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ARTIFICIAL INTELLIGENCE AND DIGITAL TRANSFORMATION
IN AUDIOVISUAL TRANSLATION: REFLECTIONS ON
KAZAKHSTAN'S PRESIDENTIAL ADDRESS

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Abstract. The accelerating digital transformation of media and the rapid deployment of artificial intelligence (AI) are reshaping audiovisual translation (AVT), creating both substantial opportunities and important challenges. This article examines the integration of AI into AVT in Kazakhstan and explicitly frames the analysis in relation to the Presidential Address “Kazakhstan in the Age of Artificial Intelligence,” which foregrounds national digitalization, institutional consolidation of innovation policy, and the coordination role of higher education and research institutions. The aim of the study is to identify prospects, limitations and policy-relevant pathways for AI-assisted AVT in Kazakhstan, and to assess how local initiatives align with the national digital agenda.

Methodologically, the research employs a mixed-methods design that combines a comparative literature review, content and discourse analysis of audiovisual materials and policy documents, and case studies of automated subtitling and dubbing pilots. The study integrates international scholarship on natural language processing and AVT with empirical examination of domestic projects, including national language models and automated speech tools.

Results reveal a dual effect of digitalization: AI substantially increases the speed, accessibility and scalability of AVT workflows, yet current systems often fail to reproduce culturally marked meanings, idiomaticity and multimodal nonverbal cues. The analysis indicates that addressing these gaps requires multimodal corpora, culturally informed algorithms, ethical audit mechanisms and interdisciplinary training that reconceptualizes the translator as editor, curator and quality controller.

This work contributes an interdisciplinary framework linking political-strategic discourse and linguistic practice and offers actionable recommendations for curriculum modernization, technology deployment and policy design. Practically, the findings support capacity building in higher education, industry and public institutions to implement AI in AVT while safeguarding Kazakhstan's linguistic and cultural heritage.

Keywords: audiovisual translation, artificial intelligence, digital transformation, machine translation, subtitling, dubbing, national identity, culturally specific elements, multimodal communication, education and training of specialists

Introduction

The contemporary world is undergoing profound transformations driven by the rapid advancement of digital technologies and the implementation of artificial intelligence (AI) across key domains of the economy, science, and culture. At present, nearly all countries worldwide are actively transitioning toward the extensive use of AI technologies, which contributes to their comprehensive development and strengthens their positions in the global scientific and technological arena. In this context, the Republic of Kazakhstan is also demonstrating a firm commitment to keeping pace with global trends by taking deliberate steps toward integrating AI into all critical spheres of life. A compelling confirmation of this commitment is found in the recent Presidential Address, which places particular emphasis on the strategic role of digitalization and AI integration in national development.

In the Presidential Address of the Republic of Kazakhstan, “Kazakhstan in the Age of Artificial Intelligence: Current Challenges and Their Solutions Through Digital Transformation,” special attention is devoted to the issues of digitalization, modernization of education and scientific research, as well as the necessity of integrating AI into diverse sectors [1]. This strategic direction defines a new vector of national development, in which the humanities occupy a position no less significant than technological and economic fields.

In his Address, the Head of State underscored the need for institutional reinforcement of innovation policy, noting that responsibility for it should be transferred to the Ministry of Science and Higher Education. Together with the Academy of Sciences, this institution, according to the President, must actively coordinate the work of research institutes and universities, while also expanding the opportunities of higher education institutions focusing on AI development [1]. This indicates that the extent of opportunities provided is directly related to the readiness of the academic community and students to actively integrate AI technologies into both everyday academic practices and research activities.

Artificial intelligence has had a significant impact on virtually all areas of the modern educational system, encompassing a wide range of disciplines – from technical and natural sciences to the humanities, including linguistics. As Steven

Jobs, one of the founders of Apple Inc., once stated: “Technology alone is not enough. It is technology married with liberal arts, married with the humanities, that yields us the results that make our hearts sing” [2].

In the context of digitalization, the humanities are striving to adapt to ongoing changes by attempting to enhance their status and structure their body of knowledge after the model of the natural sciences – often at the expense of their own distinctiveness. This adaptation frequently involves employing a formalized language and adopting methodologies typical of the natural and technical sciences. At present, methodological exchange across disciplines has led to the emergence of interdisciplinarity. Despite its inherent contradictions, interdisciplinarity may foster the generation of new and relevant findings, as well as the development of previously non-existent fields such as cognitive science or digital humanities.

One of the pressing challenges at the intersection of linguistics, cultural studies, and digital technologies is the integration of AI into the field of audiovisual translation. The choice of audiovisual translation as the subject of this study is determined by its particular dynamism and relevance in the context of digital transformation. Unlike traditional forms of translation, audiovisual translation combines multiple dimensions: verbal text, visual imagery, sound accompaniment, and cultural context. This multilayered nature makes it especially receptive to the implementation of digital technologies and artificial intelligence.

It is noteworthy that audiovisual translation, as an independent branch of translation studies, took shape in the same historical period during which AI technologies began to actively develop. At the turn of the 20th and 21st centuries, with the rise of digital media and the creation of the first computer-based machine translation systems, audiovisual translation acquired the status of a distinct area of research and practice. Thus, it can be argued that audiovisual translation and artificial intelligence have developed in parallel, exerting mutual influence on one another: technological advances stimulated new formats of translation, while the needs of audiovisual communication facilitated the refinement of AI algorithms.

The origins of analyzing the interrelation between linguistics and AI date back to the late 1960s, when the first systematic attempts were made to explore this interaction [3]. Further development of the field was consolidated in the works of Yu and Deng [4], who examined the early stages of applying AI technologies in linguistics.

The integration of artificial intelligence into the fields of linguistics and audiovisual translation has become a subject of intensive academic inquiry especially over the past few decades. At the international level, the most significant contributions have been made by scholars working within the framework of Natural Language Processing (NLP). For instance, James H. Martin and D. Jurafsky view language as a key domain for applying machine learning methods and deep neural networks, emphasizing the relationship between linguistic structures and computational algorithms [5].

In the sphere of audiovisual translation, the theoretical framework is shaped

by the works of D. Díaz Cintas and A. Remael [6], who view AVT as one of the most dynamically developing areas of translation studies, as well as by the research of K. Floros [7], who analyze the impact of digital technologies and sociocultural factors on translation practice.

In the Kazakhstani context particular importance is attached to the research of A. G. Kaliyeva and Zh. Zhaparova [8], devoted to the features and major problems of audiovisual translation in the Kazakh language context. The authors illustrate how AVT influences the formation of cultural identity and language development. It is also important to highlight the works of B. Borankulova and her colleagues [9], who address issues of subtitling, dubbing, and the translation of specialized terminology.

Today, audiovisual translation demonstrates some of the most visible results of artificial intelligence integration: automatic subtitle generation, real-time simultaneous interpreting, and the use of neural networks for dubbing and voice-over. All these innovations turn the field of audiovisual translation into a key testing ground for the development and implementation of cutting-edge digital solutions.

For instance, a notable case in Kazakhstan is the experience of the Institute of Smart Systems and Artificial Intelligence (ISSAI, Nazarbayev University), which implements projects aimed at developing Kazakh-language models (KazLLM) and digital tools for speech recognition, machine translation, and multimodal communication.

Recently, a group of young scholars from Nazarbayev University developed the country's first fundamental speech model tailored to the needs of both the local and global market. This innovation, introduced through the Soyle App, is designed to enhance multilingual communication within Kazakhstan and beyond. In addition, the Institute of Smart Systems and Artificial Intelligence (ISSAI) at Nazarbayev University has presented KAZ-LLM – a large Kazakh language model adapted to the country's unique multilingual and multicultural context. It has been developed for Kazakh, Russian, and English, with additional support for Turkish, thus helping to bridge language gaps and advance generative AI for low-resource languages, including Kazakh [10].

Taken together, these works form an important foundation for understanding how artificial intelligence can be integrated into audiovisual translation processes aimed at improving the quality and accessibility of translated content.

Thus, the aim of this article is to examine the integration of AI technologies into the practice of audiovisual translation within the framework of digital transformation tasks outlined in the Presidential Address of the Republic of Kazakhstan. The study seeks to identify both the prospects and the limitations of AI use in translation practice, as well as to explore the possibilities for integrating these technologies into Kazakhstan's academic and cultural context.

The scholarly novelty of this work lies in linking the political and strategic discourse of Kazakhstan's digital transformation with the linguistic analysis

of AI integration in audiovisual translation. The practical significance of the research is found in its applicability across several interconnected areas. First, the results may serve as a theoretical and methodological foundation for developing national strategies of digitalization in the humanities, where a central aspect is the integration of modern technologies – including artificial intelligence – into the processes of analyzing, preserving, and disseminating cultural and linguistic heritage. Second, the findings are valuable for the modernization of educational programs: they make it possible to design curricula that prepare a new generation of specialists who combine traditional linguistic knowledge with contemporary digital competencies. This approach not only meets the demands of the modern labor market but also contributes to the formation of human capital capable of ensuring the sustainable development of national science and education in the context of global digital transformation.

Materials and methods

This study employs a mixed methodological approach that combines theoretical analysis and practical case studies to examine the digital transformation and the integration of artificial intelligence (AI) into audiovisual translation (AVT) within the framework of the President of Kazakhstan's Address. The methodological foundation of the research is based on contemporary works in translation theory and AI studies.

The methodological toolkit of the study includes content analysis of audiovisual materials and policy documents, discourse analysis to identify transformations in translation practices under the influence of AI, as well as a comparative analysis of traditional and AI-assisted translation strategies. On the applied level, case studies related to automated subtitling and dubbing are employed, allowing researchers to reveal both the prospects and limitations of these technologies in the context of Kazakhstan.

Results and discussion

The global scientific community is actively engaged in the study of artificial intelligence, including its interaction with linguistics and its use as a tool for analyzing language processes. According to the Web of Science Core Collection, between 1974 and 2024 more than 1,478 articles were published in 2023 alone, with an additional 546 articles appearing between January and March 2024. This demonstrates a rapid growth of scholarly interest in the topic [11]. Kazakhstan is no exception in this regard: the number of research articles published in peer-reviewed journals focusing on various aspects of artificial intelligence has steadily increased. In 2023, the number of such publications rose to 1,016 [12]. Thus, Kazakhstani scholarship is gradually integrating into global research trends.

In light of the recent Presidential Address, the task of systematically and purposefully studying the potential of artificial intelligence in linguistics becomes particularly urgent. Such research would strengthen the country's position in

the international scientific space and create conditions for the introduction of advanced technologies into educational and research practices.

Digital technologies are reshaping the audiovisual industry – scriptwriting, sound production, image creation, costume design, special effects, filming, and editing — as well as distribution and screening. They have given rise to innovative practices such as audio description, surtitles, live subtitling, and audio subtitles. New technologies and devices (streaming services, video and television on demand, podcasting, mobile phones, and portable video players) continue to exert a strong influence on broadcasting and audiences. They create new demands and needs, for instance, new formats like very short films lasting just a few minutes or mobile episodes — clips for mobile phones of one or two minutes in length.

At the same time, two parallel but contrasting processes are taking place. On the one hand, technology offers more services and higher-quality programs. The diversity of television channels – cable, satellite, network, relay-based (pay TV, cross-border and local broadcasting, specialized thematic channels on history, sports, finance, cartoons, etc.) – marks the decline of a centralized media model, provoking a shift from mass broadcasting to targeted niche audiences. On the other hand, global audiences are becoming increasingly interconnected through widely accessible videos on YouTube and films available online.

The audiovisual industry strives to provide viewers with immediate access to new episodes of popular series or newly released films. Since the late 1980s, the phenomenon of amateur subtitling and dubbing has grown significantly. The quality of amateur work depends on the translator’s understanding of the source and their familiarity with free or open-source software used to create and embed subtitles.

Amateur subtitles typically do not follow strict professional standards: limits on the number of lines per subtitle or characters per line may be ignored; font or size can be larger; display speed may be faster than in professional subtitles; subtitles may appear at the top or bottom of the screen; and additional comments may be included. Amateurs often aim for literal translation, staying closer to the original text, while using more words and reducing the time available for reading – thereby breaking conventional norms that govern professional subtitling. These practices in amateur subtitling and dubbing not only challenge existing conventions but also transform the very process of audiovisual translation (AVT).

Finally, automation is reshaping workflows. Digitization improves sound quality and enables the analysis and synthesis of actors’ speech for dubbing. By combining different software tools, it has become possible to automate the creation of foreign-language subtitles. These changes prompt a reconsideration of long-standing concepts in translation studies, such as text, authorship, meaning, unit of translation, translation strategy, and the relationship between written and spoken discourse.

The use of automated subtitling, speech recognition systems, and machine

dubbing tools significantly enhances the speed and accessibility of translation processes. On the one hand, these instruments foster the democratization of access to information, the expansion of cultural dialogues, and the integration of minority languages – including Kazakh – into the global media space.

This study attempts to provide a comparative overview of the processes of integrating artificial intelligence into the field of audiovisual translation in Kazakhstan. Such an approach makes it possible to identify the specific features of domestic developments and practices, as well as to correlate them with global trends in the digital transformation of translation.

The table 1 below presents examples of software and technologies used in the Kazakhstani context for automating subtitling, dubbing, and other forms of audiovisual translation.

Table 1. Software and Technologies for Audiovisual Translation in Kazakhstan

<i>№</i>	<i>Project/Source</i>	<i>Application</i>	<i>Technologies</i>	<i>Advantages</i>	<i>Limitations</i>
1	Kazakh Voice Over Generator (Maestra.ai)	Kazakh voice-over, video dubbing	Speech synthesis	Kazakh language support, ease of use	Limited voice styles
2	Kazakh Subtitle Generator (SubtitleWhisper, Vidy.ai)	Automatic subtitles in Kazakh	Speech-to-text, NMT	Fast subtitle creation	Manual editing required
3	Kazakh Dubbing (Wavel AI, GoPhrazy)	Automatic dubbing into Kazakh	Speech synthesis + NMT	Faster content localization	Limited emotional quality
4	3D Avatar for Sign Language (Kazakhstan)	Children’s cartoons, TV	AI avatar, sign language	Inclusion for hearing-impaired children	Technology at pilot stage
5	BeeBERT (Beeline KZ)	OTT services, translation, NLP	Kazakh-language LLM	National language support, foundation for future apps	Requires large-scale media adoption

Overall, the analysis of local initiatives demonstrates that Kazakhstan has already established a significant foundation for the integration of artificial intelligence into audiovisual translation and related areas of media production. The development of tools for automatic dubbing, subtitling, and voiceover in Kazakh, the introduction of 3D avatars for sign-language translation, as well as the creation of the national language model BeeBERT, reflect not only technological progress but also a strategic orientation toward preserving and promoting the Kazakh language in the digital environment. In other words, the automation of

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subtitling, real-time dubbing, and the development of local AI platforms prove that Kazakhstan is moving in line with global trends while simultaneously strengthening its own digital infrastructure and forming new research directions at the intersection of linguistics, artificial intelligence, and cognitive science. This process stimulates the academic community to generate new knowledge and innovations.

Thus, these examples are largely consistent with the tasks outlined by President Kassym-Jomart Tokayev in his latest Address regarding the necessity of digitalization.

Modern neural machine translation models significantly improve the quality of audiovisual translation by analyzing context and considering syntactic and semantic connections, thereby allowing for a more accurate transfer of the original meaning. In addition, AI integration provides economic efficiency: the automation of routine operations reduces costs and allows translators to focus on the creative tasks of adapting dialogues and culturally specific elements. This is especially important for streaming platforms such as Netflix, Amazon Prime, and YouTube, which work with vast volumes of multimedia content.

At the same time, AI systems are capable of processing enormous amounts of multimedia data in the shortest possible time, making them indispensable for the streaming industry. The versatility of these technologies is evident in their adaptability to various forms of media production — from feature films and video games to educational courses and advertising materials.

However, such rapid integration of digital technologies into audiovisual translation also raises a number of issues and challenges, particularly those related to the quality of conveying culturally specific information and stylistic nuance.

A critical perspective on the role of AI in linguistics is presented in the works of E. Bender, who highlights the limitations of large language models (LLMs) in conveying semantically and culturally marked information [13]. Professor Bender's studies emphasize the necessity of contextual interpretation and the preservation of ethnocultural components when using AI technologies in translation. This aspect is of particular importance in multilingual societies and culturally specific contexts, such as that of the Kazakh language.

Among Kazakhstani scholars who have contributed to the study of this issue, one can highlight Doctor of Philological Sciences and Professor at Ablai Khan University of International Relations and World Languages, V.U. Makhpirov. In his article "Problems of Translating Audiovisual Texts", he examines the views of Kazakhstani scholars who have addressed film translation and provides a comparative analysis of translating a passage from the educational animated series *Dora the Explorer* [14]. His study contributes to the development of both theoretical and practical aspects of audiovisual translation in Kazakhstan, reflecting the specific features and future prospects of this field in the country.

It is important to acknowledge the contribution of domestic scholarship in audiovisual translation, particularly the work of Kazakhstani scholars who

have recently undertaken research on the translation of Disney animated films. S. Nurgaliyeva et al. conducted a study seeking to address a significant gap in audiovisual translation (AVT) research by examining the adaptations of popular animated films for Kazakh-speaking audiences. Unlike previous studies, which have predominantly focused on European languages, their research highlights how translation practices influence both cultural identity and linguistic development within the Kazakhstani context [15].

Taken together, these works provide an important foundation for understanding how artificial intelligence can be integrated into audiovisual translation processes aimed at improving the quality and accessibility of translated content, while at the same time reflecting a strategic orientation toward building a local AI infrastructure capable of meeting the needs of national culture and science.

Thus, the discussion of the results demonstrates the dual effect of digitalization: on the one hand, it opens up new horizons for translation and media communication; on the other hand, it reinforces the need for the creative and critical involvement of the human translator, without which it is impossible to achieve high-quality translation.

The ongoing digital transformation and the introduction of artificial intelligence technologies into the field of audiovisual translation have led to a radical shift in the role of the translator. Whereas previously their work was primarily limited to the direct execution of translation, today the emphasis is shifting towards the functions of editor, curator, and quality controller – someone capable of refining the automated output and adapting it to cultural and communicative contexts. The translator thus becomes not only an executor, but also a mediator between machine translation and the end user, ensuring a balance between technological efficiency and the preservation of culturally significant meanings.

In this context, the prospects for training a new type of specialist with interdisciplinary competencies become particularly relevant. The future translator must possess not only linguistic and cultural knowledge, but also a solid foundation in digital technologies, machine learning, and multimedia formats. Such a synthesis of skills will help develop professionals capable of managing the complex processes of AI integration into audiovisual translation and of responding to the challenges outlined in the Address of the President of the Republic of Kazakhstan, which stresses the need to prepare experts oriented towards the country's innovative development.

Conclusion

The study confirms that the integration of artificial intelligence technologies into audiovisual translation is not merely a technical innovation, but a systemic factor reshaping the very paradigm of translation practice. Translation is no longer confined to the binary process of “original-translation,” but emerges as

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a multilayered phenomenon that encompasses human-machine interaction, the integration of linguistic and algorithmic strategies, and the need to reconceptualize traditional categories such as equivalence and adequacy.

Particular importance is attached to the adaptation of technologies to culturally specific contexts. For Kazakhstan, this entails preserving national identity and ethnocultural realities within multimedia content. Addressing this challenge requires the development of specialized algorithms, multimodal corpora, and ethical standards capable of ensuring a balance between automation and cultural authenticity.

The practical significance of the study lies in its potential to inform the design of educational and professional programs for training a new generation of translators. Such specialists must combine humanistic knowledge with digital skills and competencies in working with AI. In Kazakhstan, this aligns directly with the national digitalization strategy and the broader task of preparing human resources for innovative development.

Future research perspectives include the creation of comprehensive models of human–algorithm interaction, the analysis of ethical and epistemological constraints of AI use in the humanities, and the exploration of culturally specific challenges in the automated processing of texts and audiovisual materials.

Ultimately, translation in the age of artificial intelligence emerges as an interdisciplinary domain that brings together linguistics, cognitive science, cultural studies, computer science, and the philosophy of science. This synthesis opens up new horizons for translation studies and enhances both their academic and practical relevance in the digital era.

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**АУДИОВИЗУАЛДЫ АУДАРМАДАҒЫ ЦИФРЛЫҚ
ТРАНСФОРМАЦИЯ ЖӘНЕ ЖАСАНДЫ ИНТЕЛЛЕКТ:
ҚАЗАҚСТАН РЕСПУБЛИКАСЫ ПРЕЗИДЕНТІНІҢ
ЖОЛДАУЫНДАҒЫ ТАПСЫРМАЛАРДЫҢ КӨРІНІСІ**

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Аңдатпа. Медиа саласындағы цифрлық трансформацияның жеделдеуі және жасанды интеллект (ЖИ) технологияларының қарқынды енгізілуі аудиовизуалды аударма (АВА) саласын түбегейлі өзгертіп, жаңа мүмкіндіктермен қатар бірқатар сын-қатерлерді де туындатуда. Бұл мақалада Қазақстандағы АВА-ға ЖИ-ді интеграциялау қарастырылып, оның Президенттің «Жасанды интеллект дәуіріндегі Қазақстан» Жолдауымен байланысы талданады. Жолдауда ұлттық цифрландырудың басымдықтары, инновациялық саясаттың институционализациясы және жоғары оқу орындары мен зерттеу орталықтарының үйлестіруші рөлі атап өтілген. Зерттеудің мақсаты – Қазақстанда ЖИ кірістірілген АВА-ның мүмкіндіктері мен шектеулерін анықтау, сондай-ақ жергілікті бастамалардың ұлттық цифрландыру стратегиясына сәйкестігін бағалау.

Әдіснамалық тұрғыдан зерттеу аралас әдісті қолданады: әдебиеттерге салыстырмалы шолу, аудиовизуалды материалдар мен бағдарламалық құжаттарға контент- және дискурс-талдау, автоматтандырылған субтитрлеу мен дубляжға арналған жобалардың кейс-стадилері пайдаланылды. Талдау табиғи тілдерді өңдеу, АВА бойынша халықаралық еңбектерді, ұлттық тілдік модельдер мен сөйлеуді тану жүйелерін зерттеумен ұштастырады.

Зерттеу нәтижелері цифрландырудың қосарлы әсерін көрсетеді: бір жағынан, ЖИ аударма үдерістерінің жылдамдығын, қолжетімділігін және ауқымдылығын арттырады, екінші жағынан, қазіргі жүйелер мәдени-спецификалық мәндер мен идиомаларды, сондай-ақ вербалды емес элементтерді толық жеткізе алмайды. Бұл мәселені шешу үшін мультимодалды корпустар, мәдени тұрғыдан бейімделген алгоритмдер, этикалық стандарттар және пәнаралық мамандарды даярлау қажет. Мұндай жағдайда аудармашы редактор, куратор және сапа бақылаушысы рөлінде қайта қарастырылады.

Зерттеудің ғылыми құндылығы – саяси-стратегиялық дискурсты лингвистикалық тәжірибемен байланыстыратын пәнаралық әдістемелік негіз ұсынады. Практикалық маңыздылығы – білім беру бағдарламаларын жаңғыртуға, технологияларды енгізуге және цифрлық әрі гуманитарлық құзыреттерді біріктіре алатын мамандарды даярлауға бағытталған ұсыныстар береді. Бұл тұжырымдар Қазақстан үшін ерекше өзекті, себебі ЖИ-ды АВА-ға енгізу мәдени мұраны сақтауға және ұлттық цифрлық инфрақұрылымды дамытуға ықпал етеді.

Тірек сөздер: аудиовизуалды аударма, жасанды интеллект, цифрлық трансформация, машиналық аударма, субтитрлеу, дубляж, ұлттық бірегейлік, мәдени-спецификалық элементтер, мультимодалды коммуникация, білім беру және мамандарды даярлау

**ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ И ЦИФРОВАЯ
ТРАНСФОРМАЦИЯ В АУДИОВИЗУАЛЬНОМ ПЕРЕВОДЕ:
ОТРАЖЕНИЕ ЗАДАЧ ПОСЛАНИЯ ПРЕЗИДЕНТА РЕСПУБЛИКИ
КАЗАХСТАН**

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Аннотация. Ускоряющаяся цифровая трансформация медиа и стремительное внедрение технологий искусственного интеллекта (ИИ) радикально меняют сферу аудиовизуального перевода (АВП), открывая новые возможности и одновременно создавая ряд вызовов. В данной статье рассматривается интеграция ИИ в АВП в Казахстане, а также анализируется её соотнесённость с Посланием Президента «Казахстан в эпоху искусственного интеллекта», в котором обозначены задачи национальной цифровизации, институционализации инновационной политики и координационная роль вузов и исследовательских центров. Цель исследования заключается в выявлении перспектив, ограничений и политически значимых направлений развития АВП с применением ИИ в Казахстане, а также в оценке того, насколько локальные инициативы соответствуют национальной цифровой стратегии.

Методологически исследование основано на смешанном подходе, включающем сравнительный обзор литературы, контент- и дискурс-анализ аудиовизуальных материалов и программных документов, а также кейс-стади проектов по автоматическому субтитрованию и дубляжу. Анализ сочетает международные исследования в области обработки естественного языка и АВП с изучением отечественных разработок, включая национальные языковые модели и системы распознавания речи.

Результаты показывают двойной эффект цифровизации: с одной стороны, ИИ значительно повышает скорость, доступность и масштабируемость переводческих процессов, с другой — современные системы всё ещё не способны в полной мере передавать культурно-специфические значения, идиоматику и невербальные элементы. Для решения этих проблем необходимы мультимодальные корпуса, культурно-ориентированные алгоритмы, этические стандарты и междисциплинарная подготовка специалистов, в рамках которой переводчик переосмыляется как редактор, куратор и контролёр качества.

Научная ценность исследования заключается в предложении

междисциплинарной рамки, связывающей политико-стратегический дискурс с лингвистической практикой. Практическая значимость работы проявляется в рекомендациях для модернизации учебных программ, внедрения технологий и разработки политики, обеспечивающей подготовку кадров, способных совмещать цифровые и гуманитарные компетенции. Полученные выводы особенно важны для Казахстана, где применение ИИ в АВП может способствовать сохранению культурного наследия и развитию национальной цифровой инфраструктуры.

Ключевые слова: аудиовизуальный перевод, искусственный интеллект, цифровая трансформация, машинный перевод, субтитрование, дубляж, национальная идентичность, культурно-специфические элементы, мультимодальная коммуникация, образование и подготовка специалистов

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