Analysis of Applicant Tracking Systems

Introduction:

The socio-technical features such as the black box nature, bias, surveillance, data ownership, personalization and amplification associated with the development and management of algorithmic systems are ambivalent in nature when it comes to the dynamics of resistance online. These algorithmic features simultaneously empower and constrain online activism, ultimately posing serious threats to the activists involved. As a solution, algorithmic resistance such as avoidance, deception etc., emerges as a strategy used in navigating the visibility regime. However, this resistance strategy can also be misguided or exploited easily in algorithmic systems beyond social media. This essay aims to highlight one such real-world example by analyzing the Applicant Tracking Systems (ATS) used in recruitment in detail to showcase its societal impacts and the resistance strategies involved in it. The essay concludes by highlighting the cyclical dilemma when it comes to the necessity and implementation of such algorithmic systems in crucial decision-making spaces.

Visibility and Resistance through Algorithms:

The world has evolved from enabling only situated visibility to also providing mediated visibility years ago (Thompson 2005). It has only grown since then with the social media presence and other advanced technologies. While mediated visibility has become normal, it is widely controlled and dominated by modern algorithmic systems paving the way to a post-panoptic era (Jiménez-Martínez 2023). That dominance is enabled by the socio-technical features associated with the inherent nature of the algorithms and by their relevant management. These can help reap extreme rewards in the digital world but also cause severe harm at the same time. This essay will focus on some of the highly impactful socio-technical features of the algorithms and their impacts on the resistance online. These features also go beyond social media platforms as they are a part of almost every algorithmic system that we encounter in our day-to-day lives.

The Black Box Nature:

The black box nature of the algorithmic systems comes from two qualities - inherent nature and companies' policies. Firstly, the logic behind the algorithms evolved from a simple if-else structure to complicated neural networks involved in predictions and categorizations. This highly rewarding efficiency of the algorithmic systems leads to

its black box nature encompassing long complicated math behind it. Secondly, the "knowledge problem" is also a way of functioning the social constructs (Pasquale 2015) leading to company policies and privacy. These problems cause hindrances to the resistance online as the activists involved are kept in the dark about the actual workings of the visibility process. It leads to algorithmic resistance as a solution, where the activists/users spend most of their time reverse engineering the algorithms and fighting for transparency online with the organizations. While these grassroots efforts lead to temporary wins like cracking the secret to virality for a short time or drawing attention to their fight, they might ultimately act as hollow defiance as the resistance online for real-world change will get lost in between.

Bias and Discrimination:

Algorithmic systems are often critiqued as biased and discriminatory. While the systems themselves do not inherently discriminate, bias emerges from the data they were trained upon which consists of historical inequities and societal prejudices. When marginalized voices are frequently underrepresented or misrepresented in history, these systems tend to reinforce those existing disparities. This challenges the marginalized community by filtering out their content or miscataloging it and affects their ability to represent themselves or their issues online. When digital platforms prioritize the elite voices and suppress the underrepresented, the marginalization continues. It leads to a feedback loop over time where the lack of representation leads to more biased output, further leading to a cycle of misrepresentation and exclusion.

Surveillance and Moderation:

Mediated visibility comes with a price. The price is not just the recognition, it is also a new form of subjection and marginalization (Gray 2013). Through content moderation algorithms, mainly aimed at the efficiency of the platform and the quality of information produced, constant surveillance is made possible. While the data collection and management itself might not be harmful, it might "place minority communities in a double bind, a paradox that results from the multiple contexts in which data circulates" (Crooks 2021). This surveillance capitalism leads to a novel situation where managing visibility becomes central (Flyverbom 2022) to activists sidelining the original issue they wanted to advocate. Some activists use invisibility as an algorithmic resistance strategy to circumvent authorities to achieve political and/or social ends as in the case of environmental conflict in the Australian island state of Tasmania (Lester 2012).

While these efforts are highly impactful when coordinated all over, they might fall behind as an individual's strategy in the aspects of resistance online.

Data ownership and Power asymmetries:

Data ownership is an ongoing controversial struggle in platform economies. While there are many existing data protection laws and regulations, there are wide gaps in content ownership in digital platforms as the platforms tend to take control over the user-generated content. It is further complicated in the era of generative AI where the content can be repurposed easily. These acts reinforce the existing power asymmetries of the world as individuals lose control over their contributions in the digital spaces. The dynamics of resistance are also deeply impacted by these ownership issues. Activists/users face uncertainty about the permanence and accessibility of their work, as platforms or governments can remove content that does not conform to societal standards or platform policies. In such cases, as a deceptive strategy of algorithmic resistance, activists tend to get creative in their content in a way that doesn't explicitly defy the policies and standards. One such example was the case of feminist activists in China using emojis to talk about the #MeToo issues in order to avoid censorship (Wired 2018).

Personalization and echo chambers:

Personalization is a major feature in any content-based algorithmic system. It is mostly beneficial to the users as it will help them find their desired content and creators. However, in the case of resistance online, personalization leads to echo chambers where the voices are only reached to a niche community leading to limited visibility and impact. If the main purpose of the resistance online was to raise awareness through visibility and recognition, this feature of the algorithmic system will help in finding the resonating users but fail in reaching the broader audience. For an online activist, this is both a boon and a bane, which helps them to gain the initial reach but also limits them after a point. This leads to them focusing on visibility as an end goal (Jiménez-Martínez 2023) rather than as a means, thereby impacting the core resistant movement.

Amplification and Transience:

The transience nature of visibility in digital platforms has not only ruined people's attention spans but also led the resistance online to hollow defiance. Transience

makes visibility a fleeting reward which can be lost at any point in time if not maintained continuously. The activists who fall for this end up "disciplining themselves to develop content that fits with everchanging rules and expectations, rather than showing what they want" (Jiménez-Martínez 2023).

Algorithmic Resistance:

While these socio-technical features of algorithmic systems heavily influence the dynamics of resistance online, they also lead people to adopt algorithmic resistance strategies to "beat the system." Despite these strategies being effective in reaping short-term rewards such as creating awareness about social issues on digital platforms, they often result in hollow defiance by lacking long-term structural impact or societal change. Beyond social media, when such strategies are employed individually in algorithmic systems used in decision-making spaces, such as immigration or recruitment, they can have highly harmful consequences. This essay examines one such example: Applicant Tracking Systems (ATS) used in job hiring. It aims to explore the inner workings of ATS, their societal impacts, and the resistance strategies individuals employ to navigate these systems.

Applicant Tracking Systems (ATS):

Applicant Tracking Systems are algorithmic systems that are used in the recruitment scene from the beginning of the job posting till the candidate hiring. Their main functionalities are job posting distribution, resume parsing, candidate relationship management, candidate ranking, keyword matching, predictive analytics, automated screening and schedule management. Overall, the ATS system posts job postings on different channels, collects and stores candidates' resumes, matches job requirement keywords with candidate experiences generates a ranking of the applicant pool and helps with further communication with candidates. These processes reduce the business costs hugely and make the hiring process efficient (Laumer 2015). These systems are increasingly used by many small-scale and big companies, particularly in sectors like information technology and finance. The global applicant tracking system market size was valued at USD 2.14 billion in 2021 and is expected to expand at a compound annual growth rate of 6.2% from 2022 to 2030 (Grand View Research, n.d.).

The ATS algorithmic systems are widely used in the first stage of the recruitment process for automated resume screening, resulting in a reduced applicant pool. The

creation of a rule of scores and bets was only employed in the credit score systems earlier (Pasquale 2015). Now the scoring system is being used in many crucial decision-making spaces including immigration and recruitment. It is often a preferred technique for decision-making due to the nature of the quantitative things being adaptable to optimization. But like (Slack 2005) states the significant problem with relying solely on numbers as a measure of progress is that it might lose sight of the qualitative and moral dimensions of the progress. ATS has a similar problem when it tries to optimize the recruitment process in terms of scoring and rankings, it loses out on the quality of the candidates selected in the process. Many recruiters who use the system wouldn't worry much about what the candidate scores signify or how they are calculated and only focus on the high-scored candidates which is the same case in the credit-score systems (Jiménez-Martínez 2023).It is due to the concept of the digital layer where one has the advantage of viewing everything without going deep down into it. ATS provides such a layer where the recruiter can choose to go through the resumes of only the top candidates emitted out by the ATS ranking system.

Societal Impacts of ATS:

Some industry experts estimate that 80 percent of companies irrespective of their size use ATS as the first reader for every resume received from any source. An unfortunate fact is that ATS is also the last reader in many cases as almost 75 per cent of the resumes in many company databases are never seen by a human recruiter or hiring manager (Holderman 2014). In the past few years, the volume of applications mainly for graduate roles in competitive fields such as IT, finance etc., and the subsequent auto-rejects or "ghosting" have increased tremendously. It makes us doubt if the job market is very bad with more supply for demand or if it is the social construct of the system.

The main issue with the recruitment algorithmic systems is the reduction of the candidates to simple data points. When seen as a data point, a probabilistic matching can only identify an individual to a certain confidence interval, it reveals a certain ambivalence to one’s underlying identity. An example shown in (Holderman 2014), for a position requiring a bachelor’s degree or equivalent work experience (two to four years.), when the candidate had no option to input the relevant work experience in the application and answered truthfully to not having that education background, he was instantly rejected. A small mistake in the algorithmic system for calculation can potentially miss out on great relevant candidates. These systems highly tend to impact

people with career breaks or people who switch careers as their transferrable skills wouldn't necessarily "match the keywords" inputted in the system. The keyword matching and auto rejection can be based on many factors like requiring visa sponsorship, relocation, completely matching previous job responsibilities etc. Once again minorities might be the first to get affected as even for applications to early careers, ATS is being heavily employed as the first stage.

As we advance into the AI era where AI is made part of every technological system, ATS is no exception to it. Many existing ATS software systems have adopted AI as a feature to produce advanced candidate analytics (Recruit crm, n.d.). While these might be efficient in terms of time and cost saving, it also depends on its training data as we saw earlier in the essay, once again on what kind of bias they inherit and how it will be adapted to screening. The candidates may not fear a robot evaluating and rejecting them, but they do have to worry about these technologies never displaying them as top candidates for a job they are more than qualified for. Another issue that may arise with the advanced AI-integrated ATS is that the recruiters who use them overestimate AI's ability as seen in the of the belief that AI has universal intelligence or exceeds human thoughts or arrive at knowledge on their own. This may lead to an illusion of understanding within the recruiters regarding understanding the candidates more than they actually do (Messeri 2024).

Resistance towards ATS:

What happens when you apply to a lot of jobs that match your skills and experience but end up getting a templated rejection mail or worse not even hearing back for months if not years? Like every other algorithmic resistance strategy as mentioned in the essay earlier, people come up with deceptive techniques to "game the system" to get past algorithms and meet the humans of the organization. ATS proof resumes is one such widely known concept for getting past the algorithmic system. There are several online services available to craft and target your CV/resume to pass the ATS. Applicants spend a lot of time optimizing their CVs to exactly match the keywords found in the job description and check their "ATS score" through these available online services. Ultimately, an algorithmic system is used to break another algorithmic system for establishing connections between humans.

There are also main paid resume writing services particularly to get past ATS and unfortunately, many people do fall for it out of desperation for employment. It results

in a future where the qualifications of a candidate wouldn't matter more than their skills to game the system. For example, a talent management research and consulting firm in California tested an ATS by writing a resume for a clinical scientist position. They crafted a resume for a theoretical ideal candidate meeting 100 per cent of the desired qualifications but the ATS ended up ranking this resume to meeting just 43 per cent. The candidate was rejected for not meeting the minimum educational criteria just because of the way their advanced degrees were structured in the resume. A similar incident happened in Bangalore, India where an entire HR team got fired after a manager was rejected for their own position when they tested their resume with the ATS the company uses. Such incidents lead to harmful consequences of people going to the extent of crafting fake experiences and exaggerations of skills just to match the keywords for the job, ultimately leading the business to not only lose out on perfect candidates but also hire people based on their deceptive skills rather than actual ones.

Another concern with ATS systems is the data monitoring of the candidates' information. Many recruitment systems store the candidate's information for a longer time to use it to search for any opening that the company has going beyond the position that the candidate applied for. Once again, like the digital media platforms, these data ownership and moderation depend on each company's policies.

The Never-Ending Cyclical Dilemma:

The world of recruitment is a perfect example of the world of technological determinism and social constructivism. While the determinists are the candidates who believe ATS determines and has the power to reject applications based solely on the algorithmic criteria, the constructivists are the recruiters who believe that the issues with ATS arise not because of the technology itself but because of how it is designed, implemented, and used by humans as it is highly efficient in managing a high volume of applications. There is a lot of hatred amongst candidates in the hiring sector when they've gone through a lot of auto-rejections. But in reality, the recruiters are also desperate to find the perfect candidate for the job thereby getting creative with all their keywords search. It is truly hard when a company receive 1000s of applications for one vacancy, resulting in a single hiring manager relying on ATS to give them the top candidates. Even a simple variation in spelling such as British English or American English can result in missing out on an ideal candidate ending up as a loss for both sides. This cyclical dilemma between people applying for many jobs even the ones they don't

qualify for just because of the fear of getting many auto-rejects and recruiters using ATS to handle those high volumes of applications results in a lot of unnecessary yet unavoidable emotions and conflicts.

Such cyclical dilemmas in crucial decision-making spaces lead to unavoidable bias and discrimination. It is also caused by a lot of misinformation regarding the functioning of such algorithmic systems thereby investing negative emotions amongst people. While the need for such systems in complex decision-making systems is completely necessary, there is a lot of effort going on to make the systems less biased and less discriminative. For example, the use of explainable AI in these contexts to understand the scores and ranking of the candidates done by the ATS will be highly beneficial. The concept of always having a human in the loop of such decision-making practices is also crucial in this early stage of AI inclusions. It is already being practised in an OFCCP regulated environment, where AIs are not a substitute for compliant applicant/candidate selection workflows. Such efforts will not only make the decision-making practices fair but also reduce a lot of alienation that occurs to these algorithmic systems and to the people who adopt them.

Conclusion:

Algorithmic systems provide a dual reality where their socio-technical features offer efficiency and scalability but at the same time reinforce power asymmetries and inequities. This essay examined how these systems shape the dynamics of resistance online leading to activists employing algorithmic resistance strategy, resulting in an act of hollow defiance. Similarly, the essay drew a parallel on how these resistance strategies provide temporary wins but result in severe consequences in the field of recruitment by analysing the Applicant Tracking Systems (ATS). These cycles of resistance, irrespective of online or everyday decision-making space, highlight a critical need for transparency and ethical redesign of the systems. Explainable AI and humans in the loop are some potential solutions to the bias of the systems. In this advancing digital world, the reimagination of algorithmic systems as tools of empowerment rather than exclusion is much needed to result in people benefitting from them rather than them trying to game the systems. This shift can break the cycle of alienation, ensuring technological progress shaped by humans rather than humans reshaping themselves for the technology.

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