Enabling Dilemma of AI for Disabled Individuals

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Abstract. The fairness of Artificial Intelligence (AI) for individuals with disabilities is a complex and contested issue, as AI holds both inclusive and exclusive potential. On the one hand, AI can empower disabled individuals by mitigating barriers; on the other hand, it may perpetuate discrimination against marginalized groups, including those with disabilities. Intersectionality further differentiates this picture by highlighting how multiple forms of discrimination intensify these challenges. Leaning on this argument, this paper addresses the following question: How do intersectional forms of discrimination interfere with the enabling power of AI for disabled individuals? We argue that autonomy, the capacity to decide, plan, and act toward personal goals, provides a fitting analytical lens, as it encompasses crucial dimensions like agency and accessibility. Using a qualitative analysis of 48 online documents publicly available at websites that address inclusive AI for disability, we identify two key insights. First, intersectional discrimination does not merely obscure AI's enabling potential; it can actively reverse it, undermining the autonomy of disabled individuals. Second, bringing the broader society into the analysis, the control of disabled people over their lives, as compared to the society that they live in, may shrink, regardless of their autonomy in their personal lives. This debate formulates AI's enabling dilemma: while promising empowerment, AI may deepen disparities due to intersectionality and the accelerating enablement of the general population. Fairness of AI, therefore, must be assessed not only through the lens of disability but also in the context of broader societal structures and inequalities.

1 Introduction

Artificial Intelligence (AI) is increasingly becoming a pivotal force in evolving technologies that support disabled individuals[1], emerging through two parallel but converging trends: pursuing accessibility for mainstream consumer AI technologies and shifting dedicated assistive technologies into AI-based solutions (Braun et al., 2020). On the one side, consumer technologies, especially those developed for mass markets, progressively try to incorporate features enhancing accessibility. On the other side of the spectrum lie purpose-built assistive technologies explicitly designed to support disabled individuals. However, promises of solutions suggested by both sides of the spectrum are far from fully realized due to technical challenges and socio-technical contexts. Nonetheless, while necessary, ongoing debates about algorithmic bias and fair access are not sufficient to reach fairness, understood as a social good (Lillywhite and Wolbring, 2023) and justice (Hertweck et al., 2024). Instead, we would argue that fairness must be understood in broader terms, extending beyond algorithmic performance to encompass real-world social conditions and lived experiences. Accordingly, this paper takes a step beyond technical aspects of fairness (such as Pagano et al., 2022; Mehrabi et al., 2019) to critically explore whether AI systems can truly function as enabling technologies for disabled individuals in everyday life.

Central to this inquiry is the concept of intersectionality: a framework that reveals how overlapping forms of discrimination, such as those based on disability and ethnicity, can interact to shape unique and often intensified experiences of marginalization (Wolbring and Nasir, 2024). In this context, we encounter two opposing dynamics: on the one hand, AI holds potential as an enabling tool for disabled individuals; on the other hand, structural and intersectional forms of discrimination may limit or even negate this potential. So, this study shifts focus from technical remedies to a qualitative, socio-technical analysis of AI's enabling role. We aim to inquire how disabled individuals experience AI in their daily lives, particularly within settings marked by intersecting axes of inequality. Therefore, the main argument would be whether AI can serve as a substantial enabler or risks reproducing existing forms of exclusion in new, technologically mediated ways. To be more specific, we would investigate how the experience of using AI would be affected by additional forms of discrimination, such as for ethnical minority social groups, in addition to disability.

To meaningfully assess the enabling power of AI for disabled individuals, it is both conceptually and ethically justifiable to focus on its potential to enhance autonomy. This focus could be rooted in the terminological nexus between 'ableism' and 'enabling.'

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[1] We acknowledge two politically correct approaches to address people with disability (and disabled individuals). We have used both depending on articulation of the sentence, given priority to the phrase disabled individuals.

Ableism, as defined in disability studies, refers to the systemic discrimination and social prejudice directed toward individuals with disabilities, manifesting in practices that marginalize disabled voices, reduce individuals to their impairments, and uphold normative assumptions about ability (Hofmann et al., 2020; Shew, 2020). In contrast, the notion of enabling represents a reorientation: it emphasizes empowering disabled people (either disabled due to impairment or by society[2]) and supporting independent living (Moyà-Köhler and Domènech, 2022) or, as Wolbring (2024) depicts, turning expectations around ability and ableism into opportunities for empowering individuals and reshaping social structures.

Within this conceptual shift, autonomy emerges as a particularly salient value. Nonetheless, autonomy also encapsulates itself as a spectrum of interrelated dimensions in the neighbouring disciplines. To begin with, from a philosophical perspective, autonomy is a key value in human identity, as emphasized by Kant (Chiodo, 2022), and it features prominently in technology design methodologies such as Value-Sensitive Design (VSD), where it is treated as a key ethical value that developers should aim to preserve and enhance (Friedman and Hendry, 2019). Meanwhile, technology could also aid in obtaining and maintaining autonomy, where autonomous self-realization and human agency, among others, are listed as opportunities brought by AI to society (Floridi et al., 2018). Thus, framing the enabling potential of AI in terms of its capacity to promote autonomy is not only consistent with the aims of disability advocacy but also aligns with broader ethical and design principles in the development of emerging technologies. It allows us to examine if AI can serve as a medium for empowerment rather than as a new vector of dependency or exclusion. Accordingly, this study hypothesizes that AI has some potential to enable disabled individuals by raising their autonomy, but this enabling power should be further differentiated, taking intersectionality into account. Therefore, this study aims to qualitatively analyze the interrelation between employing AI, the autonomy of disabled individuals, and intersectionality to answer the question of 'how intersectional forms of discrimination affect the autonomy of disabled individuals while using AI'.

Our study, thereby, turns abstract technological potential into tangible social progress by bringing intersectional discrimination into the analysis of the enabling power of AI. In this framing, disability is not treated in isolation, nor is technology viewed as a neutral or universally empowering tool. Rather, we foreground the everyday life of disabled individuals, where intersectional forms of discrimination are not peripheral but integral, and investigate how AI functions as an enabling variable within this complex terrain. Thus, the core aim of this research is to qualitatively analyze the dynamics between AI, autonomy, and intersectional discrimination to assess whether and how AI can support

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[2] This dual definition of disability roots in the two predominant models of disability: the medical model, which associates disability with physical impairment, and the social model that finds society and the environment as disablers (Mitra, 2006).

more autonomous lives for disabled individuals, considering multiple forms of discrimination.

To answer this question, Chapter 2 focuses on the theoretical background of the research, which is followed by a methodology section, Chapter 3, where the path of selecting the research method and empirical work is reported. Accordingly, the results and the discussion of the research are reported respectively in Chapters 4 and 5. The paper concludes with the research contribution and further research in Chapter 6.

2 Theoretical Framework of the Research

This chapter elaborates on two key theoretical standpoints of this study: how autonomy could be understood from the literature, and how layers of discrimination could affect the enabling potentials of AI.

2.1 Autonomy and Disability

As a core value in contemporary ethics, autonomy is both a complex and context-sensitive term. At its foundation, autonomy is understood as an individual's capacity to act based on their own beliefs, motivations, and values, free from coercion, manipulation, or deceptive influence (Prunkl, 2024). This notion includes both the authority and power to live one's life (Prunkl, 2024). Within the field of value-sensitive design, autonomy is further conceptualized as the ability of individuals to decide, plan, and act in ways that support their self-defined goals (Friedman and Hendry, 2019). Importantly, these perspectives converge on the view that both internal authenticity (actions reflecting one's true self) and external agency (the actual capacity to act meaningfully in one's environment) are essential in defining autonomy (Prunkl, 2024). Alternatively, Laitinen and Sahlgren (2021) address these two aspects as human autonomy and functional autonomy, where the former incorporates the latter with an adequate degree of control, and the latter is responsible for operating independently.

However, the lived experience of autonomy diverges significantly between abled-bodied and disabled individuals. To dive into this difference, it would be helpful to first elaborate on Chiodo's (2022) perspective on distinct human autonomy from technological automation; while the former is in the hands of the person, the latter is beyond their control, or, as Chiodo articulates, off-hand or outsourced to the machine. Speaking of disabled individuals, the second pillar could be considered as their subordinate hand[3] (Moyà-Köhler and Domènech, 2022) or an extension of their body, illustrating how

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[3] This expression uses 'hand" as a representative metaphor for agency; and how technology for disabled individuals could be considered as their secondary 'hand" in order to compensate on the limitations the disability may cause.

autonomy for these individuals is often mediated by the technical form and function of the tools at their disposal. This position of technology fits well with some philosophical definitions of technology. On top of them, McLuhan's (1994) definition of technology as an extension of man, Latour's (2005) Actor-Network Theory when he realizes the agency of non-human actors (as actants), not to mention Haraway's (2016) Cyber Manifest where the distinction between human and machine is being questioned, support this proposition that technology for a disabled individual is more than a tool. Instead, it becomes part of their body and gives them the freedom to carry their lives (Mazera *et al*., 2024) and facilitates greater autonomy (Moyà-Köhler and Domènech, 2022).

This brief review of autonomy, how it is perceived differently for non-disabled versus disabled individuals, and how technology and automation manifest for them, is an essential theoretical backbone for this study. This basis provides us with an understanding of the autonomy of persons with disability to assess the enabling power of AI through our empirical data.

2.2 Intersectional Discrimination in the Disability Realm

Our main argument in this section is to depict how the intersections of discrimination affect the realization of the potential and promises of digital technologies, such as AI. In this regard, as shown in Fig. 1., we analyze different layers of discrimination and exclusion from AI technologies. This pyramid shows how each layer of discrimination can diminish the enabling power of AI. As mentioned above (while articulating the research problem in the introduction section), enabling power could be understood as reversing the disabling attributes of the physical impairment and society, or, in a broader context, the autonomy of individuals.

For intersectionally excluded social groups

For disabled social groups

For digitally excluded social groups

For conventionally excluded social groups

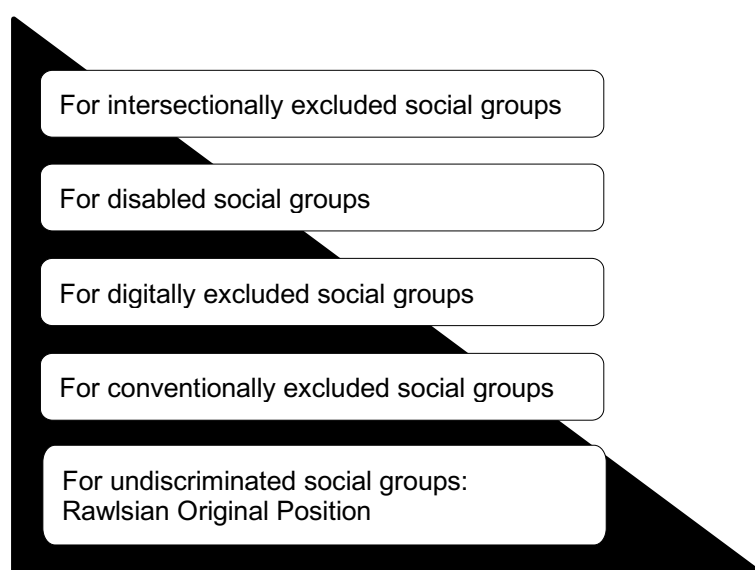For undiscriminated social groups:
Rawlsian Original Position

Fig. 1.: How different layers of discrimination diminish the enabling power of AI- Own presentation, inspired by (Park and Humphry, 2019).

John Rawls' (1971) theory of *the Original Position* or *the Veil of Ignorance* could perfectly define a purely inclusive world where decision-makers (here, technology developers, technology policy-makers, investors, etc.) ignore their gender, class, nationality, and any other identifying attributes they might carry. This positioning fits well with the definition of fairness in the decision-making context, which is the '*absence of any prejudice or favoritism toward an individual or group based on their inherent or acquired characteristics*' (Mehrabi et al., 2019, p. 1)*. According to Rawls, to diminish the bias, one should return to one's original position before birth. Something that is neither feasible nor plausible in the real world, where Southern citizens, marginalized ethnicities, the lower economic classes, the older adults, women, non-binary persons, and, in our case, people with disabilities, are facing discrimination in many spheres of their lives, including utilizing new technologies. Nevertheless, these conventional exclusionary topics are not the only discriminating attributes affecting the utilization of digital technologies. Digital divide or digital exclusion, limited or lacking access to the Internet, smart devices, and other infrastructures, and a lack of the authority to use digital tools and features (Park and Humphry, 2019) are all discriminatory aspects that may be imposed on someone, in addition to the conventional forms of discrimination. In addition to these layers, AI systems may impose particular demands on users that persons with disabilities, as users, might not be able to meet. For example, speech-based interfaces often require clear articulation and the ability to formulate precise commands or intents. These requirements can pose significant challenges for individuals with speech impairments, cognitive limitations, or language barriers. As a result, such interfaces risk excluding or disadvantaging certain user groups unless alternative interaction modalities or inclusive design principles are implemented.

It is worth mentioning that these layers are defined and divided in the related literature in different arrangements; for instance, some researchers consider the digital divide as an extension of general exclusion (Nierling and Maia, 2020). Others merge the exclusion of people with disabilities with the digital divide layer (Braun et al., 2020).

Regardless of how these layers are addressed, there is a hidden layer that is manifested through the intersection of two or more discriminations. As developed by some scholars, intersectionality elaborates on the idea that different attributes of identity shape the form and change the dynamics of oppression (Wolbring and Nasir, 2024). Intersection of multiple forms of discrimination, hence, further questions the fairness of AI for disabled individuals (Lythreatis et al., 2022; Mitra, 2006; Tsatsou, 2020). In other words, being classically discriminated against (such as exclusion caused by gender, religion, race, etc.), being excluded from digital technologies (such as data exclusion, algorithmic biases, etc.), and lacking access due to disability (such as inaccessible UI designs, etc.) are not independent of each other. Instead, the intersection of discriminations counteracts each other to shape a new dynamic of discrimination. To be more specific, the experience of discrimination for any given disabled person could be different from

others, given that they might face multiple forms of discrimination. Accordingly, people facing the intersection of various discriminations might experience AI and utilize its potential differently from one another.

3 Methodology, Method, Empirical Work

This study employs a Critical Discourse Analysis (CDA) approach to examine the impact of AI technologies on the autonomy of individuals with disabilities, taking into account intersectional discrimination. CDA studies power imbalance, dominance, and discrimination through the use of language (Mengibar, 2015), the interpretation of mutually linked texts and other sources (Bondarouk and Ruël, 2004), and uncovering hegemony beneath marginalized individuals and ideas (Wall et al., 2015). These attributes enable us to trace the dynamics of power, exclusion, and representation within a discourse, making it especially suitable for studies that involve forms of discrimination (Noble, 2020), in our case, ableism. In order to analyse the relevant public discourse, we conducted a qualitative analysis covering online documents published by actors pertinent to the field. For our study, we analysed text documents that were all available online (e.g., news, articles, or blog posts at publicly available websites), covering a broad range of actors, ranging from public institutions to media channels to individual authors.

Accordingly, the empirical data for this study were selected via the DuckDuckGo search engine to make sure that the search is unbiased and not influenced by user-specific tracking or personalized algorithms. Aligned with our research question and methodology, we were looking for sources of intersectional forms of discrimination and how they affect the autonomy of disabled individuals in the public sphere. Accordingly, we needed to make sure that our sample is broad enough to provide a basis for critically analyzing the text and context, while also being relevant enough to our inquiry. Thus, we resolved to assemble a discourse that includes three key aspects: the (1) inclusion of (2) AI for (3) disability, which we used as our initial keywords for searching. The targeted search strategy, then, included the presence of the three keywords as mentioned above, their synonyms, or their inherent inclusion within the title of the entries. Here are the alterations of each keyword that helped us decide about the entries:

- Inclusion and its cognates (inclusive, inclusivity); fair and its cognate (fairness), equal opportunities, justice; representation, and not leave people behind.
- AI, generative AI; algorithms, algorithmic tools, language models; GPT-4, ChatGPT, OpenAI.
- Disabled people and different wordings for it; ableism, technoableism; and specific disabilities such as visually impaired, low-vision, etc.

The collection and analysis of the data were conducted from May to October 2024. The number of entries, when qualitative data saturation was reached, was 48, with different

scopes that they cover, publishing dates, and publishers, all of which are described below.

The piled-up sample covers a variety of AI technologies (language models; matchmaking algorithms; facial, voice, and motion recognition systems; robotics; etc.), provides narrations across various settings (everyday life, education, work, among others), and reflects a broad spectrum of disabilities (hearing, vision, mental, and physical impairments). The entries, those with a specified publishing date, range from 2019 to 2024, along with seven entries with no available date for publishing. Above that, to describe the context for the entries, which is expanded and inclusive, they can be categorized in five groups, based on the type of the publishing organization: accessibility and disability advocacy which represents publishers whose mission is addressing disability and accessibility (15 entries); blog, NGO, and independent authors for those who have no ties to public and private organizations (6 entries); business, technology, and market analysis for publishers with technical and market oriented views (7 entries); news and media outlet for publishers such as news agencies and analytical content providers (10 entries); and public institution and international organization for those who have ties to public institutes (10 entries). This information, along with the authors and publishing organizations, as well as access links, is all addressed in Annex 1.

The interpretation process was conducted by a single coder using Software support[4]. The coding process was carried out in two main stages, repeated after each round of data collection: applying codes to the text based on the key concepts of the research question (autonomy and intersectionality) and identifying emergent subcodes for each of these concepts. Additionally, since context plays a critical role in interpretation within the framework of CDA (Mengibar, 2015), we simultaneously applied an open coding strategy to contextual variables. Through this process, two principal contextual codes (emotional tone and attitudinal stance of the text) and some subcodes for each emerged, complementing the primary coding scheme. These codes and their subcodes are all addressed in Annex 2. The results of the research, accordingly, were derived through cross-analyzing these codes and concepts, seeking to identify how intersectional factors shape the autonomy and agency of disabled people.

4 Results

As mentioned above, while interpreting the qualitative data, two key dynamics became central to understanding the autonomy of disabled individuals in the context of AI. The first, intersectional discrimination, was a focus from the outset of the study, given its well-articulated impact on access, inclusion, and agency. However, a second emergent

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[4] MaxQDA Analytics Pro. 2020

dimension also surfaced during the analysis: the relative autonomy of disabled individuals within the broader social environment. This additional factor underscores how autonomy is affected not only by technical offers of AI but also by one's embedded position in socio-technical contexts. This finding resonates with the social model of disability, which attributes disabling barriers primarily to society and social institutions rather than to individual impairments (Lawson and Beckett, 2020). These two dimensions offer a more layered and context-sensitive understanding of autonomy and of analyzing the promises of AI in general.

4.1 Addressing Autonomy Across the Intersectionality

Our analysis confirms that AI holds considerable enabling potential for people with disabilities, particularly in enhancing autonomy by supporting authentic decision-making and expanding agency. However, more critical interpretations of our data reveal that this potential is far from universally achievable. Accordingly, our empirical data includes some quotes to bring up the intersectional discriminations inherent in AI promises for people with disabilities: '*In some countries, immigrants tend to avoid medical examinations and tests for fear of being deported or facing unacceptable medical costs (46, public institution and international organization, 2023).*' On the contrary, '*Particular social groups (e.g., Caucasian families in the US) are more likely to report concerns related to the child's autism due to better medical access (46, public institution and international organization, 2023).*' Here, immigration background, ethnicity, and financial status, three different forms of discrimination, intersect with each other, affecting the seeking of medical solutions.

Exclusion from using technology, in our case AI, further compounds this problem: '*People with disabilities are one of the most marginalized groups in the effects of technology (8, accessibility and disability advocacy, NA).*' In other words, even when technologies exist and are accessible, they are not equally usable for all: '*mere existence of a[n AI] technology is not the same thing as people with disabilities having easy, affordable access to these things to actually use (21, blog, NGO, and independent, 2024).*' Technology is, as discussed above, the subordinate or secondary hand for disabled individuals, and access to it is not taken for granted. So, these observations feed this interpretation that the notion of AI as an 'enabler' is compromised when additional layers of discrimination, economic access, and digital literacy are factored into the equation. The experience of AI, accordingly, for a disabled individual who is also an ethnic minority, is a new form of discrimination shaped out of the intersection of two separate forms.

Another group of quotes is more implicit: by elaborating on the potentials and promises of AI for disabled individuals, they presume its availability and affordability. Take this quote, '*Social robotics for emotional training for pupils with autism [...] is a wearable that helps neurodiverse individuals with social-emotional learning (47, public institution and international organization, 2023).*' as an example. Interpreting through the context, as

CDA suggests, this quote encompasses multiple presumptions to conclude inclusivity of AI for disabled individuals; among them: pupils with autism can have access to social robotics; all pupils diagnosed in various spectrum of autism, with different language capabilities, mother tongues, and accents, can communicate with the robot; neurodiverse individuals have unified socio-emotional norms and subcultures. A similar quote states that '*AI powered robots and other tools […allow…] people with disabilities to live independently (43, public institution and international organization, 2022).*' This pattern has repeatedly occurred in our empirical data: many AI-based tools and features implicitly assume that users already possess certain forms of social and structural privilege, such as legal stability, economic means, and digital literacy.

Analysing quotes such as '*You can now find AI-powered braille tutor apps on the internet (25, business, technology, and market analysis, 2023)*' or '*The most common and affordable form of AI is using smart home technology (6, accessibility and disability advocacy, NA)*' implies a particular sentiment in which AI is there, and the disabled individual needs to utilize it as an enabler. At the same time, this baseline of technological access may not exist for all disabled individuals due to multiple and overlapping forms of marginalization.

The last but not least quote for this part is the one that offers a broad set of social attributes as disabling ones, implicitly suggesting that intersectionality is a disabler by itself, no matter how enabler AI is: '*Capitalism, racism, transphobia, patriarchy, colonialism, homophobia — all disabling (18, blog, NGO, and independent, 2024).*'

In summary, while AI may offer tools that could enhance the autonomy of disabled individuals, our findings show that an insufficient understanding of intersectional discrimination often undermines this promise. These layered exclusions limit AI's real-world availability and functionality, regardless of how accessible it might be. As a result, AI may not be as enabling in practice as it is often assumed or claimed to be in theory. This heightens the risk of disabled individuals becoming even further disabled in an AI-driven society, which is a key question in the following section of our results.

4.2 Addressing Relative Autonomy in the Society

A second aspect of the findings centers on the autonomy of disabled individuals as members of a society in which AI is an inseparable part. What this viewpoint suggests is that the perception of autonomy can be analyzed in a broader social setting. Regardless of the accessibility, availability, and affordability of AI for disabled individuals, AI-based solutions might still have a double effect on their autonomy because of the ableist mindset of society. In other words, for a person who faces no forms of discrimination except for their disability, fulfilling the promises provided by AI seems tricky: '*Police and autonomous security systems and military AI may falsely recognize assistive devices as a weapon or dangerous objects or misidentify facial or speech patterns (42, public*

institution and international organization, 2023).' This quote suggests that the ableist society could cancel out the autonomy offered by AI for disabled individuals.

Involving the person's social life (as opposed to their private life) in the perception of autonomy for disabled individuals also brings up the fact that disabled individuals are not the only social group that incorporates AI, and the whole of society also uses it. While non-disabled individuals are in the absolute majority in society, use tools and solutions of AI as decision-making aids, outsource their agency to the AI, and, in general, use AI as enablers, the expectations of performance for the entire society, including disabled and non-disabled social groups, escalate. This leaves those who do not have proper access to AI, due to merely disability or the intersection of disability and other forms of discrimination, behind: '*Educators already excessively discipline and punish […] disabled students, and stricter policing will exacerbate these disparities (17, blog, NGO, and independent, 2023).*'

Nonetheless, in the best-case scenario, when disabled individuals can utilize AI as expected, enabling promises of AI for disabled individuals might not be as welcome as anticipated by the entire society: '*ChatGPT threatens to disrupt able-bodied privilege (17, blog, NGO, and independent, 2023).*'

These insights point to broader societal shifts: while incorporating AI may suggest relatively higher living standards, it can simultaneously remove agency from disabled individuals by marking them as 'different.' Additionally, AI might be seen as threatening the privilege of non-disabled individuals, leading to a reconfiguration of autonomy and responsibility in a way that favors those who are already advantaged. Therefore, the enabling power of AI for disabled individuals must be compared to the dynamics of the entire society and not only within the narrow frame of disability-focused solutions, which could be either enabling or disabling.

5 Discussion

As mentioned above, despite the accessibility, availability, and affordability of AI for disabled individuals, AI-based solutions may still have a double-edged impact on their autonomy due to the prevailing ableist mindset in society. While AI holds considerable potential to enable disabled individuals, this potential remains unrealized mainly due to the persistent influence of intersectional discrimination. Rather than functioning uniformly as a tool for empowerment, AI can, in practice, reproduce or even intensify existing social inequities. Taking the nominal promises of AI to enable disabled individuals by raising their autonomy as the main argument of our study, two counter-arguments, as mentioned below and demonstrated in Fig. 2., raise serious doubts about the realizability of those potentials.
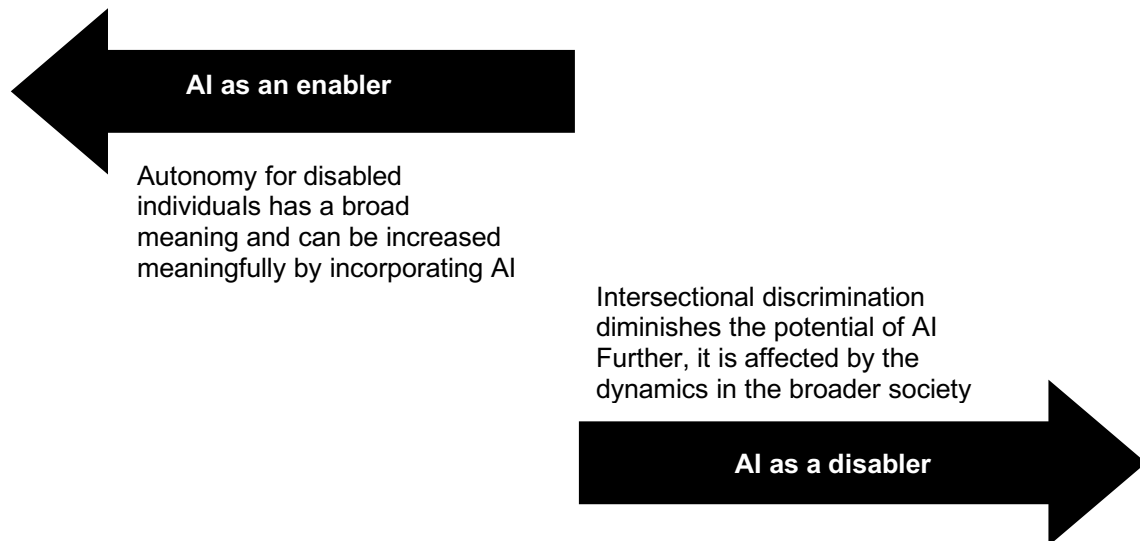
AI as an enabler

Autonomy for disabled individuals has a broad meaning and can be increased meaningfully by incorporating AI

Intersectional discrimination diminishes the potential of AI Further, it is affected by the dynamics in the broader society

AI as a disabler

Fig. 2.: The enabling dilemma of AI- Own presentation

One counter-argument to the enabling narrative is that intersectionality itself may diminish the autonomy of disabled individuals when interacting with AI. As overlapping systems of oppression (such as racism, classism, or sexism) interfere with the equitable access and agency of disabled individuals, the enabling potentials of AI seem far-fetched. A second counter-argument, questioning the enabling promises of AI, emphasizes the importance of examining autonomy not in isolation but in relative terms. How AI restructures autonomy must be considered across the community, including disabled and non-disabled individuals. Therefore, a broader question arises: how, and if at all, can AI enhance the autonomy of disabled individuals compared to the society in which they live? Thus, any assessment of its enabling power ties to these relational dynamics, putting another layer of doubt on the enabling power of AI. These findings frame a dilemma: AI for disabled persons can act either as an enabler or a (further) disabler, depending on how incorporating it intersects with other forms of discrimination and in the broader social context. This dilemma is depicted in Fig. 2.

One practical contribution of this study is the emphasis on addressing not only disability-related bias in AI but also its intersection with other forms of discrimination that disabled users might face. Inclusion in AI development requires more than integrating disability perspectives into datasets or correcting for algorithmic exclusion. As Whittaker *et al.* (2019) argue, intersectionality fundamentally reshapes the operation of exclusion. We suggest that fairness in AI must be pursued through *intersectional debiasing*. By intersectional debiasing, we refer to the accounting for overlapping and mutually reinforcing effects either during model training or in post-processing. Effective intersectional debiasing must therefore recognize different layered identities (specifically those causing discrimination) and their complex interactions. However, like many inclusive AI efforts, intersectional debiasing faces trade-offs between inclusiveness and model performance. Data for multiply marginalized groups is often scarce, and its sparsity can hinder effective integration into training datasets.

The second core contribution of this study is suggesting a shift from evaluating AI's nominal potential to assessing the enabling capacity of AI in the everyday social settings in which disabled individuals live. We tend to call this *relative autonomy*, which, as Mazera *et al.* (2024) discuss, appears in everyday life in the face of external barriers that limit the actions of some people with disabilities. Timpe (2019) likewise reminds us that agency is not an isolated function of the individual but depends on the ecology and the environment. From a more prescriptive viewpoint, developing and using AI-driven consumer electronics and assistive technologies must be understood in context, as their development and use are influenced by local social, institutional, and cultural factors (Nierling and Maia, 2020). Similarly, as argued by Shams, Zowghi, and colleagues (2023), tackling bias and unfairness requires a holistic approach that recognizes the cultural dynamics and normative assumptions embedded within AI systems. Our contribution, then, ultimately aligns with shifting from D&I (Diversity and Inclusion) in AI to AI for D&I.

In conclusion, the enabling power of AI for disabled individuals cannot be assessed in isolation, separate from the community. It must be evaluated in light of social inequality, intersectional discrimination, and the contextual factors that shape autonomy and agency. Only through such a layered and situated approach can we begin to understand whether AI truly enables or disables the individuals it seeks to serve.

6 Conclusion and Further Research

This study shows that AI matters more for disabled individuals than is often presumed. Autonomy has a different operationalized connotation for disabled individuals, making AI and other promising technologies a potential leap in their quality of life. A non-disabled person might look at automation, giving out autonomy to the machine, as a trade-off that reduces their responsibilities (Chiodo, 2022). Meanwhile, technology for a disabled person is the freedom to carry out their lives (Mazera et al., 2024) and a promise of facilitating greater autonomy (Moyà-Köhler and Domènech, 2022). This distinction only applies to disability, as compared to other classic underrepresented social groups, making studying their autonomy a broad potential for further contribution.

Another theoretical standpoint of our study is to go beyond algorithmic fairness. To assess the fairness of AI for people with disabilities or any other underrepresented group, it is not sufficient to focus solely on the technical promises of AI or its specific applications for that group. Instead, the accurate assessment must be analyzed within a broader context to reach a comprehensive and meaningful evaluation of this socio-technical phenomenon. While this study is exploratory, it feeds further research that moves beyond assessing AI as a technical phenomenon and incorporates social dynamics as essential components in evaluating AI's enabling potential.

Based on these theoretical standpoints and through a qualitative analysis of empirical data, we identified and examined two key social forces that cast doubt on the promises of AI to enhance the autonomy of people with disabilities: intersectional discrimination and relative autonomy within broader society.

The latter expresses the need to clarify what some might expect from AI as an enabler. Is it expected of AI to maintain the status quo, or should it actively help reduce discrimination? If AI systems maintain the current gap between the autonomy of disabled and non-disabled social groups, calling them 'enablers' may be misleading. It might even be the opposite: AI might exclude particular user groups, including disabled individuals facing intersections of multiple forms of discrimination. Future research, accordingly, could move beyond the qualitative analysis of the enabling power of AI and investigate how much AI is improving the everyday lives of disabled individuals. To do this meaningfully, researchers and developers need to be clear about what exactly they are assessing: the potential of AI, its real-world impact, or its relative contribution compared to broader social progress. Making these distinctions is essential for building a deeper understanding of fairness and for designing AI systems that are genuinely inclusive.

Considering intersectional discrimination as one of the social forces that we studied, and given that we believe in more involvement of social forces in evaluating fair AI, this study can also provide a more practical contribution. We would, accordingly, coin the term *'intersectional debiasing'* as an effort to include, if technically viable, not just persons with one underrepresented attribute but also persons who face intersections of discrimination in AI. While this concept still requires technical feasibility assessments, it provides a more socially inclusive mindset to shift algorithmic fairness to a new paradigm, one that integrates social justice principles and recognizes the multi-dimensional experiences of marginalized groups. Such a shift could meaningfully advance the discourse on inclusive and ethical AI.

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Annex 1. Title of the Entries as Empirical Data (Sorted by Organization Categories, Alphabetically)

	Title	Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
1	Can ChatGPT Make the World More Accessible	Benjamin Roussey	Accessibility	Accessibility & Disability Advocacy	Apr 03, 2023	May 03, 2024	https://www.accessibility.com/blog/can-chatgpt-make-the-world-more-accessible?ref=disabilitydebrief.org
2	GPT-4 Image Recognition: An Absolute Game Changer in Accessibility	Aaron Preece	American Foundation of the Blind	Accessibility & Disability Advocacy	Feb 09, 2024	May 03, 2024	https://afb.org/blog/entry/gpt-4-image-recognition-accessibility?ref=disabilitydebrief.org
3	Microsoft Leverages Power of AI To Improve Accessibility for Disabled People	Sarah Sarsby	AT Today	Accessibility & Disability Advocacy	May 19, 2023	May 03, 2024	https://attoday.co.uk/microsoft-leverages-power-of-ai-to-improve-accessibility-for-disabled-people/?ref=disabilitydebrief.org
4	New GPT-4 Model Can Reportedly Describe Images Accurately	NA	boia (Bureau of Internet Accessibility)	Accessibility & Disability Advocacy	Apr 20, 2023	May 03, 2024	https://www.boia.org/blog/new-gpt-4-model-can-reportedly-describe-images-accurately?ref=disabilitydebrief.org
5	Artificial Intelligence Products for Disabled People	Krissie Barrick	Disability Charity: Scope UK	Accessibility & Disability Advocacy	NA	Sep 30, 2024	https://www.scope.org.uk/news-and-stories/artificial-intelligence-disabled-people
6	How Will AI Help Disabled People	Emma Purcell	Disability Horizons Shop	Accessibility & Disability Advocacy	NA	Sep 30, 2024	https://shop.disabilityhorizons.com/how-will-ai-help-disabled-people/
7	Using AI for Disability Inclusion	Kristina Treadwell	Disability:IN	Accessibility & Disability Advocacy	NA	Sep 30, 2024	https://disabilityin.org/business-case/using-ai-for-disability-inclusion/

	Title	Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
8	Is AI A Risk or an Opportunity for Disability Rights	Shah Maitreya	European Network on Independent Living	Accessibility & Disability Advocacy	NA	Sep 30, 2024	https://enil.eu/is-ai-a-risk-or-an-opportunity-for-disability-rights/
9	AI for Accessibility: Opportunities and Challenges	Cindy Bennett, Shari Trewin	Equal Entry	Accessibility & Disability Advocacy	Mar 28, 2023	May 03, 2024	https://equalentry.com/ai-for-accessibility-opportunities-and-challenges/?ref=disabilitydebrief.org
10	Real AI Solutions for Accessibility Challenges	Kevin Berg	Equal Entry	Accessibility & Disability Advocacy	Sep 26, 2023	May 03, 2024	https://equalentry.com/real-ai-solutions-for-accessibility-challenges/?ref=disabilitydebrief.org
11	How AI Needs to be Redesigned for People with Disabilities	Sam Proulx	Fable	Accessibility & Disability Advocacy	NA	Sep 30, 2024	https://makeitfable.com/article/ai-and-analytics-people-with-disabilities/
12	AI for Disability Inclusion: Friend or Foe	NA	Get Skilled Access	Accessibility & Disability Advocacy	NA	Sep 30, 2024	https://getskilledaccess.com.au/blog/ai-for-disability-inclusion/
13	AI For All: Why Disability Inclusion Is Vital to the Future of Artificial Intelligence	NA	Scope	Accessibility & Disability Advocacy	May 16, 2024	Sep 30, 2024	https://www.linkedin.com/pulse/ai-all-why-disability-inclusion-vital-future-artificial-intelligence-z59ne/
14	Fairness of AI for People with Disabilities: Problem Analysis and Interdisciplinary Collaboration	Jason J.G. White	SIG Access	Accessibility & Disability Advocacy	Oct, 2019	Sep 30, 2024	https://www.sigaccess.org/newsletter/2019-10/white.html
15	Three Ways AI Supports People with Disabilities in the Workplace	NA	Verbit.ai via Accessibility	Accessibility & Disability Advocacy	Mar 9, 2023	Sep 30, 2024	https://www.accessibility.com/blog/three-ways-ai-supports-people-with-disabilities-in-the-workplace
16	No, 'AI' Will Not Fix Accessibility	Adrian Roselli	Adrian Roselli	Blog & NGO & Independent Authors	Sep 08, 2024	May 03, 2024	https://adrianroselli.com/2023/06/no-ai-will-not-fix-accessibility.html?ref=disabilitydebrief.org

	Title	Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
17	Ableism and ChatGPT: Why People Fear It Versus Why They Should Fear It	Mich Ciurria	Blog of the APA	Blog & NGO & Independent Authors	Mar 30, 2023	May 03, 2024	https://blog.apaonline.org/2023/03/30/ableism-and-chatgpt-why-people-fear-it-versus-why-they-should-fear-it/?ref=disabilitydebrief.org
18	Nothing About Us, Without Us: Disability Justice and AI	Kenrya Rankin	Mozilla Foundation	Blog & NGO & Independent Authors	July 09, 2024	Sep 30, 2024	https://foundation.mozilla.org/en/blog/disability-justice-and-ai/
19	Adventures with BeMyAI	Léonie Watson	Tink	Blog & NGO & Independent Authors	Aug 17, 2023	May 03, 2024	https://tink.uk/adventures-with-bemyai/?ref=disabilitydebrief.org
20	Disability, Accessibility, and AI - Towards Data Science	Stephanie Kirmer	Towards Data Science	Blog & NGO & Independent Authors	Sep 16, 2024	Sep 30, 2024	https://towardsdatascience.com/disability-accessibility-and-ai-0d5ab06ec140
21	Report – To Reduce Disability Bias in Technology, Start with Disability Data	Ariana Aboulafia, Miranda Bogen	Center for Democracy and Technology (cdt)	Blog & NGO & Independent Authors	July 25, 2024	Oct 01, 2024	https://cdt.org/insights/report-to-reduce-disability-bias-in-technology-start-with-disability-data/
22	Equally AI Releases ChatGPT-Powered Report on Web Accessibility Websites in the US, Urges Business Leaders to Prioritize Inclusivity	Kathy Berardi	PRWeb	Business, Tech & Market Analysis	Mar 29, 2023	May 03, 2024	https://www.prweb.com/releases/equally-ai-releases-chatgpt-powered-report-on-web-accessibility-websites-in-the-us-urges-business-leaders-to-prioritize-inclusivity-809668774.html
23	Artificial Intelligence Is Dangerous for Disabled People at Work: 4 Takeaways for Developers and Buyers	Nancy Doyle	Forbes	Business, Tech & Market Analysis	Oct 11, 2022	May 03, 2024	https://www.forbes.com/sites/drnancydoyle/2022/10/11/artificial-intelligence-is-dangerous-for-disabled-people-at-work-4-takeaways-for-developers-and-buyers/?ref=disabilitydebrief.org
24	Disability Data Alarmingly Absent from AI Algorithmic Tools, Report Suggests	Gus Alexiou	Forbes	Business, Tech & Market Analysis	Aug 06, 2024	Sep 30, 2024	https://www.forbes.com/sites/gusalexiou/2024/08/06/disability-data-alarmingly-absent-from-ai-algorithmic-tools-report-suggests/

	Title	Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
25	Empowering Individuals with Disabilities Through AI Technology	Tyler Weitzman	Forbes	Business, Tech & Market Analysis	Jun 16, 2023	Sep 30, 2024	https://www.forbes.com/councils/forbesbusinesscouncil/2023/06/16/empowering-individuals-with-disabilities-through-ai-technology/
26	Envision Adds ChatGPT AI Sight Assistance to Its Smart Glasses for the Blind	Gus Alexiou	Forbes	Business, Tech & Market Analysis	Apr 30, 2023	May 03, 2024	https://www.forbes.com/sites/gusalexiou/2023/04/30/envision-adds-chatgpt-ai-sight-assistance-to-its-smart-glasses-for-the-blind/?ref=disabilitydebrief.org
27	How AI Can Improve the Lives of People with Disabilities	NA	Smart Click	Business, Tech & Market Analysis	NA	Sep 30, 2024	https://smartclick.ai/articles/how-ai-can-improve-the-lives-of-people-with-disabilities/
28	How AI Is Advancing Assistive Technology	Mary K. Pratt	Tech Target	Business, Tech & Market Analysis	Jan 22,2024	May 03, 2024	https://www.techtarget.com/searchenterpriseai/tip/How-AI-is-advancing-assistive-technology?ref=disabilitydebrief.org
29	Be My Eyes Announces New Tool Powered by OpenAI's GPT-4 to Improve Accessibility for People Who are Blind or Have Low-Vision	NA	Business Wire	News & Media Outlet	Mar 14, 2023	Sep 30, 2024	https://www.businesswire.com/news/home/20230314005425/en/Be-My-Eyes-Announces-New-Tool-Powered-by-OpenAI0.000000E+002https://en.yna.co.kr/view/AEN20230317004500315?ref=disabilitydebrief.org
30	'We Don't Want To Leave People Behind': AI Is Helping Disabled People in Surprising New Ways	Clare Duffy	CNN Business	News & Media Outlet	July 08, 2024	Sep 30, 2024	https://edition.cnn.com/2024/07/08/tech/ai-assistive-technology-disabilities/index.html
31	Can AI Be Used to Help People with Disabilities? Experts Say Yes, With The 'Right Data Set'	Irelyne Lavery	Global News	News & Media Outlet	Jan 29, 2023	Sep 30, 2024	https://globalnews.ca/news/9440455/artificial-intelligence-disability/
32	How Ableist Algorithms Dominate Digital Spaces	John Loeppky	IT Pro	News & Media Outlet	Feb 20, 2023	May 03, 2024	https://www.itpro.com/technology/artificial-intelligence-ai/370064/how-ableist-algorithms-dominate-digital-spaces?ref=disabilitydebrief.org

	Title	Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
33	AI Revolution: Paralyzed Woman 'Speaks' via Digital Avatar	Robin Marks	Neuroscience News	News & Media Outlet	Aug 23, 2023	May 03, 2024	https://neurosciencenews.com/ai-bci-voice-recreation-23810/?ref=disabilitydebrief.org
34	GPT-4's New Capabilities Power A 'Virtual Volunteer' For the Visually Impaired	Devin Coldewey	TechCrunch	News & Media Outlet	Mar 14, 2023	May 03, 2024	https://techcrunch.com/2023/03/14/gpt-4s-first-app-is-a-virtual-volunteer-for-the-visually-impaired/?ref=disabilitydebrief.org&guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZGlzYWJpbGl0eWRlYnJpZWYub3JnL2pYnJhcnkvdG9waWMtZGlnaXRhbGpLw&guce_referrer_sig=AQAAAD3WCZAJp_0mo-DGordWLn8SLwPdSOMU3_Hl8Xr0rPAbq8AbpYseabU6zPyuYix4kwE46w0kXbtX9wLW1l8ae15kXzGNsjxlQscUWHNQQAkMO4a1l-7pg7aPkqjFxeFnt1AtXJ5g3VT37iIrQBUdtM1Uk5xJaGdA8t95LRt_64CI
35	Why AI Fairness Conversations Must Include Disabled People	Eileen O'Grady	The Harvard Gazette	News & Media Outlet	Apr 03, 2024	Sep 30, 2024	https://news.harvard.edu/gazette/story/2024/04/why-ai-fairness-conversations-must-include-disabled-people/
36	Common AI Language Models Show Bias Against People with Disabilities: Study	Gianna Melillo	The Hill: Changing America	News & Media Outlet	Oct 14, 2022	May 03, 2024	https://thehill.com/changing-america/respect/diversity-inclusion/3688507-common-ai-language-models-show-bias-against-people-with-disabilities-study/?ref=disabilitydebrief.org
37	Book Review: 'Against Technoableism,' by Ashley Shew	Andrew Leland	The New York Times	News & Media Outlet	Sep 19, 2023	Sep 30, 2024	https://www.nytimes.com/2023/09/19/books/review/against-technoableism-ashley-shew.html?utm_source=cmpgn_news&utm_medium=email&utm_campaign=vtAdvUnirelClipReportsCMP_weeklysept212023

Title		Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
38	Automating Ableism	S.E. Smith	The Verge	News & Media Outlet	Feb 14, 2024	Sep 30, 2024	https://www.theverge.com/24066641/disability-ableism-ai-census-qalys
39	More Equal Opportunities: How AI Fosters an Inclusive Working World	NA	acatech (National Academy for Science and Engineering)	Public Institution & International Organization	July 06, 2023	Sep 30, 2024	https://en.acatech.de/allgemein/how-ai-fosters-an-inclusive-working-world/
40	Artificial Intelligence and Its Impact on the Human Rights of Persons with Disabilities	Jerneja Turin,	European Network of National Human Rights Institutions	Public Institution & International Organization	Dec 03, 2023	Sep 30, 2024	https://ennhri.org/news-and-blog/artificial-intelligence-and-its-impact-on-the-human-rights-of-persons-with-disabilities/
41	Can AI Improve the Lives of Persons with Disabilities	Klaus Hoeckner	Futurium	Public Institution & International Organization	Feb 21, 2019	Sep 30, 2024	https://futurium.ec.europa.eu/en/european-ai-alliance/blog/can-ai-improve-lives-persons-disabilities
42	AI Act and Disability-Centred Policy: How Can We Stop Perpetuating Social Exclusion?	Yonah Welker	OECD	Public Institution & International Organization	May 17, 2023	Sep 30, 2024	https://oecd.ai/en/wonk/eu-ai-act-disabilities
43	Humanity Should Get the Best From AI, Not the Worst	NA	UN Human Rights	Public Institution & International Organization	May 09, 2022	May 03, 2024	https://www.ohchr.org/en/stories/2022/05/humanity-should-get-best-ai-not-worst-un-disability-rights-expert?ref=disabilitydebrief.org
44	The AI Revolution: Is it a Game Changer for Disability Inclusion?	Hudoykul Hafizov	UNDP Uzbekistan	Public Institution & International Organization	July 18, 2024	May 03, 2024	https://www.undp.org/uzbekistan/blog/ai-revolution-it-game-changer-disability-inclusion

	Title	Author(S)	Organization	Entry Category	Publishing Date	Collecting Date	Link
45	Algorithms, Artificial Intelligence, and Disability Discrimination in Hiring	NA	US Department of Justice Civil Rights Division	Public Institution & International Organization	May 12, 2022	Sep 30, 2024	https://www.ada.gov/resources/ai-guidance/
46	Generative AI Holds Great Potential for Those with Disabilities - But It Needs Policy to Shape It	Yonah Welker	World Economic Forum	Public Institution & International Organization	Nov 03, 2023	May 03, 2024	https://www.weforum.org/agenda/2023/11/generative-ai-holds-potential-disabilities/?ref=disabilitydebrief.org
47	How Cognitive Diversity in AI Can Help Close the Disability Inclusion Gap	Yonah Welker	World Economic Forum	Public Institution & International Organization	Apr 17, 2023	Oct 01, 2024	https://www.weforum.org/agenda/2023/04/how-cognitive-diversity-and-disability-centred-ai-can-improve-social-inclusion/?ref=disabilitydebrief.org
48	How Sovereign Funds Could Empower the Future of Assistive Technology and Disability AI	Yonah Welker	World Economic Forum	Public Institution & International Organization	Aug 15, 2023	Oct 01, 2024	https://www.weforum.org/agenda/2023/08/sovereign-funds-future-assistive-technology-disability-ai/?ref=disabilitydebrief.org

Annex 2. The Codes and Subcodes of the Qualitative Data Analysis

The text

Autonomy
- Acting and functioning
- Having choice options
- Desicion-making

Intersectionality
- Language privillage
- Ethnic exclusion
- Gender-biases
- Wealth
- Digital supremacy

The context

Emotional tone of the text
- Scientific, neutral
- Activist, critical
- Optimist
- Fascinated
- Ironic, sarcastic
- Politically incorrect

Attitudinal stance of the text
- Marketing for technology, profit-making
- Fixing the disability
- Promoting AI and assistive technologies
- Practical solutions for inclusive AI