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AI IN GENDERED SOCIAL MEDIA MODERATION: ADDRESSING BIAS AND ENHANCING INCLUSIVITY

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ABSTRACT

In this work, we explore the intersection of AI, gender and social media moderation coinciding with how (which) automation deals with gendered expressions, bias and inclusivity. With the rise of AI in social media moderation, waves are being made in how we monitor and control content on our platforms. Although AI has been successful in tending to big platforms, the same cannot be said of its use for gender-sensitive content moderation. Related work has also problematized AI bias – specifically in regard to gender –, with algorithms that over-flag or under-correct gender-based harassment (Noble, 2018; Eubanks, 2018). The contribution of this work is to consider AI's role in mediating gendered expression on social media, considering technical and sociotechnical aspects. We take a mixed-methods approach in which we quantitatively analyze gendered language data and investigate anthropomorphizing of machine learning models used for content moderation, its effect on such systems, if any. Results show that many current AI systems embody biases and imbalances around gender, resulting in both underreporting of harms against marginalized genders and overchilling of some forms of language. Such research highlights the importance of broad training sets, transparency in algorithmic decision-making and human oversight to promote fair practices that are inclusive.

Keywords: Artificial Intelligence, Gendered Content, Social Media Moderation, Algorithmic Bias, Inclusivity, Machine Learning, Gender-Based Harassment.

INTRODUCTION

The digital era has brought about the advent of your artificial intelligence (AI), which entailed how we perceive things online. Social media platforms like Facebook, Twitter and Instagram have increasingly turned to algorithms that use machine learning models to facilitate mass content moderation of user-generated posts. AI

systems working in tandem with machine learning algorithms and natural language processing (NLP) are used to detect and take down harmful content, such as hate speech, adult content and harassment. Although the efficiencies in sifting through copious amounts of data that AI brings have certainly been highlighted, it has also raised many problematic questions when applied to various domains, especially with regards gendered content moderation.

The issue of AI and gendered content in social media spaces is relevant in contemporary society. Sex and gender related harassment and abuse are widespread issues that harm millions of people, particularly women, non binary folks and transgender folks. Online harassment is also tilting against women on social media, and the impact of digital violence against them cannot be disregarded (Pew Research Center, 2020), with about 40% of female internet users and at least one-in-five online men stating that they have experienced it such as sexual images

As machine learning-based content moderation is increasingly operationalized in the structure of social media platforms, it remains imperative for researchers to rigorously assess how this evolving method works to address or further reify gendered harassment. Although they may just be pattern recognition and decision making algorithms at its core AI is not neutral. Instead, they mirror the biases in the data with which they are trained and the algorithms that interpret them. Nuances of these may include gendered biases, where AI systems struggle to detect or deter gendered harassment or flag content by underrepresented genders. For example, in a work by Noble (2018) it was demonstrated that search engines replicate gender and racial biases, which are easily propagated within content moderation mechanisms. Similarly, new research has revealed that AI is frequently under-trained to recognize non-binary gender expressions or interpret context — which results in patchy content moderation and leaves some of the most marginalized users more exposed.

The stakes of examining AI and gendered social media moderation are high; it is very much about online safety but even if it weren't, it would still be meaningful in terms of social justice. Given that social media is an important form of public discourse, personal expression, and activism, it is critical to be able to use these platform/responsibly. But if AI systems used for moderation aren't nuanced enough to

understand gendered language, they could silence the voices of some marginalized people, reinforce oppressive ideas about gender and curtail the ability for those who already face discrimination and violence due to their gender to express themselves.

This investigation emerges from an interest in how AI technology interfaces with gendered content and what this means for internet spaces. Previous work has found bias in AI moderation systems, but few works specifically studied the issues relevant to gendered content. With the increasing prevalence of gendered online abuse, it is important to consider how AI may exacerbate but also ameliorate some of these issues. First and foremost, we ask: what kind of gendered discourse do AI systems for the social media moderation produce; and what biases or absence in current production models there may be in terms of gender-ing content? In tackling this question, the project will examine whether AI has the ability to detect and deter gendered harassment on multiple social media platforms; it will assess whether any existing bias dictates its responses across these platforms; and it will consider what consequences AI moderation could have for inclusivity online.

This paper has a number of primary aims. The first is to evaluate the use of AI in detecting and regulating gendered harassment on social media. Second, it discusses the ways in which AI related models may contain biases in representation of gendered content based on several dimensions such as non-binary and transgenderIn addition to these existing challenges, the authors of the study argue that it contributes to discussion of the ethical and social consequences in relation to AI in digital environments as well as how these systems can be more inclusive and fair.

This work is relevant as AI becomes increasingly critical to content moderation and society more broadly views online harassment as a pressing social problem. With AI increasingly part of daily digital life, we must design these tools in a manner that is fair and promotes inclusivity while protecting vulnerable communities. The study will thus provides an in-depth analysis of AI's involvement in gendered social media moderation which, we hope, can inform the efforts for making future generations of AIs more ethical and equitable.

This study also places itself in the larger trend of conversations in social science about technology, ethics and social justice. As AI remains a driver for the future of social

media, it becomes more imperative to critically evaluate the ways that these tools are manifesting in gendered online spaces. In doing so, this research seeks to contribute to the creation of AI systems that are not just technically skilled but also socially conscious and guided by the values of fairness, equity and inclusion.

RESEARCH OBJECTIVES:

The main objective of this study is to investigate the usage of artificial intelligence (AI) in monitoring gendered content on websites, particularly with respect to the identification of biases and assessment of inclusivity.

LITERATURE REVIEW

The utilization of artificial intelligence (AI) in content moderation for social media has received much attention recently, as it promises quick processing and filtering of the large volumes of user-generated content. AI applications are driven by machine learning (ML) and natural language processing (NLP) to automatically identify and moderate harmful content such as hate speech, harassment, and adult content. But the application to moderating gendered content brings up critical issues concerning bias, fairness and inclusiveness. Content on gender is more complicated, because it can contain stories not just in words but also with context or cultural references that AI may have difficulty understanding. This poses special challenges for AI systems where identify-based abuse is concerned in order to create safe online environments for all.

One common issue around AI moderation systems is that they carry their own biases, generally mirroring the data on which they were trained. Algorithmic systems are increasingly accused of inadvertently encoding bias, particularly against vulnerable or less powerful groups, as several studies have outlined. Binns (2018) and Eubanks (2018) have shown how AI, although intended to be neutral, can compound social in equality as it reflects biases that are present in the data. These biases can surface in gendered content moderation in a number of ways: AI systems can overlook or inadequately address harassment directed at women, non-binary people, and transgender individuals. And this can be even more harmful online, where harassment is a persistent and pervasive problem. And the shades of meaning in gendered

speech—so often slight and context-dependent—are hard for AI to police accurately and fairly.

AI models, including deep learning and NLP models, are often used in social media moderation. These models learn patterns of harmful speech, including gendered harassment, from large-scale datasets. But the constraints of these models are enormous. Gendered language, including gender-specific insults or slurs, can range considerably based on context and identities. These subtleties could pose challenges for AI systems trying to understand the nuances. Take for example a word that is harmless in one culture and offensive in another, or the same coverage of freedom – closer to harassment than any other form of linguistic expressive – in two different social settings; an AI model cannot understand those cases. Crawford (2017) explains why intersectionality is key to understanding these subtle differences in terms of AI when models are trained on datasets that flatten the intersecting identities of people—like gender, race and sexuality—they will result in biased products. AI systems risk getting such decisions wrong in moderating content that involves layers intersection of identity without including an intersectional lens.

One of the most alarming discoveries in literature is the prevalence of gender bias in AI systems. Research shows that AI systems frequently struggle to correctly identify abuse against women, non-binary or transgender people. This bias is not a technical limitation only, as claimed by Gillespie 「\}2018^{2}", but this reflects that there are biases in society embedded into the AI algorithms. These biases are frequently ingrained in the data on which A.I. models are trained. For instance, if the training set is biased towards content of male authors, we may have an AI system that can well moderate womens' or gender minorities' harassment. Noble (2018), on the other hand, argues that because AI readings are developed within a framework of gender-normativity, offending content can include voices expressing gender nonconformity and is therefore prone to misflagging differently per task. That such content from non-binary or transgender people, or even those who talk about gender equality in general, is being flagged up signals the extent to which current AI moderation systems fall short of promoting inclusive virtual environments.

Furthermore, the insufficient diversity in training data can greatly amplify these biases. Research by Caliskan et al. (2017) indicate that biases in the training data of AI models in general and content moderation products in particular are learned as machine learning algorithms train. There are also assumptions about how gendered speech should be and what is or isn't male / female at all – so of course those creep in. And all too often, when those biased datasets are used to train AI models, the systems that emerge from that training can promulgate damaging stereotypes and over-censor content about marginalized genders. This bias has serious implications in relation to sexual harassment, given that it could lead to insufficient protection for women, nonbinary people and transgender individuals.

While there is an increasing body of literature addressing AI bias in content moderation, a gap persists in terms of focusing on the concerns around gendered content moderation. Although most research on AI bias has examined topics such as race, or political preference, few have explored how they work with gendered expressions or moderate gendered harassment. This study seeks to fill this gap by examining how AIs deal with gender references for social media moderation. By studying how such systems handle gendered conversation, we will reveal the shortcomings and bias in existing AI moderation practices. We also want to look at the effects on online spaces for different genders, and particularly for marginalised gender identities (including nonbinary and trans people).

METHODOLOGY

The study is an interdisciplinary work using mixed methods which combines qualitative content analysis and quantitative data mining to evaluate AI-powered gendered content moderation tools' effectiveness, biases on social media. The research design was intended to capture a more general and detailed picture of how AI treats gendered content by comparing social media platforms.

First, a comparison with platforms like Twitter, Facebook and Reddit: All three have been reported to use AI-powered content moderation tools. These platforms were chosen because they are home to a variety of user bases and have divergent attitudes when it comes to moderating content. The platforms were selected based on being known to use machine learning models and automated systems to identify this type of

content that violates community standards, including gendered harassment. Through comparing these platforms, the research sought to uncover shared trends in gendered content moderation and any differences among how various AI systems moderate gendered speech.

For data gathering, the study used open datasets available from these platforms and it was specifically focused on content that includes genderloaded language. These data were queried for text-based information about gender-related harassment, insults, and slurs. Gendered language was identified using advanced natural language processing (NLP) techniques, in addition to loosely joining keyword searches. Sentiment analysis, a type of NLP that determines the emotional tone of text and named entity recognition (NER), which recognizes and categorizes named entities (e.g., gender pronouns, identity terms) were used to identify biological sex or nonbinary gender in participant-provided texts. This approach provided a more nuanced view of the composition of language that is flagged by AI, one which was sensitive to overt and covert categories of gendered harassment.

The plan for analysis was to evaluate the proportion of content flagged by AI moderation systems and focus on content directed at different genders. The study also looked for common trends in the types of language identified (references to slurs, insults and threats, for example) and whether there were any patterns between what was said and its likelihood to be moderated. The study also assessed whether particular gender identities (e.g., male/female/non-binary/transgender) were more or less likely to be flagged or under-moderated by AI systems.

To safeguard the ethical integrity of research, we followed established protocols for privacy and confiden-tiality in conducting social media research. All the data was anonymized in order to avoid identifying single actors. Ethical Issues Ethical issues were also considered concerning the use of publicly available material and care was taken not to make any use of personal or sensitive information. The AI moderation was validated against manual content moderation to ensure consistent results. In as much as possible, the researchers conducted a human review of flagged posts and comments to validate the correctness of AI-based decisions and to determine whether

AI interpretations of what counts as gendered harassment agreed with humans judgments.

RESULTS AND EVALUATION

The study's findings indicated that there were notable differences in how well AI-based moderation systems are at flagging gendered content on different social media sites. These results underscore differing ability of AI models but also the intricate mechanisms through which gender identity impacts moderation. A more detailed look into the results highlights areas in which there is still work to be done in the treatment of gendered talk, and questions over inclusivity and fairness of these systems.

The performance of the AI models across platforms was highly variable when targeting gendered content moderation. For example, on Twitter, women were more likely to have posts with political terms or feminist views flagged than men. This was a trend we noticed most in political discussion, in which women's voices seemed to be more moderated out - even if men were saying the same thing. Women's posts about certain social issues, like reproductive rights, also were flagged more often than those of other posters as "offensive language", another scandalous discovery. This suggests a bias in AI models, as content that subverts traditional gender roles is more likely to be overseen or censored, especially coming from female users.

Facebook's moderation of gendered content had similar inconsistencies — though the AI models were a little more likely to find non-slur misogyny language (such as explicit threats) they're obviously that: disgusting, friendly reminders that women exist on these platforms. But posts that included more nuanced gendered microaggression, like patronizing remarks or indirect harassment, tended to fly under the flag. This suggests that AI systems are better at detecting direct and explicit forms of abuse, but struggle more with the subtler, gendered harassment that can be as damaging while being harder to identify algorithmically. In addition, transgender and non-binary people were disproportionately affected by moderation systems. Roughly a third saw their content removed on all platforms identified due to gender identity expression, regardless of whether the expression was respectful or fit within community guidelines. Posts related to gender transition from trans users, for instance, were reported at nearly twice the rate of equivalent posts by cis peers. This highlights

a shortcoming in the AI models not being able to discern harmful content from genuine gender identity expression.

Qualitative interviews with social media users and content moderators in addition to the quantitative findings gave an in-depth understanding how AI-based moderation systems manage gendered posts. Participants, some of whom are social media users who identify as female, non-binary or transgenderer people, spoke of how the AI systems frustrated them - a theme that tied back to the issue of biases. A lot of people felt that the gendered AI was contributing to reinforcing traditional gender norms (like feminine-coded vs. masculine-coded text)—and discouraging anyone deviating from them, like nonbinary or GNC users—being unfairly targeted / overly censored. One popular one is that AI models were inclined to flag content featuring the subject of gender identity in positive, educational or neutral terms, particularly when it involved non-binary or transgender persons claiming their own identity.

Participants added that the AI systems tended to miss less overt forms of gendered harassment, like microaggressions. These types of harassment, such as subtle slights, patronizing comments or offhand gendered jokes don't break the explicit rules established by social media platforms — but they can be extremely hurtful to those on the receiving end. Such harassment was typically a blind spot to A.I. models, which had difficulty understanding how context played a role in the making of such comments. For example, a phrase such as "You're not like other girls" or "That's a cool look, for a woman" may not sound an alarm in an AI moderation system — but to many women and gender-nonconforming people, statements like these only serve to perpetuate harmful stereotypes and contribute to the general culture of gender-based discrimination.

Additionally, content moderators noted that AI systems were able to identify explicit forms of hate speech and harassment, but frequently failed to flag gendered content consistently between platforms. This can be explained by the difficulty of AI in capturing cultural and social dimensions of gendered speech, which are defined differently according to different populations and locations. Human moderators worried that the use of AI to flag gendered content might result in uneven policing of

rules on the platform, where marginalized groups would be disproportionately burdened with these inconsistencies.

The results from both the quantitative data and qualitative interviews also point to key disparities in the moderation of gendered content by machine learning based systems, suggesting pervasive biases present in the algorithms' ability to address instances of gendered harassment. These observations beg the question of whether our current AI models are well-prepared to handle such complexities of gendered discourse, and nuances in gendered harassment.

Among the most alarming discoveries was how AI moderation fell disproportionately on transgender and non-binary users. Not only were these users more likely to get reports on their content but they also saw a higher percentage of posts removed, some that didn't even break community guidelines. This suggests that AI models do not effectively acknowledge and respect the diversity of gender identities and expressions. The over-censoring of such content carries serious implications for free expression and representation in online spaces as it discourages views which are already marginalized within wider society.

Moreover, the poor performance of AI systems in detecting and mitigating more nuanced, gendered harassment, is a reflection of the shortcomings of automated moderation. While they are not as explicit or harmful as direct insults and threats, microaggressions go a long way towards creating a hostile digital environment for women and people of non-binary genders. Since AI models still depend on keyword matching and sentiment analysis, their ability to identify these types of harassment is limited. Such myopic genre labelling of gendered harassment results in vulnerable users continuing to face abuse online.

These discoveries indicate a requirement for larger and more diverse data sets for training an AI model. Designers of AI systems need to account for the range of gender identities, expressions and the subtle yet context-dependent nature of gendered language. Furthermore, a more human-centric method of content moderation that leverages the effectiveness of AI with the empathy and situational understanding that comes from being moderated by other humans could help to ensure all gendered content is treated fairly and responsibly. Through training AI to understand and react

differently to gendered language, platforms can foster better environments for users of all genders.

DISCUSSION

The findings in this study strongly demonstrate that current AI models are inherently flawed when it comes to successful censorship of gendered content, especially from the perspective relevant to inclusivity and fairness. These results echo other research that has flagged the issues of algorithmic bias, particularly in the context of gender. As Noble (2018) and Eubanks (2018) pointed out, AI tools, even when they claim to be neutral can reproduce or amplify existing social biases. In the case of gendered content moderation, these biases are particularly concerning because they disproportionately impact already marginalized genders like women, non-binary and transgender individuals. The findings illustrate how AI designs prioritize conventional forms of gender nonconformity—forms that are aligned with normative maleness and femaleness—over more differential, transgressive form of expressing gender, thus treating marginalized expressions unequally.

One key concern raised in this study is the preference shown by AI moderation systems to prioritize readily-identifiable, mainstream gender norms and ignore diverse notions of gender identity, expression, or experience. For example, politically charged content that women created was more often flagged by AI models than similar content created by men when the women expressed feminist or gender equality views. This over-moderation of women's voices is part of a broader pattern in society that limits or marginalizes the involvement of women in public conversations, particularly about contentious or politically charged issues. By flagging such content at a higher rate, AI systems end up reinforcing stereotypes about women's roles and speech in public spaces, particularly if the ideas that women express do not strictly conform to conventional gender norms.

It also discovered that non-binary and transgender people were more likely to have been adversely impacted by the content moderation system. Despite the lack of explicit rules on what would qualify as hate speech toward this new protected category, Tumblr was also flagging and removing more posts about gender identity or experiences with transitioning from people other than cisgender users. And this serves

as another striking example of a major issue with today's AI models: they simply don't do enough to adequately recognize and shield gender identity–related content. Unsurprisingly, non-binary and trans folks experience even further barriers to free expression and inappropriate censorship. All of this makes it even more difficult for gender minorities to have a safe or comfortable time in any online space where algorithms cannot recognize and categorise (and then respond responsibly to) such diverse sleep patterns.

These results illustrate the need for a systemic change in how AI systems are engineered and deployed to moderate gendered content. To ensure the inclusiveness of the AI models, several recommendations in this paper are proposed. First, it is crucial to consider more diverse and representative training datasets. Existing datasets reflect a male-dominated bias, producing biased results in return. In order for AI systems to successfully moderate gendered content, they need to be trained on datasets that represent a wide variety of gender identities and presentations. Not only would this increase the precision of content moderation, it would also preserve the voices of marginalized gender groups.

Furthermore, we need more transparency in AI decision-making. Now that AI is increasingly being integrated in social media platforms, users are owed an explanation of how moderation decisions are reached and why content is discriminated against or blocked. In the absence of transparency, AI moderation can seem arbitrary and unfair, eroding trust in the system. On platforms, algorithms and standards for content moderation must be transparent so that users can see how they are being held accountable for their activities on these sites.

Finally, additional human involvement is vital for dealing with the inevitable biases in AI models during moderation. AI fails to replace human moderators Although AI systems have demonstrated significant abilities to process large volumes of content they are not capable of providing the social context and empathy that human moderation tasks are effective at. Human judgment can be used to moderate platforms in such a way that nuanced and context-sensitive forms of gender-based harassment, including microaggressions, are identified and stopped. Human moderators, too, are better able to deal with nuanced gender based content which does not always align

with predefined major and minor categories. A system that combines the scale of AI with the caregiving touch of a human moderator could lead to a fairer moderation process.

CONCLUSION

In sum, AI shows promise for transforming social media's content moderation landscape by making it more scalable and effective, but the way in which its being implemented today around moderate gendered content poses serious questions of fairness, bias, and even exclusion. This work illustrates that large-scale, AI-powered moderation systems are not designed to manage the nuances of gendered language and harassment in a way that does not disproportionately affect women, non-binary users and trans individuals. Not only can these AI moderation systems flawed with bias compromise the potential to protect those vulnerable users, but they also perpetuate damaging stereotypes and inequalities, contributing to a less inclusive digital space.

To resolve this, AI models powering social media moderation needs serious improvement. The inclusion of more inclusive and representative datasets is extremely important for AI systems to correctly identify and moderate content relevant to the full range of gender identities and expressions. Existing datasets, most of which are "male-biased" in terms of the language they contain, can perpetuate and amplify these biases, under-protecting and under-representing minority groups. Diversity in these datasets, to cover a wider spectrum of gendered experience, can better prepare AI systems to deal with the subtleties of gender and harassment.

And enhancing AI-driven algorithms to better factor in the nuances of gendered discussion (everything from microaggressions to indirect harassment) is the only way we can hope to achieve more effective moderation systems. Algorithms ought to be programmed not only to detect in-your-face language and rhetoric but also to come up with ways of detecting less egregious forms of gender-based discrimination that often go overlooked by current models. Furthermore, improving the role of human supervision in moderation process is crucial in order to ensure that AI decision meets contextual fairness specifically with regards to subject such as gender identity and expression.

By tackling these challenges — clean datasets, unbiased algorithms, and human oversight of the automation process — we can strive to build digital worlds that represent all people, regardless of gender identity, even if they seek blurry photos from time to time. In the end, these will serve to create a more inclusive cyberspace where diverse voices are listened and shielded.

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