recruiting is mostly under development and has only being introduced for a small number of companies. Currently it hasn't been widely used due to the potential harms AI technologies could have and because of the current development of the technology. There has in fact only been one event where this technology has had consequences on society, and many have disregarded the consequence due to the low use of this technology so far. However due to the high expectancy of this technology in the near future, the importance and consequences must be brought up to everyone's knowledge. Another big limitation is the low amount of resources that studies how diverse leaders impact business culture. Many studies support the idea that inclusion and diversity are very impactful for successful business but there are not many studies that analyze the impact. The impact is very hard to calculate because it is more qualitative rather than quantitative and even though many know the impact inclusion can have on a company there is no formula nor statistics to support the actual impact. By studying leaders such as Satya whose impact in culture change is clearly known we can better study the impact diverse leaders have on those influenced by them.

For the future of the project I would like to interview recruiters from top tech companies which focus on inclusiveness to understand at a deeper level the strategies they use to hire and

balance the population of minority groups. If I were to continue this research, I would like to study companies who are innovating this technology and get more details as of how they are going to proceed and how they will make sure the algorithm outputs unbiased results. Most tech companies as of late have a position called Chief Diversity Officer. I would like to study their roles, analyze the effectiveness they could have on AI-assisted recruiting and include possible solutions as to how they can support their development. I would like to perform more studies on other diverse leaders in tech companies to understand more fully how diverse leaders can lead to successfully maintain the ethics behind AI-assisted recruiting in the long run.

Long term commitment to improve diversity

There are two main solutions to dealing with bias in Artificial Intelligence assisted recruiting. The first will involve reducing bias by ensuring the algorithm recruits from diverse talents pools which do not weight specific groups to be of more importance than others. The second solution which has been currently implemented by many companies is to solve biasing by improving company culture and promoting diversity in leadership teams. Culture is essential in top tech companies and having diverse teams is key to bringing in diverse mindsets that can build technology for every specific group rather than having a sole focus. Due to the big margin between minority groups and highly abundant ones, it is important to make sure this technology is committed to reducing recruiting bias. It is hard already for many minority groups to not face bias from companies, if the population numbers above where to fall it would cause tragic

consequences for these groups. I wish to remind leaders how essential minority groups are to innovation and how important it is to keep rising these statistics.

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