**Recognizing Bias Associated with Applicant Tracking Systems**

Resume-reading algorithms are commonplace in many modern-day hiring processes, especially those of large corporations; however, the abundant use of this technology does not ensure its harmlessness. Based on recent studies, some applicant tracking systems (ATSs) eliminate potential job candidates based solely on gender and race. The implementation of resume-reading technology is growing rapidly in the modern business world, for 99% of Fortune 500 companies and 70% of other large companies use applicant tracking systems in their hiring processes. Furthermore, experts predict that most people will likely face judgment by one of these algorithms at one point in their life (Johnivan, 2024). Because these resume-reading algorithms are so prevalent in today’s society, anyone wishing to acquire a job under an esteemed organization should become knowledgeable about ATSs, how they function, and what they look for in a candidate.

**Definition of an Applicant Tracking System**

To understand applicant tracking systems, one must first become acquainted with the primary definition of these algorithms. The goal of an ATS is to increase a company’s productivity by quickly eliminating unqualified resumes in order to find the best-fitting candidates (Gafner et al., 2024). In fact, some ATSs can be so efficient as to eliminate 72% of resumes before passing on top-rated applications to be human-reviewed (Mann & O’Neil, 2016), a statistic which holds immense importance in the eyes of anyone seeking a new job. In order for ATSs to work, employers train the applicant tracking systems on specific code words and on the company’s historically successful employees. The downside to this process occurs when too much trust gets placed into these resume-reading algorithms and mistakes go undetected by companies. Often, the biggest issue that arises from the implementation of an ATS is bias, for “algorithms are, in part, our opinions embedded in code” (Mann & O’Neil, 2016). For example, if a company with a history of mainly white male employees decides to implement an ATS and train it to pick quality candidates based on past employees, that ATS is more likely to find a parallel between “white male” and “success.” While it is an easy concept to theorize, the sad truth is that examples of this phenomenon actually occur in real life.

**Racial Bias in Applicant Tracking Systems**

ATSs can have a multitude of bugs in their coding, but, arguably, one of the most harmful issues that comes with implementing one of these algorithms into the hiring process comes in the form of racial bias, as demonstrated in an article by Bloomberg. In this study, a generative pre-trained transformer (GPT) analyzed and ranked resumes which all had similar experience and qualifications: the only difference among the resumes were the names of the applicants. These sample resumes were randomly assigned the most popular names for White, Black, Hispanic, and Asian ethnicities. Researchers found that when comparing applicants for a financial analyst position, the resume-reading algorithm recommended Asian women the most often, and more than twice as often than it recommended Black men (Yin et al., 2024).

According to the data, this GPT unfairly ranks candidates based on the assumed races of the candidates’ names and thus reinforces racial stereotypes historically associated with those of Asian and African American descent. The racial bias exhibited by this ATS can be quite harmful, for it could place someone of Asian origin in a job they are not qualified for while simultaneously preventing qualified African American candidates from the same job solely based on the name on their applications. To connect this statistic to real life, I searched for my name in a name ethnicity database and found that people with my first name are typically of Asian or Black descent. This combined with the fact that both Asian and African American populations may experience unfair job placement made me start to wonder if I, myself, should worry about algorithms incorrectly labeling me as either Asian or Black when my race is White. Additionally, research shows that I may also be at risk for gender discrimination when submitting my resumes to large corporations because I was born a female.

**Gender Bias in Algorithm-Tracking Systems**

Anyone looking to apply for jobs in the near future should also consider the gender bias commonly associated with applicant tracking systems. For example, the previously mentioned GPT recommended female applications more often than male ones for retail and human resources jobs—both of which being careers that have been typically run by women, historically (Yin et al., 2024). One would hope that when submitting equally-qualified resumes to an applicant tracking system that the results would come out as either inconclusive or recommending every candidate, but as made evident by this study, the goal of this specific GPT seems to be to reinforce stereotypes of women doing less laboring jobs rather than fairly sizing up the skill potential of each candidate.

Another example to support this idea of gender bias appears in the journal article “Evaluating and Mitigating Gender Bias in Machine Learning Based Resume Filtering” by authors Gagandeep et al. (2023). This article outlines the study conducted by researchers when they realized that an applicant tracking system was unfairly ranking resumes based on gender alone. These researchers found that when feeding this ATS similarly qualified resumes, it would recommend male applicants more often than female applicants, which was apparently due to the fact that female resumes typically included words like “women’s” or the names of female-only colleges. Next, researchers performed an experiment where they eliminated gender-based language by replacing it with random punctuation marks, and it resulted in the applicant tracking system providing more equal results than before these terms were masked. This phenomenon of applicant tracking systems only ranking female and male applicants on the same level when it is unable to tell the applicant’s gender shows just how harmful these resume-reading algorithms can really be, for it unfairly hinders females’ chances at jobs simply due to their gender. Something needs to be done about these algorithms and their bias, and it needs to happen soon. What, readers may wonder, can we actually do about this? Are there measures that can be taken to overcome ATS bias and receive fair treatment?

**Overcoming Bias in Applicant-Tracking Systems**

Believe it or not, there is a solution to overcoming ATS bias, and it is not overly complicated. Firstly, company executives can absolutely change their hiring process to be more inclusive and fair. First, companies should stop relying solely on algorithms to eliminate candidates. Instead, trained employees should oversee the hiring process and give feedback to the algorithms to train them to recognize characteristics other than race or gender. Next, companies can implement random spot-checks of their systems rather than fully trust that the algorithm is providing the best possible results. Finally, companies should revise their job descriptions to be all-inclusive, such as eliminating any slang or excessively big words that could prompt an ATS to exhibit bias based on age or race (Mann & O’Neil, 2016).

Although employers have a lot of room for improvement in their hiring processes, applicants should become aware of ways to present their resumes that may change the outcomes of the ATSs that review them. For example, one way to impress an applicant tracking system is by using the right keywords. This might mean rewording your experience to match the job title you apply for or only including experience relevant to the job position. While using key terms in your resume can be useful, applicants should avoid trying to trick an ATS–whether by repeating keywords as much as possible or by trying to hide them in white text–because when it becomes time for your resume to be reviewed by human employers, they will catch on to redundant trigger words or other tricks and view the applicant as “trying to cheat the system” (Borsellino, 2023).

Another piece of advice when applying for jobs online is to keep the formatting simple. Applicants should refrain from using fancy fonts or including images, for the implementation of these can confuse an ATS and become practically impossible to review. Even things that most applicants would not think of as an issue, like headers and footers, should be avoided in resumes in order to improve your chances at being recommended by an ATS (Novak, 2016). While these measures would typically be considered unprofessional even when viewed by an actual person, it remains especially imperative to tailor one’s resume to an ATS, which functions primarily on simple text. While applicant tracking systems may only be bundles of code, it remains imperative that readers become aware of the potential biases associated with these processes and educate themselves on how to overcome them, especially since these algorithms are so popular in today’s society.

**Conclusion**

Applicant tracking systems, while primarily created for the purpose of streamlining the hiring process, have ultimately resulted in unfair treatment of racial and gender minorities by using the flawed past of a company as a guideline for future success. It remains imperative that company executives reevaluate just how much power they allow ATSs to have in their applicant-selection process in order to prevent future discrimination among job candidates. Additionally, anyone seeking employment at a large company should make themselves aware of the limitations of ATSs so that they can submit a proper resume that best demonstrates their skillset to be reviewed fairly. It is the duty of every person involved in the modern business world to do their part in limiting the risks associated with resume-reading algorithms and provide all candidates with an equal opportunity for job placement.

**References**

Borsellino, R. (2023). *Beat the robots: How to get your resume past the system and into human*

*hands.* The Muse. https://www.themuse.com/advice/beat-the-robots-how-to-get-your-

resume-past-the-system-into-human-hands

Gafner, J., Garcia, R., Herrity, J., Eads, A., Mendoza, A., & Lagace, L. (2024). *13 best practices*

*for beating an applicant tracking system.* Indeed. https://www.indeed.com/career-advice/

resumes-cover-letters/how-to-beat-applicant-tracking-system

Gagandeep, Kaur, J., Mathur, S., Kaur, S., Nayyar, A., Singh, S. P., & Mathur, S. (2023).

Evaluating and mitigating gender bias in machine learning based resume filtering.

*Multimedia Tools and Applications: An International Journal,* 1–21.

https://link.springer.com/article/10.1007/s11042-023-16552-x

Johnivan, J. R. (2024). *Applicant tracking system statistics (Updated for Q4 2024).*

SelectSoftware Reviews. https://www.selectsoftwarereviews.com/blog/applicant-

tracking-system-statistics#:~:text=According%20to%20recent%20studies%2C%20nearly

%2099%25%20of%20all,review%20applicants%20and%20strengthen%20the%20overall

%20candidate%20experience

Mann, G., & O’Neil, C. (2016). *Hiring algorithms are not neutral.* Harvard Business Review.

https://hbr.org/2016/12/hiring-algorithms-are-not-neutral

Novak, J. (2016). Making the cut when applying for jobs online. *Journal of Vocational*

*Rehabilitation, 46*(3)*,* 293-299. https://doi.org/10.3233/JVR-170864

Yin, L., Alba, D., & Nicoletti, L. (2024). *OpenAI’s GPT is a recruiter’s dream tool. Tests show*

*there’s racial bias.* Bloomberg. https://www.bloomberg.com/graphics/2024-openai-

gpt-hiring-racial-discrimination/?leadSource=uverify%20wall