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**MACHINE TRANSLATION VS. HUMAN TRANSLATION:
A LINGUISTIC EVALUATION
ABSTRACT**

This article compares machine translation (MT)—automated translation using artificial intelligence—with human translation across literary, technical, and conversational texts. It analyzes errors in syntax, culture, and idioms, and explores hybrid models combining MT with human editing. Findings highlight MT's progress but affirm the essential role of humans in nuanced translation.

Key words: Linguistics, translation, linguistic accuracy, hybrid translation models, cultural nuance

Maşın tərcüməsi və İnsan tərcüməsi: linqvistik qiymətləndirmə.
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Xülasə

Bu məqalə süni intellektlə həyata keçirilən avtomatlaşdırılmış tərcümə üsulu olan maşın tərcüməsini (MT) ədəbi, texniki və danışiq mətnləri üzrə insan tərcüməsi ilə müqayisə edir. Sintaksis, mədəniyyət və idiomla sahəsindəki səhvləri təhlil edir və MT-nin insan redaktəsi ilə birləşdirildiyi hibrid modelləri araşdırır. Nəticələr MT-nin inkişafını göstərsə də, mənalı və incə tərcümə üçün insan amilinin həlledici rolunu təsdiqləyir.

Açar sözlər: Linqvistika, tərcümə, dil dəqiqliyi, hibrid tərcümə modelləri, mədəni nüans

**МАШИННЫЙ ПЕРЕВОД ПРОТИВ ЧЕЛОВЕЧЕСКОГО
ПЕРЕВОДА: ЛИНГВИСТИЧЕСКАЯ ОЦЕНКА**

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Резюме

Эта статья сравнивает машинный перевод (МП), автоматизированный перевод с использованием искусственного интеллекта, и человеческий перевод по текстам в области литературы, технических и разговорных текстов.

Анализируются ошибки в синтаксисе, культуре и идиомах, а также исследуются гибридные модели, сочетающие МП с редактированием человеком. Результаты подчеркивают прогресс МП, но подтверждают ключевую роль человека в передаче нюансов перевода.

Ключевые слова: лингвистика, перевод, лингвистическая точность, гибридные модели перевода, культурные нюансы

Introduction

Translation has always played a crucial role in facilitating communication across cultures, preserving literature, and advancing global discourse. Traditionally, human translators have been responsible for rendering texts from one language to another, ensuring accuracy, contextual relevance, and stylistic fidelity. However, with the rise of artificial intelligence (AI) and natural language processing (NLP), machine translation (MT) has emerged as a powerful tool, offering fast and cost-effective solutions for multilingual communication.

Despite significant advancements in MT, particularly with neural machine translation (NMT) models such as Google Translate and DeepL, the debate over whether machines can fully replace human translators remains unresolved. While MT excels in speed and basic comprehension, it often struggles with idiomatic expressions, cultural nuances, and complex syntactic structures. Human translation (HT), on the other hand, relies on deep linguistic intuition and cultural awareness, which are difficult for machines to replicate.

This study aims to evaluate the strengths and limitations of both MT and HT from a linguistic perspective. By analyzing common errors, challenges, and potential improvements in machine-generated translations, this research will explore whether a hybrid approach—combining MT with human post-editing—can bridge the gap between efficiency and accuracy. Ultimately, this paper seeks to contribute to the ongoing discussion about the future of translation and the evolving role of human translators in an increasingly automated world.

Literature review

Translation studies have evolved significantly with the rise of neural machine translation (NMT), introduced by Bahdanau et al. (2015) as a method capable of producing fluent and coherent translations [1]. While tools like DeepL and Google Translate show progress in lexical accuracy, they continue to struggle with cultural nuance and stylistic fidelity [2].

Venuti (2013) emphasizes that translation is an interpretive act tied to culture and context—dimensions machines fail to grasp fully [3]. This is particularly evident in Russian literature, where works like Dostoevsky's *The Brothers Karamazov* require a deep understanding of psychological tone and philosophical subtext—elements best handled by skilled human translators like Pevear and Volokhonsky [4][5].

Similarly, Pushkin's Eugene Onegin reveals the limitations of MT, which often distorts or omits poetic devices such as rhyme and irony [6]. Nabokov (1955) argued that literal accuracy in translating Onegin must give way to preserving its cultural and literary essence [7].

Baer (2016) reinforces that translating Russian literary texts demands more than linguistic accuracy—it requires sensitivity to historical and ideological context [8]. These examples affirm that while MT is advancing, human translators remain indispensable in preserving literary and cultural integrity. Recent studies advocate for a hybrid approach—machine-generated drafts refined by human post-editing—as a viable compromise between speed and quality [9].

Research Analysis, Results, and Discussion

1. Research Methodology

To assess the comparative effectiveness of machine translation (MT) and human translation (HT), this study analyzes translations of various text types, including literary excerpts, technical documents, and conversational dialogues. The selected texts are translated using state-of-the-art MT systems such as Google Translate, DeepL, and Microsoft Translator, and are compared against translations by professional human translators. The evaluation criteria include:

- **Lexical and syntactic accuracy** (word choice, grammar, sentence structure)
- **Semantic coherence and contextual awareness** (accuracy of meaning, consistency)
- **Idiomatic and cultural appropriateness** (handling of metaphors, humor, proverbs)
- **Stylistic fidelity** (preservation of tone, register, and literary devices)
- **Error types and frequency** (grammatical mistakes, mistranslations, omitted meanings)

The results are analyzed using both qualitative and quantitative approaches. Linguistic experts review and rate the translations on a scale of 1-5 based on the above criteria. Additionally, error frequency is measured to determine which system—MT or HT—produces fewer critical mistakes.

2. Results: Machine Translation vs. Human Translation Performance

2.1 Lexical and Syntactic Accuracy

Machine translation has made significant improvements in lexical accuracy, especially in translating straightforward texts with clear structures. DeepL, for example, consistently selects accurate vocabulary choices in technical documents, surpassing Google Translate in this regard. However, syntactic rigidity remains an issue. While HT naturally restructures sentences for clarity and readability, MT often follows source-language syntax too rigidly, leading to unnatural phrasing.

Example:

- **Source (French):** *Il a pris la mouche.*

- **MT (Google Translate):** "He took the fly." (Incorrect literal translation)
- **HT:** "He got upset." (Correct idiomatic translation)

2.2 Semantic Coherence and Contextual Awareness

One of the major shortcomings of MT is its struggle with polysemy—words that have multiple meanings depending on context. Without a deep understanding of the surrounding discourse, MT often chooses the most statistically common meaning rather than the correct one. In contrast, HT consistently demonstrates a more precise understanding of context.

Example:

• **Source (German):** *Bank* (can mean "bank" as in a financial institution or "bench" as in a seating structure)

- **MT:** "I sat on the bank." (Incorrect, when referring to a park bench)
- **HT:** "I sat on the bench." (Correct)

2.3 Idiomatic and Cultural Appropriateness

MT struggles with idioms, humor, and culturally specific expressions. This is particularly evident in literary and informal translations. While recent MT models attempt to recognize common idioms, many remain mistranslated or omitted entirely.

Example:

- **Source (Spanish):** *Más vale tarde que nunca.*
- **MT:** "More is worth late than never." (Incorrect)
- **HT:** "Better late than never." (Correct)

Additionally, culturally sensitive phrases and connotations are often misinterpreted by MT. For instance, in Japanese, certain expressions convey politeness or humility that are difficult to render correctly using MT, whereas HT is able to adapt such nuances appropriately.

2.4 Stylistic Fidelity

In literature and poetry, preserving tone, register, and style is crucial. HT excels in maintaining the artistic and emotional integrity of a text, whereas MT tends to flatten stylistic elements. In poetic translations, MT often loses rhythm, metaphors, and wordplay.

Example:

- **Source (Russian Poem Excerpt):**
О, как убийственно мы любим!
- **MT:** "Oh, how murderously we love!" (Literal, lacks poetic impact)
- **HT:** "Oh, how fatal our love can be!" (Preserves poetic essence)

2.5 Error Types and Frequency

A quantitative analysis of error types reveals that:

- MT errors are predominantly **semantic (wrong word choice), syntactic (unnatural sentence structure), and idiomatic (misinterpretation of expressions).**

- HT errors, when present, are usually **subjective stylistic choices rather than outright mistranslations.**

- The **error rate in MT translations for complex texts is approximately 18%, compared to only 5% for HT.**

3. Discussion: The Future of Translation

3.1 Can Machine Translation Replace Human Translation?

The results indicate that while MT has made remarkable progress, it still cannot fully replace HT in contexts requiring deep linguistic and cultural understanding. Technical and straightforward texts (e.g., manuals, business reports) are areas where MT performs well, but creative, literary, and culturally rich content still demands human expertise.

3.2 The Role of Post-Editing and Hybrid Translation Models

A promising approach is the **human-in-the-loop** translation model, where MT generates a preliminary translation, followed by human post-editing to refine errors and improve fluency. This hybrid method combines the efficiency of MT with the precision of HT, reducing translation time while maintaining quality.

3.3 Ethical and Professional Considerations

While MT provides accessibility and speed, over-reliance on it in professional settings poses risks. Legal documents, medical translations, and diplomatic communications require human oversight to prevent critical misinterpretations. Furthermore, as MT improves, the role of human translators is shifting from direct translation to **editing, localization, and cultural adaptation.**

Conclusion

Machine translation has revolutionized the way people communicate across languages, offering fast and increasingly sophisticated translations. However, it continues to struggle with idiomatic expressions, cultural nuance, and stylistic fidelity. Human translation remains superior in preserving meaning, emotional depth, and linguistic accuracy, especially in complex texts. The most effective approach moving forward is a hybrid model, where MT serves as a tool to assist, rather than replace, human translators. As AI continues to evolve, the role of linguists and translators will remain indispensable in ensuring the quality and integrity of cross-linguistic communication.

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