RESEARCH ARTICLE

Perceptions of Computer-assisted Interpreting Tools in Interpreter Education in Chinese Mainland: Preliminary Findings of a Survey

Received: 17 November 2021; revised: 11 March 2022; Published: 31 March 2022

Hongyu Wan

Shanghai International Studies University, Shanghai, China.
Email: wanhongyu@shisu.edu.cn

Xiaoshu Yuan

Shandong Agricultural University Tai'an, China
Email: xiaoshuyuan@sdau.edu.cn

Abstract:

Computer-assisted interpreting (CAI) tools are increasingly used particularly for terminology accuracy and efficiency. However, the perceptions of the usefulness of CAI tools' are mixed. This article analyses the perceptions of CAI tools in interpreter training based on the findings of a survey distributed to interpreter trainers and trainees in China. Analysis of the 161 responses shows that most respondents are interested in CAI but there is no relevant course available on BA- or MA-level interpreter programs yet while students are keen to learn CAI tools in preparation for the future market. Secondly, the most frequently used CAI tool among Chinese interpreter trainees remains online dictionaries whereas the arguably most frequently used terminology management tool in Europe, InterpretBank, is not even in the toolkit of Chinese interpreters. User feedback shows CAI tools mainly help with interpreting preparation, especially in the science and technology domain. Thirdly, it is recommended that CAI be integrated into China's interpreter education, even though some interpreter trainers have argued about the importance of developing interpreting skills in the first instance. Informed by the findings of the study, this article contributes to the discussion of the possibility of future integration of CAI in interpreter education.

Keywords: perceptions; computer-assisted interpreting; survey; user feedback; interpreter education

1. Introduction

Information and communication technologies (ICTs) have played and continue to play an important role in facilitating translation and interpreting, from computer-assisted language learning since the late 1960s (Sandrelli & de Manuel Jerez, 2007, p. 275) to computer-assisted interpreter training including e-learning platforms and online resources. Interpreters used to work with an interpreter console, glossaries, and interpreting delivery platforms. Nowadays, computer-assisted interpreting (CAI) allows interpreters to prepare ahead of time, check technical terms during live events, and optimize workflows. As early as 2000, the International Association of Conference Interpreters (AIIC) published "Code for the Use of New Technologies in Conference Interpreting" (AIIC, 2000) on its website. Ten years later, Irabien (2010) identified and described the ICTs used then by professional conference interpreters and

by conference interpreter trainers, as well as recorded their perception of the impact of ICTs on their work. In the CIRIN bulletin, a comprehensive semestral listing of conference interpreting research, there were only 15 works related to conference interpreting and ICTs by 2010. However, in the year 2021 alone according to the CIRIN bulletin (Gile, 2021), 13 items out of 121 were dedicated to technology use in interpreting. This "technological turn" (Fantinuoli, 2018b) presents both opportunities and challenges to the interpreters and trainers. Literature has shown mixed perceptions of CAI tools. On the one hand, there are empirical studies demonstrating how they have improved interpreting quality and efficiency (Prandi, 2018; Fantinuoli, 2017, 2018; Xu, 2018). On the other hand, some professional interpreters showed reticence about adopting new technologies (Ortiz, 2018).

Over the last decade, increased attention has been paid to new technologies with new capabilities that have been developed in China, albeit accompanied by rash commercial fanfare[1], which is seldom attempted in the western world. Following on the appeal of previous literature (e.g., Fantinuoli, 2018; Mellinger & Pokorn, 2018) to replicate or further the investigation of CAI tools in practice and interpreter education, this report, out of a series of related studies, presents an analysis of the perceptions of CAI tools in interpreter education from an online survey of student interpreters, professional interpreters, and interpreter trainers. It is hoped that the findings of this study will serve to profile the demand for CAI tools in China's interpreter education and help speed up integrating CAI in interpreter education.

2. Literature Review

CAI tools are software solutions developed specifically to facilitate terminology and knowledge management (Biagini, 2015; Prandi, 2015) as well as to reduce the cognitive load of interpreters. There have been attempts to present an overview of CAI tools (Costa et al., 2014a; Rütten, 2017) and establish criteria for their evaluation (Costa et al., 2014b; Will, 2015), even though interpreters, unlike translators, "have not benefited from the same level of automation or innovation" (Costa et al., 2014b, p. 27). CAI tools are classified into process-oriented tools (e.g., technology management systems, knowledge extraction software, corpus analysis tools) and setting-oriented tools (e.g., booth consoles, remote interpreting devices, training platforms) (Fantinuoli, 2018, p. 155). In this paper, CAI tools refer to process-oriented tools, if not otherwise indicated.

Though some studies suggest that CAI tools might help increase the accuracy of delivery and reduce information redundancy in the phase of production (Hamidi & Pöchhacker, 2007). The perceptions of CAI tools among professional interpreters are mixed. A quantitative analysis conducted by Biagini (2015) on the terminological quality of the interpreted text compared the use of a paper glossary and the CAI tool InterpretBank. To further this effort, Fantinuoli (2017a, 2017b, 2018) presented findings from empirical studies that several CAI tools had improved interpreting workflow. Xu (2018) reported improved terminological preparation and accuracy in English-Chinese simultaneous interpreting with a corpus-based terminological preparation procedure, managed by a term extraction tool and a concordance tool.

[1] Commercial fanfare like "AI taking the place of human interpreters" C.f. Wei Zhonghe(韦忠和). Prospect of Interpreting Industry in the AI Era (AI 时代口译职业的前景) https://www.sohu.com/a/271679227_722306 (accessed Jul 4, 2021)

However, many interpreters have shown some degree of reluctance to use ICTs (Winteringham, 2010; Irabian, 2008). Among the 133 professionals surveyed (Paster & Fern, 2016), less than 5 used speech recognition tools, and no more than 25 consulted glossary or other forms of terminology databases during interpreting. The survey also found that interpreters all reported their struggle with processing time when using CAI tools during interpreting. Prandi (2017, 2018) expanded the analysis, exploring the positive effects of CAI tools on the terminological quality of an interpreter's rendition and the effects on the cognitive load during simultaneous interpreting (SI) with CAI.

Due to new developments in educational technologies and the increasing need to prepare students to work in professional contexts, scholars have also examined the role of technology in educational contexts (e.g., Sandrelli & Manuel Jerez, 2007; Kerremans et al., 2019). Attempts have been made to "provide a context for the application of technologies to interpreter education and to learn more broadly" (Ehrlich & Napier, 2015: xvi).

Reception of CAI tools by interpreter trainees has been explored (Lim, 2013; Lee, 2014; Prandi, 2015) and a qualitative evaluation of their usage in the booth highlights the need for practical experience and theoretical instructions on the topic. In the survey of 25 European universities, Prandi (2020, p. 4) found only some universities had integrated CAI tools in their curriculum and that "InterpretBank is the tool students are most often introduced to, followed by Interplex and Interpreter's Help."

What is the situation among interpreter trainees and trainers working with Chinese and English? As of May 2019, China's Mainland now has 281 Bachelor of Translation and Interpreting (BTI) programs according to the China National Committee for BTI Education [2] and 313 Master of Translation and Interpreting (MTI) programs as of Aug. 2021 according to the China National Committee of Translation and Interpreting Education[3]. Apart from some general introduction of CAI tools (Feng, 2018) and surveys about professional interpreters in specific areas (Wang, 2004; Pan et al., 2009), there are few reports on the actual application of CAI tools in interpreting practice or in interpreter training. STTACAS and TRANSN (2007) collected information about interpreters' wellbeing but barely touched upon opinions of the technology use. Han (2016) surveyed 140 interpreters for information about the real-life practice. However, several master theses dealt with attitudes toward AI Interpreting (Liu, 2018), though on a small scale, surveying 5 trainers, 27 professional interpreters, and 35 students. It means that the tech-savvy young generation or interpreter trainees are possibly interested in CAI. Furthermore, the existing scholarly discussion on this subject primarily emphasizes CAI tools prior to interpreting and tools for consecutive interpreting. This work aims to portrait CAI tools in interpreter education in China, echoing the western researchers' appeal (e.g., Irabien, 2010; Fantinuoli, 2018; Mellinger & Pokorn, 2018) to replicate the previous studies in different regions with different language combinations, thus complementing the bigger picture of CAI tools used in educational settings in the world.

The authors integrated CAI modules in an interpreting course of an MA program before collecting training diaries. Afterwards they disseminated a questionnaire to a larger cohort of student interpreters and trainers to gauge the current impact and its potential. The present study does not intend to test or

[2] https://cnbti.gdufs.edu.cn/info/1006/1595.htm (accessed Feb 12, 2022)
[3] https://cnti.gdufs.edu.cn/jxdw.htm (accessed Feb 12, 2022)

measure in any way the use of CAI tools in the profession or in pedagogy, but rather to provide statistical information for both fields and may eventually better align teaching objectives with the demand for future interpreters.

Guided by this overarching aim, our research questions are the following:

1) How do student interpreters and interpreter trainers perceive CAI tools?
2) What is the status quo of CAI tools in interpreter education in China?
3) What are the prospects of CAI in China's interpreter education?

This research is carried out in light of three hypotheses:

a) There exists a growing interest in CAI tools both in the profession and in pedagogy;
b) The use of CAI tools by interpreter trainees and trainers varies between China and other regions of the world;
c) Integrating CAI tools in interpreter education is necessary to better prepare trainees for the market.

3. Methodology

To address the research questions, the methodological approach of the survey is adopted in this study to contextualize real-world knowledge about CAI tools in interpreter education in China. A survey (survey link https://wj.qq.com/s2/8653115/4559/) was designed to profile the perceptions of CAI tools in interpreter education in China. It contained 29 questions (Qs) starting with demographic information (Q1-Q4). The other three sections each examined a specific aspect of CAI in interpreting education as follows: Section I: CAI tools literacy (Q5-Q9); II: The status quo of CAI pedagogy (Q10-Q14) and III: CAI tools user feedback (Q15-23); and IV: General impression and future prospects (Q24-29).

3.1 Survey design

The web-based Tencent Survey is easily accessible, practical, and intuitive. It also includes the option to create a survey in different languages. As we primarily aimed to approach interpreter trainers and student interpreters with different native languages, we chose Chinese and English to cater to different preferences. Tencent Survey also offers researchers several question types. For instance, for questions Q7-Q9 about CAI tools used before, during, and after interpreting, there is an option for multiple responses given that some people tend to use several CAI tools at the same time. It also provides a short answer function format, thus making it possible for the respondent to type their text response. There are also questions measured on a five-point Likert scale such as Q19 (i.e., willingness to use CAI tools) and Q26 (i.e., degree of anxiety towards the future of language service industry) where respondents were asked to rate from 1 to 5, with 5 indicating the highest level of agreement.

Once the survey was created, Tencent Survey automatically generated a link to facilitate access to the survey. Data on the platform can be extracted in Excel and Word formats and displayed in various forms, including pie charts, graphs, and figures for the vivid presentation of the analysis.

Participants who took part in the study were either student interpreters or interpreter trainers. A multi-pronged approach was taken to boost the sample size. The first method was to post the survey link on WeChat Moment and QQ Space, where eligible interpreter trainees and trainers would self-

select to participate. The second was to establish a chain-referral sampling by sending the link to selected WeChat and QQ groups and for trainers and trainees in these groups to forward the survey link to eligible participants. The last was to distribute the survey link directly to trainees and trainers within the authors' professional networks. Recruitment was thus based on non-probability sampling.

The questionnaires were finished in 7 minutes 27 seconds on average. Qualitative data (e.g., open-ended questions) was processed using Microsoft Excel, while correlation analysis and reliability test were processed using SPSS 26.

3.2 Demographic data

The survey had been open for 6 days until 209 valid responses were retrieved. Partially completed questionnaires were not taken into account in the analysis. We have also eliminated 10 responses with either language pairs other than English-Chinese or responses from beyond China's Mainland to maintain a more focused discussion. Responses from 38 professional interpreters are saved only for discussion about market feedback on CAI. Table 1 shows 161 respondents' demographic data organized under the following headings: gender, location, identity showing different stages of interpreting education. Women made up over three-fourths of the sample. The 161 respondents were distributed mainly over four geographical areas in China's Mainland. The majority of respondents came from Eastern China (especially in Shanghai and Jiangsu Province), which correlated with the concentration of interpreting markets and BTI/MTI programs. However, the other three areas were more or less equally represented.

Regarding the identity of the respondents, more than half of them were MA or MTI students, showing the most significant interest in CAI tools and their application in education. A total of 34 interpreter trainers took part in the survey, accounting for 21.12% of the total respondents.

Table 1. Demographic Data

Demographic variables		No.		Percentage (%)	
Gender					
Male		38		23.6	
Female		123		76.4	
Location					
China's Mainland	Northern China	14	161	8.3	100.0
	Eastern China	101		60.1	
	Central China	24		14.3	
	Southern China	22		13.1	
Identity					
Undergraduate students		21		13.04	
Postgraduate students		106		65.84	
Interpreting trainers		34		21.12[4]	

[4] The percentage is kept two decimals in order to keep the sum of two groups equal to 100 percent.

4. Results

4.1 CAI tools literacy

Questions in Section I describe respondents' familiarity with CAI tools. To understand CAI tools literacy among interpreter trainees and trainers, we constructed 2 Likert-type scales items to learn about their familiarity with CAI tools (Q5) and their opinion on integrating CAI tools in interpreter education (Q6). Informed by differences in interpreting learning and practice trajectories, student interpreters and interpreter trainers had shown different levels of CAI tools literacy. Concerning familiarity with CAI tools, to the statement "I am familiar with CAI tools," Figure 1 indicates that 31 student interpreters (24.4%) and 5 interpreter trainers (14.7%) chose "Strongly disagree"; 36 student interpreters (28.3%) and 19 interpreter trainers (55.9%) chose "Neutral"; and only 2 student interpreters (1.6%) whereas no interpreter trainer chose "Strongly agree".

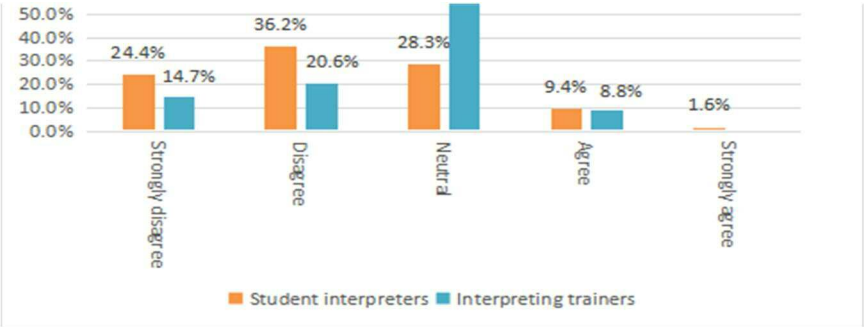

Figure 1. CAI tools literacy (Q5).

With such a low CAI tools literacy, 65.2% of the respondents "agree" or "strongly agree" that CAI tools should be included in interpreter education (Q6). Questions 7-9 (Q7-Q9) collected information about the tools respondents have used before, during, and after the event. For example, Figure 2 summarizes the answers to Q7 about the tools respondents have used while preparing to interpret. The most frequently used is an online/electronic dictionary followed by a search engine electronic database shared by both student interpreters and interpreting trainers.

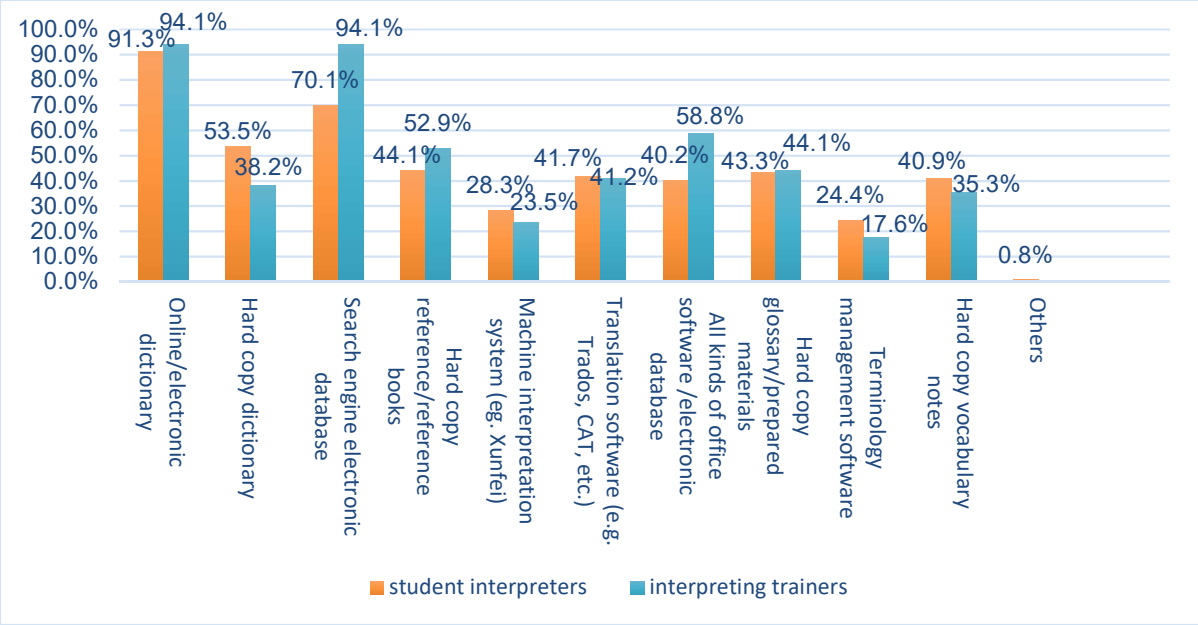

Figure 2. Pre-interpreting tools (Q7).

During the interpreting assignment/practice (Q8), the most frequently used tool among student interpreters remains hard copy note pad and pen (86 (67.7%)), followed by online search engine/online dictionary (83 (65.4%) (if time permitted)). 24 trainers (70.6%) chose search engine, electronic/online dictionary, and 18 trainers (52.9%) used electronic terminology database/data bank. As post-interpreting review may not be required for all training programs, comparatively fewer CAI tools are allegedly used in post-interpreting review (Q9). About two-thirds of student interpreters (64.6%) still resorted to traditional hard copy notes in a post-interpreting review rather than CAI tools. In comparison, the majority of interpreter trainers (61.8%) were accustomed to using voice recognition software in interpreting follow-up activities for automatic transcription for self-assessment (to be discussed in Section 5).

InterpretBank, the terminology management tool frequently used by European students (Prandi, 2020, p. 4), has barely been mentioned by the Chinese interpreters or trainers for reasons that could not be shown through the survey.

4.2 The status quo of CAI tools in interpreter education

Section II presents the status quo of CAI tools in interpreter education (Q10-Q14).

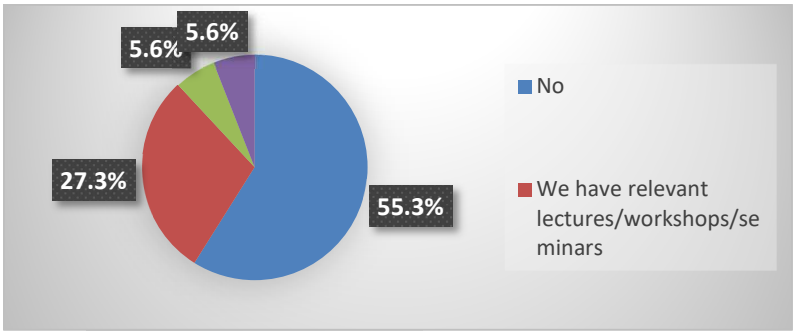

Figure 3. CAI courses offered in the interpreting programs (Q10)

Among these 17 Master's programs, more than half claimed no specific courses on CAI tools in their curriculum. 27.3% of the respondents reported relevant CAI lectures, workshops, or seminars. Interestingly enough, only 5.6% of the respondents claimed to have relevant modules in their interpreting courses by the time of the survey, compared with 7.9% having machine translation courses in a survey by Luo et al. (2018).

Regarding the training modules of CAI tools in teaching and learning, answers to Q11 indicate that 73 student interpreters (57.5%) and 18 interpreter trainers (52.9%) have no proper relevant modules or training on CAI tools while barely 16.8% of all respondents have had CAI tools in their organization. In total, 30 student interpreters (23.6%) and 10 interpreter trainers (29.4%) referred to some lectures or workshops but somehow missed, and 21 student interpreters (16.5%) and 6 interpreter trainers (17.6%) reported attending some introductive modules of CAI tools.

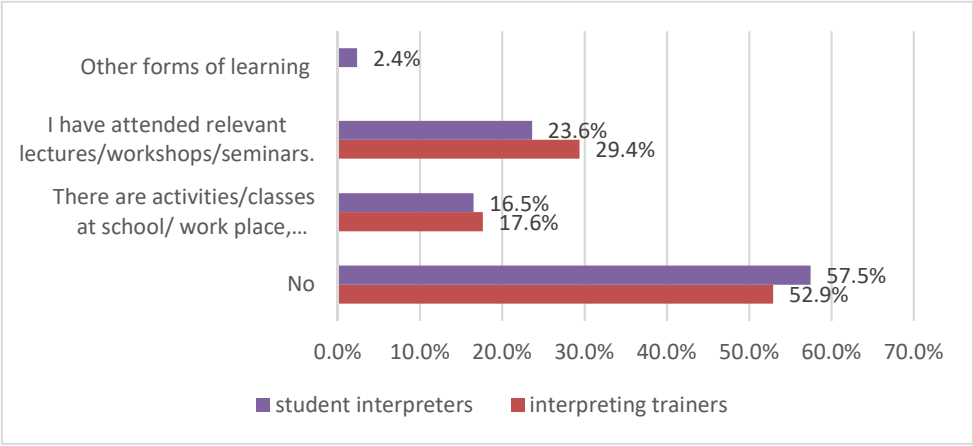

Figure 4. CAI training/course offered by the school (Q11).

As personal computers and tablets are commonly available in most universities, the technical facilities for introducing CAI tools into the curriculum are there. If the curriculum and training are slow in reflecting these new terminology management solutions, will the interpreters learn to use CAI tools by themselves?

Concerning the self-learning of CAI tools, Figure 5 shows that 75 student interpreters (59.1%) and 13 interpreter trainers (38.2%) have never learned CAI tools by themselves. Furthermore, 52 student interpreters (40.9%) and 20 interpreter trainers (58.8%) knew somewhat about CAI (i.e., history, status quo, developing trend, technology and application system) while only 1 interpreter trainer (2.9%) claimed to have adequate knowledge of CAI tools.

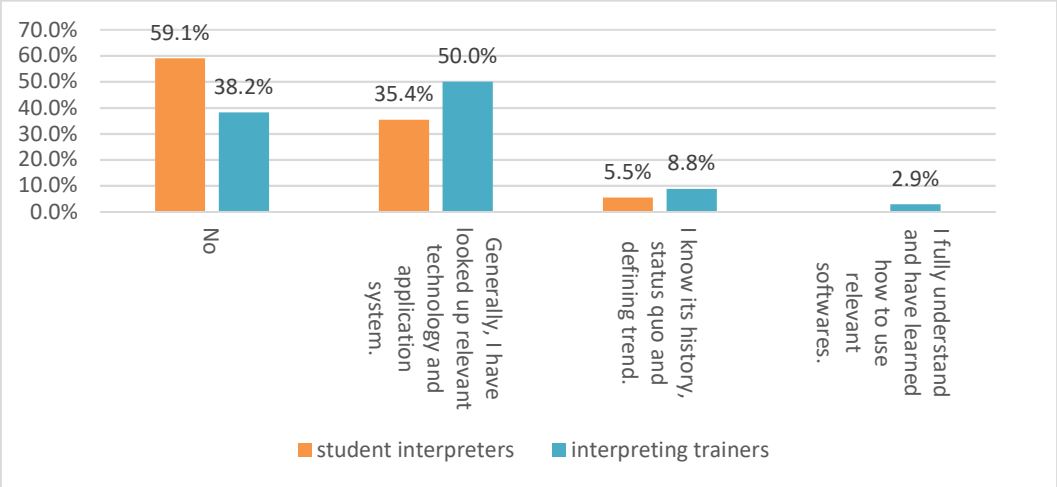

Figure 5. Self-taught CAI tools (Q12).

Likewise, as is seen from Figure 6, 18 student interpreters (14.2%), and 1 interpreter trainer (2.9%) have never used or heard of CAI tools. A meaningful 17 student interpreters (13.4%) and 8 interpreter trainers (23.5%) reported having used CAI tools before, during, and after interpreting practice or assignment, which will be further discussed in Section 5.2. Most of the respondents have tried CAI tools for no more than 10 minutes if any.

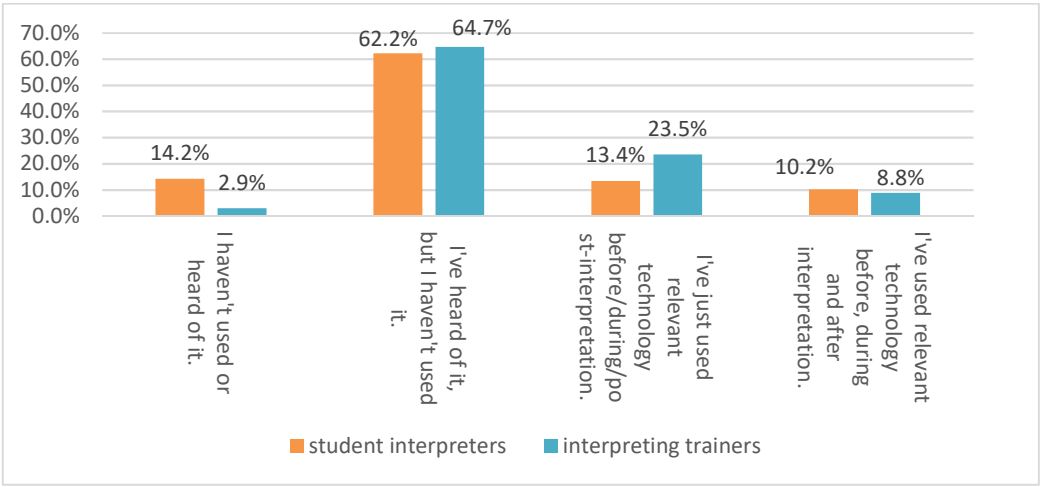

Figure 6. Prior CAI tool use (Q13).

4.3 Perception on the usefulness of the CAI tools

Questions in Section III solicit user feedback on the application of CAI tools in practice. Here we juxtapose the responses of student interpreters and interpreter trainers. Irabien (2010) reported an attitude gap towards ICTs among different regions of the world. In her survey of 206 conference

interpreters, Africa, Asia, Northern Europe, and Oceania seemed to be very optimistic about ICTs, while the Americas, Central Europe, and Southern Europe presented a divided opinion. Regarding the CAI tools in practice, Figure 7 shows a complete array of helps CAI tools could provide. In total, 77.0% of respondents (94 student interpreters and 30 interpreter trainers) thought CAI tools could best help with technical terminologies, and 61.5% of respondents (77 student interpreters and 22 interpreter trainers) believed CAI helped with figures. Nonetheless, the most useful help perceived by professional interpreters was to relieve cognitive efforts in recognizing and translating technical terminologies (65.8%), followed by acronyms (42.1%) regarding their working experience.

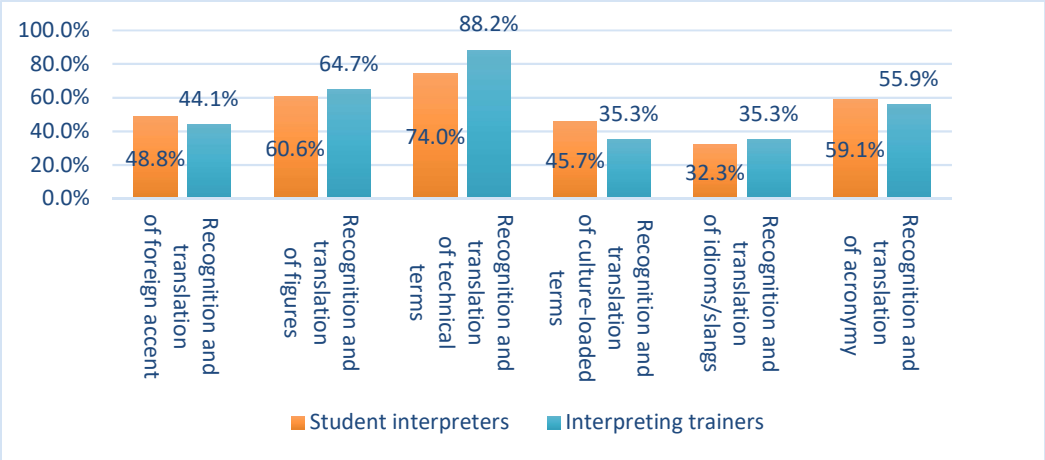

Figure 7. Perceived help from CAI tools (Q15).

Though CAI tools, for the time being, cannot do much with foreign accents nor cultural-loaded terms, still quite a few respondents thought that CAI could help with foreign accents (62 student interpreters (48.8%)), and cultural-loaded terms (58 student interpreters (45.7%)). It further implies an inadequate knowledge or experience with CAI tools among interpreter trainees in China.

Concerning the willingness to use CAI tools, a total of 72 student interpreters (56.6%) and 20 interpreter trainers (58.8%) were willing (i.e., "Agree") or very willing (i.e., "Strongly agree") to use CAI tools while the rest were skeptical. In contrast, only 5 student interpreters (3.9%) and 2 interpreter trainers (5.9%) were determined not to try it at all. Another finding was that the mean score of the willingness of interpreter trainers is higher than that of student interpreters, which means interpreter trainers are much more willing to use CAI tools during interpreting (M_T=3.88>M_S=3.68[5]).

[5] S refers to student interpreters, and T refers to interpreter trainers.

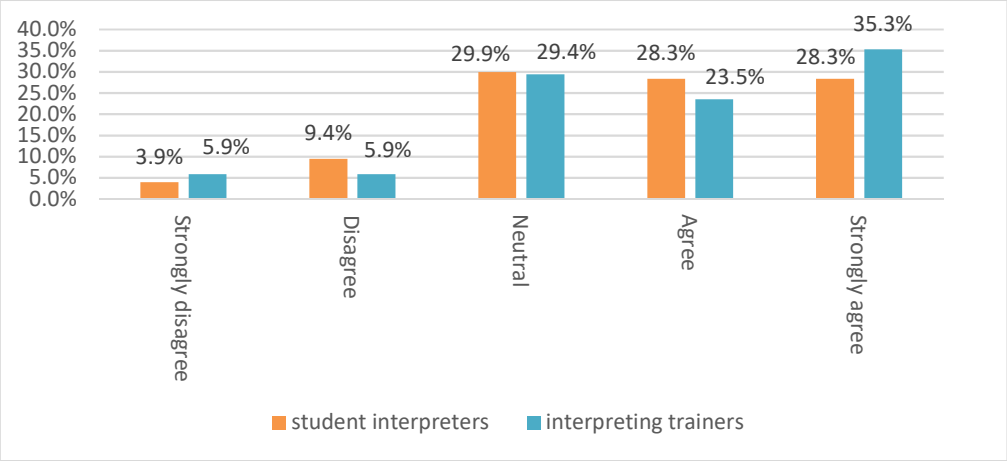

Figure 8. Willingness to use CAI tools during interpreting (Q19).

Concerning what might drive or has driven them to try CAI (Q20), a cross-tabulation (Table 2) shows that 104 surveyed (64.6%) think CAI is the trend. 94 respondents (58.4%) hoped to see the real benefits of CAI and 102 responses (63.4%) confirmed CAI practicality, while 75 respondents (46.4%) may try just out of curiosity. However, the trendy nature of CAI was the most frequently cited reason why student interpreters and interpreter trainers tried CAI.

Table 2. Reasons for using CAI tools

	Student interpreters	Interpreter trainers	Total
I am just curious what CAI is up to.	65 (51.2%)	10 (29.4%)	75 (46.6%)
I want to experience the practicality and convenience of CAI tools.	84 (66.1%)	18 (52.9%)	102 (63.4%)
I believe that CAI is a defining trend.	84 (66.1%)	20 (58.8%)	104 (64.6%)
I believe that CAI tools can improve the quality of interpreting practice.	77 (60.6%)	17 (50.0%)	94 (58.4%)
Other reasons.	0 (0.0%)	0 (0.0%)	0 (0.0%)

4.4 General impression and suggestions to R&D of CAI tools

Regarding the future prospect of CAI in interpreting education, Figure 9 presents answers to Q24, the kinds of CAI didactics to be desired. Specific application of CAI tools was the most hankered item, followed by "Operating mechanisms of CAI" and "the future development momentum of CAI." Comparatively speaking, student interpreters had shown the highest enthusiasm towards all aspects of CAI tools. Just as Prandi (2015) also highlighted the potential risk to students of relying too heavily on such tools, one interpreter trainer in the current survey noted that it would be better for CAI tools to be ushered in after interpreters having acquired adequate interpreting skills. As professional interpreters are at the forefront of the CAI application, their optimism towards CAI forebodes a bright future of the CAI tools.

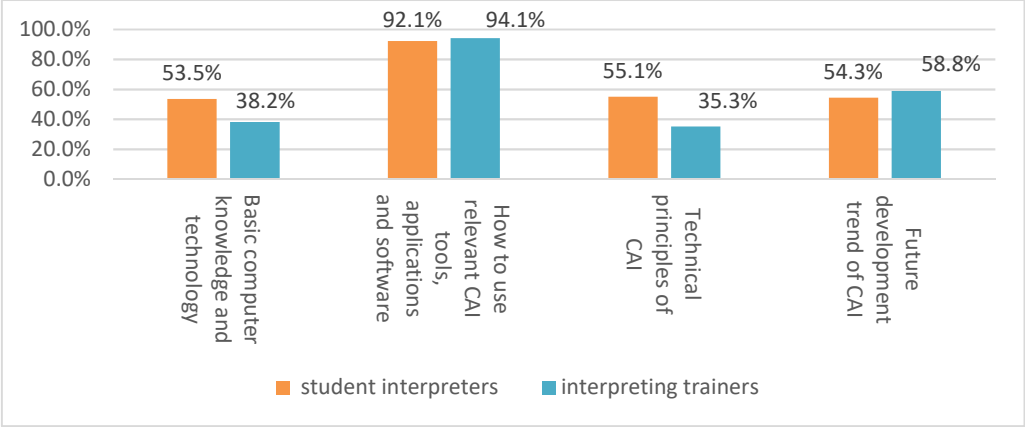

Figure 9. CAI in interpreting education to be desired (Q 24).

Responses to Q25 show that 97 student interpreters (76.4%) and 22 interpreter trainers (64.7%) called for the inclusion of CAI in interpreting diploma programs, and 100 student interpreters (78.7%) and 28 interpreter trainers (82.4%) agreed that CAI education should be integrated into everyday interpreting training. An exciting phenomenon showed that trainers were quite reserved compared with student interpreters. One trainer argued (2.9%) (in the form of text entry) that "CAI tools should not be included in the curriculum until students acquire basic interpreting skills."[6].

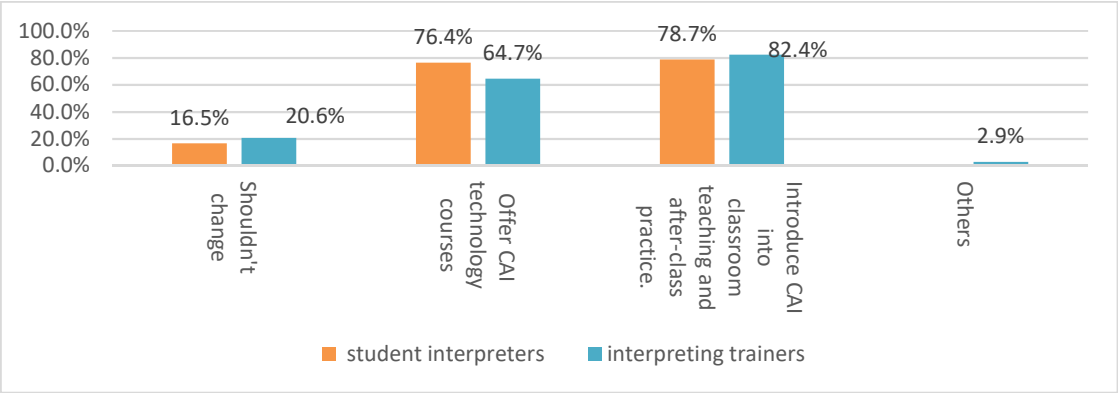

Figure 10. On change of interpreting curriculum (Q25).

Q26 addressed the future prospect of CAI tools. In total, 23 student interpreters (16.5%) and 7 interpreter trainers (20.6%) were not anxious about interpreting jobs being overtaken by AI, and 12 student interpreters (9.4%) and one interpreter trainers (2.9%) were very worried. 69 student interpreters (54.3%) and 22 interpreter trainers (64.7%) claimed to be concerned (2-3 on the Likert scale). Figure 11 shows that student interpreters without adequate knowledge of CAI tools tend to become more anxious about the future.

[6] Translated from "在口译基本技能牢固后，再引入机辅口译"

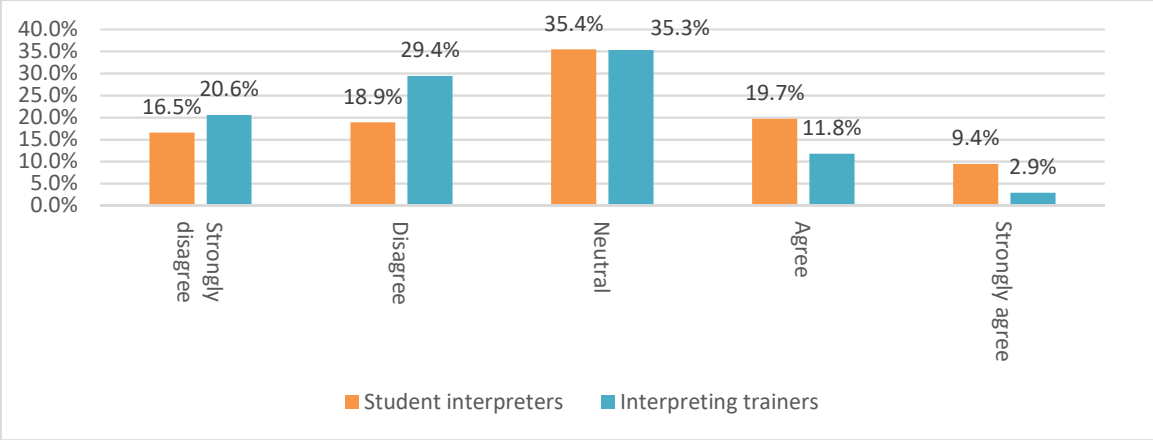

Figure 11. The anxiety level of two groups (Q26).

Question Q28 was an open-ended question soliciting respondents to further their impression of CAI tools, while Q29 provided advice to R&D teams regarding CAI tools. The text messages were translated by the authors. Coding and categorizing these responses to open-ended questions was an opportunity to gain much deeper learning.

The raw data were cleaned and anonymized, then imported to Microsoft Excel for qualitative content analyses. The data were then inductively coded into four themes: *No opinion; Positive; Neutral; Negative*. To improve the credibility of coding, we adopted a prolonged engagement and member checking method. Three weeks after the initial coding, Coder A (the second author) re-coded, thereby obtaining intra-coder reliability of 100%—a suggestion that the coding decisions were identical over time. Meantime, Coder B (the first author) joined the coding process to double-check and verify the coding of Coder A. The inter-coder reliability was 98%, indicating that over 95% of the coding decisions were identical between the coders.

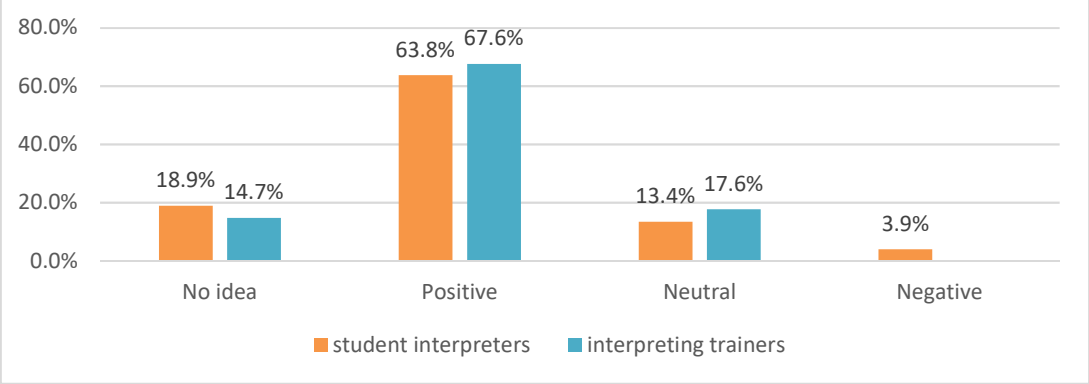

Figure 12. General perceptions of CAI tools (Q28).

Figure 12 shows a categorization of the opinion of the student interpreters and interpreter trainers regarding the development of CAI. First, most respondents pointed to the positive side of CAI, essentially claiming that "CAI is a defining trend…CAI is quite promising and deserves to be

introduced into real-life interpreting didactics."[7] Their responses were annotated to Q15 thereby highlighting the benefits of improving interpreting quality by relieving the pressure of interpreters in memorizing terms, numbers, and other de-contextualized items, improving target language quality, and fluency of delivery.

Secondly, some respondents expressed "No idea" regarding CAI tool use (24 student interpreters and 5 interpreter trainers) due to their unfamiliarity with the tools as shown in their responses to Q5 in which the majority of them chose "Disagree" (2 on a scale of 1-5)[8].

Thirdly, among those who had a neutral attitude to CAI tool use, students sounded very hesitant using words like "maybe" as in "maybe it will become better,[9] "it is a future trend, but has some limitations."[10] In comparison, interpreter trainers gave such clear notes as in:

"CAI is useful in collecting materials (i.e., preparation), but it interferes with the process of interpreting. Besides, I believe that CAI can only do well in term-packed technical domains like medical, chemical, and legal subjects. However, CAI is lousy in non-technical fields."[11].

Fourth, interestingly, 38 professional interpreters who also responded to the same survey were more likely to contend that "CAI can only provide assistance but can never be as qualified as professional human interpreters in any field."[12] Based on their experience of working with CAI tools, they pointed out that "CAI interferes with their listening and analysis" or that "CAI provides minimal help in the workflow given its low accuracy in speech recognition and the fact that more cognitive effort is demanded from interpreters"[13]. Only 1 interpreter trainer mentioned CAI's assistance limited to specific domains. However, students in the group with a Negative Opinion sounded very general or even vague, pointing to the lack of accuracy in speech recognition or just asking for improvement.

As for suggestions to R&D professionals, respondents mainly mentioned two aspects. First, CAI tool companies should invest more in extensive corpora, terminology standardization in all fields, and higher speech recognition accuracy.[14] Second, they should improve CAI tool publicity by cooperating with universities or offering affordable services.[15]

[7] Translated from "机辅口译是未来大势所趋"; "很有发展前景，应该大力推广，应该纳入课堂"
[8] 2 on the scale of 1-5 means "I disagree that I am familiar with CAI".
[9] Translated from "现在感觉技术不成熟可能等以后会好一点吧"
[10] It was translated from "机器能发挥一定作用但作用有限。"
[11] Translated from "机器口译在资料收集整理方面很好用。但是在口译过程中使用的话，会有干扰…机器口译只能处理固定模式的术语，适合医疗化工法律类的任务。但是语言灵活的时候就拖后腿了。"
[12] Translated from "机器只能是参考，关键是人。"
[13] Translated from "更多的是干扰听辨；机器辅助口译在译中目前只在转写阶段可以有用，且听辩速度和准确率较低，而且只能用于 Windows 系统，反而增加译员的压力。"
[14] Translated from "各领域的专业术语都需要分别统一规范，语料库就要大容量又要保证准确度"；"多丰富语料库；增大对语音识别的投入。"
[15] Translated from "收费便宜点，内测免费"；"在高校进行投放试点；真实宣传。"

5. Discussion

5.1 Demographic information

To maintain the homogeneity of the respondents, we have excluded respondents from beyond China's Mainland and respondents with language combinations other than English/Chinese. Furthermore, the research questions are all about the perceptions of CAI tools in interpreter training, so the salient elements should include students (127) from 22 interpreting programs in China's Mainland and trainers (34) who are also active practitioners of conference interpreting. The sample size is comparable with that of the previous pieces of literature. For example, Irabien (2010) surveyed 206 conference interpreters and 33 interpreter trainers. Han (2016) surveyed 140 interpreters for information about the real-life practice, and Pan et al. (2019) sent out 160 questionnaires and retrieved 123 valid responses. We would have had more responses if we could have waited longer. However, it was considered the data set was sufficient to support our study of the prospect of CAI tools in interpreter education in China.

Almost three-fourths of respondents were female (76.3%), which also matches the gender structure of the interpreting profession. The majority of respondents were from more economically dynamic regions (i.e., cities of Yangtze River Delta in East China, 60.1%), reflecting the demand for the interpreting service and pedagogy. This survey also collected questionnaires from 38 professional interpreters who are directly linked with the market, but the data were excluded from the present discussion for a more focused perspective into CAI tools in interpreter training. Nevertheless, professional interpreters' feedback on CAI tools in the booth does shed some light on the necessity of integrating CAI in the curriculum. Since this survey was based on non-probability sampling, the respondents may not represent the population adequately. Demographic information as such does not show an equally distributed sampling, which understandably reflects the freshness of the topic, lack of motivation, and inaccessibility to a larger cohort of the target population.

The survey was not distributed through the official channel but via personal WeChat Moment and personal networks. Therefore, the non-probability sampling used in this study requires that the survey results be looked at with caution and placed in a proper perspective. However, despite these limitations, it still provided a holistic view of CAI tools in interpreting education in China, greatly complementing the previous research studies (Irabien, 2010; Fantinuoli, 2017, 2018; Mellinger, 2019).

5.2 CAI literacy and the demand for CAI in training

With the rapid development of machine interpreting technologies, including automatic speech recognition and neural machine translation, there has been much fanfare about human interpreters being replaced by machines in China. However, how and when that would happen remains unknown to most respondents who, in the meanwhile, are also unsure how to coexist with machines in the near future.

In the survey of professional interpreters in 2007, only 21% of the respondents considered Computer-assisted Translation (CAT) very helpful, 36% thought it had minimal help, and 43% believed it was not valuable or were unsure about its usefulness (STTACAS & TRANSN, 2007). How have things changed after a lapse of 15 years? In an era of ever-accelerating technological advancement, the use of computers or other CAI tools both inside and outside the booth has become

part and parcel for experienced interpreters to prepare ahead of time, check technical terms during live events, and optimize workflows. Therefore, there is no doubt that professional interpreters are at the forefront of applying CAI tools and have the right say in commenting on the merits and demerits of the tools. Among the 38 professional interpreters responding to the same survey, 31 of them (81.6%) had no proper or relevant training modules on CAI tools and 19 of them (50.0%) had never learned CAI tools by themselves.

Student interpreters have grown up using advanced technologies daily and are particularly receptive to new tools. However, due to the inaccessibility of CAI tools, only a few describe themselves as "knowing CAI tools very well," and they become the most significant group yearning for CAI in interpreting education. Interpreter trainers need to prepare students better to meet the requirements of future jobs. Moreover, they are obliged to know more about CAI tools and adjust themselves to suit the market's needs.

We have exemplified in brackets the process-oriented CAI tools (Fantinuoli, 2018) such as online/electronic dictionaries; search engines; electronic database; machine interpreting systems; translation software (e.g., Trados, CAT, iFLYTEK（讯飞)); all kinds of office software/electronic database; terminology management software. However, Section II of the current survey also corroborates the results of STTACAS and TRANSN (2007), indicating that the most frequently used tools before and during interpreting remain the online dictionary, glossaries, and, in some cases, web-based resources. Professional interpreters agreed with "limited time for technology use" in the booth. Interestingly, terminology management tools such as InterpretBank and Intragloss, the two subjects of frequent discussion concerning interpreting preparation, were unpopular among the Chinese-English interpreters, partly because these tools are not free-to-use. Instead, online/electronic dictionary Youdao（有道)，Google search engine and translating software like iFLYTEK（讯飞）ranked top.

With low CAI tools literacy, 79.5% of the respondents endorsed that CAI tools should be included in interpreter education. As Fantinuoli (2018, p. 169) points out, if CAI tools consistently show overall positive effects on the interpreting assignments for both interpreting students and professionals, "there is no reason why advantages and shortcomings of their use should not be properly addressed in the training of future interpreters".

5.3 User comments and CAI in interpreter education

After the first CAI tool prototype in 1993 (Stoll, 2002), early publications on terminology management systems for interpreters can be dated back to the early 2000s. Most of the CAI tools focus on terminology management and knowledge extraction, even though technology may not be able to replace human interpreters in the future for reasons like "nuances, linguistic variation, non-verbal communication, accents, linguistic subtleties, emotion, understanding of the 'between the lines', flexibility of the human adaptation, decision-making, reliability, culture, metaphors, intonation, irony, ambiguities, unpredictability, the capability of judgment" (Ortiz & Cavallo, 2018. p. 24). However, technology has always facilitated and will, if harnessed well, continue to facilitate human output. Respondents are right in calling for dedicated modules of CAI tools in interpreting curriculum, particularly in facilitating human-AI collaboration in specific interpreting tasks.

When Prandi (2015) observed 12 MA interpreting students during the simultaneous interpreting of terminology-dense texts, she found some students tended to excessively rely on the software program, while others regarded it as a source of distraction and found it hard to focus on the delivery. Similarly, trainers surveyed in the study also expressed ideas of "skill development over tool use."

Only some universities had integrated CAI tools in their curriculum among those 25 European universities surveyed by Prandi (2020). Overall, despite the growing interest in this emerging field, there is still confusion and lack of information among interpreter trainers, mistaking general technologies as CAI tools or vice versa. The lack of lecturers capable of teaching remains an important factor for those universities that have not integrated CAI tools into their curricula. Among those 22 university programs, there was no specific course on CAI tools, and only 45.7% of respondents had accessed CAI through lectures or relevant modules. The status quo of CAI in interpreting education in China is not very optimistic. Only 1.4% of respondents claimed an adequate knowledge of CAI tools. In contrast, 69.9% of the respondents have never used CAI tools.

Despite the growing interest among the interpreter students and trainers, didactics of CAI tools in universities are influenced by the usability and effect of the tools on the professional market. Prandi (2020) noted that trainers' expertise was a decisive factor in integrating CAI in interpreter education. As many curricula were set before the widespread of these tools, it is not surprising that many schools have not integrated CAI into their teaching. For those students who acquired some knowledge of CAI, it is attributed to the initiative of the trainers, which is often research motivated.

Professional interpreters are advised to embrace CAI to improve terminological output and efficiency. Human interpreters will not be replaced by AI; rather, they will probably be replaced by humans capable of working with AI. Interpreter trainers would be required to keep abreast of the new development and equip young professionals with the necessary CAI tools to keep up with the trend. Student interpreters are advised to develop awareness that CAI tools only serve as an auxiliary to solid skills of interpreting and other expertise.

6. Conclusions

One hypothesis, which our study was based on, is that there is growing interest in CAI tools that have impacted the interpreting industry and should be integrated into interpreter education. To investigate this hypothesis, 209 participants were recruited to respond to a survey. The analysis of the survey led to the conclusion that CAI tools are not fully utilized yet in the booth or in interpreter education. Unlike translators, interpreters have not benefited much from ICTs, mainly due to the immediacy of interpreting jobs. CAI tools can be used to improve interpreting quality by facilitating the rapid retrieval of accurate terminology, reducing translation errors, optimizing workflows, and increasing productivity. However, interpreter trainees and trainers specializing in Chinese and English appear not to have benefited from CAI tools as much as their European counterparts, for the reasons discussed in the analysis of the second question. It is hoped that the current survey can increase awareness of CAI tools in the interpreter training community that is willing to try CAI tools during interpreting as long as the tools improve the workflow.

As to the second research question, we gathered feedback on existing CAI tools that are good in technical subjects, including science & technology, economics, and foreign affairs but not good enough

in other fields. We agree with Costa et al. (2014, p. 32) that there is "an urgent need to develop technologies that automate the process, increase the productivity and ease the labor-intensive activities of an interpreter." Efforts should be made to address the needs of interpreters working in different modes (Pastor & Fern, 2015) and the developers continuously develop and perfect interpreting products, including booth-friendly products in order to improve interpreters' experience and output.

As to the third research question, the survey results underscored the need for CAI tools to be integrated into interpreter education when trainees have acquired adequate interpreting skills and developed the habit of knowledge buildup and management. In other words, "developments in interpreter training can be beneficial only if they are technology-based, rather than technology-driven" (Sandrelli & de Manuel Jerez, 2007, p. 292). Basic interpreting skills training, including language enhancement, should be prioritized at all times.

The following limitations should be acknowledged when interpreting the findings presented in this study. First, due to the time constraint and limitation of the scope, the sample size is still small. Extra efforts should be made to approach more people in the next project. Secondly, the CAI tools under discussion are limited to process-oriented tools only because the differences among the setting-oriented CAI tools such as interpreting training software and systems will be evened out across the globe soon. Lastly, caution should be taken when generalizing these findings as some responses were based on inadequate knowledge of CAI.

With ICTs developing rapidly and offering new possibilities to interpreting education, we look forward to more case studies on CAI in interpreting education, not only at pre-interpreting and after-interpreting stages but also during-interpreting terminology extraction. We have started to employ iFlytek, a speech technology tool, in simultaneous interpreting training and observed the cognitive load added or reduced on student interpreters. More collaborated empirical studies are required to help generate enough data to help further develop booth-friendly CAI tools to achieve augmented simultaneous interpreting.

Declarations and acknowledgement

The authors declare no conflict of interest.

This study is funded by the grant on the project "Knowledge management in Interpreting" from Shanghai International Studies University (Grant No. 2018114044).

The authors are very grateful to all the participants of the survey, and colleagues and friends who helped distribute the survey. Gratitude also goes to the editors of this journal and the anonymous reviewers for their valuable feedback and suggestions.

References

AIIC. *Code for the Use of New Technologies in Conference Interpretation*. Retrieved from https://www.staff.uni-mainz.de/fantinuo/class/files/cai/aiic_code_interpreting%20technologies.pdf

Berber-Irabien, D. (2010). *Information and Communication Technologies in Conference Interpreting*. Lambert Academic Publishing.

Biagini, G. (2016). Glossario cartaceo e glossario elettronico durante l'interpretazione simultanea: uno studio Comparativo [Printed glossary and electronic glossary in simultaneous interpreting: a comparative study] [Master's thesis, Università di Trieste]. Retrieved from https://units.academia.edu/GiulioBiagini

Corpas Pastor, G., & Fern, M. L. (2016). A survey of interpreters' needs and their practices related to language technology. Technical report, Universidad de M´alaga. Retrieved from https://www.researchgate.net/publication/3036851539

Costa, H., Pastor, G. C., & Muñoz, I. D. (2014a). A comparative user evaluation of terminology management tools for interpreters. In Proceedings of the 4th International Workshop on Computational Terminology, pp. 68-76. Retrieved from https://www.researchgate.net/publication/264978440

Costa, H. , Pastor, G. C. , & Munoz, I. D. (2014b). Technology-assisted interpreting. *MultiLingual*, 25(3), 27-32. https://www.researchgate.net/publication/261991890

Ehrlich, S. , & Napier, J. (2015). *Interpreter Education in the Digital Age: Innovation, Access, and Change*. Gallaudet University Press.

Fantinuoli, C. (2016). *InterpretBank. Redefining computer-assisted interpreting tools. In Proceedings of the Translating and the Computer 38 Conference, pp. 42–52.* Retrieved from https://www.researchgate.net/publication/311485909

Fantinuoli, C. (2017a). Computer-assisted preparation in conference interpreting. *Translation and Interpreting*, 9(2), 25-38. http//doi.org/10.12807/ti.109202.2017.a02

Fantinuoli, C. (2017b). Speech Recognition in the Interpreter Workstation. Translating and the computer, 39. Retrieved from https://www.researchgate.net/publication/321137853

Fantinuoli, C. (2018). Computer-assisted interpreting: challenges and future perspectives. In G. Corpas Pastor & I. Durán Muñoz (Eds.), *Trends in e-tools and resources for translators and interpreters* (pp. 153-174). Brill.

Feng, J. (2018). 冯建中. 机器口译：口译教育面临的挑战与对策.《翻译教学与研究》[Machine Interpreting, Challenges and measures facing interpreting education. In Translation Pedagogy and Research] http://www.sohu.com/a/247079088_176673 (Accessed July 2021)

Gile, D. (2021). THE CIRIN BULLETIN No.62 (2021 July). https://doi.org/10.13140/RG.2.2.30937.44646

Han, C. (2016). A survey to profile conference interpreting practice in China. *Interpreting*, 18(2), 259–272. http//doi.org/10.1075/intp.18.2.05han

Hamidi, M., & Pöchhacker, F. (2007). Simultaneous Consecutive Interpreting: A New Technique Put to the Test. *Met*a, 52(2), 276-289. http//doi.org/0.7202/016070ar

Lee, T. (2014). Using computer-assisted interpreter training methods in Korean

undergraduate English classrooms. *The Interpreter and Translator Trainer*, 8(1), 102–122. https://doi.org/10.1080/1750399X.2014.908560

Lim, L. (2013). Examining students' perceptions of computer-assisted interpreter training. *The Interpreter and Translator Trainer*, 7(1), 71–89. https://doi.org/10.1080/13556509.2013.798844

Liu, Y.Q. (2018). 刘亚琼. 口译界人士对人工智能口译的看法大调查报告.〔A Survey about the Views of the Interpreting Circle on Artificial Intelligence Interpreting. [Master's thesis, China Foreign Affairs University]. Retrieved from http://cdmd.cnki.com.cn/article/cdmd-10040-1018816209.htm

Luo, H., Meng, Y., & Lei, Y. (2018). China's language services as an emerging industry. *Babel*, 64(3), 370-381. http//doi.org/10.1075/babel.00043.luo

Mellinger, C. D. , & Pokorn, N. K. (2018). Community interpreting, translation, and technology. *Translation and Interpreting Studies*, 13(3), 337-341. http//doi.org/10.1075/tis.00019.int

Mellinger, C. (2019). Computer-Assisted Interpreting Technologies and Interpreter Cognition: A Product and Process-Oriented Perspective. Revista Tradumàtica, 17, 33-44.

http//doi.org/10.5565/rev/tradumatica.228

Ortiz, L., & Cavallo, P. (2018). Computer-Assisted Interpreting Tools (CAI) and options for automation with Automatic Speech Recognition. *TradTerm*, 32, 9-31. http//doi.org/10.11606/issn.2317-9511.v32i0p9-31

Pan, J., Sun, Z.X., & Wang, H. H. (2009). 潘珺等. 口译的职业化与职业化发展 – 上海及江苏地区口译现状调查研究. *《解放军外国语学院学报》*. [Professionalization in interpreting: Current development of interpreting in Shanghai and Jiangsu Province.] *Journal of PLA University of Foreign Languages*, 32(6), 81–85. https://d.wanfangdata.com.cn/periodical/jfjwgyxyxb200906015

Pöchhacker, F. (2009). Conference interpreting: Surveying the profession. *Translation and Interpreting Studies*, 4(2), 172-186. http//doi.org/10.1075/tis.4.2.02poc

Prandi, B. (2015). The use of CAI tools in interpreters' training: A pilot study. In *Proceedings of the Translating and the Computer 37 Conference*, Geneva: Editions Tradulex (*pp. 48-57)*. Retrieved from https://www.researchgate.net/publication/337543904

Prandi, B. (2017). Designing a Multimethod Study on the Use of CAI Tools during Simultaneous Interpreting. In *Proceedings of the 39th Conference Translating and the Computer*, London, UK (pp. 76-88). Retrieved from https://www.researchgate.net/publication/337543906

Prandi, B. (2018). An exploratory study on CAI tools in Simultaneous Interpreting: theoretical framework and stimulus validation. In Claudio Fantinuoli (Ed.), *Interpreting and technology* (pp. 28–59), Language Science Press.

Prandi, B. (2020). The use of CAI tools in interpreter training: where are we now and where do we go from here? *inTRAlinea*. Special Issue: Technology in Interpreter Education and Practice. http://www.intralinea.org/specials/article/2512 (accessed 27 July 2021)

Rütten, A. (2017). Terminology Management Tools for Conference Interpreters – Current Tools and How They Address the Specific Needs of Interpreters. In *Proceedings of the 39th Conference Translating and the Computer*, London, UK (pp. 98-103). Retrieved from https://www.asling.org/tc39/wp-content/uploads/TC39-proceedings-final-1Nov-4.20pm.pdf

Sandrelli, A. & Jerez, J. (2007). The impact of information and communication technology on interpreter training state-of-the-art and future prospects. *The Interpreter and Translator Trainer*, 1(2), 269-303. https://doi.org/10.1080/1750399X.2007.10798761

Stoll, C. (2002). Dolmetschen und neue Technologien [Interpreting and new technology]. In J. Best & S. Kalina (Eds.), *Übersetzen und Dolmetschen* (pp. 307-312). UTB Francke.

STTACAS (Science and Technology Translators Association of the Chinese Academy of Sciences) & TRANSN. (2007). 中国科院科技翻译协会 & 传神联合信息技术有限公司. 中国地区译员生存状况调查报告 [An investigation into working and living conditions of translators and interpreters in China: A report]. http://wenku.baidu.com/view/3ff59c88d0d233d4b14e6964.html (accessed Aug 15, 2021).

Tripepi Winteringham, S. (2010). The usefulness of ICTs in interpreting practice. *The Interpreters' Newsletter* 15, 87-99. https://www.researchgate.net/publication/268061028

Wang, E.M. (2005). 王恩冕. 口译在中国调查报告. 《中国翻译》 [Interpreting as a profession in China: A survey]. *Chinese Translators Journal*, 26(2), 212–159.

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=cjfd2005&filename=zgfy200502012&dbcode=cjfq

Will, M. (2015). Zur Eignung simultanfahiger Terminologiesysteme für das ¨Konferenzdolmetschen [On the Simultaneous Terminology System for Conference Interpreting]. T*rans-kom*, 8(1),179–201. http://www.trans-kom.eu

Xu, R. (2018). Corpus-based terminological preparation for simultaneous interpreting. *Interpreting*, 20(1), 29-58. http://doi/org/nfo:doi/10.1075/intp.00002.xu

About the authors:

Dr. Hongyu Wan is a faculty member of the School of English Studies at Shanghai International Studies University. She teaches consecutive interpreting and simultaneous interpreting courses. She is also a former visiting scholar and lecturer at the Middlebury Institute of International Studies at Monterey (2012-2013). Her research interests include cognitive analysis of translation and interpreting studies, CAI in interpreter education, translation and interpreting of Chinese culture and history. She has published A Cognitive Study of Sight Translation (2017), journal articles on sight translation and interpreting pedagogy.

Xiaoshu Yuan holds a Master of Arts from the School of English Studies at Shanghai International Studies University. Now, she works as a teaching assistant of the College of Foreign Languages at Shandong Agricultural University in Tai'an China. Her current research interests include the testing of interpreting, corpus-based interpreting studies and interpreting education.

Appendix

数字化时代机辅口译技术教育专项问卷

Computer-assisted Interpreting Training in the Digital Era

您好！诚邀您参与上海外国语大学机辅口译教育团队设计的问卷调查，此匿名问卷旨在了解数字化时代“机辅口译”技术应用及其教育的现状。请您根据自己的实际情况填写，问卷结果和分析将用于学术论文撰写。衷心感谢您的支持和帮助！

You are cordially invited to complete the following questionnaire designed for the study on “computer-assisted interpreting (CAI)” training proposed by the CAI research team at SISU.

This anonymous questionnaire is only for research on the user feedback of machine-assisted interpreting technology and the training of computer-assisted interpreting in your study/workplace. Analysis of the result will be used only in academic paper writing. Thank you for your support!

1. 您的性别是？
☐男　☐女

1. What is your gender?
☐Male　☐Female

2. 您的学习/工作地为

2. Where do you study/work？

3. 您目前的年级是?
☐本科　☐研一　☐研二　☐研三　☐在职

3. Describe yourself.
☐undergraduate　☐first-year postgraduate　☐second-year postgraduate　☐third-year postgraduate　☐professional interpreter

4. 您的主要口译语对是？
☐汉-英
☐汉-法/德/西/意
☐汉-日/韩/朝
☐汉-（请填写）

4. What is your primary language pair in interpreting?
☐Chinese-English
☐Chinese-Japan/Korean
☐Chinese-(please write it down)

5. 我了解机器辅助口译技术。
☐5 完全不同意 ☐4 不同意 ☐3 不一定 ☐2 同意 ☐1 完全同意

5. I am familiar with CAI.
☐5 Strongly disagree ☐4 Disagree ☐3 Neutral ☐2 Agree ☐1 Strongly agree

6. 我认为口译教育应该包括机器辅助口译技术教育。
☐5 完全不同意 ☐4 不同意 ☐3 不一定 ☐2 同意 ☐1 完全同意

6. I agree that the teaching of CAI technology should be included in interpreting education.
☐5 Strongly disagree ☐4 Disagree ☐3 Neutral ☐2 Agree ☐1 Strongly agree

7. 译前准备阶段，您使用过以下哪些工具？【多选题】
☐在线词典 / 电子词典
☐纸质词典
☐搜索引擎电子资料库
☐纸质参考资料 / 工具书
☐机器口译系统
☐翻译软件（Trados,CAT 等工具)
☐各类办公软件（如 office）/电子资料库
☐纸质学习笔记/语料积累笔记
☐术语管理软件
☐纸质词汇笔记
☐其他工具（请简述）
☐以上工具都没有使用过

7. Which tools have you used for interpreting preparation? [Multiple choice]
☐Online/electronic dictionary
☐Hard copy dictionary
☐Search engine electronic database
☐Hard copy reference/reference books
☐Machine interpreting system
☐Translation software (e.g., Trados, CAT, etc.)
☐All kinds of office software (e.g., office)/electronic database
☐Hard copy glossary/prepared materials
☐Terminology management software
☐Hard copy vocabulary notes
☐Other tools (simple description)
☐None of the above tools has been used before

8. 口译过程中，您使用过以下哪些工具？【多选题】
☐搜索引擎电子/在线词典
☐纸质词典
☐电子版术语库/资料库
☐纸质术语表/准备资料
☐语音识别软件
☐普通录音笔
☐电子笔记设备（如使用平板电脑记笔记）
☐普通笔记工具（纸+笔）
☐其他工具（请简述）

8. Which of the following tools have you used during interpreting? [Multiple choice]
☐Search engine electronic/online dictionary
☐Hard copy dictionary
☐Electronic terminology database/ data bank
☐Hard copy glossary/prepared materials
☐Speech recognition software
☐Electronic note-taking devices (e.g., tablet to take notes)
☐Common note-taking tools (Hard copy + pen)
☐Other tools (brief description)
☐None of the above tools

9. 译后总结回顾中，您使用过以下哪些工具？【多选题】
☐语音转写
☐各类办公软件(如 office)/电子资料库
☐纸质学习笔记/语料积累笔记
☐术语管理软件
☐纸质词汇笔记
☐口译自动评价系统
☐其他工具（请简述）
☐以上工具都没有使用过

9. Which of the following tools have you used for post-interpreting review? [Multiple choice]
☐Speech transcription device
☐All kinds of office software (e.g. office)/ electronic database
☐Hard copy notes
☐Terminology management software
☐Hard copy vocabulary notes
☐Automatic Evaluation System for Interpreting
☐Other tools (brief description)
☐None of the above tools

10. 您所在学校的硕士培养课程中，是否有机器辅助口译的相关内容教学？【多选题】
☐没有
☐有相关讲座／工作坊／研讨会
☐有课程相关模块
☐其他专业有

10. Have you taken any courses on CAI in the postgraduate programs in your school?
[Multiple choice]
☐No
☐We have relevant lectures/workshops/seminars
☐We have relevant modules in interpreting courses
☐Relevant courses for other majors

11. 学校或工作单位是否组织过“机器辅助口译”的相关内容学习？
☐有相关培训活动／课程，但我没有参加过
☐讲座／工作坊／研讨会上修读过相关课程
☐其他形式学习（请简述）

11. Has your school or workplace ever offered CAI training sessions?
☐There are activities/classes at school/ workplace, but I haven’t taken part in them.
☐I have attended relevant lectures/workshops/seminars.
☐Other forms of learning (brief description)

12. 您是否自主学习过“机器辅助口译”的相关内容？
☐没有
☐大致查阅过相关技术及应用系统
☐研习过相关技术及应用，了解其发展、现状及趋势
☐学习过相关软件的使用
其他形式的学习（请简述）

12. Have you ever learned "machine-assisted interpreting" on your own?
☐No
☐Generally, I looked up relevant technology and application system
☐I know its history, status quo, and defining trend.
☐I have learned how to use relevant software.
☐Other learning forms (brief description)

13. 您是否使用过机器辅助口译技术？【多选题】
☐没用过，也没听说过
☐听说过，但没有使用过
☐仅在译前／译后阶段使用过相关技术
☐在译前／译中／译后阶段均使用过相关技术

13. Have you ever used CAI technology? [Multiple choice]
☐I haven’t used or heard of it.
☐I've heard of it, but I haven't used it.
☐I’ve just used relevant technology in pre-/during/post-interpreting.
☐I’ve used relevant technology before, during, and after interpreting.

14. 您练习“机器辅助口译”技术的时长为？
☐不足 10 分钟， 仅试用
☐大于等于 120 分钟小于 400 分钟
☐大于 400 分钟

14. How long have you practiced "CAI"?
☐Less than 10 minutes, just for a try.
☐More than or equal to 120 minutes, but less than 400 minutes.
☐More than 400 minutes.

15. 根据您对机辅口译技术的使用经历，您认为技术辅助体现在：
☐对外语口音的识别
☐对数字的识别
☐对技术术语的识别
☐对文化特色词的翻译
☐对俗语谚语的翻译
☐对缩略词的识别和翻译

15. According to your experience with CAI, the technology provides the best assistance in：
☐Recognition and translation of foreign accent
☐Recognition and translation of figures
☐Recognition and translation of technical terms
☐Recognition and translation of culture-loaded terms
☐Recognition and translation of idioms/slangs
☐Recognition and translation of acronyms

16.您认为机器辅助口译技术对您口译方向性表现的促进作用如何（方向性）？
☐对英译汉方向有帮助，汉译英方向无帮助
☐对英译汉方向无帮助，汉译英方向有帮助
☐对两种方向都有帮助
☐取决于不同主题

16. Describe your opinion on how CAI technology has improved interpreting performance (Directionality)?
☐It is helpful in Chinese-English interpreting
☐It is helpful in English-Chinese interpreting
☐It is helpful in Chinese-English bi-directional interpreting.
☐It is up to domain or topics.

17.您认为机器辅助口译技术对您的口译过程的促进作用如何？
☐对口译听辨有帮助、对翻译无帮助
☐对口译听辨无帮助、对翻译有帮助
☐对口译各阶段都有帮助
☐没有帮助

17. Describe your opinion on how CAI technology has improved your interpreting performance (Interpreting process)?
☐It is helpful only in listening comprehension.
☐It is helpful only in reproduction.
☐It is helpful in all stages of interpreting.
☐It is of no help.

18. 请您对“机器辅助口译”技术对提高不同口译主题下的表现排序。
☐外交话题
☐政治话题
☐经济话题
☐科技话题
☐旅游话题
☐医疗话题
☐法律（法庭）话题
☐口语化演讲

18. Please rank the performance of CAI technology in improving the interpreting performance of different topics.
☐Foreign affairs
☐Politics
☐Economics
☐Science and technology
☐Tourism
☐Tourism
☐Law
☐Oral speech

19. 如条件允许，我愿意在口译过程中使用机器辅助口译技术。
☐5 完全不同意 ☐4 不同意 ☐3 不一定 ☐2 同意 ☐1 完全同意

19. I am willing to use CAI technology during interpreting.
☐5 Strongly disagree ☐4 Disagree ☐3 Neutral ☐2 Agree ☐1 Strongly agree

20. 您为什么愿意使用“机器辅助口译”技术？【多选题】
☐好奇，想看看相关技术究竟是什么
☐想亲自感受相关技术的实用性
☐认为“机器辅助”是未来发展的大趋势
☐认为相关技术能够提高口译实践的质量
☐其他原因

20. Why are you willing to use CAI technology? [Multiple choice]
☐I am just curious what the technology is up to.
☐I want to experience the practicality and convenience of the relevant technology
☐I believe that "machine assistance" is the trend of future development
☐I believe that relevant technologies can improve the quality of interpreting practice
☐Other reasons (brief description)

21. 机器辅助口译还提供了哪些方面的辅助？
☐语音识别缓解听辨压力
☐减轻短时记忆压力（比如数字、术语等）
☐参考译文改善口译产出
☐缓解听不懂译不出的压力
☐提高自信心
☐延长 EVS
☐其他方面辅助（请简述）
☐不认同此题，认为技术完全无法辅助口译过程

21. What other benefits do you think CAI technology provides？
☐Speech recognition reduces the pressure of listening and comprehension
☐Reducing stress of short-term memory (e.g. numbers, terminology, etc.)
☐Reference translation improves the interpreting production
☐Reduce anxiety and mental pressure
☐Improve confidence
☐Extended EVS
☐Help relieve the tension of interpreters
☐Other aspects (brief description)
☐Technology does not assist the process of interpreting at all

22.如果您不愿意使用机器辅助口译技术，是因为？【多选题】
☐无特别理由，不想尝试
☐反感相关技术公司的宣传
☐认为口译过程中不需要使用到辅助技术
☐认为口译过程中使用技术反而会影响自己口译能力发挥
☐其他原因

22. If you are reluctant to use CAI technology, what might be the reason? [Multiple choice]
☐No specific reason, I just do not want to try
☐I dislike the exaggerated marketing of relevant tech companies
☐I believe that there is no need to use assisted technology in interpreting
☐I believe that the use of technology in interpreting hinders performance
☐Other reasons (brief description)

23. 您认为在口译过程中，机器翻译可能会形成哪些干扰？【多选题】
☐分散精力
☐干扰听辨
☐影响记笔记
☐机器识别错误影响理解
☐机器误译影响口译产出
☐压力更大
☐其他干扰（请简述）
☐不认同此题，认为使用辅助技术不会干扰口译过程

23. In your opinion, which of the following could result from machine translation in interpreting? [Multiple choice]
☐Distracting the interpreter from focusing on their individual listening and analysis
☐Interfering with note-taking
☐Interfering with comprehension caused by machine recognition errors
☐Interfering with the production of interpreting caused by machine mistranslation
☐Greater stress on the interpreter
☐Other disturbances (brief description)
☐ Disagree and I believe machine-assisted will not interfere with the interpreting at all

24.您希望得到机器辅助口译方面怎样的培养？【多选题】
☐基础计算机知识、技术的培养
☐机器辅助口译相关工具、应用、软件的使用方法
☐机器辅助口译的技术原理培养
☐机器辅助口译未来发展趋势的培养
☐其他培养（请简述）

24. What kind of CAI training would you like to receive? [Multiple choice]
☐Training on basic computer knowledge and technology
☐Training on how to use relevant machine-assisted interpreting tools, applications, and software
☐Training on the technical principles of machine-assisted interpreting
☐Training on the future development trend of machine-assisted interpreting
☐Other training (brief description)

25.您觉得高校口译教学应做出哪些改变？
☐维持传统口译教学
☐开设机辅口译技术入门课程
☐将机辅口译技术引入日常课堂教学和课下练习
☐其他（请简述）____

25. What kind of changes do you think should be made in teaching interpreting in colleges and universities?
☐Maintaining traditional teaching methods of interpreting.
☐Offering course of CAI technology.
☐Introducing CAI technology into classroom teaching and after-class practice.
☐Other (brief description)____

26. 我因机器口译的相关发展而对语言服务行业（口译）前景感到焦虑。
☐5 完全不同意 ☐4 不同意 ☐3 不一定 ☐2 同意 ☐1 完全同意

26. I am anxious about the future of the language service industry due to the continuous development of computer-assisted interpreting.
☐5 Strongly disagree ☐4 Disagree ☐3 Neutral ☐2 Agree ☐1 Strongly agree

27. 考虑到目前机器口译的发展现状，如果能够重新选择，您仍愿意就读口译专业。
☐5 完全不同意 ☐4 不同意 ☐3 不一定 ☐2 同意 ☐1 完全同意

27. With the advancement of CAI, I would still choose interpreting as your major if given a second chance.
☐5 Strongly disagree ☐4 Disagree ☐3 Neutral ☐2 Agree ☐1 Strongly agree

28.您对“机器辅助口译”的主观看法或评价如何？_____

28. How do you evaluate the development CAI? _____

29.如果您有机会给“机器辅助口译”技术研发公司提出建议，您会给出哪些意见？_____

29. What advice would you give R&D people to improve CAI technology?_____

30.若您对本次调研的结果感兴趣或愿意接受后续访谈，烦请留下联系方式（QQ、微信、手机、邮件等形式均可），再次感谢您的参与和帮助。

_____

30. If you are interested in this survey's results or are willing to accept the follow-up interview, please leave your email address. Thanks for your cooperation and help.

_____