

## A Praxis of AI Potentials: Pathways to Improve Translation Accessibility by Visually Impaired Translators in Jordan

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### Abstract

**Objectives:** accessibility received scant attention by research into machine translation since its emergence in the 1960s, which perpetuated systemic barriers to the participation of visually impaired translators in the translation community and job market. Grounded in Mike Oliver's 1983 social model of disability, the present investigation explores the convergence of translation professional practices by blind and visually impaired translators in Jordan with machine translation.

**Methods:** through analytical qualitative methodology that encompasses interviews with 8 Jordanian blind and visually impaired translators, the present investigation expands on their increasing dissatisfaction about overlooking accessibility in the broader arena of machine translation.

**Results:** Initial findings revealed that the current machine translation tools are inadequate to address the needs of blind and visually impaired translators, yet a transformative change can be made available by the potentials of artificial intelligence integrated into assistive technology.

**Conclusions:** the present investigation advocates the adoption of universal inclusive design in the field of translation-driven AI, which will reflect not only on developing high accuracy AI-driven machine translation frameworks but also affording opportunities for a more inclusive environment.

**Keywords:** Machine Translation, Artificial Intelligence, Visually Impaired Translators, Accessibility, universal inclusive design, social model of disability.

### سُبُل تحسين إمكانية الوصول في الترجمة للمترجمين المكفوفين في الأردن

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#### ملخص

الأهداف: لم تحظ مسألة إمكانية الوصول باهتمام كبير في أبحاث الترجمة الآلية منذ نشأتها في ستينيات القرن الماضي، مما شكّل عوائق منهجية أعاقَت مشاركة المترجمين المكفوفين وضعاف البصر في سوق عمل الترجمة ومجتمعها. وانطلاقاً من النموذج الاجتماعي للإعاقة الذي اقترحه مايك أوليفر عام 1983، تستكشف هذه الدراسة التقاطع بين ممارسات المترجمين المكفوفين وضعاف البصر في الأردن مع الترجمة الآلية.

المنهجية: بالاستناد إلى منهجية تحليلية نوعية تشمل مقابلات مع 8 مترجمين أردنيين مكفوفين وضعاف بصر، تسلط هذه الدراسة الضوء على عدم رضاهم المتصاعد عن تهميش إمكانية الوصول ضمن نطاق الترجمة الآلية بشكل عام. النتائج: كشفت النتائج الأولية أن الأدوات الحالية للترجمة الآلية غير كافية لتلبية احتياجات المترجمين المكفوفين وضعاف البصر، إلا أن إمكانيات الذكاء الاصطناعي قد تتيح تغييراً جذرياً في هذا المجال.

الخاتمة: تدعو هذه الدراسة إلى تبني تصميم شامل عالمي في مجال الذكاء الاصطناعي القائم على الترجمة، مما يتعدى الإسهام في تطوير نماذج ترجمة آلية دقيقة تعتمد على الذكاء الاصطناعي إلى توفير فرصٍ لبيئة أكثر شمولية. الكلمات المفتاحية: الترجمة الآلية، الذكاء الاصطناعي، المترجمون المكفوفون وضعاف البصر، إمكانية الوصول، التصميم الشامل العالمي، النموذج الاجتماعي للإعاقة.



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## 1. Introduction

At this critical moment in the age of the discipline, Translation Studies is characterised by three emergent research trends: [1] ecological thinking about translation, [2] transcreation, and [3] the Translation for emerging technologies. These three movements, amongst others, can reframe views on sustainability, creativity and inclusivity. In this understanding, translation can be viewed as a process of transformation, and to perceive it as such it is rightly necessary to examine how such three emergent trends accredit and intersect with accessibility. In this sense, accessibility with its prospect of the sensory engagement with the outer world, argue Bogucki and Deckert (2020, p. 335) assumes a role akin to translation.

The purpose of the present paper is to reflect on the perspectives of Jordanian blind and visually impaired translators (BVITs) on the current state of accessibility of machine translation (MT) and the potentials of inclusive AI-driven translations. We contend that accessibility is an essential element of translation, considering it is in its very nature an act of mediation. Such recognition is crucial for the methodological implications of engaging in or studying accessibility theoretically and practically, and for the development of inclusive MT tools.

## 2. Background and Context

Despite the consequences of ALPAC report in 1966, which advised the US government to drastically reduce funding on MT research thus stifling its progress, the emergence and evolution of technologies of MT in the past several decades are characterised by increasing accuracy and efficiency. However, one under-explored area is the incorporation of accessibility principles in MT research and application, including the needs of professionals with disabilities (PWDs). MT has a transformative potential to facilitate communication and engagement with translation community and job market.

However, several challenges have systematically hindered the participation of PWDs, BVITs in our context. We may argue that there are two drivers for this situation. First are societal attitudes. Amongst the core principles of accessibility and technology is social justice which seeks to dismantle barriers that marginalise certain communities. For BVITs, these barriers do not manifest only as hardly accessible MT tools but also manifest as societal attitudes that perceive disability as a limitation or inability but not as a difference in capability. This view is widely supported by literature on the subject, arguing that existing MT technologies fail to respond to the diverse needs of users, resulting in Continuum of disadvantage (Greco 2016 and 2018; Romero-Fresco 2017).

Second is TS itself. We need to recognise that classical and contemporary models of researching translation can be incapable of capturing the realities of accessibility. Marais and Meylaerts (2019, p. 3) contend that translation theory can deal with wholes and parts but not with randomness and exceptions. Borrowing words of Marais and Meylaerts (2019, p. 12), Josélia Neves (2022) describes accessibility as a topic of investigation in TS as complex, prone to chaos and constantly evolving (cited in Zanettin & Rundle, 2022, p. 442).

The current investigation takes Jordan as its ecological setting. While there is a resourceful tradition for translation and scholarship, inclusive industry practices of translation are yet to be embraced. Limited awareness of disability issues and lack of infrastructure that can accommodate the needs of PWDs in general are some of the Socio-cultural factors that impede the full implementation of universal inclusive design (UID) models which exacerbate the challenges faced by Jordanian BVITs.

Finally, we may highlight that the findings of the present investigation can be generalised across population in other Arab countries and possibly internationally, considering that way of handling translation projects by BVITs is exclusively executed through screen readers or braille displays/note takers, and that the issues of accessibility in existing MT tools are global and are rarely the result of language and region specificity.

## 3. Theoretical Framework

The present investigation examines the intersection of MT tools and the professional practices of Jordanian BVITs. Central to this examination is the social model of disability which deals with the various systematic barriers for PWDs in their professional and social communities.

Historically, disability has been understood through a medical understanding, which has brought with it marginalisation and restraining for a broader perception of disability (Schlund-Vials & Gill, 2014, p. 149). In 1980, World Health Organisation sought to standardise definition of disabilities through the lens of medicalisation, a step that was severely criticised (Devlieger, 2003, p. 100). However, the social model of disability, as first formulated by Mike Oliver in 1983, posits that disability is a construct of society not consequence of physical impairment. This understanding of disability, as Barnes (1991) argues, challenges medical models that deals with disability as a deficit that needs to be fixed.

Early research into disability can be traced to 1960s. A common aspect is their attempt to analyse disability but at the same time failing to account for ideological critiques surrounding disability. Industrial capitalism further exacerbated the situation, as structural forces justified discriminatory practices against disabled individuals (Martin et al., 2023, p. 311). In fact, with postmodern and structuralist theories, little progress has been made in the study into disability (Harvey, 2010). World War II advocacy encouraged community-based services and promoted rights of people with disabilities (Rimmerman, 2017, p. 118). Such movement led to the establishment of organisations advocating against segregation and calling for legislative reforms, through which some legislative acts came to existence as a result of its efforts (e.g. UK in 1977 and US in 1973). By this, disability took a different dimension as it had become no longer an aspect of personal shortcoming but as a form of social oppression.

As seen above, the framework of social model of disability aligns with aims of present investigation, which examines how existing MT tools perpetuate systematic barriers, while, at the same time, AI seems to have the potential to or dismantle these barriers. The theoretical framework expounded herein underscores the importance of embracing the proposed social model of disability in perceiving the barriers faced by BVITs in Jordan by challenging the predominant paradigms in technology while advocating for inclusive design principles in AI-driven MT.

#### 4. Related Literature

The following two sections will examine research into intersection between accessibility and technology in general. We believe that unless we examine the wider technological scope, we will be less privileged to understand how accessibility is perceived and advocated. The second section will look into research into accessibility and intersection with MT and AI.

##### 4.1 Research into Accessibility and Technology

Throughout its history, the field of MT has been significantly limited in several aspects, one of which is the adaptations required by PWDs. The enduring systemic barriers relevant to the utilisation of MT have severely excluded the engagement of BVITs within their wider translation community. Yet another factor is partly due to the very nature of accessibility. Accessibility is very complex to study, which TS at present might be incapable of addressing as discussed earlier. We find echoes of this stance by Marais and Meylaerts (2022), where they emphasise that traditional models of translation can not deal with the complexities inherent in translation phenomena, such as accessibility, and the available theory is for the most part inadequate. This aligns with the perspectives of other scholars who advocate for the application of other approaches that are from the outside of translation theory. For example, Neves (2022) contends that integrating complexity thinking into TS can bring a better understanding of accessibility as a socio-spatial phenomenon.

However, a survey of existing research into accessibility tools and technologies demonstrates two primary trajectories. The first involves the pivotal role of critical disability studies (CDS), which question the systemic obstacles encountered by people with disabilities. Emphasising a user-centred approach, Ellis et al. (2019) and Goodley (2011) point out that identifying disability as a socio-cultural construct rather than merely a physical or emotional impairment brings the responsibility for accessibility to structures of society.

Considering this view, accessibility serves various population who have diverse requirements and goals, thus discourse surrounding accessibility can be described as inherently intersectional, and from its very intersectionality it can be defined. Petrie et al., 2016, p. 498) define accessibility as a comprehensive yet relative construct that ease dialogue and communication across different modalities governed by societal norms and expectations. It is crucial, within this view, to see accessibility transcends mere technical challenges, yet what persists of challenges is societal perceptions of disability

which seem to be intrinsically linked to the evolution of accessibility tools (Greco 2016, 2018; Romero-Fresco 2017, 2018). For the context of translation, this manifests as another imperative for stakeholders to proactively develop inclusive design MT tools.

Several researchers have examined ways through which we can reduce the impact of systemic barriers of evolving accessibility. Iwarsson and Ståhl (2003) suggest a framework for approaching accessibility at micro, meso, and macro levels, with several dimensions such as the informational contexts, physical environment, and societal frameworks. The Russian doll model further embraces the multilayered nature of accessibility, suggesting that the effective handling of accessibility goes through several layers, and that each layer should be addressed in terms of its deficiencies, and that the identification of problematic area would also help with resolving issues with other layers.

Acknowledging the role of the ecological factors in the process, Neves (2022) introduces the term "achievement spaces" to underscore that accessibility goes beyond merely removing barriers as it also involves making communication more effective. This view demonstrates how translation can establish environment conducive to the involvement of people with diverse capacities.

The second trajectory relates to the progress made in the domain of ID. A bulk of research highlights that both ID and USID frameworks may benefit from viable AI-driven solutions (Berendt et al. 2021; Newell and Persad 2012), where the latter, in particular, seems to be more effective as it prioritises individualised needs over a generic approach. In this vein, it is worth noting that AI-driven solutions may posit further unnecessary complication turning MT tools to BVITs considering the current state of assistive technologies and tools such as braille displays and screen readers. Neves (2022, p. 444) calls for a critical re-evaluation of the methodologies concerning ID and USID to deal with the persistent challenges, including predominant societal attitudes towards disability and accessibility. This transformative shift, as elaborated by Neves, is becoming more crucial, considering the rapid development of technology across all sectors.

#### **4.2 Research into Intersection between Translation, Accessibility and MT**

Historically, TS research has neglected the accessibility challenges faced by BVITs, particularly concerning advancements in MT technologies. Despite significant technological progress since the inception of MT in the 1960s, the integration of these tools has frequently excluded PWDs, thereby perpetuating systemic barriers within the translation community (Aldalain, 2024; Rodríguez Vázquez, 2016). In the following lines, an examination of literature pertaining to the intersection of accessibility, translation pedagogical and professional practices, and the enhancement of MT frameworks will be conducted.

To start, many researchers have examined the issue of accessibility within the field of technology. Abaszadeh (2019), Harding (2018), Li (2020), Marais (2014), Marais et al. (2021) Marais and Meylaerts (2022), Nugroho et al. 2021 and 2022, Shreve (2020), among others, underscore the very distinctive and diverse needs of visually impaired users.

The main access of various forms of technologies is often granted to the visually impaired users through speech. Rodríguez Vázquez (2016) sheds light on the various issues that users of web content encounter, particularly when the content is multilingual. The findings of this study can be universalised throughout other systems, considering that screen readers usually fail to report content that is multilingual whereas language autoswitching feature is enabled yet the content does not seem to be properly announced by the screen readers in the language it appears in. This reflects a centrality of software development, where the English and European languages users are prioritised, and very little attention is given to other users of other languages. An example is in the Arab World, where the language-relevant issues with MT tools seem to be more pronounced, considering the often lack of support of right-to-left languages (RTLL), including Arabic. As a result, BVITs in Jordan and in the Arab World are often marginalised in translation industry as they often discard tasks where content has to be provided through MT tools (Refaat, 2021).

Even when screen readers are improved enough to handle multilingual content, speech seems to persistently impact the working of users, BVITs in our context. Nugroho et al. (2016) provide evidence of the negative impact of screen readers outputting content in speech which seems to disrupt the overall quality of the translation product. This can be seen as a call

for developing multimodal screen reader outputs, like audio clues, tactile output and other means, where speech is no longer the sole method of accessing screen content. Aldalain (2024) gives examples of the external impact of screen readers on the quality of the translations of BVITs in Jordan, highlighting that issues persist even with the use of other tools such as braille displays. This, again, reiterates the urge for developing MT tools that utilise multimodal access of content.

Research, albeit very scarce, has been also conducted within the domain of translation pedagogy. Moldovan (2023) sheds light on the disparities in the pedagogical settings of translation training, where visually impaired translation trainees receive much less orientation and training as a result of the lack of support for existing MT tools. The findings encourage further investigation of the needs of the visually impaired translation trainees and propose MT improvements. We may argue that the delivery of training to BVITs can be different based on the method of accessing content and the overall status quo of accessibility, thus the competencies of BVITs can differ accordingly. Delineating the competencies of BVITs, Suryaningtyas et al. (2023) calls for target interventions in the pedagogical settings of translation training where trainees may include students with visual impairment.

Finally, proposals of solutions for the current issues in the MT domain are varied across sectors and across several modalities, however we may argue that AI can provide a potential for empowering a shift towards the improvement of existing accessibility frameworks that can be integrated into MT tools. This view is supported by research done by Moldovan (2024), advocating for a comprehensive integration of specifically designed tools to accommodate the needs of visually BVITs which can be based on AI, thereby aligning their competencies with the current demands of translation market. Figiel (2022) and Rodríguez Vázquez (2015) highlight the role of inclusive design frameworks and encourages further research into the needs and expectations of the visually impaired translators. The potentials of ID can be further widened by AI-driven MT tools, and we contend that other broader application of such tools will reflect on further inclusive translation community and market.

A critical and current discourse among researchers and Translation Studies scholars, e.g. Jiang and Lu (2021); Tang (2023); Muñoz-Basols et Al. (2023); Sun (2021), is focused on MT and integration of AI within translation research. This prompts a holistic re-assessment of established methods, beliefs and outcomes by both translators and researchers alike. This critical stage in the history of translation theory and practice invites an evaluation of the short life of the discipline of translation thus far, and calls for innovative pathways of prospective methods for improving the development and analysis of AI products and its multifaceted services within the wider context of translation to potentially, we may argue, grant a vantage point for accessibility to encourage further engagement and inclusivity in the digital world.

Based on the above, it seems that accessibility and relevant disciplines are still in need for grand theory or overarching understanding of accessibility both in training contexts and job market. The above aliterature testifies to this fact, as it seems that scholars are shedding light on accessibility and assistive technology, their usefulness in the workplace and prospects for developing the xperience of PWDs, yet they still disagree on what mechanisms can serve users of such tehcnologies and how such technology can be adapted to the use of PWDs. We believe that conferences on accessibility, disability and the integration of AI, ID and UID can be beneficial in this regard, as it may result in unified view and joint efforts to advancing the field further. Additionally, the contribution of PWDs themselves in this process is inevitable as we believe that since possibilities of enhancing the experience of PPWDs is available through collaborative channels in the first place between the developer and the consumer, the PWD and the employee, and the corporates and their perspective customers.

## **5. Methodology and Data Collection**

The present investigation used an analytical qualitative methodology which we believe suitable for the nature of data we seek to gain (context-specific difficulties, individualised experiences, and reflections on present and future of profession from the perspective of BVITs). Eight BVITs voluntarily participated in the present investigation. Participants have been invited and revruited through personal channels. The author of the present investigation is blind himself and professional translator. Surveying the field of translation, very limited of Jordanian BVITs were found whom the researcher got in touch

with and detailed the purposes and procedures of the study.

The data collection procedure encompassed semi-structured interviews, which allowed us flexibility in addressing specific issues while, at the same time, focusing on the main study 12 questions. Each interview was carried out online. Choice of platform was chosen by each participant, ensuring the compatibility of the platform used with their screen readers. The interviews were recorded with prior consent signed by the participants. We prioritised the use of the Arabic language in the interviews to avoid any cases of non-L1 impact on interviewees, which aligns with evidence demonstrated by Lee and Pérez (2014) and Ernberg and Mac Giolla (2023).

The semi-structured form of the interviews enabled the researcher to probe deeper into particular domains of interest to the present investigation while allowing participating BVITs organic sharing of their narratives and insights. The 12 interview questions elicit responses regarding the barriers, perceived experiences with technologies of MT, and overall thoughts for improvement.

The audio recordings of the interviews were cleaned up and transcribed verbatim shortly afterwards. Accuracy in capturing the participants' voices and quality of transcribed data were prioritised at this stage. The transcription process was taken manually which involved attentive listening and multiple revisions of the audio records to maintain the accuracy of BVITs narratives by avoiding any slight chance of making errors.

The transcribed data were subjected to thematic analysis to derive meaningful and describable data relevant to the main queries of the present investigation, particularly the challenges encountered by BVITs in Jordan, their experiences with MT tools, and their suggestions and recommendations for developing and enhancing MT through AI and UID. Aligned with the exploratory nature of the present investigation, the use of thematic analysis in the paper is shaped by and reliant on the organic emergence of data from participants, and it did not follow a predetermine scheme of coding/labeling. We decided to follow such inductive approach for more flexibility and responsiveness, considering the small sample of participants. Yet we ensured that the themes reflect complexities of interpretations of participants rather than strict categorisations.

We gave ethical concerns a paramount importance throughout the study. Participants, who had been anonymised in all stages, had signed a consent form, detailed on the study and its procedures, and had been granted the right to withdraw at any time and with no consequences.

## 6. Findings and Discussion

This section discusses the multifaceted findings from the data obtained from the semi-structured interviews with the eight BVITs, and contextualises them with the discourse about accessibility, translation pedagogical and professional practices, and the enhancement of MT frameworks for the context of Jordan and elsewhere.

The marginalisation of BVITs in the translation market stands as a foundational issue in the present investigation. Participants highlighted exclusion from the wider translation community due to the pervasive poor accessibility support in MT tools:

**BVIT1:** 'I contact translation companies all the time, and I feel like when they know somehow about my visual impairment, they avoid sending me translation projects.'

**BVIT3:** 'translation companies often ask translators to submit CSV files of their translations. These spreadsheets are exported from the CAT tool. I am not aware of any MT application that is accessible except one, and that app is very difficult to use with screen readers.'

Reflecting a sense of alienation and frustration due to being rendered dependent on MT tools that do not empower them, BVITs generally expressed dissatisfaction with the poorly designed user interfaces of CAT tools and lack of built-in support for braille devices and screen readers. This results in lower productivity rate, risking their professional identity as professional translators:

**BVIT3:** 'I tried many machine translation applications on various platforms, all I get is a silence in speech output of my screen reader. Applications of this type are inaccessible. I like translation but cannot seem to be doing it the way I can call it professional.'

emblematic of broader attitudes in the technology sector, development of applications, solutions and tools prioritises input from the majority users not the marginalised users, reinforcing status quo of social intersectionality (Albusays, 2021). In the case of MT, this marginalisation pushed invisibility to the working of the PWDs, BVITs in our context. In fact, reviewing advancements made in MT revealed that very little has been done to make such tools accessible.

Central to the findings of the present investigation is the urgent need to fundamentally rethink how MT tools are conceptualised and developed from the outset to go beyond accessibility standards with inclusive design principles in mind. It is worth noting that an approach that adopts a universal, one-size-fits all approach is not generally useful. That is, adopting a universal design of MT tools can result in convoluted systems for those who do not need such further complexities to their MT tools:

[BVIT7](#): 'I often have hard times with my colleagues in my workplace where they either struggle with my visual accommodations of the screen (colour inversion and magnification) and me struggling with them often muting the audio on the office computers.'

Thus, a design of MT tools should not be only universal, it also should be inclusive. The difference in both systems is that inclusive design MT tools may have built-in features that should be available all the time and in all use cases. These features should avoid toggling of many personalisation features to accommodate the needs of a particular user, and it should be developed with a bottom-to-top approach:

[BVIT4](#): 'a specific MT tool is hardly accessible. I can find my way in the app and do initial work. It is daunting process, and I feel my cognitive load is just beyond all limitations.'

This takes a further intense dimension when we consider the process of translation being overshadowed by the attempt of finding one's way in an application that is hardly accessible. Evidence shows the negative impact of cognitive load on the process of translation and consequently the final product of the process (Ehrensberger-Dow and et al., 2020).

Despite the systemic barriers expounded by the BVITs in the interviews, they highlighted a potential of AI-driven MT:

[BVIT1](#): 'I tried AI models, and they seem to work wonders. If AI works as accessible as it is now, I believe MT will greatly benefit from this.'

AI seems to afford unprecedented opportunities that can manifest as AI-driven MT tools that are accessible, usable and adaptable to the needs of BVITs ([BVIT1](#), [BVIT6](#), [BVIT8](#)). AI features, such as NLP models, can monitor the interactions of the BVITs and give accurate personalisation for accommodations to be operative by default, real-time support and feedback systems, and can be implemented in MT tools that are accessible, interactive and responsive:

One further aspect revealed by the analysis of the acquired data involved the dissatisfaction with the lack of collaboration between developers and end users, particularly considering the users in Jordan. BVITs reported very rare instances where developers contacted them for activity to raise awareness about accessibility advocacy. Developers themselves need to be informed about assistive technology in general:

[BVIT4](#): 'in the last 10 years I have been contacted twice by local developers to tell them more about accessibility and the needs of the people with disabilities as far as web platform design is concerned. I believe developers themselves have little to no knowledge of screen readers and braille displays and other assistive technologies.'

Several BVITs expanded on the issue of training for the BVITs on the available MT tools, underscoring that they do not receive any training adapted to their needs in educational institutions delivering translation training:

[BVIT5](#): 'I had BA in translation and have had no training whatsoever on the available MT tools, while my sighted peers have been enrolled in many of these classes.'

[BVIT5](#): 'I know some friends who have programming knowledge, and they sometimes offer solutions that they devise themselves.'

This indicates that PWDs are empowered enough, and they have the potential to provide solutions to enhance accessibility. Developers can collaborate with their end users which can have both economic and technical advantage.

To conclude, UID AI-driven MT seems to have the potential to address the needs of the PWDs in general, BVITs in our context. However, this can not be done without collaboration between all parties involved in the design, prototyping and

implementation process, including developers, translation agencies, educational institutions, advocacy groups and necessarily the end users. Partnerships of this kind will encourage the integration of best practices, diverse perspectives and orientation that all can contribute to a more inclusive ecology for practicing translation in training and practice contexts.

## 7. Conclusion and Recommendations

The findings of the present investigation align with the findings from other research that urge for a paradigm shift in machine translation (MT) to develop models that are inclusive to the needs of professionals with disabilities (PWDs), particularly blind and visually impaired translators (BVITs). In the available literature, it is highlighted that current MT models lack accessibility features, thereby limiting the participation of PWDs in translation industry (GALA Global, 2023). Similarly, Stanger (2022) found that developers of MT rarely integrate accessibility as a core design principle, which reinforces the marginalisation of PWDs in the field.

In the present investigation it is also highlighted that artificial intelligence (AI) may play a crucial role in enhancing the experience of PWDs, however this transformation is not yet realised. This comes in parallel with findings by Zahra et al. (2023). AI integration would open horizons that have not been yet explored by PWDs, considering the lost opportunities to integrate further in job market by PWDs because of inaccessible content or less usable devices and applications.

Universal inclusive design models, as highlighted in the present investigation, can actively involve PWDs in the design and improvement of UID AI-driven translation. These models will not only provide accessible platforms for PWDs, but they will also be contextually and culturally appropriate. This aligns with MIT Communication Lab (2024) findings. These findings support recommendation of the present investigation that collaboration between, developers, institutions, and end users is the key to create UID AI-translation models that afford agency, trust and usability to its users.

We also warn that it is crucial for UID AI-driven translations to be culturally, contextually and individually well-informed. Such models without prior and constant feedback by the end users will always demonstrate cases of bias. We recommend that explainable artificial intelligence (EXAI) frameworks are to be implemented. This comes in parallel with research by Fernández et al. (2024), who points out that EXAI frameworks are essential for justifiable AI-driven translation decisions.

## Appendix 1:

**Questionnaire script:** [Questionnaire](#).

**Scripts for BVITs:** [BVITs Interviews](#).

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