

Original Paper

An Analysis of the Application of Digital Platform-Assisted Interpretation in Scenarios of Foreign-Related Technical Communication

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Abstract

With the continuous integration and development of the global industrial chain and technological innovation system, cross-border technical exchange and cooperation have become essential links in international technological cooperation, industrial upgrading and the sharing of technical resources. Professional and efficient language-translation services provide a basic guarantee for the smooth operation of technical communication, but the traditional model of interpreting can no longer meet the demands for high frequency, many scenarios and professional development in modern technical exchanges. Artificial intelligence algorithms, large-scale professional corpora and cloud real-time computing technology have been used to build a new model of intelligent auxiliary language service, and now it is widely used in various foreign-related technical exchange scenarios, such as technical lectures, scheme negotiations, equipment debugging and technical achievement docking. The general conditions of daily life and commerce in China are not the same as those abroad; foreign technical knowledge is full of complex engineering professional terminology, strict technical logic, standardised process specifications and industry-specific discourse systems, so high professional demands are placed on the accuracy, real-time performance and situational adaptability of digital interpreting platforms.

Keywords

continuous integration, situational adaptability, platforms

Introduction

With the trend of global technological globalisation and increased cross-border industrial cooperation, foreign-related technical exchange activities have taken various forms, are frequent in interaction and

professionalisation, and cover many scenarios, such as international technical seminars, cross-border equipment installation and commissioning guidance, technical scheme demonstration and negotiation, industrial standard mutual recognition and technical talent exchange training. A language barrier has always been one of the main reasons for limited interaction between experts in different countries^[1]. Accurate and efficient language translation should be carried out to transmit the technical information correctly; otherwise, if the language expression is ambiguous or incorrect, there will be a technical misunderstanding, deviation from cooperation, and even project delays. Traditional on-site artificial interpretation has some shortcomings, such as the subjectivity of the professional match for interpreters, restrictions on the time and place of service, and limited on-site emergency response capabilities; thus, it is difficult to meet the all-weather and multi-faceted language service demands of modern large-scale and standardised foreign-related technical exchanges. In recent years, with the development of intelligent digital technology, many professional platforms for digital interpretation have been constantly enhancing their functions to offer new assistance in the area of foreign-related technical interpreting, such as voice recognition, intelligent translation, real-time conversion and text recording, etc. However, technical exchange scenarios have a high degree of professionalism, contextuality and dynamism, and the general intelligent translation mode of digital platforms is mainly oriented towards public daily life and general business scenarios^[2].

1. Difficulties in the Application of Digital Platform-Assisted Interpretation in Foreign-Related Technical Communication Scenarios

1.1 Insufficient Adaptation to Professional Technical Discourse Systems

Most of the digital interpretation platforms in the market are trained based on universal public corpora and general business corpora, and there is a lack of accumulated segmented professional technical corpora in machinery, electronics, chemical industry, new energy, etc. In providing on-site auxiliary interpretation for foreign-related technical exchanges, the platform often fails to recognise the exclusive semantic connotation of professional technical terms correctly and is prone to rigid literal translation; thus, there may be semantic deviation and distortion of the professional information. At the same time, technical discourse is also context-dependent. The same technical terms often have different interpretations and application ranges in various places within the industry or different projects^[3]. Digital Platforms do not have intelligent semantic discrimination in combination with technical scenarios, cannot dynamically adjust translation strategies according to the progress of technical exchange and themes of on-site communication, and are unable to grasp subtle semantic differences in professional technical expressions. Therefore, it is not easy for the results of digital platform-assisted interpretation to meet the high-precision information transmission demands of foreign-related technical exchanges and fully adapt to the standardised and professional discourse system in technical scenarios^[4].

1.2 Limited Adaptation to Changing Technical Exchange Scenarios

Unlike the translation of static text and fixed-script business interpretation, on-site foreign-related technical exchanges are very dynamic and spontaneous. In interactive links, such as the technical Q&A session on-site, multi-party technical discussions, temporary scheme modifications and equipment fault analysis, the language used by participants is free and random; there is no fixed sentence structure or organised communication logic, and many spontaneous technical descriptions and personal opinions will appear^[5]. The working method of digital interpretation platforms is to use fixed algorithm rules and corpus matching; thus, only standardised and pre-set language content can be translated accurately, and there are obvious adaptation deficiencies in non-standard and spontaneous technical language. In addition, the on-site environment of technical exchanges is often complex and unstable; there are many people speaking at the same time, equipment noise and environmental interference, etc., which can easily affect the accuracy of voice recognition and real-time processing by digital platforms^[6]. The platform is unable to filter out invalid interference information effectively, cannot distinguish between different types of content in multi-party interactive dialogue accurately, and often has problems such as delayed recognition, missing translation, and incorrect translation of important technical information. The problems mentioned above will prevent the digital platform from providing good auxiliary interpretation in many complex and changing situations of technical exchange and will thus reduce the overall service quality of digital auxiliary interpretation^[7].

2. Key Points for the Application of Digital Platform-Assisted Interpretation in Foreign-Related Technical Communication Scenarios

2.1 Stick to the basic idea of transmitting technical information accurately.

In the service scenario of foreign-related technical exchange, the main purpose of interpreting work is to accurately convey professional technical information, and the first rule that digital platform-assisted interpreting must always follow is the accuracy of information. Different from the general scenario of interpreting, which emphasizes communication fluency and interactive experience, technical exchange activities are closely linked to the implementation results of technical cooperation projects, the formulation of technical plans and the docking of industrial technologies. Even a small change in meaning or the loss of some information can lead to a technical misunderstanding, affect the assessment of a professional problem by technical staff, and thus hinder cross-border technical cooperation^[8]. Therefore, in the course of applying digital interpreting platforms to carry out auxiliary work, one should not focus solely on translation fluency, but rather take the accuracy of professional technical terms, the rigor of process logic and the completeness of parameter information as the core judgment basis, prioritize the accurate reproduction of core technical information, and ensure that all interpreting output can truly reflect the professional connotation of the content of technical communication^[9]. Considering that it needs to be technically accurate, moderate the fluency of language expression to balance professionalism and readability, thus providing reliable and precise

linguistic support for foreign-related technical communication^[10].

2.2 Enhance Scenario-oriented Function Adaptation and Dynamic Adjustment.

There are many different types of foreign-related technical exchanges, such as standardised technical preaching, impromptu technical negotiation and on-site technical debugging; different situations have entirely different language expression characteristics and information transmission priorities, and thus require scenario-based adaptation of the application of digital interpreting platforms. In the actual application process, one should avoid the rigid use of a single platform mode for all technical situations and, according to the characteristics of different technical exchange links and the communication frequency of these links, carry out targeted function configuration and dynamic parameter adjustment. For standardised technical preaching with fixed content and standardised expression, a professional term base and fixed translation rules can be pre-loaded on the platform to improve the efficiency and accuracy of continuous interpretation; for impromptu interactive negotiation and on-site debugging scenarios with flexible content and strong randomness, it is necessary to start the real-time correction and intelligent fuzzy matching function of the platform, dynamically adjust voice recognition sensitivity and language-switching frequency, and adapt to the flexible and changeable nature of on-site communication. Based on the whole scene and real-time conditions, it will be adjusted dynamically to meet the actual needs of foreign-related technical exchanges^[11].

2.3 Construct Human-Machine Collaborative Auxiliary Interpretation Working Mode.

Due to the limitations of technical algorithms and corpora, digital interpreting platforms do not have professional semantic understanding or situational awareness and are thus unable to carry out high-precision interpreting work independently in complex foreign-related technical exchange situations. To make good use of the digital platform-assisted interpreting system, we need to establish an orderly and regular mode of human-machine collaboration that can integrate the advantages of intelligent digital technology with professional manual interpretation^[12]. Some of the relatively simple and frequent tasks in the course of on-site service can be carried out by digital platforms, such as real-time voice recognition, initial language conversion and automatic text recording, to improve the overall efficiency of on-site language services and reduce the workload of interpreters. A professional technical interpreter will be employed to identify and correct any errors in the platform's translation, enhance the expression of technical logic, spontaneously handle ambiguous content, and confirm the accuracy of professional terms. The problems of unprofessionalism and a lack of scenario adaptation in the digital platform can be solved by the above cooperative model, and at the same time, the strengths of manual interpreters in technical semantic differentiation and on-site emergency response will be fully used to improve the overall quality, efficiency and stability of interpreting services for foreign-related technical exchanges^[13].

3. Application of Digital Platform-Assisted Interpretation in Foreign-Related Technical Communication Scenarios

3.1 Full-Process Auxiliary Application in Standardised Technical Presentation Scenarios.

Standardised technical presentations are the simplest and most frequently used types of foreign-related technical communication, covering the sharing of technical results, introduction of product ideas, explanation of industrial norms and demonstration of project plans; they have fixed content, standardised expressions, centralised professional information and a stable communication cycle. At this time, digital platform-aided interpretation services will be available all-round, constantly and uniformly. Before the start of the technical exchange, the staff can pre-load industry-specific professional term banks, project-related technical parameter vocabularies and standardised process description corpora obtained from abroad onto the digital platform, perform targeted pre-training and parameter tuning, and improve the platform's professional matching ability for the current theme of technical exchange. At the site of the technical presentation, continuous real-time voice collection and synchronous multi-language translation output will be provided, along with automatic generation of standardised text subtitles and electronic records, so that technical audiences from all over the world can obtain professional technical information accurately and completely. At the end of the activity, the platform will automatically organise and save all the materials of technical interpretation and communication, create complete technical exchange data files, provide accurate data references for future technical research and cooperation, and thus improve the standardisation and informatisation of foreign-related technical exchange work.

3.2 Dynamic Auxiliary Applications for Interactive Technical Negotiation Scenarios.

Interactive technical negotiation scenarios refer to all kinds of multi-party talks on technical problems, scheme-docking discussions, communication of technical differences and on-site issue resolution; they are essential platforms for promoting deep technical cooperation, have flexible dialogue contents, strong spontaneous performance abilities, and considerable practical value. Given the above circumstances, the main purpose of digital platform-assisted interpreting is to promptly respond, make timely corrections and accurately collect important information^[14]. Different from the continuous recognition mode of the general cases mentioned above, intermittent intelligent recognition and turn-based dialogue capture modes can be employed for technical negotiations to keep up with the speed of multi-party interactive conversations; thus, the main technical views, problem descriptions and scheme adjustment ideas spontaneously expressed by all parties can be comprehensively recorded without losing information due to fatigue from prolonged continuous recognition. If there are any unclear technical terms or new industry vocabulary that have emerged during the course of negotiations, the platform will immediately flag the ambiguous part in real time and coordinate with on-site professional interpreters to conduct secondary semantic confirmation, translation optimisation and logical sorting. A dynamic auxiliary application mode can meet the demand for flexible and varied communication in the context of technical negotiations, solve the problem of language barriers among

all parties in technical exchanges, and ensure the effective progress of technical viewpoint alignment and cooperative scheme negotiations.

3.3 Long-term Auxiliary Application in Follow-up Technical Docking Scenarios.

Foreign-related technical exchange is a continuous and periodic form of cooperation that not only includes on-site contact but also long-term follow-up technical docking work, such as remote technical guidance, post-exchange technical problem consultation, scheme optimisation and adjustment, and summary and dissemination of technical experience. Digital platform-assisted interpretation is no longer confined to the old limitations of time and place; now, full-cycle, long-term support for the subsequent technical docking link can also be provided. Digital platforms can be used for real-time voice translation and text-to-speech conversion of daily remote technical communication and online fault debugging guidance; they can also support long-term synchronous language communication among technical teams in different countries and provide continuous language support for equipment after-sales service, technical problem-solving and scheme iterative optimisation. At the same time, the platform will automatically summarise and organise all communication records, technical dialogue content and interpreting data produced in the process of technical exchange, create standardised archives of technical communication, provide accurate data support for follow-up on technical cooperation, accumulate and spread technical experience in the industry, and further expand the application value and service life cycle of digital auxiliary interpreting in foreign-related technical cooperation scenarios^[15].

Summarization

Platform-assisted interpreting is now a necessary intelligent language service tool in the digital age, and it can effectively improve the efficiency of foreign-related technical exchanges and overcome cross-border technical language barriers; thus, it has also been developing and applying widely in the field of international technical cooperation. Given that technical language has particular attributes and the environment of discussion is constantly changing, platform-assisted interpretation is still not suitable for professional adaptation and real-world application in daily work. In order to give full effect to the auxiliary service value of foreign-related technical exchanges, one should always take the accurate transmission of technical information as the foundation, be able to adapt to different situations based on scenarios, use a combination of human and machine services, and carry out targeted auxiliary interpreting work for standardized presentation, interactive negotiation and long-term docking scenarios, respectively. With the continuous development of digital language technology and the continuous enhancement of professional technical corpora, the adaptability of the situation, translation accuracy and service stability of digital platform-assisted interpreting will be further improved. In the future, the mode of digital intelligent auxiliary interpreting will be an essential intelligent support for the high-quality development of global cross-border technical exchanges, and it will continue to promote the deeper development of international technological innovation cooperation and industrial

resource sharing.

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