

REPRESENTATION OF NATIONAL AND CULTURAL FEATURES IN ARTIFICIAL INTELLIGENCE-BASED TRANSLATION

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Abstract

This paper examines the representation of national and cultural features in translations produced with the help of artificial intelligence. It discusses the capabilities of modern neural machine translation systems, focusing on their advantages in terms of speed and terminological consistency, as well as the challenges they face when translating culturally specific words and expressions, including cultural realia, phraseological units, proverbs, and words with connotative meanings. Attention is paid to the difficulties that arise in translating culturally specific elements between English and Uzbek. The paper also considers possible approaches to improving translation quality, including hybrid translation models based on cooperation between artificial intelligence and human translators, the development of culturally informed dictionaries and databases, and the creation of high-quality parallel corpora for the Uzbek language.

Keywords: artificial intelligence, machine translation, national and cultural features, translation, cultural realia, phraseological units, connotative meaning, Uzbek language, English language.

Introduction

In recent years, the rapid development of artificial intelligence technologies has had a significant impact on the field of translation studies. Machine translation systems such as Google Translate and DeepL, as well as large language models such as ChatGPT and Claude, are increasingly being used to translate texts from one language into another. These technologies have made the translation process considerably faster and more convenient in education, science, business, and everyday communication. At the same time, the quality of translation cannot be determined solely by the accurate transfer of lexical meaning. Every language reflects the history, traditions, lifestyle, worldview, and values of the people who speak it. Therefore, preserving national and cultural meaning is an important requirement in translation. This is particularly challenging when translating culturally specific words and expressions, where artificial intelligence systems may have difficulty conveying the full meaning and cultural context of the original text.

National and cultural features can be understood as linguistic units that reflect the history, traditions, lifestyle, worldview, and values of a particular nation. When translating such units, it is important to consider not only their lexical meaning but also the cultural information they convey.

These features can be conditionally divided into the following groups:

Lexical units with national and cultural meaning are culturally specific concepts that do not have direct equivalents in another language. For example, the Uzbek words *sarpo*, *kelin salom*, and *hashar* refer to traditions and forms of social interaction. Translating them with a single word may result in the loss of part of their original cultural meaning.

Cultural realia include names of national foods, clothing, ceremonies, and objects associated with everyday life. Words such as *plov*, *adras*, and *sumalak* refer not only to foods or objects but also carry information about their preparation, ceremonial significance, or seasonal associations. Therefore, transliteration or descriptive translation is often appropriate when translating such terms.

The meaning of Phraseological units and proverbs does not necessarily correspond to the sum of the meanings of their individual words. For example, the Uzbek expression “*boshi osmonga yetdi*” literally refers to someone’s head reaching the sky, but its actual meaning is “*to become extremely happy*.” A word-for-word translation may therefore distort the intended meaning.

Words with connotative meaning referring to the same object or phenomenon may have different emotional or evaluative associations in different cultures. For example, in Uzbek, *chehra* generally has a positive and pleasant connotation, whereas *bashara* may carry a negative or sarcastic connotation. Preserving such subtle distinctions is important for maintaining the overall tone and expressive effect of a translation.

Capabilities of Artificial Intelligence in Translation

Modern neural machine translation systems operate on large amounts of bilingual data and generate translation options based on patterns learned from existing language models. Their main advantages include speed and efficiency.

The major benefits of using artificial intelligence in translation include:

- translating large volumes of text within a short period of time;
- maintaining terminological consistency in scientific, technical, and other specialized texts;
- preparing an initial translation draft for the translator;
- saving time when working with large amounts of textual material.

Combining artificial intelligence with human post-editing can be an effective approach. In this model, artificial intelligence prepares the initial translation, while a professional translator reviews and edits the text from linguistic, stylistic, and cultural perspectives.

Challenges in Translating National and Cultural Meaning

One of the main challenges of artificial intelligence-based translation is understanding the cultural meaning behind a word or expression and expressing that meaning naturally in another language.

Several difficulties may arise in this process:

- misinterpretation of polysemous words;
- replacement of cultural realia with similar but not fully equivalent concepts from another culture;
- literal translation of phraseological expressions;
- loss of the emotional and artistic effect of the original text;
- the influence of languages with greater linguistic resources, which may lead to the simplification of culturally specific elements in other languages.

Preserving the author's style, imagery, symbolic meanings, and emotional tone is particularly challenging in literary texts. For this reason, artificial intelligence-based translation can be more effective when it is used as an assisting tool for human translators rather than as a complete substitute for them.

The English–Uzbek Language Pair

English and Uzbek have developed within different historical and cultural environments. As a result, each language contains numerous words and expressions that either have no full equivalent in the other language or can only be partially matched. These include names of traditional foods, clothing, ceremonies, holidays, and occupations. In such cases, artificial intelligence systems generally attempt to transliterate the original term, provide a descriptive translation, or select the closest available equivalent. However, the selected option may not always convey the complete cultural meaning of the source text. Therefore, culturally specific elements require particular attention in English–Uzbek translation.

Possible Solutions

Several approaches can be considered to improve the preservation of national and cultural features in artificial intelligence-based translation.

First, a hybrid translation model can be used. In this approach, artificial intelligence produces an initial translation, while a qualified translator subsequently edits the text in terms of meaning, style, and cultural appropriateness.

Second, it is important to develop dictionaries and specialized databases containing cultural information. Databases and corpora that include cultural realia, phraseological

expressions, proverbs, and nationally specific concepts can contribute to improving the quality of machine translation.

Third, further development of systems capable of taking broader context into account is necessary. Considering the genre, purpose, and target audience of a text can contribute to more appropriate translation choices.

Finally, the development of high-quality parallel corpora for relatively low-resource languages such as Uzbek should be considered an important task. Expanding such linguistic resources may contribute to improving the performance of artificial intelligence systems in Uzbek-language translation.

Conclusion

Artificial intelligence has created significant opportunities for making the translation process faster and more efficient. However, human translators continue to play an important role in accurately and naturally conveying national and cultural features.

In translation, transferring the lexical meaning of words alone is not sufficient. Cultural realia, phraseological expressions, emotional connotations, and broader cultural context must also be preserved. From this perspective, artificial intelligence can be regarded not as a replacement for human translators, but as a tool that expands their capabilities.

Effective translation therefore depends on the combination of technological efficiency and human understanding of language and culture.

References

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