USING ARTIFICIAL INTELLIGENCE TO IMPROVE EMPLOYMENT OUTCOMES FOR PEOPLE WITH DISABILITIES

Exploring Existing Barriers and Opportunities for Progress

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Using Artificial Intelligence to Improve Employment Outcomes for People with Disabilities:

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Introduction

People with disabilities have long faced inequities when it comes to employment in the United States. A combination of practical barriers, widespread misperceptions and biases, and outright discrimination, among other causes, exclude disabled people from the workforce and limit their economic wellbeing. These long-standing challenges represent a major injustice and should be a topic of significant social concern.

The disparities in employment outcomes are truly massive. As of June 2023, only 40% of disabled teens and adults (ages 16-64) in the United States are in the labor force, compared to nearly 78% of non-disabled Americans. 8.3% of teens and adults with disabilities (ages 16-64) are unemployed, compared to 3.2% of people without disabilities in the same age range. This number is further exacerbated when accounting for intersections between race and disability, with 6.7% of white people with disabilities facing unemployment, compared to 10.1% and 12.4% of disabled Hispanic and Black disabled people, respectively.

The recent emergence of artificial intelligence (AI) technologies could present opportunities to increase employment and earnings for people with disabilities, as

well as expand opportunity and inclusion. AI could change the pathway to employment for disabled people by developing tools that increase targeted recruiting of people with disabilities or that help disabled job seekers find the right opportunities. AI could also improve a disabled employee's experience while on the job, whether by enhancing access to accommodations or providing support tools for routine job functions.

[With 84% of workers reporting](#) that their coworkers would benefit from more workplace accessibility, this is an opportune moment for companies committed to improving employment outcomes for people with disabilities to think about how these issues intersect. This is also a pivotal moment for the technology sector to build intentional engagements with the disability community so that new AI tools and resources contribute to a better future of work that includes disabled workers. Whether that materializes, however, depends on how this technology is developed, deployed, and overseen.

This brief report is intended to help start a conversation about the current barriers to employment for people with disabilities. It also shares ideas for AI tools that can improve these outcomes and specifies considerations that must be incorporated into the development of such tools. This report also outlines the kinds of investments and approaches that will serve that end, including proposed solutions for engaging people with disabilities in AI tool development. By necessity, the discussion here is incomplete, but it is intended as a platform for showcasing possibilities and encouraging more conversation, research, and investment in these important issues.

This document draws heavily from a conversation supported by Google DeepMind that brought together a group of disability advocates, entrepreneurs, and researchers who did what people with disabilities do so well in a world that isn't often designed for them – they imagined the possibilities. I am grateful to the nine individuals who participated in the virtual convening for their insights and perspectives and to Google DeepMind for supporting this necessary work. Relevant insights and ideas from the conversation are included throughout the paper, but their presentation (and any errors) are the author's alone.

I. Technology for workplaces: one lever in a series of social systems impacting disabled people's access to employment

In July 2021, 43.7% of unemployed people with disabilities in the U.S. [reported at least one barrier to employment](#). Before understanding the role that AI tools can play at work for people with disabilities, it is important to acknowledge the array of social conditions that affect disabled people's pathways to employment.

- **Mobility & access barriers:** Public transit can be unreliable for many, but it is also inaccessible for people with disabilities who do not live in areas well-

served by public transit. Transportation barriers for disabled people include a wide array of access issues and scenarios. For example, wheelchair users cannot easily access buses, subways, or other public transit systems when they don't live near a designated route. In other instances, disabled people face difficulty reaching their transit stops due to difficult conditions (e.g., lack of curb cuts, weather conditions, or long travel distances). And while paratransit services exist, they are often underfunded, unreliable, and inflexible – making it difficult to accommodate dynamic work schedules. A lack of adequate, reliable transportation options can impact disabled people's access to employment and other economic opportunities.

- **Benefits**: People with disabilities can also experience something called the benefits cliff when they receive an employment opportunity. The benefits cliff occurs when a person with a disability loses access to government benefits like social security income (SSI) or Medicaid as their earnings from work increase. To qualify for SSI, a person's income cannot exceed the maximum federal benefit rate, [which in 2021 was $794 a month](#). The benefits cliff can prevent disabled employees from receiving continued access to essential benefits. Fluctuating benefits can also impact people's financial stability, career advancement, or annual income. [Work incentive programs](#) allow people to earn more money and maintain their eligibility for programs like Medicaid. However, not enough people know about these options, and they must follow nuanced rules to maintain eligibility. The benefits cliff limits socioeconomic advancement for people with disabilities and risks keeping people in cyclical poverty due to imposed limits on career growth and earnings.

- **Social attitudes & discrimination:** Negative attitudes and assumptions about people with disabilities are still prevalent in the U.S., with [one study indicating](#) that it may take more than 200 years to reach zero implicit disability bias. Existing laws and procedures have impacted disabled people's [right to vote](#), [to get married](#), or to [have children](#). People with disabilities also face frequent discrimination in the workplace: in 2022, the United States Equal Employment Opportunity Commission (EEOC) received over [25,000 disability-related discrimination claims](#). Negative attitudes towards people with disabilities continue to be a prevalent issue that affects a wide swath of social frameworks.

While this paper contains proposals for the use of AI tools in the workplace, companies and developers have a larger opportunity to think about how AI tools and technology interventions could improve the social systems that limit equitable entry to employment for disabled people in the first place.

II. From human to machine: how human perception impacts AI development

Disability is often underrepresented in AI development and data systems, leaving decision making and statistical reasoning processes in AI partial to spreading harmful assumptions about people with disabilities and other communities, as well as producing harmful outcomes. For example, the Center for Democracy and Technology outlined how tests for hiring may be discriminatory against disabled applicants due to specific uses of screening algorithms that measure metrics such as personality traits, aptitude, or facial / voice recognition. In other instances, AI-based assessments have been used to deploy evaluations that are not related to essential job functions, raising concerns for potential discrimination. The below list outlines specific ways that human bias and data limitations can impact AI development:

- **Limitations in data sets**: In datasets, disability includes small groups of people with shared characteristics, but the reality is that disability includes a broad collection of experiences and identities. This can make it difficult for AI systems to recognize disability as a wide group with specific legal protections. Additionally, there's no uniform definition of disability. Measures of disability also continue to be under-studied and under-resourced. As a result, large language models and other technical approaches being used for AI tools may be impacted by this lack of robust information, thus resulting in limited understanding of disability and potential consequences on the end user experience. Data sets that are not inclusive of disability may also be more susceptible to bias against people with disabilities.
- **Bias in training data**: Data sets, algorithms, and systems are informed by the people that develop them. If data used to train an AI system mirrors negative social perceptions or is not inclusive of people with disabilities, AI systems may learn to make unfair assumptions or may unintentionally discriminate against those same people. For example, facial recognition systems trained on data sets that lack disabled representation may be less accurate at identifying people with disabilities.
- **Bias in automated processes**: Similarly, if an AI system's automation relies on discriminatory processes, unfair treatment can occur. For example, algorithms used in hiring may learn biased patterns from human-directed discriminatory hiring protocols that are applied to the AI system. As employers increasingly integrate AI into their workplace functions and decision making, some tools have already permitted or even accelerated discrimination.
- **Inaccessible system design or function**: AI products that are not designed inclusively can exclude people with disabilities from using them. For example, a virtual assistant that only interacts via voice would not be accessible to a deaf user. Similarly, a chatbot that does not provide audio tools may not be accessible to someone who is blind. An AI system designed without considering how disabilities impact a person's needs could harm its users. For

example, an autonomous vehicle that doesn't account for different mobility experiences could be difficult for disabled people to use.

Governments have begun taking action to advance equal opportunity in hiring while avoiding discrimination. The U.S. EEOC recently released resources regarding the use of AI to assess job applicants and has cautioned about the potential for discrimination in algorithmic hiring tools. In October 2022, the White House released the Blueprint for an AI Bill of Rights, which also promotes principles and practices to reduce discriminatory experiences in AI.

However, companies also have a responsibility to ensure that AI tools and services that they are using or developing are inclusive of disabled users.

III.   Imagining AI tools & services for people with disabilities at work: potential tools & integrations for relevant stakeholders

The employment journey is an experience that includes many phases, people, and systems. There is a potential to integrate AI tools, particularly for disabled jobseekers and employees and their employers, across an array of hiring and employment experiences to improve accessibility, increase employment for people with disabilities, and support full participation for all people.

Outlined below are ideas and examples of such tools. They have been categorized by the perceived user.

For disabled jobseekers and employees

Disabled jobseekers are often interacting with systems that are not designed for them. These systems can even unintentionally cause barriers to employment. Disabled employees then have a separate set of challenges and considerations once they are hired. Whether it is preparing for an interview, requesting accommodations, or navigating traditional work expectations, AI tools could help improve the job search and employment experiences for people with disabilities by:

- **Providing AI-driven resources for professional development**. For example, AI chatbots could be deployed to engage a jobseeker preparing for interviews. Game-based technologies could be used to simulate work environments and scenarios. There is an opportunity for companies to build career development resources (e.g., remote learning opportunities, workplace trainings, job application tools) that help disabled jobseekers develop the skills and confidence needed to find employment.
- **Mapping accessible environments and workplaces for prospective applicants** so that they can identify job locations and settings that provide a high quality of life. For instance, AI technologies such as machine learning or pattern recognition could be deployed to gather information about a

workplace's benefits, accommodations, and other information that may be useful to a disabled jobseeker when it comes to finding a workplace that is right for them (e.g., accessibility and affordability of a city). Examples here include [Waymap](#) and [AccessNow](#). Both companies are helping residents navigate cities and accessible spaces using technology platforms.

- **Developing communications assistance and other social tools** for individuals who may find translation and communication services valuable. For example, people in the neurodiverse community [have begun using generative AI tools](#) to help with communication and anxiety. Additionally, teams could produce tools for other types of assistance, such as resources for speech, hearing, or written communications.
- **Building generative AI tools that improve accommodation outcomes** to ensure that disabled staff feel supported at work. Providing related automation tools and resources could reduce back and forth between employees and HR staff, making it easier for employees with disabilities to receive the accommodations necessary for their success. AI integrations could also mean that disabled staff receive accommodations more quickly and equitably than current practices, thus resulting in greater success, longer retention, and greater degrees of advancement for disabled staff.
- **Creating automation tools** to help with work tasks. Teams could develop AI tools that provide executive function support (e.g., AI personal assistants for memory-related tasks or task automations for summaries and transcriptions). Integration of such tools in the workplaces can make traditional work processes more accessible and efficient, both for disabled and non-disabled employees.

For employers and organizations

Employers have a crucial role in informing the experience that a person with disabilities has in the workforce. Integrating AI tools in the workplace could help employers with:

- **Creating inclusive job descriptions** that are free of ableist language and assumptions. For example, [OurAbility](#) is a company based in Albany, NY that is developing Abli.ai, a language tool and accessibility checker that provides suggestions, reviews, and recommendations for inclusive language. Better job descriptions can help better recruit employees with disabilities, reduce barriers to employment, and can reduce bias against people with disabilities.
- **Providing resources for accommodation** requests and processes. Many employers are often learning as they go when it comes to hiring disabled staff. AI could help employers understand processes, procedures, and requirements regarding reasonable accommodations. AI tools could also help HR and talent teams understand the spectrum of accommodations and how they may be useful for their staff members through resources like chatbots or automation

tools that help create templates for accommodation requests and responses. By integrating AI into the HR and talent experience, employers can avoid being reactive or falling short of legal requirements about providing reasonable accommodations to staff.

- **Developing automated, inclusive approaches to improve hiring**. AI could be leveraged to design more inclusive talent matchmaking systems by creating algorithms that encourage talent teams to look beyond traditional qualifications. For example, [Inclusively's Workforce Inclusion Platform](#) helps match disabled talent to hiring teams based upon aligned skills, requirements, and accommodations using AI systems. However, automated hiring tools also carry significant risks. Section V highlights some of the privacy and surveillance risks potentially associated with this concept. Approaches to building these tools must consider and mitigate the risks if they are truly to advance the interests of people with disabilities.

Benefits for non-disabled peers

While this report is focused on exploring the potential of AI tools developed to support people with disabilities, it should be noted that the ideas included throughout can also be more broadly applied. Inclusive, [universal design](#) has historically had an added benefit of shaping systems and products for people with disabilities. AI tool development is no different.

Designing for people with disabilities also has far-reaching benefits. Consider the development of curb cuts, which are now used by people with strollers, city shoppers transporting their groceries through busy city streets, and delivery workers using carts to move heavy loads. Or closed captions, which are now [commonly used](#) on televisions and cell phone screens by non-deaf or hard of hearing individuals. Designing AI tools for people with disabilities in the workplace is no different.

Designing for one can mean happier, more successful workplaces for all. Some of the tools suggested can certainly have benefits for non-disabled people:

- **Automated AI tools** could help many employees quicken their workflows so that they have time for more substantive, strategic, or creative work.
- **AI tools to field worker accommodations** could help other employees make requests, whether they are requesting parental leave, medical leave, or are simply asking for equipment to improve their work experience and comfort.
- **An AI tool that responsively compares data on city livability and workplace benefits** can help workers nationwide find job opportunities that provide them with equitable, high-quality safe jobs, as well as incentivize employers to improve conditions.

Ultimately, designing AI tools for people with disabilities opens a world of imagination when it comes to the future of work. By creating and deploying tools for people with disabilities, teams can also unlock opportunities to improve individual and collective innovation, communication, and inclusion at work, regardless of disability status.

IV.   From imagination to implementation: how to build teams for inclusive AI development

It is important to acknowledge the [lack of representation in existing AI development](#), including from people of color, disabled people, members of the LGBTQ+ community, and women developers and talent. The AI industry has an opportunity to bring individuals from these communities (and those who may have multiple, or intersectional identities) together to acknowledge the various aspects and needs of the human experience. By creating a more inclusive design process, AI tools can become more inclusive and resonant for the users they serve.

A [classic disability rights motto says it best](#) – "Nothing about us, without us." Companies are more successful if people with disabilities are a part of the conversation. A [2018 Accenture report](#) indicated that the U.S. GDP could shift up to $25 billion if an additional 1% of people with disabilities joined the U.S. workforce. Additionally, corporate champions of disability on average saw 28% more revenue than their counterparts across a four-year period. However, current discussions around AI are limited to a small community of people, with much of the U.S. [population still unsure about their perceptions of AI](#).

Involving marginalized voices is an important part of developing more conscious, inclusive AI tools. But it is a process that requires a variety of systemic changes, as well as specific investments in capacity, research, and other needs.

Currently, the disability community has little capacity to engage on technology issues outside of accessibility-related conversations and engagements. However, there is an opportunity for technology companies to collaborate with disabled users to identify tools that could be beneficial to their lives, including in the workplace.

The list below outlines opportunities for business, private organizations, and philanthropy to support more inclusive and effective AI tool development:

- **Fund efforts that expand awareness and education of AI.** A key part to integrating more perspectives in AI development is ensuring that more people are aware of and can understand AI topics at large. One approach to closing the knowledge gap is to help organizations [implement plain language models](#) in their internal or external communications that help to make AI concepts and topics more accessible. Organizations could also fund educational

opportunities, such as training or learning engagements that grant people more exposure to the AI development space.

- **Recruit more people with disabilities onto teams.** Employing disabled talent can ensure that disabled perspectives are incorporated throughout an entire product's lifecycle and development. By hiring people with disabilities onto teams, companies are also supporting improved social outcomes and economic mobility for people with disabilities.

- **Promote external and internal talent initiatives** that increase the number and quality of talent development pipelines for people with disabilities to enter the AI workforce. Opportunities include fellowship programs, scholarships, and cooperative learning models.

- **Integrate multiple marginalized identities into feedback processes** for AI tool creation. Ensuring that people who represent marginalized communities participate in user feedback can help AI developers consider a variety of user experiences across race, gender, and disability identities. Identifying and encouraging participation by marginalized voices who are often left behind in the development process will require complementary investments. It is important that companies acknowledge and value the time that marginalized users commit to sharing their experiences and feedback by compensating participants for their time and by helping to provide accommodations needed to fully participate (e.g., transportation to offices, assistance with childcare if research is conducted during certain hours, covering expenses for the day, etc.). Additional investments could be made to help strengthen the recruitment of marginalized voices to participate in user research and other feedback loops, such as focus groups or questionnaire evaluations.

- **Fund people with disabilities to enter other important AI fields, including AI policy and governance.** Private businesses, philanthropies, and other civil society organizations have an opportunity to fund or develop programs that build the talent pipeline for conscious technologists with disabilities to advance in policy roles across government and industry. Given that disability bias is an intrinsic part of large data sets, it is important to include disability expertise on teams responsible for oversight and accountability. This is true for the public and private sectors. By supporting workforce diversification and growth, important preemptive decisions, and accountability measures to protect AI users can be standardized, rather than reactive.

V.   Additional considerations for AI tool development: risks and considerations for maximizing impact

Evaluating and responding to potential harms

AI developers, technologists, and companies using AI tools must also consider privacy and surveillance issues. These challenges can harm all people, but may present specific risks to people with disabilities:

- **Privacy**: AI could have privacy implications for disabled people in the workplace. For example, AI could make confidential disability disclosures (when an employee reveals their disability to a team member as part of an accommodation request) available to others who may not usually receive that information (e.g., other colleagues using the tool, employees of the AI company creating the tool, etc.) Given that disability disclosures are already a complex issue to navigate, developers must consider how privacy standards are integrated into AI so that tools and users operate with transparency about how personal data is used and shared. Developers must also ensure that tools do not unintentionally create workplace bias or increase social stigmatization of disability due to data access.
- **Surveillance**: Employers have [begun using bossware](#), or technologies that routinely surveil worker activity or act as an automated supervisor. AI systems could be used as a justification for [gathering more invasive data](#) on productivity, or could be misused to exploit workers and extract labor. For example, systems designed with the laudable goal of detecting burnout could also be used to monitor employee output more aggressively or even target dissatisfied employees for retribution. It is important to [design workplace tools](#) that do not contribute to unfair or inaccurate assessments of employees, and that don't exacerbate inequality, stress, or harmful environments in the workplace.

Helpful considerations for builders

It is important for technological innovations to move away from the dominant model of "moving fast and breaking things" when it comes to AI development. Working with existing AI technology requires a more deliberative response to its use and deployment, particularly to ensure that existing data systems are not perpetuating harm.

When it comes to emerging tools, teams must build systems for future development that are thoughtful, inclusive, and participatory - especially for tools that are intended to advance the interests of marginalized communities. Additionally, teams should consider other applications and use cases of AI tools originally designed for people with disabilities so that tools have a wider reach and impact for many users.

Below are a series of questions that may be helpful for developers and companies to explore during their tool development and testing processes:

- Why am I building this tool? What is its goal or function?
- What needs is it filling?
- What are the boundaries of this tool's use or intended use?
- Is this tool asking questions tied to the essential functions of the job?
- Are job functions properly specified?
- How are people of color, people with disabilities, and other marginalized communities involved in development and feedback systems?
- How will I communicate the boundaries and transparency standards to the market?

By asking these questions, teams can develop clearer value propositions and evaluate the ways that an AI tool can effectively and safely serve disabled users. Other useful resources include PEAT's AI & Disability Inclusion Toolkit, Sig Access's Research Roadmap, We Count, and the Civil Rights Standards for 21st Century Employment Selection Procedures, which was developed by a coalition of civil rights, disability, and technology public interest organizations. Organizations like Disability:IN have also developed a series of resources for companies looking to build best practices in accessibility, or who are exploring accessible product procurement processes.

Conclusion

There is an exciting opportunity for the AI field to imagine a new future of work that includes systems and AI tools that are inclusive and useful – not just for people with disabilities, but for all employees.

However, it is also essential that developments and improvements that impact the experience of work are designed with *and* by the disability community. There is plenty more work to do, but the time to support and build the structures needed for transformational, thoughtful AI tool development that is led by people with disabilities is now.

Authors & Acknowledgements

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Henry Claypool brings over 25 years of experience working on federal policy to shape policy development and program implementation. He currently applies his extensive disability policy experience in the healthcare and technology sectors. As a fellow at the Center for Democracy and Technology and a consultant to the American Association of People with Disabilities, his work in technology policy involves promoting an enhanced understanding of consumer data privacy, confronting the effects of algorithmic bias on disabled people, and bringing enhanced utility to emerging technologies.