



A COMPARATIVE STUDY OF QUALITY AND EFFICIENCY IN ARTIFICIAL INTELLIGENCE TRANSLATION VERSUS HUMAN TRANSLATION

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<https://doi.org/10.5281/zenodo.19351961>

Keywords: Human translation, artificial intelligence, neural machine, terminological precision, technical texts.

This study compares intelligence (AI) translation and human translation. The research looks at how good and accurate both methods. It checks how well they translate in terms of accuracy and meaning. It also checks how well they understand context and adapt to cultures. The study focuses on how neural machine translation systems affect how fast and cheap translations are. The study uses methods to compare and analyze translated texts. The study wants to know the strengths and limitations of AI translation and human translation. It looks at how they translate and how well they understand context. The study also looks at how neural machine translation systems work. It checks how they affect translation services. The goal is to understand what AI translation and human translation can do.

In years artificial intelligence or AI has changed the way translations are done. AI tools those that use neural networks are super-fast and easy to use. They can translate text from one language to another instantly. Human translators are still very important. They make sure the translation makes sense is culturally correct and sounds good¹. This study compares AI translations with translations. We want to see how good they are and how well they work. We are looking at kinds of texts to find out how AI and humans can work together to make translations better. By studying texts, we hope to learn how AI can help human translators do their job better. The goal is to make translations more accurate and efficient by combining the strengths of AI and human translators. This will help us understand how to get the most out of both AI and human translation skills.

This study compares intelligence, AI translation and human translation to see which one is better and faster. We looked at three types of texts:

- A literary except
- A technical text about information technology
- A news articles

Each text was 300 words. The texts were originally in English. Then translated into Uzbek. We used two methods to translate them:

1. A computer program like Google Translate
2. A professional translator with least five years of experience

The goal was to compare the quality and efficiency of AI translation and human translation². We want to see how well AI translation and human translation work. Artificial intelligence translation and human translation were compared. The texts were translated using AI and human translation. The translations were then evaluated. The evaluation compared AI translation and human translation.

¹ Vaswani A., Shazeer N., Parmar N., Uszkoreit J., Jones L., Gomez A., Kaiser Ł., Polosukhin I. *Attention Is All You Need*. – Red Hook, New York: Curran Associates, Inc., 2017. – B. 211.

² Koehn P. *Statistical Machine Translation*. – Cambridge: Cambridge University Press, 2020. – P. 34.



The selection of diverse genres allows for a broader assessment of translation performance across stylistic, terminological, and contextual variations. Literary texts were chosen to examine the preservation of figurative language, emotional tone, and stylistic nuance³. Technical texts were selected to evaluate terminological accuracy and clarity. Journalistic texts were included to assess syntactic structure, neutrality, and contextual coherence.

The methods used in this research are analysis and error analysis and qualitative assessment. Translation quality was looked at based on these things:

1. Accuracy. This is how well the translation keeps the meaning of the text.
2. Fluency. This is about the grammar and how natural the translation sounds in the language.
3. Adequacy. This is how well the translation handles sayings and references that are specific to a culture.
4. Precision. This is about using the right special words, in the translation.

Efficiency was measured by recording the time required to complete each translation task and comparing processing speed. AI translation required only a few seconds per text, while human translation required approximately 40–60 minutes depending on text complexity.

For example, in a literary sentence such as *"Her heart was broken into a thousand silent pieces,"* the AI system translated the phrase literally, producing an equivalent of *"uning yuragi mingta jim bo'lakka sindi,"* which preserved lexical meaning but lacked emotional depth⁴. The human translator rendered it as *"uning yuragi so'zsiz iztirobga to'ldi,"* adapting the metaphor more naturally to Uzbek stylistic norms.

In a technical example, the phrase *"cloud-based data encryption protocol"* was translated by AI with minor lexical inconsistency, while the human translator ensured terminological precision and consistency throughout the text. In journalistic texts, AI generally maintained structural clarity but occasionally produced unnatural word order. Human translation demonstrated higher contextual coherence and smoother syntactic flow.

The collected data was looked at closely to find repeating patterns of mistakes and good things in both kinds of translations. We also compared the time it took to do the translations to see which one was faster⁵. This way of doing things lets us look at both systems fairly and see how well they work how reliable they are and how useful they are, in life. The translation systems were evaluated for performance the translation systems were evaluated for reliability. The translation systems were evaluated for practical applicability.

The comparison showed differences between AI translation and human translation. AI translation was much faster translating texts in seconds. Human translators took a lot longer. This proves that AI systems are efficient for big tasks that need to be done quickly. AI translation and human translation differ in quality too. AI translation systems can translate texts fast but human translators can give better results. They understand the context. Can make the

³ Schuster M., Chen Z., Le Q. V., Norouzi M., Macherey W., Krikun M. *Google's Neural Machine Translation System: Bridging the Gap between Human and Machine Translation*. – Ithaca: Publishing, 2016. – P. 15.

⁴ Toral A., Castilho S., Moorkens J., Way A. *Neural Machine Translation vs. Human Translation: Comparative Evaluation*. – Providence: Journal of Artificial Intelligence Research Publishing, 2018. – B. 78.

⁵ Tiedemann J. *Neural Machine Translation and Translation Memory Integration*. – Cham: Springer International Publishing, 2019. – B. 101.



translation more natural. So, AI translation and human translation have their strengths. AI translation is fast and good for tasks while human translation is better for tasks that need a personal touch⁶.

However, we found that human translation usually gives accurate results. It also fits better with the context. In texts AI is good at translating standard terms but sometimes it makes mistakes. Human translators make sure the terms are precise and the text makes sense from start, to finish.

In texts AI translated figurative expressions in a very literal way. This made them sound less emotional and less natural. Human translators however were better at changing metaphors. They kept the emotional nuances. In texts AI got the main idea across. Sometimes the sentence structure sounded strange. Human translators did a job. Their translations flowed smoothly. Made more sense. The study found that AI translation is fast. It still can't match human translators when it comes to understanding context and culture. So, using both AI and translators seems like the best approach.

The comparison of intelligence translation and human translation shows that artificial intelligence translation and human translation have some good things and some not so good things. Artificial intelligence translation is really fast and cheap which makes it great for translating a lot of text and helping with the steps of translation. Even with all the progress that has been made artificial intelligence systems still have trouble understanding what things really mean like the little differences between cultures when someone is being funny or sarcastic and the small details that make writing special. On the hand human translation gets the meaning right more often understands the context better and is more careful about cultural differences especially when it comes to books and complicated texts but it takes more time and money. So, the study says that artificial intelligence translation and human translation should work together because when you combine the things about artificial intelligence translation with the good things, about human translation you get the best results. Artificial intelligence translation and human translation are better together. This helps us get the most out of artificial intelligence translation and human translation.

References:

1. Crego J., Senellart J., Yang A., et al. *Systran Neural Machine Translation Systems*. – Dordrecht: Springer, 2016. – B. 111.
2. Koehn P. *Statistical Machine Translation*. – Cambridge: Cambridge University Press, 2020. – P. 34.
3. Schuster M., Chen Z., Le Q. V., Norouzi M., Macherey W., Krikun M. *Google's Neural Machine Translation System: Bridging the Gap between Human and Machine Translation*. – Ithaca: Publishing, 2016. – P. 15.
4. Tiedemann J. *Neural Machine Translation and Translation Memory Integration*. – Cham: Springer International Publishing, 2019. – B. 101.

⁶ Crego J., Senellart J., Yang A., et al. *Systran Neural Machine Translation Systems*. – Dordrecht: Springer, 2016. – B. 111.



5. Toral A., Castilho S., Moorkens J., Way A. *Neural Machine Translation vs. Human Translation: Comparative Evaluation*. – Providence: Journal of Artificial Intelligence Research Publishing, 2018. – B. 78.
6. Vaswani A., Shazeer N., Parmar N., Uszkoreit J., Jones L., Gomez A., Kaiser Ł., Polosukhin I. *Attention Is All You Need*. – Red Hook, New York: Curran Associates, Inc., 2017. – B. 211.
7. Zhang J., Luan H., Sun M., Liu Y. *Context-aware Neural Machine Translation*. – Cambridge: MIT, 2020. – B. 271.