A Study of the Types and Characteristics of Computer-assisted Interpreting Technology (CAIT)

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Abstract

During the last decade, information technology has played a central role in the language service industry. Especially, since the appearance of ChatGPT which dramatically affects the interpreting process and greatly changes the traditional views that thinks interpreters have not benefited from the same level of automation or innovation. In the era of artificial intelligence (AI), digital tools for interpreters have evolved from easy-to-use glossary creation and management solutions to complex workstations that cover most stages of the interpreter workflow, from assignment preparation to terminology lookup during interpretation. This paper mainly studies the types and characteristics of computer-assisted interpreting technology (CAIT) according to consecutive interpreting workflows, so as to provide reference for future interpreter learners, trainers and professional interpreters.

Keywords

Computer-assisted interpreting technology (CAIT); workflow; types; characteristics.

1. Introduction

In recent years, interest in computer-assisted interpreting technology(CAIT) , particularly but not exclusively in the field of simultaneous interpreting, has increased significantly. CAIT is a set of applications specifically designed to assist professional

interpreters in at least one of the several sub-processes of interpreting, such as knowledge acquisition and management, lexicographical memorization, real time terminology access, and so on. The technology available so far differ greatly both in the number of functionalities offered and in their architecture. These can be simple terminology management spreadsheets available on the user's computer or complex applications deployed in the cloud.(Pöchhacker, 2022) Recently, advanced approaches to natural language processing and machine learning, especially deep learning, have been integrated, opening up new opportunities to develop advanced and intelligent tools. Advances in language-related technologies such as machine translation, speech recognition, and language modeling have the potential to transform many aspects of assistive technology in the interpreting field.

CAI tools are particularly relevant to improve the work experience of professional interpreters and to help them maintain or improve the quality of their service. This is especially true given a widespread need to streamline processes and compensate for shorter time-to-events, a trend that started years ago and is gaining momentum. In this context, the emergence of distance interpreting, especially remote simultaneous interpretation (RSI), seems to make the use of CAIT even more relevant. The transition from an analog to a digital workspace, from the physical booth and the hardware console to the immateriality of a digitalize and artificial environment, has opened new and natural ways to integrate CAIT into the interpreter workflow.

2. Interpreting workflow and types of CAIT

Simply put, interpreting workflow can be divided in to three stages at least, which are before, during and after the interpreting.

2.1. Preparation

Seleskovitch (Seleskovitch, 1978)believes that complete and accurate interpretation depends largely on the interpreter's grasp of the subject knowledge and context. In many interpreting cases, the subject knowledge of interpreting is new to the interpreter, which establishes the necessity of pre-interpreting preparation. Gile (Gile, 2009) claims that in many occasions where interpretation services are offered, the interpreter is not a professional in that field, so preparation before interpretation is of great importance. The role of preparation is central for at least two reasons: it aims at bridging the linguistic and extra-linguistic gap between conference participants and interpreters and helps to reduce the cognitive load during the interpreting task as it anticipates parts of it in the preparatory phase. Having more free cognitive capacities during an interpreting assignment, interpreters can manage the interpreting process more efficiently. Accordingly, preparing an assignment in advance supports interpretation quality, for example, by ensuring greater accuracy. Yet, preparation is generally time-consuming, and interpreters may often experience the feeling of not knowing exactly how to perform this task efficiently. To cope with this, some types of CAIT can be used to help interpreters to rationalize the process.

For background knowledge, one can use different search engines, like Google, Bing, Baidu etc, to find related information. Through scanning, one can get familiar with this field. Besides, en-powered by ChatGpt, that information can be generalized and formed into a glossary for the terminology preparation. CorpusModeiv is a documentation software designed for translators and interpreters. It comprises a tool to build specialized corpora from the web, a terminology and collocation extraction module and an easy-to-use concordancer to explore the texts in an exploration-oriented way. The tool bundles a set of topic-related information such as: • a corpus of specialized texts automatically collected from the web

• a list of statistically relevant terms for the conference topic

• a search engine-like tool to dynamically explore the corpus

• candidate translations for the extracted terms

• a definition for each extracted term.

2.2. During interpreting

As early as in 1995, Gile proposed two models, for simultaneous interpreting and consecutive interpreting respectively, to explain the cognitive process interpreters need to go through to complete an interpreting task. The models were revised in 2009. The theories center on interpreters' cognitive effort and aim to explain recurring difficulties other than linguistic capacity in interpreting. The Effort Model explains the interpreting process in two phases (Gile 2009: 175-176).

Phase one is the comprehension phase (or listening and note-taking phase) consisting of interpreters' efforts in listening and analysis, note-taking, short-term memory operations and coordination.

Interpreting = L + N + M + C (L: Listening and Analysis; N: Note-taking; M: Short-term memory operations; C: Coordination)

Phase Two on the other hand is devoted to the production of notes and consists of interpreters' efforts in remembering, note-reading, production and coordination.   Interpreting = Rem + Read + P + C (Rem: remembering; Read: Note-reading; P: Production)

We contend that in the new era where interpreting embraces technologies, using a CAIT consisting of Real-time Automated Speech Recognition (ASR) and Machine Translation (MT) for consecutive interpreting will have consequences in Phase Two above, as the tool has implications for attention management and thereafter for interpreting quality. In terms of attention management, an interpreter will now need to split their attention and coordinate between their notes, their long-term memory and the MT for their interpreting planning before delivery.

During the interpreting stage, one can use ASR software like Braina, Dragon Speech Recognition Solutions, Otter, iFLYTEK,etc.to convert audio in to text which can relieve memory burden of the interpreter. Besides, interpreters can also use ASR applications that encoded MT, which can give the interpretation simultaneously. All interpreters need to do is post-edit the interpretation. Recently, web-based speech recognition has made huge strides. Otter.ai is well-known for both real-time and post-processed transcription (albeit only in English, while Zoom offers automatic transcription of calls and meetings in a dozen languages. In terms of language coverage, Web Captioner leads the pack with over 40 languages – for free.

As for consecutive interpreting that involves note-taking, there are some applications can be used to assist interpreting. Such as, Cymo-note, which is a professional multilingual note-taking software for interpreters. It is designed to handle complex multitasking in consecutive, simultaneous and many other interpretation scenarios. Released in late 2022, Cymo Note aims to bring automatic speech recognition to the full range of interpreting settings – including remote, onsite and hybrid meetings – and modalities – simultaneous, consecutive, and hybrid approaches. Cymo Note's most innovative aspect is its consecutive interpreting feature. Turn on "Consecutive layout," and the screen will automatically be divided in two, with the transcription on the left and a blank space for taking notes on the right. Enable "Drawing mode," and start taking notes.

2.3. After the event

The work of interpreters doesn't end when the microphone is turned off. Feedback is an important part for the development and growth of interpreters. After the event, several kinds of CAIT tools can be used to generalize the work and provide support for future activities.

The first type is transcription software. This type of software can convert audio files from the interpretation session into text format, which can then be edited and formatted as needed. This is especially helpful for those who need to produce written records of the interpretation.

The second type is terminology management tools. After interpretation, it is important to review and update terminology used. Computer-assisted translation (CAT) tools often include terminology databases that can be used to store and manage this information. This helps ensure consistency in future translations or interpretations.

Then is the quality assurance tools. These tools can analyze the transcribed text to identify any potential errors or inconsistencies in the interpretation. They may highlight areas where the interpreter might have missed something or where there might be a need for clarification.

The last one is feedback and evaluation systems. Computer-based feedback and evaluation systems can be used to collect feedback from listeners or other stakeholders about the quality of the interpretation. This feedback can then be used to improve future performances.

It's important to note that while these tools can enhance the interpreter's work, they should not be seen as replacements for human interpreters. Instead, they should be used as adjuncts to enhance the overall quality and efficiency of the interpretation process.

3. Characteristics of CAIT

This technology has revolutionized the field of interpretation, offering a range of benefits and advantages. Here are some of the key characteristics of CAI technology:

Speed and Efficiency: CAI tools can process and translate text or speech at remarkable speeds, enabling interpreters to work more efficiently. This is particularly beneficial in scenarios where real-time translation is crucial, such as international conferences or medical emergencies.

Accuracy and Consistency: Computer-based translation systems are designed to maintain a high level of accuracy, ensuring consistency in terminology and grammar. This helps to reduce errors and ambiguities that may arise in manual translation.

Multilingual Support: CAI technology covers a wide range of languages, enabling interpreters to work effectively in multilingual environments. This flexibility is crucial in today's globalized world, where cross-cultural communication is becoming increasingly important.

Portability and Convenience: CAI tools are often designed to be user-friendly and portable, allowing interpreters to work seamlessly across different devices and platforms. This adds flexibility to the interpretation process, enabling interpreters to work remotely or on the go.

Enhanced Productivity: CAI technology can help interpreters handle larger volumes of work, reducing the need for extensive note-taking or memorization. This frees up time for interpreters to focus on more complex tasks, such as understanding context or refining translations.

Real-Time Feedback: Many CAI systems provide real-time feedback to interpreters, highlighting potential errors or suggesting alternative translations. This feedback loop helps interpreters improve their work overtime, leading to more accurate and natural translations.

Integration with Other Technologies: CAI tools often integrate with other technologies, such as speech recognition systems or video conferencing software. This integration allows interpreters to work seamlessly within a larger technological ecosystem, enhancing their overall productivity and efficiency(Jing & Qiong, 2019).

Computer-assisted interpreting technology offers a range of benefits that make the interpretation process faster, more accurate, and more efficient. These characteristics have transformed the field of interpretation, enabling interpreters to meet the challenges of today's globalized world with greater ease and effectiveness.

4. Its affects to interpreters

Computer-assisted interpreting (CAI) technology has significantly altered the role and responsibilities of interpreters. This technology, which leverages the power of computers and related software tools, has brought about several impacts on interpreters, both positive and negative. CAI tools enable interpreters to work more efficiently by automating certain tasks and speeding up the translation process. This saves time and effort, allowing interpreters to handle more work in a shorter period.

The technology can handle repetitive and routine tasks, such as basic translation or terminology look-up, reducing the workload on interpreters. This frees up time for interpreters to focus on more complex and nuanced aspects of interpretation. CAI systems often have built-in checks and balances to ensure accuracy in translation. This helps interpreters avoid common errors and maintain consistency in their work.

It can also provide real-time feedback to interpreters, which can help them identify and correct errors quickly. This feedback loop can improve the quality of interpretation over time. What's more, CAI technology covers a wide range of languages, enabling interpreters to work effectively in multilingual environments. This flexibility is crucial in today's globalized world,

where the need for cross-cultural communication is increasing.(Prandi, 2020) With CAI tools, interpreters can handle larger volumes of work without compromising on quality. This can lead to enhanced productivity and better output overall.

However, the introduction of CAI technology also poses challenges for interpreters. They may need to adapt to new ways of working and embrace technology that may be unfamiliar or uncomfortable. There is also a need to stay up-to-date with evolving technologies and their applications in the field of interpretation.

While CAI technology can enhance interpreter's productivity and accuracy, it also has the potential to displace some interpreters. Automated translation tools can handle basic translation tasks, reducing the need for human interpreters in some instances.

Overall, computer-assisted interpreting technology has brought about significant changes in the role and responsibilities of interpreters.(Severine & Jerome, 2021) While it has brought about numerous benefits, such as efficiency boosts and workload reduction, interpreters also need to adapt to new ways of working and embrace technology to stay relevant in the field.

5. Conclusion

This paper has delved into the world of computer-assisted interpreting (CAI) technology, examining its workflow, types and characteristics in detail. CAI technology has emerged as a crucial tool in the field of interpretation, offering a range of benefits and opportunities but also posing challenges and requiring adaptation from interpreters.

The paper has highlighted the different types of CAI technology, ranging from basic machine translation tools to more advanced systems that leverage artificial intelligence and machine learning algorithms. Each type of technology has its unique strengths and limitations, making it important for interpreters to understand the capabilities and limitations of the tools they are using.

Furthermore, the paper has explored the characteristics of CAI technology, focusing on areas such as translation accuracy, speed, and user-friendliness. While CAI tools can significantly improve translation efficiency and accuracy, they are not perfect. Interpreters need to be aware of the potential for errors and be prepared to verify and correct translations when necessary.

Additionally, the paper has discussed the impact of CAI technology on the role of interpreters. While the technology can automate certain tasks and improve efficiency, it cannot replace the human element of interpretation. Interpreters still play a crucial role in ensuring the accuracy and quality of translations, particularly in complex or nuanced situations.

In conclusion, computer-assisted interpreting technology has transformed the field of interpretation, offering new tools and possibilities. However, it is important for interpreters to maintain a balanced approach, leveraging the technology's strengths while also recognizing its limitations. By doing so, interpreters can continue to provide accurate and reliable translation services in a rapidly evolving technological landscape.

Acknowledgments

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