WIP: Moving from Accessibility to Anti-Ableism through the Explication of Disability in the AI Ecosystem

Sri Yash Tadimalla
University of North Carolina Charlotte
Charlotte, U.S.A.
stadimal@uncc.edu

Rachel Figard
University of Georgia
Athens, U.S.A.
rachel.figard@uga.edu

Yukyeong Song
University of Florida
Gainesville, U.S.A.
y.song1@ufl.edu

Abstract—This work-in-progress innovative practice paper builds on existing studies highlighting the significant lack of diversity in the field of artificial intelligence (AI), with a particular emphasis on the role of identity in shaping biases, inequalities, and ethical considerations within AI systems. As AI becomes increasingly integrated into society, it is essential to critically examine its impact on disabled individuals. This paper advocates for the adoption of an anti-ableist framework, emphasizing the inclusion of disability perspectives throughout the AI development and deployment processes. Central to this position is a critical examination of the AI identity ecosystem, which includes the creators of AI, the technologies they produce, and the societal implications of these technologies—all viewed through a lens that prioritizes disability rights and perspectives. We introduce a conceptual framework designed to center disability within the AI ecosystem, particularly in educational settings. This framework aims to teach students the importance of accessibility and anti-ableism in AI, equipping them with the tools to integrate these principles throughout their work. By promoting an anti-ableist approach and integrating accessibility education, this paper seeks to inform future policies and initiatives in human-centered AI. It contributes to the ongoing discourse on ethical AI, urging a reevaluation of how disability is integral to AI's identity and its future trajectory.

Index Terms—AI, disability, equity, identity, accessibility

I. INTRODUCTION

The impact of AI on employment is significant and growing, with up to 97 million individuals expected to work in the AI field by 2025. Technological advancements in AI are likely to result in both job displacement and augmentation, with substantial implications for the workforce. The US AI market is projected to reach $299.64 billion by 2026, and AI tools are expected to influence nearly 40 percent of jobs globally, rising to 60 percent in advanced economies, particularly due to disparities in internet access and digital infrastructure [1]. At this critical juncture of widespread AI adoption, it is essential to move beyond mere data representation towards genuine inclusion in AI design, creation, and deployment. Educators teaching AI must prioritize teaching students how to incorporate the perspectives and identities of people with disabilities into AI systems. This paper presents a conceptual framework designed to center disability within the AI ecosystem and guide students in understanding the importance of accessibility and anti-ableism. By contextualizing disability's role, we aim to inform the future trajectory of AI through the lens of accessibility education and inclusivity at every stage of AI development and deployment [2]. We investigate this through the research question: **How can we teach students the urgency of incorporating principles of accessibility and advancing towards anti-ableism in AI?**

II. BACKGROUND

A Note on Language: Throughout this article, we alternate between using "disabled people" and "people with disabilities." This choice reflects our understanding of disability both as a social category ascribed to individuals and as a personal identity that individuals might embrace. For a more detailed exploration of identity-first and person-first language, refer to [3]. In the realm of AI, discussions have predominantly focused on technological and economic factors, such as defining AI, understanding its usage, and examining human-AI interactions [4]–[9]. However, the perception of AI is shaped by a multitude of factors, including societal structures, personal experiences, and media representations, adding layers of complexity to the notion of AI identity [2]. Such complexity necessitates a comprehensive view of AI, encompassing both the internal characteristics of AI technologies and the external perceptions shaped by societal impact and cultural norms. This perspective is crucial for addressing various ethical dilemmas like fairness, transparency, and trust [10], [11]. Recognizing the importance of intersectional identities—how AI's interactions with culture, economics, and ethics intersect with human identities such as race, gender, socioeconomic status, and, notably, disability—is essential. Focusing on disability as a key identity factor is critical because it ensures that AI broadening participation strategies are equitable and inclusive, particularly for marginalized communities. By critically examining the contexts in which AI creators operate and the existing frameworks that guide AI development and its societal impacts, we can advocate for an AI identity that equitably serves all individuals, including those with disabilities [12], [13]. The research and conceptual frameworks that explore the AI identity ecosystem explore how individual identity factors in-
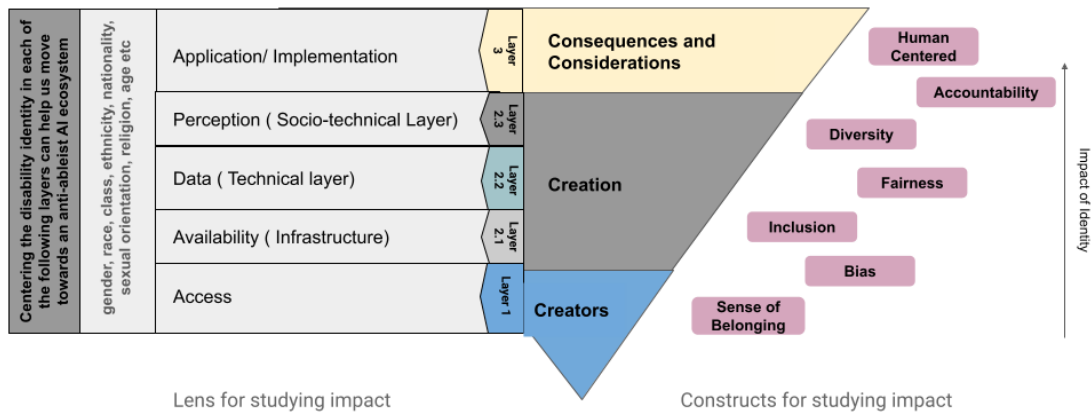
Fig. 1. A conceptual framework to visualize and center disability in the AI ecosystem

fluence technology within the roles of creators and consumers [14]. Representation and inclusion in the creation process have extensive consequences and must be critically evaluated through the lens of identity [2]. By prioritizing disability within this framework, we can better understand and address the specific challenges and needs in AI development, aligning the definition of AI identity more closely with the identity of disability [15]. An approach that is at the intersection of many existing frameworks [16] [17], [18]. This approach not only reflects a broader, more inclusive view of technology's role in society but also ensures that AI technologies are developed in a way that is truly beneficial for all of society, including those from historically underrepresented or marginalized groups [19]. The remainder of this paper will examine the layers of the creators and creation (Figure 1) within the AI identity ecosystem. By centering on the lens of identity on disability, we illustrate how inclusive practices can fundamentally shape the development and impact of AI technologies. There are a plethora of seemingly redundant methods and terms related to disability and accessibility in technological design. However, each method distinguishes itself through the ways in which it approaches the roles of design and designers.

Here, we summarize the definitions of the following terms in the context of design theory in AI development: **Accessibility:** A proactive measure to remove barriers from an event, program, system, or service prior to its intended use. Unlike anti-ableism, accessibility is not rooted in critical scholarship and it aims to remove ableist barriers, not disrupt an ableist system. [20] **Universal Design:** A design philosophy that focuses on proactively creating accessible spaces for all users, regardless of ability [21]. **Human-Centered Design (HCD):** A design method that views all humans as users, with a specific focus on their thinking, emotions, and behavior. During the design process, HCD involves the potential users from the beginning, putting them at the center of the design process [22]. **User-Centered Design (UCD):** A design method that narrows the scope of HCD by focusing specifically on the end-user during the design and development process [23]. **Anti-Ableism:** Aims to disrupt productivity and normalcy as implicitly encoded

ideals in methodological practices [24], [25] by amplifying disabled people's ways of knowing (e.g., articulated lived experiences) and centralizing them in the knowledge creation process.

Considering these nuances, the above frameworks provide a comprehensive set of perspectives related to the inclusive development of AI technologies and highlight the multifaceted and comprehensive approach needed to address the equally as complicated societal implications of AI development. Current AI development has paid little attention to the inclusivity of its development and has abysmal reflection on the equability of its development decisions. As such, design methods such as UCD are almost entirely devoid of any considerations of race, class, gender, disability, or other axes of inequity in the design process [26]. Approaching anti-ableism from an epistemological perspective in AI development allows us to analyze the current landscapes of AI and propose transformative practices based on the insights and perspectives of disabled people.

III. ANTI-ABLEIST APPROACH FOR THE CREATORS OF AI

The development of AI is significantly influenced by the diversity of its creators, which is crucial for shaping technology that reflects a broad spectrum of human experiences and values [27]. However, AI development, like the broader tech industry, often lacks diversity, particularly in the inclusion of people with disabilities [28]. Involving people with disabilities in AI creation is essential for ensuring systems that are unbiased, ethical, accessible, and beneficial for society [29], [30]. Engineers and developers play a critical role in AI development, but systemic inequities often manifest in technology design, either intentionally or unintentionally [26]. While tech companies may celebrate "diverse teams" for profitability, such efforts often overlook systemic issues like white supremacy and heteropatriarchy. Anti-ableist perspectives advocate for a shift in technology design to enhance human capabilities and promote collective liberation. Collaborative communities and open-source projects offer platforms for decolonial design methods that challenge the traditional definition of "unmarked users," often assumed to be privileged across several axes [26]. Researchers, scientists, and academics

from various disciplines contribute to AI technologies across fields such as healthcare, transportation, and education [31]. Despite the National Science Foundation's (NSF) investment in AI research, less than 10% of researchers and academic scientists are reported to be people with disabilities, with even fewer in AI development [32]. In higher education, about 21% of students have a disability [33], yet data on disabled students in STEM is scarce, as highlighted by NSF's 2023 Diversity and STEM report [34]. These students, however, are integral to AI innovation, often bringing new ideas into projects and hackathons [35], [36]. Despite recent diversity efforts, true systemic change remains elusive, underscoring the need for broader educational, mentoring, and workplace reforms to achieve genuine inclusivity in tech design [37].

IV. Anti-Ableist Approach to the Creation of AI

This layer of the AI ecosystem is crucial for translating AI creators' goals into tangible outcomes, reflecting both internal and external dimensions of AI identity. Integrating an anti-ableist approach ensures AI systems consider the needs and experiences of people with disabilities. Often, product development teams include "diverse" user personas only during initial ideation [26]. To truly foster an anti-ableist approach, developers must critically evaluate design methods, embedding accessibility and inclusivity throughout the entire AI development process, from design to deployment, to empower all users, including those with disabilities [38] [26].

1) The Infrastructure Layer: The infrastructure layer is fundamental to how AI technologies are developed, deployed, and integrated into society, directly influencing accessibility for all users, including those with disabilities. AI infrastructure, encompassing digital (e.g., user interfaces and software) and physical elements (e.g., accessible buildings), must prioritize accessibility to ensure usability across a wide range of abilities. Significant gaps in disability-related data collection hinder equitable AI development [34], [39]. "Data ableism" highlights how data practices can marginalize individuals through invisibility and undesirability, reinforcing exclusions based on privileged ability expectations [40]. Integrating disability data with other identity data is essential for inclusive AI development. In education, AI curricula play a crucial role in fostering AI literacy, yet more comprehensive efforts are needed to center the experiences of students with disabilities [41]–[44]. Standard A/B testing practices often assume a "universal user," neglecting marginalized groups' diverse needs [26]. An anti-ableist approach involves analyzing feedback from diverse subgroups to ensure equitable, inclusive design choices. Additionally, design processes frequently overlook variations in user experience across race, class, gender, and disability.

2) The Technical Layer: Understanding foundational AI models is essential for recognizing how data shapes AI's identity and its diverse applications. As AI technologies evolve, aligning them with societal needs and ethical considerations remains a challenge. Adopting an anti-ableist approach in AI

development is crucial, particularly in algorithmic decision support systems, where biases often reproduce racial, gendered, and ableist inequities [26]. Anti-ableism requires critically analyzing how algorithmic design perpetuates ableism, white supremacy, patriarchy, heteronormativity, and colonialism. Transparency in AI processes is vital, enabling users, including those with disabilities, to understand decision-making, which is essential for trust and reliability. Projects like HeardAI exemplify efforts to make AI more inclusive by developing voice-activated systems that recognize disfluent speech patterns, supporting individuals with diverse speech fluency in various contexts, including education [44]. In robotics and autonomous systems, AI assists students with disabilities by enhancing social skills, increasing classroom interactions, and reducing anxiety [45]. However, in recommendation systems and personalization, discriminatory designs often standardize norms that privilege certain demographics, leading to various forms of discrimination (e.g., class-based, disability-based, race-based, gender-based) [46]. Without intentionally including disability and other demographic variables, predictive algorithms risk acting as proxies for discriminatory practices, perpetuating inequality under the guise of 'fairness' [26].

3) The Socio-Technical Layer: AI Frameworks and Principles: The socio-technical frameworks mentioned below emerged in response to AI's societal impacts, particularly on underrepresented and marginalized communities. These frameworks emphasize the need for AI systems that align with human values, ethics, and inclusivity [47].

Trustworthy AI focuses on creating safe, transparent, and reliable systems that integrate accessibility and universal design for usability by all, including those with disabilities [48], [49]. **Responsible AI** emphasizes ethical development and societal benefit, incorporating human-centered design (HCD) and anti-ableism to prevent exacerbation of inequalities, especially for disabled individuals [50]. **Ethical AI** aligns AI with fairness and justice principles, using user-centered design (UCD) to prevent discrimination and bias against people with disabilities [51]. **AI for Good** applies AI to global challenges, promoting accessibility and assistive technologies aligned with universal design, benefiting disabled communities [47], [52]–[54]. **Human-Centered AI (HCAI)** prioritizes human values, advocating for inclusive, accessible AI through participatory design that respects the dignity of all users, including those with disabilities [55]. **Explainable AI** ensures AI decisions are transparent and understandable, enhancing trust and usability for users with disabilities [56]. **Equitable AI** focuses on fair distribution of AI benefits, integrating universal design and anti-ableism to address systemic inequalities and promote inclusivity [57].

V. Consequences

As AI integrates into daily life, it raises critical issues, including algorithmic bias, privacy breaches, and the potential for surveillance. The reflection of human biases in AI systems, such as those against people with disabilities, underscores the need for fairness and inclusivity in model development. As AI

systems become more complex, there is a growing demand for transparency, regulations, and robust data protection measures. **Ethical Considerations:** AI in healthcare can misinterpret data from people with disabilities, leading to misdiagnoses, and highlighting the need for bias mitigation and accessibility. **Personification:** AI assistants like Siri or Alexa may foster emotional reliance, particularly among individuals with cognitive disabilities, blurring the lines between human interaction and machine use. **AI-Human Collaboration:** AI tools in the workplace might exclude disabled workers by not accommodating flexible work schedules, underscoring the importance of inclusive design. **Human Bias Reflection:** AI in recruitment may perpetuate biases against disabled candidates, particularly if it penalizes gaps in employment often linked to health conditions. **Regulation and Governance:** AI-driven public services, like transportation, need regulatory frameworks to ensure accessibility for disabled users. **Privacy and Data Protection:** AI health monitoring devices pose privacy risks, particularly if data is shared without consent, potentially leading to discrimination. **AI and Creativity:** AI can empower disabled artists by overcoming physical limitations, but it raises questions about authorship and ownership of AI-assisted work. **Cultural and Social Impacts:** AI in education might misinterpret the engagement of students with disabilities, leading to bias in academic evaluations. **Socioeconomic Impact:** AI-driven automation can disproportionately displace disabled workers, highlighting the need for accessible retraining programs. **Media Representations:** Media often portrays AI as a savior or threat, affecting public perceptions and potentially creating unrealistic expectations or fears among disabled communities.

VI. DISCUSSION

The perception of AI is shaped by societal structures, personal experiences, media representations, and identity [58]. The design and creation of AI technologies are influenced by the diverse backgrounds, experiences, and worldviews of their creators. Understanding who creates AI and examining existing frameworks [12] [59] and societal considerations [13] are essential for advocating diversity and inclusion, particularly for ensuring that AI serves all people, including those with disabilities. The AI identity ecosystem framework examines how identity factors, such as disability, impact technology development, access, and implementation [14]. The experiences and identities of creators shape the data they collect and the technologies they produce, making representation and inclusion critical for accessibility and fairness. Key sociological constructs like diversity, fairness, inclusion, and bias are intertwined with belonging and accountability, with their impact amplifying as we move through layers of AI development. Bias at the creator level [60] can exponentially influence the consequences layer, making disability inclusion essential in technology design. This framework can guide educators in teaching how identity, including disability, shapes technology and how technology, in turn, affects societal values and individual identities. An interdisciplinary, identity-centered approach in AI education is crucial for developing designers who understand the ethical, social, and personal ramifications of AI. Prioritizing inclusivity in AI, especially for disabled individuals, can attract broader participation and insights, improving AI's responsiveness to societal needs. Future work will build on this framework to collect, document and propose use cases, examples, and policies to elucidate each of the framework's layers and sub-areas.

VII. CONCLUSION

This paper emphasizes the need for integrating diverse identities, particularly those of individuals with disabilities, into all layers of the AI ecosystem. The proposed framework for explicating Disability in the AI Ecosystem serves as a crucial tool for guiding AI development, ensuring that accessibility, fairness, and inclusivity are embedded from the outset. persons with disabilities are significantly impacted by all aspects of AI development, from creators to socio-technical frameworks. Intersectional design and anti-ableist approaches are essential for creating socially equitable AI systems. The proposed framework provides a comprehensive approach to teach students how to incorporate disability considerations into AI research, design, and deployment. By centering disability and other marginalized identities, this framework aims to foster more inclusive AI systems that better serve the diverse needs of society.

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