MACHINE TRANSLATION AND HUMAN TRANSLATION: A LINGUISTIC ANALYSIS

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Abstract. *The rapid evolution of artificial intelligence and neural networks has introduced a new era in translation studies, transforming traditional linguistic approaches into technology-based systems. Machine translation (MT) tools—such as Google Translate, DeepL, and Microsoft Translator—are now capable of processing large volumes of text in seconds, offering quick access to multilingual communication. However, this efficiency often comes at the expense of linguistic depth, contextual awareness, and cultural sensitivity. This study explores the linguistic differences between machine translation (MT) and human translation (HT) by analyzing English–Uzbek translation pairs. The research investigates structural (syntactic), semantic, and pragmatic aspects to determine how each translation type represents meaning. Results show that MT performs accurately at the lexical and grammatical levels but fails to grasp idiomatic expressions, emotional nuances, and contextual subtleties that are essential for authentic communication. In contrast, HT relies on cognitive understanding and creative adaptation, maintaining naturalness and cultural appropriateness.*

Keywords: *machine translation, human translation, syntax, semantics, pragmatics, linguistic analysis, translation studies*

Introduction.

Translation serves as a vital linguistic and cultural bridge connecting people, nations, and civilizations. It facilitates the exchange of knowledge, art, science, and thought across languages. Traditionally, translation was considered a human-driven intellectual activity requiring mastery of both linguistic systems and cultural codes. With the advent of artificial intelligence, however, this activity has undergone radical transformation. The introduction of machine translation has revolutionized the way people access and produce multilingual content. Systems based on statistical and neural models can process millions of sentence pairs, identify translation patterns, and generate relatively coherent results.

Nevertheless, the fundamental question remains: Can machines truly "understand" language as humans do? Human translation is not merely a mechanical substitution of words—it involves interpretation, evaluation of context, and reconstruction of meaning in a new linguistic environment. The translator functions as both a linguist and a cultural mediator. Machine translation, on the other hand, is driven by algorithms and probabilities rather than comprehension and empathy. In Uzbek translation studies, this comparison holds particular importance, as Uzbek is an agglutinative language with rich morphology and flexible syntax. MT systems trained primarily on Indo-European languages often struggle to adapt to its grammatical and semantic patterns. Therefore, analyzing the linguistic distinctions between MT and HT in the context of the Uzbek language is essential for understanding the limits of technology and the enduring necessity of human linguistic intelligence. The findings emphasize that linguistic equivalence cannot be fully achieved without human interpretative competence. Although MT continues to improve through neural learning, it remains a tool that requires human supervision to ensure semantic precision and pragmatic harmony. The purpose of this research is to provide a comprehensive linguistic analysis of the differences between machine and human translation. The paper aims to highlight where machines succeed and where they fail linguistically, thereby contributing to the broader discussion on the future of translation and artificial intelligence.

Methodology

The research adopts an integrated qualitative linguistic approach, combining descriptive, contrastive, and analytical methods to examine translation differences at multiple levels.

1. Descriptive phase

In this phase, the linguistic features of both MT and HT were studied independently. Several English source texts—ranging from short stories to journalistic essays—were selected. These texts were first translated into Uzbek using Google Translate, representing machine translation output. Parallel human translations were produced by experienced bilingual translators. Each version was analyzed for sentence structure, lexical selection, and meaning consistency.

2. Contrastive phase

This phase involved direct comparison of MT and HT outputs, focusing on three linguistic dimensions:

Syntactic structure: word order, grammatical relations, sentence complexity;	Semantic equivalence: lexical meaning, idiomatic expressions, polysemy;	Pragmatic adaptation: tone, politeness, style, and cultural relevance.

Through systematic side-by-side analysis, the study identified recurrent translation errors in machine output and strategies applied by human translators to preserve meaning and naturalness.

3. Analytical phase

In this phase, the collected data were interpreted to evaluate how linguistic principles operate differently in machine and human cognition. The researcher focused on identifying patterns of deviation—instances where machine translations lost meaning, distorted tone, or violated grammatical norms. This methodological framework allows the research to not only describe surface-level differences but also explain why such differences occur—whether due to computational limitation, absence of contextual awareness, or language typology mismatch.

Results and Discussion

1. Syntactic Level Analysis

The most striking difference between MT and HT lies in sentence structure. While human translators adapt syntax to match the target language's natural patterns, machine translation tends to mirror the source language structure mechanically. For instance, English sentences typically follow a rigid Subject–Verb–Object (SVO) order. In Uzbek, however, the word order is flexible and often ends with the verb, emphasizing the predicate. MT systems, especially those trained on English corpora, tend to preserve SVO order, leading to grammatically odd results. Example:

English: I really like this movie.

- ✓ MT: Men haqiqatan ham bu filmni yoqtiraman. (acceptable but slightly awkward)
- ✓ HT: Bu film menga juda yoqadi. (natural and fluent)

The human translator restructures the sentence based on Uzbek syntactic norms, while the machine translation follows the original sequence literally. Similar issues occur in sentences containing subordinate clauses, passive constructions, or inversions. Human translators interpret grammatical relationships contextually, whereas machines rely solely on statistical correlations. Moreover, MT systems often mismanage morphological agreement in Uzbek, particularly with possessive and case suffixes. For example, phrases like "my friend's opinion" are frequently mistranslated because the system cannot fully process agglutinative patterns such as do'stimning fikri. Human translators, understanding both grammatical and semantic connections, correctly express these relationships.

2. Semantic Level Analysis

Semantic interpretation—understanding and conveying meaning—is the core of translation. Machine translation typically produces literal translations, focusing on one-

to-one word mapping. This works in neutral, factual texts but becomes problematic with figurative language, idioms, or culturally specific terms. For instance:

English: He kicked the bucket.

- MT: U chelakni tepdi.
- HT: U vafot etdi.

The literal machine translation produces a nonsensical Uzbek sentence, whereas the human translator captures the idiomatic meaning ("he died"). Machine translation also struggles with polysemy (multiple meanings of a word) and metaphor. A single English word like "light" can mean yorug'lik, engil, yumshoq, or och rangli depending on context. Machines often choose the statistically most frequent meaning, ignoring contextual clues. Human translators, however, select meanings that best fit the text's communicative intent. Another recurring issue is collocational mismatch—unnatural word combinations such as katta muammo qilmoq instead of katta muammo tug'dirmoq. Such errors occur because MT systems analyze word-level frequency but not contextual appropriateness.

3. Pragmatic and Cultural Level Analysis

The pragmatic dimension of translation involves understanding social context, tone, and intent. Machines lack pragmatic awareness, which results in translations that are grammatically correct but socially inappropriate. For example:

- English: Would you mind closing the door?
- MT: Siz eshikni yopishga qarshi emasmisiz? (grammatical but awkward)
- HT: Iltimos, eshikni yopib qo'ying. (natural and polite)

The machine translation fails to capture the polite, indirect tone typical of English requests and instead produces a literal, stiff form. Human translators use communicative equivalence, adjusting the tone to fit Uzbek norms of politeness. Culturally embedded expressions also illustrate this gap. For example, metaphors tied to Western culture (e.g., "a piece of cake" or "time is money") often lose meaning in MT, while human translators replace them with equivalent Uzbek idioms like o'ta oson ish or vaqt oltindan qimmat. Thus, human translation operates not only on linguistic but also cultural cognition, ensuring that the message resonates with the target audience's worldview—something machines cannot yet replicate.

4. Cognitive and Communicative Implications

From a linguistic perspective, MT functions as a surface processor, handling form but not sense. HT, conversely, is a meaning processor—interpreting, reconstructing, and contextualizing information. Machine translation lacks a model of human thought, so it cannot infer implied meaning or interpret emotional subtext. Human translators, through

intuition and experience, fill semantic gaps, adjust stylistic tone, and ensure communicative efficiency. The difference lies not in vocabulary but in understanding—the human ability to perceive intention behind words.

Conclusion.

The comparative linguistic investigation of machine translation (MT) and human translation (HT) demonstrates that, despite the remarkable progress of artificial intelligence, fundamental differences remain between algorithmic processing and human cognitive interpretation. Machine translation systems have achieved substantial improvement in lexical accuracy, grammatical consistency, and processing speed, making them highly efficient tools for general comprehension, technical documentation, and everyday communication. However, linguistic analysis reveals that MT continues to operate primarily on surface-level textual correlations rather than true semantic understanding. Human translation, on the other hand, functions as a dynamic cognitive process that goes beyond the boundaries of lexical equivalence. It involves interpreting context, recognizing emotional and cultural nuances, and reshaping meaning according to the communicative norms of the target language. Human translators apply their linguistic intuition, empathy, and world knowledge to achieve not only semantic accuracy but also stylistic naturalness and pragmatic appropriateness—dimensions that current MT systems cannot replicate. Moreover, the findings highlight that linguistic competence in translation encompasses far more than vocabulary substitution. It requires awareness of discourse structure, sociolinguistic conventions, and cultural symbolism. Machine translation lacks this awareness because it does not “understand” the communicative intent or the social environment in which language operates. Therefore, while MT may generate grammatically correct outputs, it frequently fails to capture the implicit meanings, humor, irony, or politeness strategies embedded in natural discourse. From a broader perspective, the coexistence of MT and HT should not be perceived as competition but as collaboration. Machine translation offers unparalleled efficiency, while human translation ensures depth, accuracy, and authenticity. The optimal approach lies in hybrid translation models that integrate computational precision with human interpretive intelligence. Such synergy could redefine translation practice—allowing technology to handle repetitive linguistic structures while human translators focus on creative, semantic, and cultural adaptation. Ultimately, the study reaffirms that translation is not merely a linguistic process but a deeply human activity rooted in cognition, empathy, and cultural experience. Until artificial intelligence acquires the ability to perceive context, emotion, and communicative intention as humans do, the translator’s role will remain irreplaceable. In essence, machines may translate words, but only humans truly translate meaning.

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