Replacing the Irreplaceable: A Case Study on the Limitations of MT and AI Translation during the 2023 Gaza-Israel Conflict

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Abstract

Despite the remarkable development of artificial intelligence (AI) and machine translation (MT) in recent years, which has made them more efficient, less costly and easier to navigate, they still struggle to match the abilities of human translators. The limitations shown by AI and MT, which have been detected in various domain-specific texts and contexts, sustain the debate over whether they can fully replace human translators. Nevertheless, very few studies have examined the translation abilities of AI and MT during conflicts and high-stakes contexts. This paper explores some of these limitations that were detected during the 2023 Gaza-Israel conflict, illustrating significant examples from X (formerly Twitter). These examples showcase limitations in 1) translating cultural references, 2) avoiding critical errors in high-stakes context, 3) preventing bias and intervention, and 4) translating cursive handwriting. This is done through a combination of descriptive, comparative and experimental analysis methods, highlighting risks implications associated with using these tools in such sensitive contexts, while contributing to the broader discussion on whether advances in AI and MT will diminish the need for human translators.

Keywords: translation, artificial intelligence, machine translation, Google translate, Gaza, Israel, conflict, Highstakes context, translation technology

1 Introduction

Advances in translation technologies have made it easier, quicker and cheaper to translate different types of text for a wide range of users. However, despite all the significant developments in recent years, artificial intelligence (AI) and machine translation (MT) still face challenges in replicating human abilities. These challenges continue to fuel the debate over whether they can take the place of human translators in the near future.

Although limitations of AI and MT have been explored across various domain-specific texts and contexts, very little research has been done on their limitations in the political domain, specifically during conflicts. This paper explores some of the limitations that were encountered during the 2023 Gaza-Israel conflict, illustrating significant examples from X (formerly Twitter) in four different key areas. The study employs a combination of descriptive, comparative, and experimental analysis methods to provide a comprehensive investigation into the limitations of text, image and audiovisual translation.

Since this study focuses on a single conflict, the examples provided are not intended to be exhaustive. Nonetheless, they effectively illustrate the limitations of AI and MT and merit further discussion for several reasons: (1) they highlight the risks associated with relying on such tools in conflicts and high-stakes contexts; (2) they help pinpoint specific areas where AI and MT require further refinement; and (3) they contribute to the ongoing debate about whether advancements in AI and MT will reduce the demand for human translators.

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2 Literature Review

2.1 Translation in Conflict Contexts

Translation plays a crucial role in shaping how conflicts are perceived globally, particularly in today's interconnected world, where disputes are no longer confined to local audiences. According to Newmark (1989),translators facilitate communication between nations, mediate between conflicting sides, and uphold both moral integrity and factual accuracy. Similarly, Baker (2010) emphasizes the crucial, yet often unrecognized role translators play in how wars are represented and understood. However, conflicts often arise from ideological differences and opposing political stances (Tang, 2007), which can inevitably affect translators working on either side. Despite this, their influence in shaping war narratives remains largely overlooked. Venuti (1998) argues that translation is influenced by political ideological conflicts, as it is shaped by the social institutions that produce it, often serving particular cultural and political agendas. Similarly, Lefevere and Bassnett (2001) assert that translation is never truly neutral; rather, it is a form of rewriting that reflects the ideologies and values of the society from which it originates. With the rise of global conflicts, translation studies have increasingly focused on ideological struggles, where competing sides attempt to discredit each other due to conflicting interests, values, and objectives. Baker (2006) notes that each party aims to validate its own narrative of events. In such contexts, true neutrality becomes highly challenging, as Palmer suggests that achieving complete impartiality is nearly impossible. Tymoczko and Gentzler (2002) highlight the intricate nature of translation, describing it as an intentional and thoughtful process of choosing, organizing, and reconstructing information, which may lead to distortion, omission, deception, or the development of concealed meanings.

2.2 AI and MT Translation across Domains

Despite the advances of machine translation and AI, the debate over their limitations and inability to replace human translators has been a reoccurring topic in the literature. Many agree that although such tools are improving tremendously, they still do not measure up to human translators across the various domains and contexts, particularly in fields of literature, religion, law, medicine and media.

In literature for instance, despite the semantic abilities and narrative skills displayed by translation technologies, they still have obvious limitations in capturing the complexity of a poem. In a study conducted on the translation of poems from Arabic into English, Alowedi and Al-Ahdal compared the abilities of machine and human translations and reached the conclusion that 'the limitations of machine translation are stark in capturing the socio-cultural context of poetry' (2023). These results resemble the findings of another study that used Chinese literary texts to compare human and AI translations. The results showed that AI lacks the ability to capture cultural aspects, narrative perspectives and human-like subjectivity (Qi, 2024), an evaluation that aligns with the findings of Bernhart and Richter (2021). Additionally, AI does not measure up to human translators because literary translation requires a good imagination (Škobo and Petričević 2023), artistic sense (Qi 2024), creativity and personal interpretation (Tomasello 2019), as well as the ability to capture the original creator's intentions (Makridakis 2017; Edmond 2019).

Religious documents have also pushed the limitations of translation technologies. One example is a study conducted by Zaid and Bennoudi on Arabic religious texts, which found that AI tools were not efficient enough to accurately translate the grammatical structure or the cultural and religious aspects of the text (2023). This conclusion was supported by Alharazi, who stated that such difficulties arise from variations of terminology, cultural elements and idiomatic expressions (2024).

In the legal field, texts often have a complex structure and specialised terminology that require precision and accuracy in translation, given that errors carry a high risk and bear severe consequences. Additionally, legal terms have various meanings across different types of documents, requiring human proficiency to produce accurate translations (Moneus and Sahari, 2024). AI has been found to lack the ability to understand legal specialised terminology, as well as the capacity to capture the contextual aspects of a legal text (Al-Romany and Kadhim, 2024). Machine systems in general base their translations on the most probable meaning, which may not be the accurate meaning, especially when dealing with specialized terminology and contexts, such as legal texts (Moorkens, 2018).

Errors are even more critical in the medical field and could lead to catastrophic results. This is because 'MT technology can in its current state exacerbate social inequalities and put certain communities of users at greater risk' (Vieira et al., 2021). A study that investigated the translation of medical reports found that, without human assistance, translation systems were not able to construe many abbreviations created by doctors (Uličná 2023). Another study looked into translations from English into seven other languages including Basque, French, German, Portuguese, Russian and Spanish, using different machine systems. The results showed that such tools are 'still not good enough in such a domain where 100% of accuracy is required' (Costa-Jussà et al., 2012). But the study also suggested that machine translation systems can be an excellent complementary tool to human translators, as long post-editing and human revision implemented.

Aside from written texts, examinations of oral translations have shown that AI is still limited in not being able to process multimodal aspects such as gestures and facial expressions that contribute to the understanding of the overall meaning of the source text—something that human translators can achieve effortlessly (Qian & Qian, 2020).

Ultimately, AI and MT, while remarkable, often fall short of human translation standards across most domain-specific texts and contexts, especially in situations where errors have critical consequences (Brynjolfsson et al., 2018).

3 Methodologies

During the 2023 Gaza-Israel conflict, users on X utilized AI tools to translate videos shared by other users from both sides of the conflict. These tools included EzDubs, an AI-powered tool designed to dub videos effortlessly from and into various languages, and TranslateMom, an AI-powered tool designed to caption videos from and into various languages. Both tools operate through bots specifically designed to translate videos on multiple platforms, including X. In addition, users relied on the translation tool integrated into X and powered by Google Translate¹, to translate texts posted on X during this conflict. Google Translate is a well-known online service that can translate text in over 100 languages, and is listed in G2.com as the top machine translation system².

In this study, the performance of the AI tools EzDubs and TranslateMom is examined, as well as the abilities of Google translate. These include the ability to translate text via the integrated feature on X, which allows users to instantly translate posts and comments within the platform, and the ability to translate text embedded in images by using the "Camera Translation" feature, which enables users to capture a photo of text and translate it instantly.

The dataset was selected after examining hundreds of MT and AI translations shared by X users during the conflict. Particular emphasis was placed on translations that met the following criteria: (1) they generated controversy or public outrage; (2) they were widely circulated or featured in prominent hashtags; or (3) they were actively contested through user comments or critically addressed by news outlets. With the assistance of two bilingual Arabic-English translators and two bilingual Hebrew-English translators with no less than five years of experience, the accuracy of these translations was examined, and only materials that were conclusively identified as inaccurate and containing errors were explored in this study. The concept of accuracy in this context refers to the degree of correctness and fidelity to the source text (Molina and Albir 2002).

The study integrates descriptive, comparative and experimental analyses, showcasing four different limitations of AI and MT. The term 'limitation' is used in this study to encompass not only the failures of MT and AI, but also their inherent constraints, including instances of human intervention and text manipulation, as can be seen in Section 4.3. The descriptive analysis includes highlighting errors in the translations, analysing the nature of these errors and explaining the circumstances of their delivery. The comparative analysis compares AI and MT performance in translating some of these encounters against reference translations provided by professional Arabic and Hebrew translators, in order to highlight errors and differences in accuracy. Lastly, due to instances where translation technologies were evidently used and resulted in errors, but the specific tools employed were not identified, a systematic experimental analysis was conducted to investigate these issues rigorously using a well-

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¹ https://help.x.com/en/using-x/translate-posts

² https://www.g2.com/categories/machine-translation?utf8=%E2%9C%93&order=g2_score

documented tool, namely Google Translate, as can be seen in Section 4.4.

4 Findings and Discussion

4.1 Translating cultural references

After reviewing the English translations of hundreds of Arabic videos, as generated by EzDubs and TranslateMom, it was observed that they often struggle to accurately convey cultural references (CRs). An example of this can be seen in the translations of a video that was posted by Arabic Post (2023), of a released Palestinian prisoner chanting in Arabic.

EzDubs and TranslateMom were both used to translate this video and, as can be seen in Table 1, both tools failed to accurately translate the name Mohammad Deif, who was a Palestinian militant and the head of the Izz al-Din al-Qassam Brigades, the military wing Hamas. They both truncated the full name to 'Muhammad', a common name across the Arab world, thereby diminishing the contextual significance and individuality conveyed by the complete form.

Table 1: Comparison of EzDubs and TranslateMom in Translating CRs from Arabic to English #1

Reference Translation		EzDubs translation		TranslateMom translation		
We	are	And	we	And	we	will
Mohammad		returned	to	return	l	to
Deif's men		Muhammad		Muhammad		

Another example is observed in a video that was posted by Mohammad Zubair (2023), of a released Palestinian woman speaking in Arabic. EzDubs and TranslateMom were both used to translate this video and, as can be seen in Table 2, both tools failed to accurately translate the CR 'Netzarim Corridor', which is a zone set up by Israel in the Gaza Strip. The CR was deleted all together by EzDubs, whereas TranslateMom falsely rendered it as 'AL-Tarim', at least recognizing it as a proper name by adding 'Al', a common prefix for Arabic proper names.

These observations align with previous research showing that machine-generated translations often miss the cultural aspects of a text (Ahrenberg 2017), resulting in a literal and awkward translation

that often confuses and misleads the target audience.

Table 2: Comparison of EzDubs and TranslateMom in Translating CRs from Arabic to English #2

Reference Translation	EzDubs Translation	TranslateMom Translation
Every day I go	And everyday	And everyday I
to Netzarim	I went to this	go to AL-Tarim
Corridor	bed	

4.2 Avoiding critical errors

One of the biggest limitations of AI and MT is the risk of relying on them during high-stakes contexts when there is so much on the line. An example of this is a pattern that was detected in the translation of some Arabic posts that were posted on X during the conflict. The integrated tool powered by Google Translate was observed minimising the intensity of some ongoing events, as can be seen in Figure 1.



Figure 1: An Arabic post and its translation, as produced by Google Translate on X (Barbar, M., 2024)

In this post from the account, ManalBarbar (2024), a reference is made to a recording of a 15-year-old Palestinian girl saying 'عمو بطخوا علينا'. The standard translation for this should be 'Uncle, they are shooting at us'. However, Google Translate translated this as 'Uncle, they beat us up', which is not accurate to the source text, since it does not describe the same severity of what was happening.

Similar issues were detected when examining Hebrew posts. An example of this is a post by the prime minister of Israel, Benjamin Netanyahu, where Google Translate made an error in translating 'עוטף עוה' Otef Aza, a region boarding

Gaza from the south. This region is normally translated as 'Gaza Envelope', but was translated as 'Gaza Strip', as can be seen in Figure 2, which basically indicated the prime minister was calling for the colonising of Gaza in the middle of an ongoing conflict. The error gained widespread attention and triggered a wave of outrage that persisted for some time, even after Google Translate corrected it. This serves as a clear reminder of the risks associated with relying on translation technologies at the heights of conflicts.

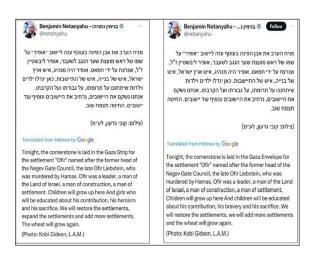


Figure 2: The controversial post from the prime minister of Israel and its translation before and after (Netanyahu, B., 2023)

The amendment of the mistake also illustrates that translation tools are subject to human intervention, a topic that is explored further in the next section.

4.3 Preventing bias and intervention

Many assume that translation tools are more objective and free of bias.³ However, these tools are still influenced by human decisions and are susceptible to human intervention. An example of this comes from a post on X by the Israeli Minister of National Security, Itamar Ben-Gvir (2023), as seen in Figure 3.

In his post, Itamar referred to an Israeli man who had just died as 'Kushi'. The original translation of this word was 'nigger', as produced by Google Translate that is integrated into X. This is because the word 'Cushi' or 'Kushi' (בוֹשִׁי) is a Hebrew colloquial used to refer to a dark-skinned person of

African descent.⁴ It was not until a few hours later that the translation was changed from 'nigger' to 'Kushi'. Some users were quick to defend the translation by claiming it was the man's actual name, and that it was just an unfortunate mistranslation. However, further research revealed that the man's name was in fact Shimon Rimon, and that he was given the nickname 'Kushi' for being a dark-skinned Mizrahi from Yemen.

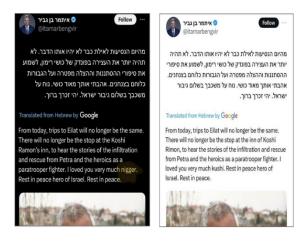


Figure 3: The post from Itamar Ben-Gvir and its translation before and after (Ben-Gvir, I., 2023)

Interestingly, when the actual Google Translate website was used to translate 'Kushi' (פּרּשָׁי), it produced the translation 'black person', 'negro', and 'nigger'. Furthermore, when looking up some other posts on X that used the same word, they were translated by Google Translate as 'negro', as can be seen in Figure 4.



Figure 4: An example of a post on X that used the word 'פושׁי' but was translated differently (Khalil, A., 2023)

³ https://www.aimyths.org/ai-can-be-objective-or-unbiased

⁴ https://en.wikipedia.org/wiki/Cushi

This is a clear indication that such a change was limited to Ben-Gvir's post on X and was done by deliberate human intervention.

Another form of human intervention was observed in the censorship of some AI tools that demonstrated their significance during the conflict. An example of this can be seen in the suspension of the AI tool EzDubs from X for several months back in the early 2024 and during the heights of the Gaza-Israel conflict. The timing was suspicious given that the tool had been available since 2022. This occurred when the tool was utilized beyond its primary function as a translation tool during the conflict, serving as a means of verification to either corroborate or challenge human translations disseminated on platform X. In this capacity, it proved to be an effective instrument for countering propaganda, especially when precise, reliable, and prompt information is crucial during crisis (Fischer, 1998; Seeger, 2006; Altay and Labonte, 2014). Immediately after Hebrew was removed from the list of languages supported by EzDubs, the tool was reinstalled into the platform. Efforts were made to reach out to EzDubs concerning this issue, but no response was received.

4.4 Translating cursive handwriting

One of the most significant translation features introduced by AI is the ability to translate text from images. A photo or a screenshot with text is uploaded, then is translated into a seamless text like the original. However, this feature showed limitations during the conflict when used to translate images with cursive handwriting.

An example of this comes from the spokesman for the Israeli Defense Forces (IDF), Daniel Hagari, who claimed in a video that the IDF had found Hamas weapons in the Rantisi Children's Hospital in Gaza, as well as an Arabic 'guardian list where every terrorist writes his name, and every terrorist has his own shift guarding the people' (2023), referring to the Israeli hostages. However, Arabic speakers on social media and some news outlets were quick to point out that the only thing on that 'list' was the days of the week, as can be seen in Figure 5. The IDF later acknowledged their mistake, attributing it to a translation error in Hagari's statement.⁵



Figure 5: IDF spokesman points to an Arabic calendar in the Rantisi Children's Hospital in Gaza (Israel Defense Forces, 2023)

Since the IDF did not disclose the tool responsible for the error, an experimental analysis was conducted using the AI-powered feature in Google Translate, which enables text translation from images. As a result, out of the 55 Arabic words displayed on the calendar, 38 words were translated into their accurate English equivalents, indicating a high level of accuracy. However, 17 words were mistranslated into unrelated terms, as can be seen in Table 3.

Table 3: The Arabic words on the calendar and their English translation as generated by Google Translate

Source Text	Reference Translation	Google Translate	Arabic Back Translation	
الأربعاء	Wednesday	Dimensions	أبعاد	
الجمعة	Friday	Fever	حمه	
الخميس	Thursday	Al-Hamid	الحامد	
الجمعة	Friday	Association	منظمة/رابطة	
الخميس	Thursday	praiseworthy	الجدير بالثناء	
الأربعاء	Wednesday	ljaa	-	
الاثنين	Monday	The Ethneed	-	
الثلاثاء	Tuesday	The three	الثلاثة	
الاثنين	Monday	Al-Asheed	-	
الأحد	Sunday	AL-Ahmad	الأحمد	
الجمعة	Friday	Hummus	حمص	
السبت	Saturday	The reason	السبب	
الخميس	Thursday	praiseworthy	الجدير بالثناء	
الاثنين	Monday	Ethanir	-	
الخميس	Thursday	praiseworthy	الجدير بالثناء	
الخميس	Thursday	Praise	مديح	
الأربعاء	Wednesday	Dimensions	أبعاد	

⁵ https://www.yahoo.com/news/cnn-quietly-cut-disputed-israeli-005939159.html

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When examining the Arabic source text and the Arabic back translation closely, orthographic similarities can be established. For instance, a similarity can be observed between the source word 'جمعة' /ˈd͡ʒu.mʕa/ and its back translation 'حمه' /'him.ma/, with the letters 'z' (/d3/) and 'z' (/h/)sharing a similar structural form, differing only by the presence of a diacritical dot in the former. Another similarity can be seen between the source word 'السبت' æs.sabt/ and its back translation 'السبب' /æs.sæ.bab/. More significantly, out of the 17 mistranslated words, three words had the Arabic definite article 'Al' added to them; 'Al-Hamid', 'Al-Sheed', and 'Al-Ahmad'. This is significant because, as mentioned in section 4.1, 'Al' usually prefixes Arabic proper names, and when it prefixes a human name, it usually signifies belonging to an Arab tribe. This may have contributed to the IDF's misinterpretation of the text as a list of names rather than a calendar.

Unlike printed text, handwritten text, particularly in cursive, introduces significant variability in character shape, spacing, and connectivity, making it more difficult for AI to recognize characters reliably. This challenge is further compounded by the fact that certain AI models must encounter each individual token in isolation within the training images in order to effectively learn how to render it accurately (Ramesh et al., 2022). In the context of AI and machine learning, a token refers to a discrete unit of input, which may consist of a word, a part of a word, or an individual character.

Another example of AI's limitation in translating cursive handwriting can be observed in the translation of a letter written by an Israeli hostage named Danielle Aloni, who wrote a thank you letter to Al-Qassam Brigades on behalf of herself and her daughter Emilia (Doam, 2023). The letter was widely circulated and has since been translated into multiple languages, including English, as can be seen in Figure 6.

However, users on X have expressed their frustration due to their inability to verify the accuracy of the human-translated letter, suggesting that existing translation tools have failed to generate an adequate rendition of the text.

As the specific tools used were not identified, an experimental analysis was undertaken utilizing the

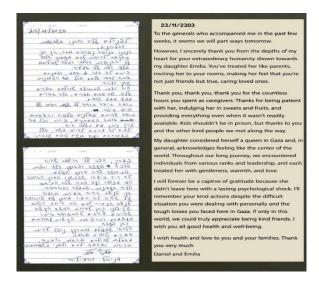


Figure 6: A letter written to Al-Qassam Brigades by the Israeli Hostage Danielle Aloni (Doam, 2023)

AI-powered feature of Google Translate. As can be seen in Figure 7, the failure to translate the source text was overwhelmingly higher than the previous example, which was also written in cursive handwriting. This leads us to believe the accuracy is affected by another factor here, which could be the language pair involved, an issue that Google Translate is known for (Taira et al. 2021). This is noteworthy because both Arabic and Hebrew are Semitic languages that share many similarities, yet the accuracy of the translation of their cursive handwriting varied significantly.



Figure 7: The controversial letter, as translated by Google Translate into English

Further evidence of this can be seen when the only Arabic phrase in the letter was the only part Google Translate was able to accurately translate, aside from the out-of-context phrase 'based on'. As can be seen in Figure 8, the Arabic phrase 'شكرا كثير' meaning 'thank you very much' was translated into 'thank you'.

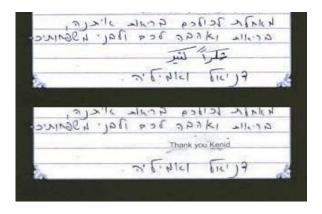


Figure 8: The Arabic phrase in the letter was the only accurate part translated into English by Google Translate

5 Conclusion

Although AI and MT are improving significantly, they still have limitations that make them unreliable, and even too risky to trust at times. This paper highlighted some of these limitations in the political field, specifically during conflicts and high-stakes contexts. Such limitations appeared in translating cultural references and cursive handwriting, as well as the inability to avoid errors at critical times and a susceptibility to bias and intervention. These limitations should serve as evidence that human translators are indispensable. especially in situations where translation tools are unable to fully and accurately translate the content, and that relying on translation tools is a risk that should not be taken in conflicts and high-stakes contexts. There is a reason such tools require postediting carried out by humans, especially when errors in translation can cause unrepairable damage.

It would be best, moving forward, to balance the two; translation technologies with all their abilities to translate large amount of text at speed, and human translators with all their intelligence and comprehension abilities. Additionally, the limitations of such tools and best ways to use them need to be clarified for their users. It is essential to

raise public awareness regarding their propensity for error and bias, especially in light of the evolving state of AI.

Continued research that builds upon the limitations outlined in this study is essential for advancing MT and AI. These technologies must draw on such findings to refine their performance and ensure more accurate and appropriate outputs. More research is also needed to understand the nature of the risks imposed when such tools are used during conflicts and high-stakes contexts. Lastly, further research is warranted not only on the limitations and failures of MT and AI, but also on issues related to fact-checking and the potential for data manipulation.

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