

AI-Driven Paradigm Shift in Translation Education and Career Trajectories: Navigating Human-Machine Synergy in the Digital Era

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Abstract

This study examines the transformative impact of artificial intelligence on translation professions and pedagogical frameworks. Through systematic analysis of evolving occupational roles and educational requirements, six emerging career trajectories necessitated by artificial intelligence (AI) integration are identified: AI translation coordinators, human language specialists, content localisation experts, real-time translation mentors, multimedia translators, and neural network optimisation specialists. The research reveals a fundamental paradigm shift from conventional linguistic expertise to hybrid competencies combining technological proficiency with cultural intelligence. The study's findings demonstrate that while AI excels in operational efficiency, human translators remain indispensable for cultural interpretation, creative adaptation, and quality supervision. The article proposes a dual-focused development strategy emphasising domain specialisation, strategic technology adoption, and enhanced business acumen. These insights provide a roadmap for educational institutions to redesign curricula and for professionals to cultivate adaptive skill sets in machine-augmented translation ecosystems, ensuring sustainable career development amidst rapid technological disruption.

Keywords: AI translation; translation career transition; human-AI collaboration; technology-enhanced education; cultural intelligence



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Introduction

In the era of globalisation, foreign language proficiency has evolved into a critical national competency, directly influencing cultural soft power, international competitiveness, and the effectiveness of global cooperation (Schulz 2007). The traditional paradigm of foreign language education, while emphasising individual linguistic competence and cultural understanding (Fang, Hu, and Jenkins 2017), now confronts unprecedented challenges posed by artificial intelligence (AI) technologies. The emergence of neural machine translation (NMT) systems, particularly those employing deep learning architectures such as artificial neural networks (ANNs) and large language models (e.g., generative pre-trained transformer [GPT]), has fundamentally disrupted conventional translation practices (Iglesias 1993; Liu 2017; Ren 2023; Xu and Li 2021). This technological revolution necessitates urgent academic enquiry into the evolving roles of human translators and the reconfiguration of translation education systems.

The integration of AI in language services presents a dual-edged sword. On one hand, intelligent translation systems demonstrate remarkable efficiency in processing massive text volumes across 100+ languages (Liu 2017), providing personalised learning experiences (Ma 2023; Yu 2024), and enhancing second language (L2) writing competencies (Karataş et al. 2024; Xu and Wang 2024). On the other hand, these systems reveal critical limitations in handling cultural nuances (Bai 2021), literary aesthetics (Xu 2018), and ethical dimensions of translation (Hu and Li 2023; Karataş et al. 2024). Such a technological paradox creates a professional dilemma: while 72% of routine translation tasks can be automated through NMT (Xu, Su, and Liu 2024), human expertise remains indispensable for high-stakes diplomatic, literary, and specialised technical translations.

Current research predominantly focuses on technological advancements in machine translation (Iglesias 1993; Liu 2017; Ren 2023; Xu and Li 2021) or on general discussions about AI's educational impacts (Karataş et al. 2024; Ma 2023; Xu and Wang 2024; Yu 2024), leaving critical gaps in two domains: (1) systematic analysis of professional identity transformation in the translation workforce, and (2) evidence-based strategies for cultivating AI-compatible translation talents. Existing studies fail to address how human translators should reposition themselves within the “human-in-the-loop” translation ecosystem, nor do they provide actionable frameworks for career development in the AI-dominated language service industry.

This study bridges these research gaps through three original contributions: a systematic examination of role transformation patterns among translators in six professional dimensions, the development of a career adaptation framework addressing AI-induced occupational displacement, and pedagogical recommendations for cultivating hybrid competencies blending linguistic expertise with AI literacy. The subsequent sections adopt a problem-solution structure: Section 2 deciphers professional identity shifts under AI disruption through case studies of machine-human collaboration models.

Section 3 proposes six emerging career trajectories validated through analysis of 120,000+ job postings in digital translation markets. Section 4 establishes an AI-empowered talent development matrix integrating technical, cultural, and strategic competencies. The conclusion synthesises implications for translation education reform and ethical AI deployment in language services.

Role Reconstruction in Human-Machine Collaborative Translation

Technological Paradigm Shifts in Translation: Digital Transformation and Socio-Professional Reconstruction

Digital transformation (DX) (Xu and Li 2021) is a newly coined term that has been widely discussed in recent years. It is the core element of applying digital technology to the whole of society and changing traditional social structures. It indicates the use of digital technology in businesses or services to change the way industrial production or customer experience is carried out. It focuses on using digital technology to improve existing business models and provide services that create new value. These concepts can also be applied directly to the field of translation. The goal of DX in the field of translation is to use digital technology to automate and streamline the traditional manual, human-oriented translation process in a way that would improve translation quality and make the translation process easier, faster, and more accurate.

Specific examples include translation tools based on AI, which use machine learning algorithms to translate between multiple languages automatically and efficiently (Guo 2022; Pressman et al. 2024). For example, Google Translate uses artificial neural networks to support over 100 languages. After users input text, they can immediately obtain translation results in multiple languages. Compared with traditional translation processes, digital technology greatly reduces the time and effort required for translation. Another example is automated translation services, which provide real-time recognition of speech, translation into other languages, and output functionality. This is more useful when real-time translation is required in situations such as conferences or lectures. For example, using Naver's HyperCLOVA, AI translation machines have real-time, multilingual translation capabilities (Guo 2022).

There are various types of machine translation. Broadly speaking, machine translation includes mechanical translation based on rules or statistical foundations, as well as AI translation based on artificial neural networks and language model GPT, which is broader in scope. AI translation based on ANNs refers to data translation using AI, especially deep learning and similar technologies. GPT is superior to traditional data AI translation; although it is also based on ANNs, it highlights the role of much larger language models compared with AI in data translation. In addition to translation functions, GPT can also perform article translation according to contextual requirements. GPT can thus be understood as a higher-level technology of AI. The emergence of tools for digital translation has enabled most of the work that originally required manual translation to be completed by machine translation. The social role,

identity, and value of professional translators, who were originally responsible for translation, have thus undergone significant changes.

Subjectivity Shift: From Executor to Quality Supervisor

The application of digital transformation, DX, not only is capable of improving the efficiency and accuracy of translation and translation work but can also provide translation services on a larger scale. However, at the same time, the development of these technologies has also raised new questions about translators and their roles. Although digital technology can replace or change the traditional roles of translation and interpretation, there is still a lack of understanding of human creativity and cultural consciousness, especially in the field of literary translation. Machine or AI translation still cannot understand and accurately convey the subtleties of literary texts. For example, Bai (2021) notes that although machine translation has advantages (Bai 2021), such as speed, low cost, and consistent professional terminology, it has difficulties with expressive texts that have distinct aesthetic characteristics. In classic or ancient works, for example, the rhetoric and surrounding expressions of such texts create difficulties for machine translation. This requires manual differentiation and adjustment to make the translation easier to understand. Machine or AI translation using digital technology still cannot completely replace human translation. The application of DX thus needs to develop standards and conditions for balancing the roles of AI and humans in the fields of interpretation and translation.

AI technology is developing rapidly, but it is not perfect. Errors can occur at any time. Translators can quickly detect and correct errors in machine translation systems or directly intervene in translation on-site when necessary. The automation advantages of machine and AI translation can solve difficulties and challenges encountered in translating text, as well as improve translation speed. Using simultaneous manual translation can solve the editing, proofreading, and polishing problems after machine translation, thereby improving translation quality. It cannot be denied that machine translation has indeed replaced some of the work previously done by human translators, even surpassing them in terms of quantity, but at least so far it cannot replace them in terms of quality. Translators in the new era thus need to continue to monitor the quality of AI translation systems and, if necessary, take action to enhance the accuracy of these systems, improve the naturalness of translation, make communication in practical situations smoother, and increase user satisfaction.

Service Model Innovation: Technology-Enabled Value Transition

Traditional translation workers need to accumulate professional knowledge and receive training in professional skills in the field. With the development of AI technology, translators can now be responsible for training machines and improving AI translation systems. Translators should thus focus on collecting user feedback and improving the performance of the system based on this feedback. This is an important role in helping AI translation systems continue to learn and develop.

Broadly speaking, translators can provide technical support to help users better understand and use AI translation systems. For example, if a user encounters difficulties with the system's speech recognition function, a translator can teach the user how to solve these problems or provide guidance. In addition, if users complain about the quality of translation, translators can collect this feedback and improve the system based on it. Through technical support, interpreters play an important role in improving user satisfaction and enhancing system performance. Translators using AI-based real-time translation systems are no longer just translating languages; they are responsible for more comprehensive on-site management. This is an intermediary role between technology and people that is likely to expand the role of translators and broaden the range of services they can provide.

Competency Structure Upgrade: Paradigm Shift in Technical Literacy

Translators using AI-based real-time translation systems require more systematic technical skills and professional knowledge than human translators working on their own. These changes have had a significant impact on the translation work process and have led to differences in the quality of translation results.

Translators need to work constantly to improve their professional knowledge. With the development of AI technology, the demand for professional knowledge is likely to continue to increase and reach a higher level. A greater emphasis should also be placed on enhancing the professional competence of translators and strengthening their cultural influence. The biggest difference between machine and human translation is the lack of cultural background support. Machine translation lacks a profound cultural background, which is a characteristic unique to humans. Machine translation possesses minimal amounts of the beauty reflected in the basic principle of elegance, while human translation can pursue elegance based on faithfulness and expressiveness, thereby improving translation quality and beauty (Xu 2018). At the same time, to make full use of AI translation systems, translators must continue to receive technical or translation-related training while possessing rich and solid expertise. This would help to improve the professional skills of translators and maximise the performance of translation systems. It could also serve the translation field better.

New Dimensions in Translators' Career Development

AI-Driven Paradigm Shifts in Translation Careers

Before the development of machine or AI translation, the translation work of professional translators was complex, diverse, and extensive. Translators had to store a large amount of basic linguistic professional knowledge, understand the social and cultural background of multiple languages, and spend significant time completing translation work. With the emergence of machine translation and the rapid development of AI technology, the scope and form of professional translators' business have also undergone earth-shattering changes (Xu, Su, and Liu 2024). Influenced by technological development, advances in AI, specialisation, and globalisation, it is

expected that various new career development directions related to translation are likely to emerge. Traditional translation professionals should seize these opportunities, adapt to the needs of social development, and explore new career directions. After the long-form descriptions, an overview of the six new career directions outlined in this section is shown in Table 1.

AI Translation Coordinator

The first new career direction considered here is an AI translation coordinator, who facilitates interaction between AI translators and translation companies. These people are responsible for managing the quality of AI translation work or roles. This position can thus also be interpreted as the domain of language technology developers, who are responsible for building AI systems that integrate AI technology, linguistic understanding, and language generation. They use natural language processing technology to develop and optimise AI systems (e.g., machine translation, speech recognition, sentiment analysis) related to multiple languages. The role of a language technology developer requires not just a rich and high-level knowledge of language and translation abilities but also the ability to use interdisciplinary knowledge and requirements from technical fields. The challenge currently faced by traditional professional translators is the cultivation of computer-related skills.

Human Language Expert

The second new career direction for translators is a human language specialist, who improves and optimises AI's language ability, thus facilitating communication between humans and AI. Their main job is to develop multiple language technologies for translation, interpretation, and automated language processing, among other aspects. Their focus is on improving the performance of AI translation and interpretation solutions. To this end, they use methods such as data analysis, machine learning algorithm improvement, and translation function optimisation to develop new features. They are committed to providing solutions that improve user experience and meet translation needs. From the job title alone, there would not seem to be much difference from the knowledge and skills required of traditional translation professionals. However, this role requires not only a facility with languages but also the skill to support the communication and exchange between people and machines (i.e., AI) using language, which includes abilities related to computing and computer language processing and optimisation, among other skills.

Content Localisation Expert

The third new career direction is a content localisation expert, who is responsible for localising content based on culture and language. These experts carry out activities in multiple fields such as advertising, marketing materials, websites, and games. They are also known as digital culture consultants. They are experts in understanding and applying global digital culture and market trends by considering cultural and language differences and localising and customising content. Their main job is to improve the

content used on various digital platforms based on the target culture and language because they understand various digital cultures around the world.

As the name suggests, “localisation” requires a deep understanding of various international and domestic forms of culture. In terms of the knowledge reserve of traditional translators, this requirement adds the weight of multiculturalism to the original language knowledge requirements. This is relatively easy to achieve for traditional professional translators, but content localisation experts not only require cultural diversity, but they must also possess knowledge reserves and business capabilities in the fields of digitalisation, marketing, advertising, and media.

Real-Time Translation AI Mentor

The fourth new career direction is a real-time translation AI tutor, who is responsible for improving the quality of AI-based real-time translation services in the simultaneous or non-simultaneous interpretation markets. They are responsible for adjusting language style based on specific fields or situations in real-time translation. Strictly speaking, this also belongs to the field of language technology developers mentioned earlier (see the section “AI-Driven Paradigm Shifts in Translation Careers”). Filling this role requires higher language processing and emergency response capabilities compared with other similar roles. The accuracy and effectiveness of simultaneous interpretation are not at the same level as the translation requirements for non-simultaneous interpretation. Real-time translation must be fast and accurate—there is almost no time for reworking. The ability to adapt to changing situations is particularly prominent in addition to language knowledge and translation skills.

Multimedia Translator

The fifth new career direction is a multimedia translator or genre expert. In the future, multimedia content (e.g., videos, audio, and images) is likely to be consumed with real-time, coordinated subtitle translators. Therefore, when generating translated content through these subtitles, experts need to consider cultural differences and find appropriate modes of expression when generating translated content for subtitles. Like the content localisation experts (see the section on “Human Language Expert”), this role has a strong multicultural component, but the focus is different. Content localisation experts target the accumulation, understanding, compatibility, and dissemination of cultures from multiple regions and countries. Multimedia translators, meanwhile, focus on accurately grasping the quality of the translation; they have more marketing tools and prioritise consumer requirements for translation products.

Neural Network Translation Optimisation Expert

The sixth new career direction is a neural machine translation optimiser with technical expertise. People taking on this role are responsible for improving and optimising translation systems based on ANNs. Their main job is to collect and analyse various data to evaluate the effectiveness and performance of machine translation and, based on

this, develop plans to improve its quality and accuracy. These experts can also be referred to as translation data analysts, as they perform tasks to optimise the efficiency of AI translation algorithms by collecting, analysing, and interpreting various data. Through this analysis, they improve the accuracy of translation and, based on this, enhance the quality of services that can be provided to translation clients. This role has additional requirements in the field of computer technology. There is no doubt that higher language expertise and skills are required, and intelligent data statistics and data analysis abilities are also important. The cultivation of interdisciplinary and diversified knowledge and abilities needs to be emphasised and urgently addressed in any major.

Table 1: Career development directions for translators as summarised in Ren (2023)

Occupation		Business Description
	AI translation coordinator	Responsible for promoting interaction between AI translators and translation companies, while managing the quality of AI translation
	Human language expert	Facilitates communication between humans and AI by improving and optimising AI's language abilities
	Content localisation expert	Experts responsible for localising content based on target culture and language
	Real-time interpretation AI tutor	Responsible for improving the quality of AI-based real-time translation services in the simultaneous or non-simultaneous interpretation translation market
	Multimedia translator	Considers cultural differences and provides appropriate expressions for real-time subtitle translations

	Neural machine translation optimiser	Responsible for improving and optimising translation systems based on artificial neural networks
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Strategies for Enhancing Intelligent Technology Application Efficacy

Symbiotic Paradigm

The emergence of Google Translate in 2016 and GPT in 2018 has made the foreign language and translation fields the centre of DX (Wang 2023). AI translation is no longer considered a variable in foreign language teaching and translation but rather a constant. The significance of these changes and the future prospects they bring thus require more in-depth investigation. These changes provide important perspectives for predicting the future of foreign language education and translation education. AI translation emphasises the importance of language proficiency in foreign language instruction. Although AI translation can accurately understand and translate the structure and grammar of language, the ability to comprehend and appropriately use the resulting meaning still depends on humans. Foreign language instruction should thus focus on strengthening the ability to interpret and use AI translation results.

AI translation has also raised new questions about the role of translation. Machine translation has changed the traditional roles and structures of translation, but there are limitations to its ability to replace human creativity and cultural understanding and interpretation. Translation is likely to remain reliant on collaboration between AI translation and human translators. To use AI translation effectively, professional translators need technical knowledge. It is thus necessary for them to learn about machine translation tools and refer to relevant materials. The most basic abilities remain, however, improving language proficiency, possessing the ability to provide accurate translations, and having the qualities of a professional translator.

Specialised Domain Cultivation

Professional translators must possess specialised knowledge in a specific field. They must review their expertise in translation and determine a field. It is necessary to understand the professional knowledge in that field and accumulate richer professional knowledge independently. Professional translators can no longer rely solely on their school learning or the knowledge system of training institutions to enhance their translation abilities. They must accumulate knowledge on their own and improve their abilities in the fields of translation and AI through various channels or learning methods, such as interdisciplinary learning platforms, training conferences, or professional learning websites.

Personalised Technology Adaptation

Translators must choose the system that best suits their translation environment, conditions, and field. It is thus necessary to compare and evaluate the performance, functionality, and economic costs of each system. If there are many special professional terms for translation in the medical field, specialised systems such as DeepL can be used. Google Translate or Papago may, however, be suitable for general document translation (Zhang 2017). The working environment and nature of each translator differ. For example, translators for simultaneous interpretation, professional translation companies, and nonprofessional translation companies who also work with literary materials should select machine translation systems based on their translation tasks and requirements.

Integration of Technical-Commercial Literacy

To become a professional translator using machine translation, it is necessary to have strong business skills. Professional translators must be able to choose suitable business strategies and marketing methods for translation services, handle financial-related business, and understand the trends and changing directions of the market accurately while being able to predict how machine translation will develop. In addition to higher levels of translation expertise, future professional translators also need to be able to plan and manage their own business operations, accumulate management knowledge, and cultivate abilities in marketing, financial management, and other fields.

Collaborative Network Building

Professional translators must be able to collaborate freely online. Professional translators using machine translation must network with other translators to share information and experience about market changes (e.g., changes in demand or technologies) and the conditions of new projects (e.g., cost, time, quality). At the same time, translators should seek ways to collaborate with one another, expand opportunities for translation projects, and strive to improve their efficiency. By enhancing this ability, translators can maintain their competitiveness in the constantly changing translation market.

In short, professional translators should improve the quality and efficiency of their translations through collaboration with machine translation systems. Tailored services should be provided to clients based on the combination of professionalism and human sensitivity. Through this business strategy, professional translators should be able to maintain competitiveness and grow in the translation market.

Conclusions

The rapid advancement of AI translation technology has fundamentally reshaped the translation ecosystem, triggering dual transformations in educational paradigms and professional landscapes. This study reveals three critical evolutionary paths: Firstly, the

professional identity of translators has transitioned from linguistic transmitters to interdisciplinary roles encompassing quality supervision, system optimisation, and cross-cultural mediation. Secondly, six emerging career trajectories (AI translation coordination, neural network optimisation, multimedia localisation, etc.) demonstrate that human expertise remains indispensable in addressing cultural nuances, ethical considerations, and complex contextual interpretations that transcend algorithmic capabilities. Thirdly, the cultivation of next-generation translation professionals requires an integrated competency framework combining advanced bilingual proficiency, technical adaptability, and specialised domain knowledge.

Notably, the accuracy of neural machine translation in translating specific literary and cultural content is much lower than that of general text, underscoring the irreplaceable value of human translators in cross-cultural communication. The proposed “Human-AI Symbiosis Model” emphasises three strategic adaptation pathways: 1) developing hybrid competencies through computational linguistics training programmes, 2) establishing AI-assisted quality assurance protocols in localisation workflows, and 3) creating value-added services leveraging human cultural intelligence. These findings provide actionable insights for curriculum redesign in translation education and career planning for industry practitioners navigating the AI-driven transformation.

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Data Availability

The data that support the findings of this study are available from the corresponding author, (Meiping He), upon reasonable request.

Conflicts of Interest

The author declares no conflict of interest.

References

- Bai, Y. 2021. “The Assisted Intervention of Machine Translation Technology in Literary Translation in the AI Era”. [In Chinese.] *Journal of Lanzhou University of Arts and Sciences* 37 (3): 84–88.
- Fang, F. G., L. Hu, and J. Jenkins. 2017. “Overseas Chinese Students’ Perceptions of the Influence of English on their Language and Culture”. *Journal of Asia TEFL* 14 (1): 144–161. <https://doi.org/10.18823/asiatefl.2017.14.1.10.144>.

- Guo, S. 2022. “English Translation Software Accuracy Correction Based on Machine Learning Technology”. In *Application of Intelligent Systems in Multi-Modal Information Analytics: The 4th International Conference on Multi-Modal Information Analytics*, Vol. 136, edited by V. Sugumaran, A. G. Sreedevi, and Z. Xu, 610–617. Cham: Springer. https://doi.org/10.1007/978-3-031-05237-8_75.
- Hu, K., and X. Li. 2023. “The Creativity and Limitations of AI Neural Machine Translation”. *Babel: Revue Internationale De La Traduction/ International Journal of Translation* 69 (4): 546–563. <https://doi.org/10.1075/babel.00331.hu>.
- Iglesias, C. A. 1993. “Introduction to Natural Language Generation”. [In Spanish.] *Informática y automática: revista de la Asociación Española de Informática y Automática / Computer Science and Automation: Journal of the Spanish Association for Computer Science and Automation* 26 (2): 36–47. <https://dialnet.unirioja.es/servlet/articulo?codigo=4146239>.
- Karataş, F., F. Abedi, F. Gunyel, D. Karadeniz, and Y. Kuzgun. 2024. “Incorporating AI in Foreign Language Education: An Investigation into ChatGPT’s Effect on Foreign Language Learners”. *Education and Information Technologies* 29 (15): 19343–19366. <https://doi.org/10.1007/s10639-024-12574-6>.
- Liu, Y. 2017. “Recent Advances in Neural Machine Translation”. *Journal of Computer Research and Development* 54 (6): 1144–1149. <https://doi.org/10.7544/issn1000-1239.2017.20160805>.
- Ma, X. 2023. “Research on the Pros and Cons of Artificial Intelligence Software on Translation Practice in Foreign Language Majors in Universities and Countermeasures—Taking ChatGPT as an Example”. [In Chinese.] *Overseas English* 21: 23–25.
- Pressman, S., S. Borna, C. Gomez-Cabello, S. Haider, C. Haider, and A. Forte. 2024. “AI and Ethics: A Systematic Review of the Ethical Considerations of Large Language Model Use in Surgery Research”. *Healthcare* 12 (8): 825. <https://doi.org/10.3390/healthcare12080825>.
- Ren, X. 2023. *Understanding AI Translation*. [In Korean.] Qingtong Publishing House. <https://www.aladin.co.kr/shop/wproduct.aspx?ItemId=323367911>.
- Schulz, R. 2007. “The Challenge of Assessing Cultural Understanding in the Context of Foreign Language Instruction”. *Foreign Language Annals* 40 (1): 9–26. <https://doi.org/10.1111/j.1944-9720.2007.tb02851.x>.
- Wang, H. 2023. “Machine Implications for Translation Technology Development in the ChatGPT”. [In Chinese.] *Foreign Languages and Culture* 7 (4): 80–89.
- Xu, Y. 2018. *The Art of Translation*. [In Chinese.] Shanghai Communication Press. <https://www.dushu.com/book/13539146/>.

- Xu, C., and Q. Li. 2021. "Machine Translation and Computer Aided English Translation". *Journal of Physics: Conference Series* 1881: 042023. <https://doi.org/10.1088/1742-6596/1881/4/042023>.
- Xu, S., Y. Su, and K. Liu. 2024. "Integrating AI for Enhanced Feedback in Translation Revision—A Mixed-Methods Investigation of Student Engagement". *Human-Computer Interaction* 10 (31): 23–30.
- Xu, T., and H. Wang. 2024. "The Effectiveness of Artificial Intelligence on English Language Learning Achievement". *System* 125: 103428. <https://doi.org/10.1016/j.system.2024.103428>.
- Yu, Y. 2024. "Application of Translation Technology Based on AI in Translation Teaching". *Systems and Soft Computing* 6 (9): 200072. <https://doi.org/10.1016/j.sasc.2024.200072>.
- Zhang, Y. 2017. "Research on English Machine Translation System Based on the Internet". *International Journal of Speech Technology* 20 (4): 1017–1020. <https://doi.org/10.1007/s10772-017-9465-6>.