CRITICAL SUMMARY ON ETHICAL USE OF NATURAL LANGUAGE PROCESSING (NLP)

By

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Acknowledgement of country

I would like to acknowledge the Gadigal people of the Eora Nation upon whose ancestral lands our City campus now stands. I would also like to pay respect to the Elders both past and present, acknowledging them as the traditional custodians of knowledge for this land.

1. INTRODUCTION

Natural Language Processing (NLP) has been rapidly advancing in recent years, and with its increasing applications come a number of ethical considerations. NLP technology allows machines to process, understand and generate natural language, which has the potential to significantly enhance human communication and interaction. However, it also raises important ethical questions about its use.

A major ethical concern with the use of NLP is the potential for misleading results. NLP systems are trained on large amounts of data, and if that data is biased, the resulting system will be biased as well. This can have dire consequences, especially in areas such as employment and criminal justice, where NLP systems are increasingly used to make decisions. If the data used to train these systems is biased, it can lead to unfair and discriminatory results, perpetuating existing inequalities and further marginalising some. certain group.

Another important ethical consideration is the potential for privacy violations. NLP systems have the ability to collect, store, and analyse vast amounts of personal data, and this raises serious concerns about the protection of individual privacy and autonomy. Critical inquiry in this area involves examining the ethical implications of data collection and use, as well as evaluating the effectiveness of existing privacy frameworks and regulations.

According to a recent LinkedIn report[9], the "time to hire" and “cost to hire” matrix shows an upward inclination for mid to senior level vacancies. So important roles and positions stay available longer than usual despite spending more money. This has led organisations like Amazon to find a progressive methods which lowers the time and the cost by implementing artificial intelligence (AI) and machine learning (ML).

It was reported [2] that Amazon formed a team in 2014 to create a candidate resume screening tool that uses NLP and ML to find the best candidates for job profiles. Once installed, the software uses sophisticated artificial intelligence algorithms to learn key parameters from the profiles of successful candidates over time and look for similarities between the profiles. Profiles are sent for review. The tool then ranks candidates on a 5-star scale based on how similar they are to previous successful candidates, similar to the rating system Amazon uses to rank products.

By 2014, A.I based hiring software was widely used in the company and only a few people trusted this system because it saved a lot of time. In 2015, it caught the company's attention because technical roles such as software developers was not filled in a gender-neutral manner. This prompted the

company to have its engineers investigate the cause. After extensive research, the engineers concluded that the bias was due to the fact that the data used during training process of the A.I software consisted primarily of resumes from male employees, reflecting the male-dominated trend in business and industry. turmeric. This unintentionally biased training data led the algorithm to create a resume-demotion association that included words like "woman" or "captain of the women's chess club." And it was reported[2] that engineers found examples of systematic graduate devaluation at two women's colleges.

These findings forced Amazon Inc to rework and rewrite the algorithms to be gender neutral and unbiased, but it was concluded that such an A.I system could theoretically develop a candidate classification software/tool in future may be discriminatory to some extent.

2. Literature Reviews

2.1 Traditional Hiring

There is no set model or procedure for hiring in the traditional/conventional sense. Typically, it begins with the business and organisation identifying a position that is open. Then, either one or both of internal channels, such as the internal job portal, and external channels, such as LinkedIn, Monster, Indeed, or Seek, are used to advertise this. Following such sourcing, the hiring team or human resource personnel pool and screen the CVs. After interviewing the shortlisted candidates, the final candidates are chosen. The main drawbacks of traditional hiring are the time and cost associated with the process, despite the fact that it is labor-intensive and human-touched.

2.2 Using Artificial Intelligence in Hiring Process

The idea of A.I has been around for a while and has found applications in many fields, but only in the past few years has technology been improved and implemented in a wide range of organisational settings. Regions where Artificial Intelligence can see that the field is huge, with robotics and natural language being the two main focuses.

According to reports, similar systems have been developed by businesses like Amazon to help with their hiring process [2]. This article will talk about Amazon A. I'm a hiring tool.

2.3 Challenges with A.I Hiring Tool

There are a lot of challenges in adopting A.I technologies in hiring process, but this can be broadly categorised into technological, privacy related and ethical problem.

2.3.1 Technological Problems

The technical problem with artificial intelligence is that A.I algorithms can be complex, making it difficult to understand how they are making decisions. This lack of transparency can be a problem if the AI system is making decisions that are discriminatory or unfair.

Just Like humans, A.I can also make mistakes. If during the training period the A.I software is not trained properly, it might lead to inefficiency and may not be able to assess candidates accurately.

2.3.2 Privacy Related Challenges

A.I algorithms may use personal information to predict job performance, which can lead to inaccurate predictions and violate an individual's privacy. For example, an A.I algorithm may use a person's browsing history or social media activity to make hiring decisions, even though this information may not be relevant or accurate for predicting job performance.

A.I systems may collect and store sensitive personal information, such as resumes, social media profiles, and background check results. This data must be secured to prevent unauthorised access and protect the privacy of job candidates.

2.3.3 Ethical Challenges

A.I systems may provide feedback to job candidates that is discriminatory or inaccurate. For example, an AI algorithm may provide feedback that a candidate did not get the job because they did not have enough experience, even though their experience is comparable to other candidates who were hired. This type of feedback can be harmful and discriminatory. The use of AI poses some serious ethical dilemmas and hard questions.

Optimising A.I for fairness is a complex endeavour because fairness touches on many areas, some of which are mutually exclusive. Dilemmas and questions prevent the widespread use of artificial intelligence in personnel selection. They include how A.I will ensure fairness, how diversity in a

company will be sustained, and is too much reliance on A.I softwares and tools harmful?[1].

3. Using Liffick's Approach on Amazon's AI Tool

In this section, we will apply Liffick's methodology [3] of analysis on Amazon's failed A.I based resume/CV rating system which was discussed in the introduction.

Liffick's analysis is used for case study or ethical scenarios. Liffick's analysis allows a scenario to be divided, the issues to be placed into a social context and codes of ethics to be used.

In Liffick's Analysis first we describe the participants, the we try to reduce the number of participants (if possible), followed by actions taken and reason for the action by the focused participants. At last few questions are raised along with some possible solutions.

3.1 Concerned Entrants

- Amazon Inc: "Responsible for the creation an A.I based software to help in the Amazon's hiring process." [8]
- Engineers: "They developed the algorithm and unknowingly used biased dataset from last 10 years interview conducted by Amazon." [8]
- Managers: "Managers used the A.I based tool during the hiring process and continued to use the tool till the end of 2015 realising that the tool is gender-biased." [8]
- Job Seekers: Underwent shortlisting via new automation software [8]

3.2 Possible Options for Participants

- Amazon's Choices
  - The implications of using A.I and potential challenges in recruitment can be explored.
  - Instead of building AI systems, could rely more on human resources.

- Engineers' Choice
  - Statistical analysis can be performed on the training data set.
  - Ethical and moral requirements should be considered as indirect functional requirements

- Managers' Options
  - Could make sure that the systems have been thoroughly tested before putting them to work.

- It is possible to avoid using such softwares and rely on human labor to get the job done.

3.3 Feasible reasons for action

- Amazon: “The Amazon began this work as an experiment and thus received little training on issues related to privacy, morality or ethics.”

- Engineers: “Engineers also see it as an experiment to discover the feasibility of using AI in recruitment, so they design and implement the system in a way that is suitable for "production" without proper research and testing.”

- Managers: “According to reports managers were reportedly impressed with the performance of the A.I automation and felt the system was well-tested and ready for production. So happily adopted them to make everyday work easier.”

3.4 Questions raised

- Has the Amazon considered moral and ethical use of A.I tool for hiring?
- Did the engineers analyse the data used to train the A.I system?
- Did the engineers test the A.I based software properly?
- Has management verified that the software is certified for workplace use?
- Was consent obtained from those whose data was used to train the AI?

3.5 Righteous Way

- Personal Data Ethics: Personal data must be collected with the owner's consent, with full disclosure of use and retention period. Anonymising data is good practice when research does not require identity. Ensure an appropriate level of confidentiality when data is made available for reuse.
- Employment equity: ensuring that a person is equal to anyone else in showcasing their talents Controversy over any unethical vector of discrimination
- Business ethics: A set of ethical values that help companies define and maintain acceptable standards of behaviour in the business environment.
- Professional ethics: A set of ethical values that help professionals define and maintain acceptable standards of behaviour in the business environment.

4 Proposals

- Data Collection: The first step is to collect a diverse dataset of resumes that includes candidates from different genders, races, and backgrounds. This will help to reduce the bias in the AI system and ensure that it is more representative of the candidate pool.
- Pessimistic: Companies can wait for AI technology to mature to mimic complex human decision-making. At the same time, use human resources.
- Optimism: Companies can optimise AI systems to mimic complex human decision-making and eliminate bias through design changes. Also, thoroughly test the system before deployment to make sure it's working as intended and free of drift or other issues.
- Trade-off: Companies design systems that are free of bias and other problems. Test the system thoroughly and have HR regularly check the AI system for suggestions and flags. While the heavy lifting of recruitment, such as CV screening, is done by AI systems, HR will have the final say on hiring.
- Continuous Improvement: The AI system should be continuously improved to ensure that it is adapting to changes in the candidate pool and evolving job requirements. It should also be updated to incorporate new data and feedback from human recruiters.

5. Visual Map

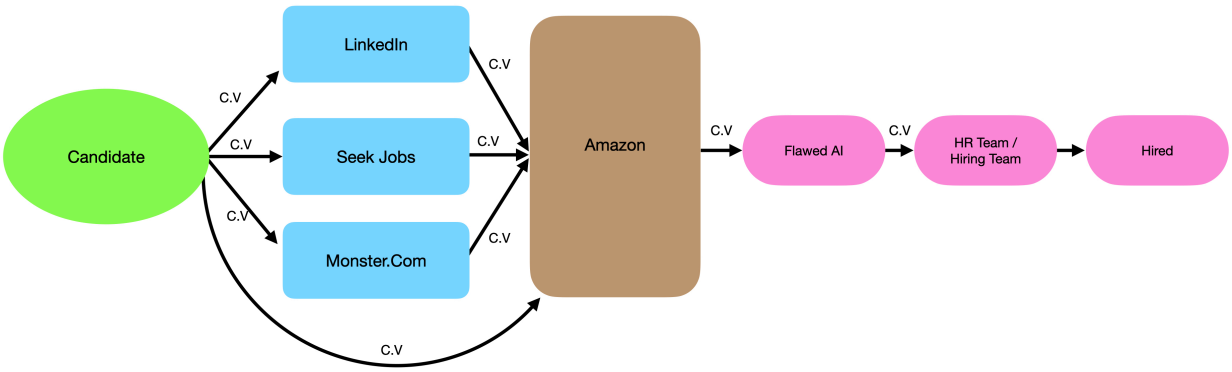

Fig: Flawed AI based Hiring Process

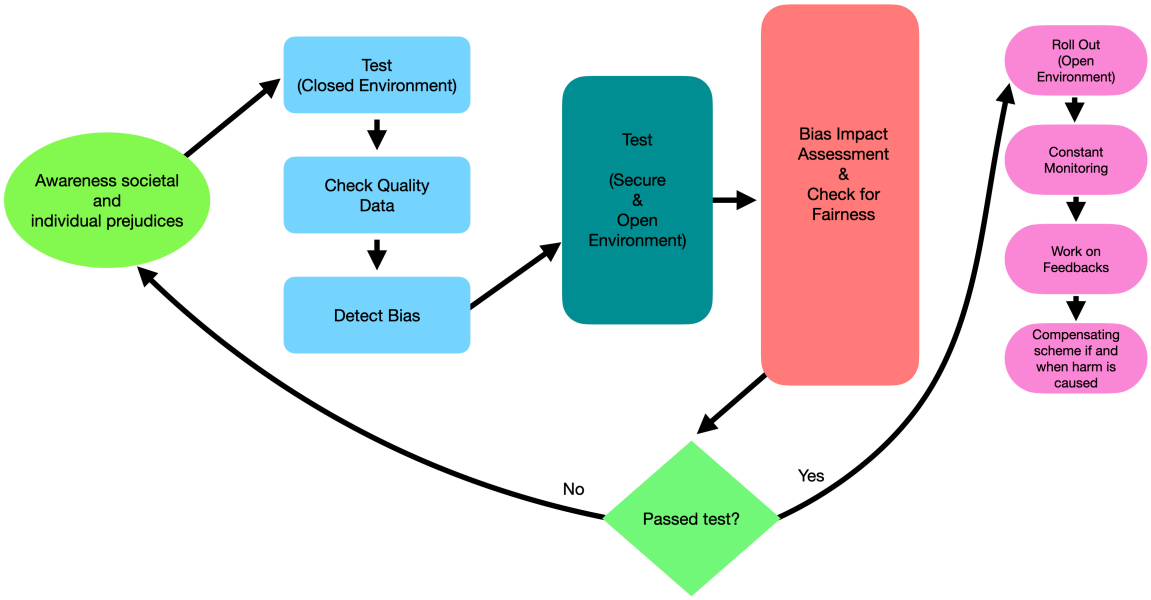

Fig: How AI for hiring should be tested

6. Conclusion

The goal of integrating AI technologies into traditional recruiting is to help people eliminate various tedious tasks in the recruiting process. Although this style of advertising was relatively new, it is developing rapidly.

Implications such as privacy, ethics, labor law, technology, feasibility and necessity of such recruitment system should be carefully considered by any organisation before adopting such a system. It cannot be denied that the use of AI can speed up the recruitment process and save manpower, but if used incorrectly or unethically, it can cause the company to lose money and reputation.

In conclusion, the ethical use of NLP requires careful consideration of potential risks and benefits. As with any technology, it is important that NLP systems are developed and implemented while respecting basic ethical principles such as fairness, transparency and accountability and safety. This can be achieved through measures such as strict vetting, transparency in algorithmic decision-making and clear policies on the collection and use of personal data. Ultimately, the ethical use of NLP depends on a combination of technical and social solutions that prioritise the well-being and autonomy of the individual and society as a whole.

7. References

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