Human vs. Machine Interpreting Today: A Professional Assessment

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As members of the Interpretation Professional Advisory Committee (IPAC), we are dedicated to ensuring effective and accurate communication across languages. This report, the result of months of weekly meetings by our members, offers a comprehensive expert opinion on machine interpreting (MI), also known as AI-generated interpreting, as of the date of this report. It does not address how Artificial Intelligence (AI) tools can support interpreters in their work, at the practitioner's discretion.

Our lead authors are certified interpreters who have been practicing professionals for decades in various settings such as education, healthcare, conference and judicial proceedings.

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Human vs. Machine Interpreting (MI)

Interpreters are language and niche industry experts who simultaneously serve as ambassadors of culture, charged with "reading the room". Connection is our ultimate mandate.

At the same time, the way in which audiences, individuals and stakeholders infer the messages provided by both live interpreters and machine interpreting is an important consideration that must be analyzed on a case-by-case basis, ranging from the simple provision of instructions within a building to interpreting services offered at the bedside of a hospice patient.

Implementing AI in interpreting is also a diversity issue that depends heavily on the recipients of services. Groups such as the Deaf and Hard of Hearing, Indigenous communities, older persons, low-resource language groups, minority populations, and individuals who are neurodivergent, digitally marginalized, or have physical or intellectual disabilities, could be particularly challenged in many settings using many projected modalities of MI. Surveys and research should be conducted among populations that may potentially interact with live or machine interpreters, in order to gain a broader understanding of a modality's viability and of the users' preferences and comfort levels.

What is Interpreting?

Interpreting involves the intricate process of understanding, analyzing, and rendering spoken or signed messages accurately into another language. The ASTM interpreting standard highlights the importance of this complex process. Conversely, machine interpreting (MI) relies on real-time technology to facilitate communication without any human input. This fundamental difference sets the stage for a comparison on several levels:

1. Consecutive Interpreting:
- **Humans:** Human interpreters manage conversational flow and can report impediments to performance such as unclear speech. They adeptly handle simultaneous inputs from multiple speakers and can detect and correct problems, ensuring accuracy.
- **Machines:** MI struggles with managing multiple speakers and often produces unintended omissions. It lacks the ability to infer missing information, resulting in potential inaccuracies. Currently, machine interpreting systems do not yet spontaneously "self-correct" *their own* errors, as live interpreters are accustomed to doing when an error is recognized.

2. Simultaneous Interpreting:

- **Humans:** Professional interpreters can dynamically evaluate speech in context, identifying and correcting errors in real time.
- **Machines:** MI lacks the ability to discern and correct the errors *of others* in speech-to-text conversions (and in fact, it would be contrary to the system's accuracy metric to do so), leading to incorrect interpretations.

3. Ethics and Preparedness:

- **Humans:** Interpreters adhere to a strict code of ethics, prioritizing accuracy, confidentiality and preparedness for each event.
- **Machines:** Ethical standards in the use of MI are still evolving, and the technology is not yet capable of ethical decision-making. Event-specific preparation is an evolving area of MI technology. Existing guidance may conflict or be unenforceable or even prohibited, depending on the venue or organization.

4. Data Privacy

- **Humans**: Interpreters are committed to confidentiality, a critical component of all interpreting codes of ethics, and can be held accountable for any breaches.

- **Machines**: MI is based on large data sets which can grow with every interaction, thereby posing a confidentiality risk. Federal guidelines regarding the implementation of any form of AI in HIPAA or other legally protected environments are still very much in development, demanding a cautious approach to deployment. Ensuring the responsible use of MI is paramount, with a focus on confidentiality, data security and ethical considerations.

5. Non-verbal Cues and Contextual Understanding:

- **Humans:** Interpreters are skilled at rendering non-verbal cues, tones, and gestures, which are crucial for conveying the full meaning of a message. For instance, intonation varies from language to language and can change the meaning of a sentence entirely, as seen in the example 'I don't want to sing **that** song for Mary' and 'I don't want to sing that song for **Mary'**, which convey different meanings.
- **Machines:** MI relies on software that is based on mathematical algorithms and probabilities. It fails to capture non-verbal cues as well as the nuanced context of culture and interpersonal relationships.

Risks and Repercussions of MI

Machine interpreting can be beneficial for simple, low risk interactions, such as setting appointments or giving directions. However, its limitations become apparent in more nuanced and complex scenarios:

- **Nuanced Information:** In medical, legal, and educational settings, the inability of MI to grasp subtle nuances can lead to significant risks, such as misdiagnoses or misrepresented testimony. For instance, a patient's use of the Spanish word 'mano' could mean the entire arm, but MI might interpret it solely as 'hand,' leading to errors in medical treatment. In legal settings, attorneys may intentionally use ambiguous wording or double entendre as part of legal strategy; it is unlikely that these deliberate misrepresentations would be noted by MI systems.
- **Complex Material:** High-stakes environments, such as public presentations, government announcements, or stakeholder meetings, demand the expertise of credentialed human interpreters. The risks of relying on MI in these contexts include miscommunication, misunderstanding, and loss of critical information.
- **Accuracy vs. Fluency:** Traditional measures of accuracy focus on transferring the message without omitting any part of its content. Fluency refers to transferring the message in a manner that flows naturally, such that the listener connects with the message, without any barriers. When we do not have both precision and fluency the message is not accurate in practice. MI has significant challenges in this respect, as described above. Moreover, language experts believe that MI may increase accuracy while simultaneously decreasing fluency. Word for word translations are often examples of this. In writing, the listener can reread the message a few times to grasp the meaning. In an oral rendition, the listener just gets one chance to understand the message. When discussing the gains and losses of MI, both factors must be considered, as accuracy gains with fluency losses could result in a net decrease in connection.

Current Applications and Future Outlook

MI (AI-generated interpreting) does have its place, especially when compared to volunteer or non-professional human interpreters. It could be useful for low-risk interactions. It may help a receptionist identify the language of a person who comes to the front desk and schedule a professional interpreter for the medical encounter.

For encounters with any level of risk or liability, on the other hand, professional interpreters bring a depth of understanding and adaptability that MI currently lacks.

In the future, translation and interpreting instruction will need to evolve to keep pace with new industry tools, techniques and approaches. At this point, AI can provide tools that support interpreters in their professional services, which practitioners may use at their discretion.

Challenges and Considerations

When discussing Machine Interpreting, a distinction should be made between modalities, such as what might be called "consecutive machine interpreting," or CMI and "simultaneous machine interpreting," or SMI, as these modalities affect the quality of the MI output. For

instance, MI interpreting in a consecutive mode may perform well at the beginning and end of a paragraph but struggle to maintain coherence in the middle, leading to potential inaccuracies. We have observed that text-based AI systems often create inaccurate messages, known as hallucinations. We are concerned that this invented content might corrupt the accuracy of the interpreted message.

Additionally, what is often referred to as "AI-assisted interpreting" bears strong resemblance to machine translation post-editing (MTPE), in which a human professional reviews and revises the AI output prior to its release for use.

However, in real-time interpreting this additional step of post-editing is not feasible due to:

- the cognitive load already demanded of the interpreter,
- the additional time needed to correct errors,
- any unexpected lag, delay or breakdown of the AI system, and
- the instantaneous nature of interpreting itself.

This effort, perhaps better referred to as "MIPE" (machine interpreting post-editing), would hinder the dynamic delivery of services, thus undermining the very nature of interpreting.

Note: A practical application of AI in human interpreting is the use of AI-generated subtitles or closed captions in the source language. This combines two challenging interpreting modes, sight translation and simultaneous interpreting, both of which are tested independently in court interpreting certification exams.

Summary

In summary, while machine interpreting technology has made impressive strides, it is not a replacement for professional human interpreters. MI falls short when dealing with nuanced understanding, ethical and privacy considerations, and when required to interpret non-verbal cues. Human interpreters, on the other hand, excel in these areas. Our opinion is that machine interpreting services may be suitable for low-risk, simple interactions but pose significant risks in more complex, nuanced scenarios. As with any technology, an ongoing evaluation of risks, capabilities, and the impact on end users is essential.

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Other relevant ATA papers:

ATA's position on Machine Translation

ATA Position Paper on Remote Interpreting

ATA Comments on DHS 2014 Language Access Plan