

International Conference
Global Perspectives on Technology-Enhanced Language Learning and Translation - GLOTECH

25-26 SEPTEMBER 2025
LANGUAGES: ENGLISH & SPANISH

GLOTECH 2025: Redefining Language Learning and Translation in the Digital Age

Organized by: Digital Language Learning (DL2)

University of Alicante City Centre Venue

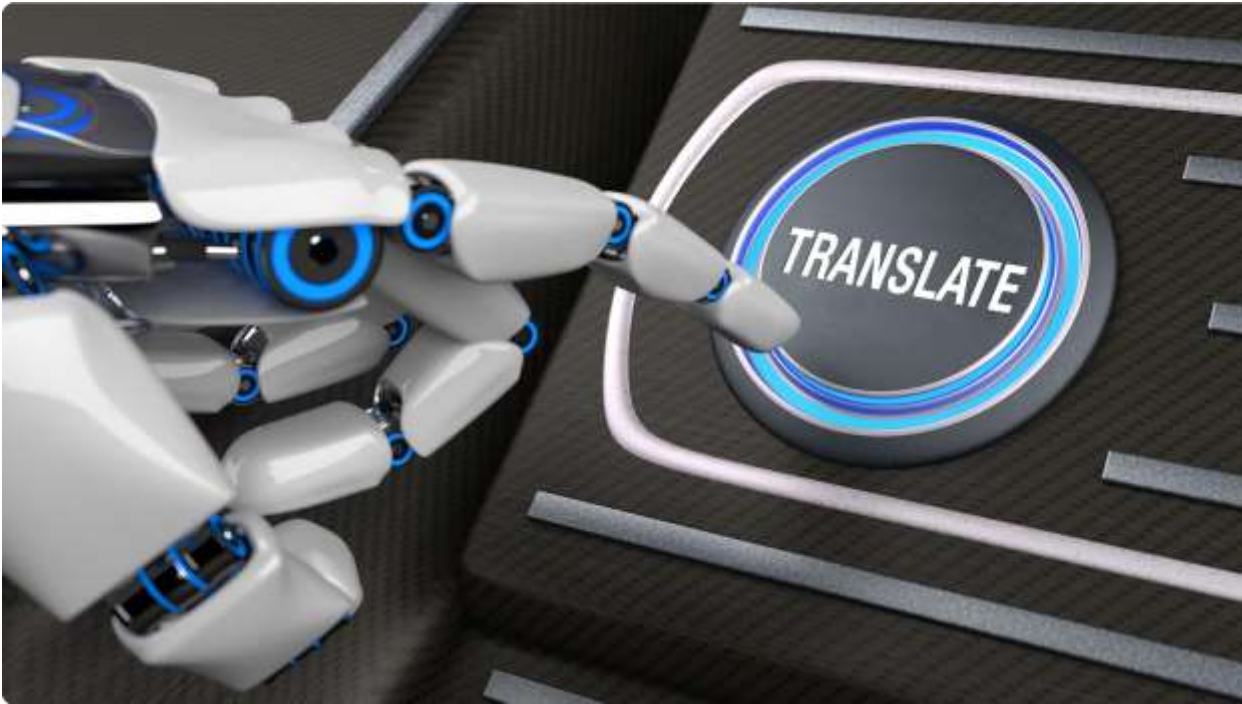


The Role of Artificial Intelligence in Translation

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The Role of Artificial Intelligence in Translation

Translation bridges linguistic and cultural divides in our globalized world. Traditionally performed by humans with linguistic proficiency and cultural competence, translation has been transformed by Artificial Intelligence. This presentation examines AI's evolving role in translation, evaluating its effectiveness, accuracy, and limitations compared to human translation.



Understanding Translation

Definition

Translation conveys verbal meanings from one language to another, requiring more than word-for-word substitution.

Complexity

Requires understanding of context, cultural framework, and proper explanation.

Considerations

Translators must balance author's style, grammatical conventions, cultural elements, text structure, and reader expectations.

As Newmark (1988) notes, translation is "a complex, unnatural, and even misleading process" that requires careful navigation of linguistic and cultural identities.



Key factors considered by translators

1. The author's **individual style or idiolect** in the source language: should it be (a) preserved, or (b) adapted?
2. The **grammatical and lexical conventions** typical of that specific genre, depending on the topic and context.
3. **Cultural or linguistic elements** specific to the source or even a third language.
4. The traditional structure or **layout of the text** based on its type.
5. **Readers' expectations**, including their presumed knowledge of the topic and language style.
6. **Referential truth**—information that can be confirmed independently of the original text or reader assumptions.
7. The **translator's own biases** or perspectives, which may stem from personal, cultural, or social affiliations such as nationality, politics, ethnicity, religion, gender, or class.

AI Methods in Translation

Rule-Based (RBMT)

Uses explicitly encoded grammatical and lexical rules of both languages.

1

2

Statistical (SMT)

Relies on statistical models derived from analysis of bilingual text corpora.

3

Neural (NMT)

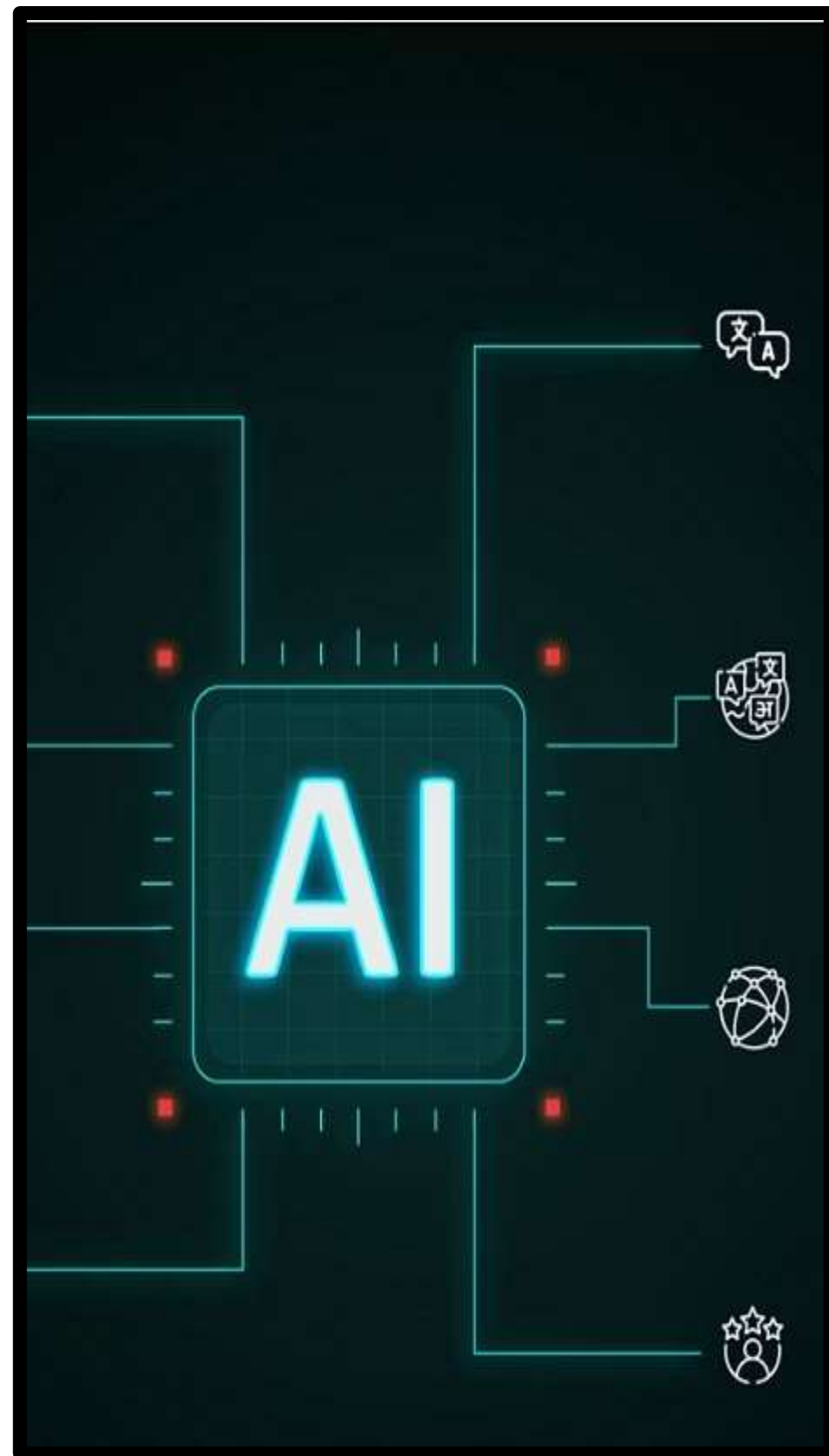
Directly learns mapping between languages using neural networks, recognizing relationships between words and phrases.

4

Hybrid (HMT)

Combines strengths of rule-based and statistical methods for greater accuracy.

Neural Machine Translation represents the most significant recent advancement, using deep learning to deliver more accurate and context-aware translations.



Popular AI Translation Tools

Google Translate

Supports 133 languages, used by over 1 billion people, translating 100+ billion words daily

DeepL

Focuses on fewer languages but with higher quality, especially for European languages

ChatGPT

Supports 95+ languages with unique ability to refine translations based on feedback



Advantages of AI Translation

Speed & Efficiency

Processes large volumes of text in significantly shorter time than human translators

Cost-Effectiveness

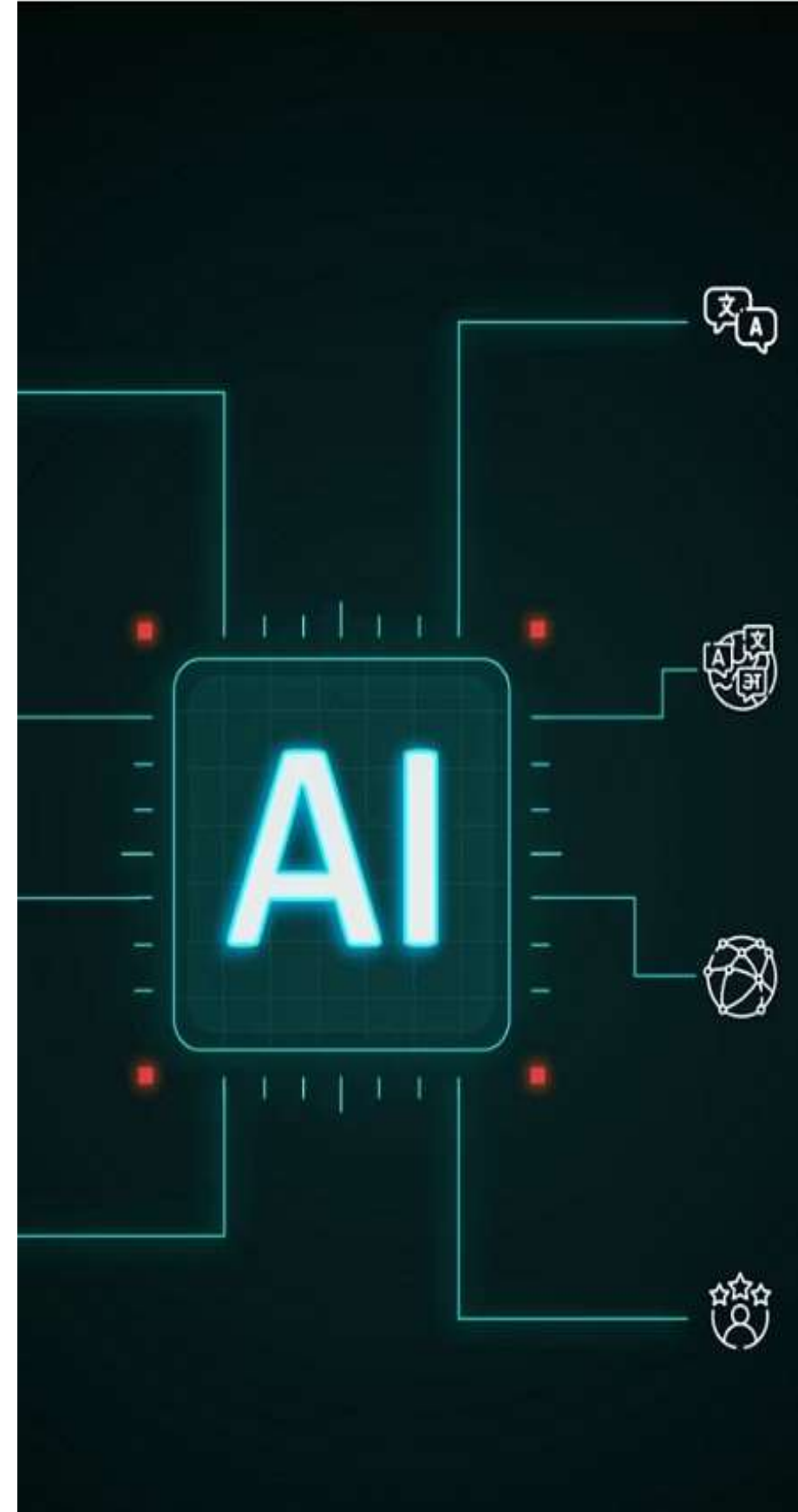
Generally cheaper than hiring human translators, especially for organizations with limited budgets

Language Coverage

Ability to translate into numerous languages, making content accessible to global audiences

Domain Specialization

Can be customized for specific fields and industries, with technical vocabulary already encoded



Limitations of AI Translation



Ambiguity

Struggles with homography, polysemy, and categorical ambiguity

66

Idioms

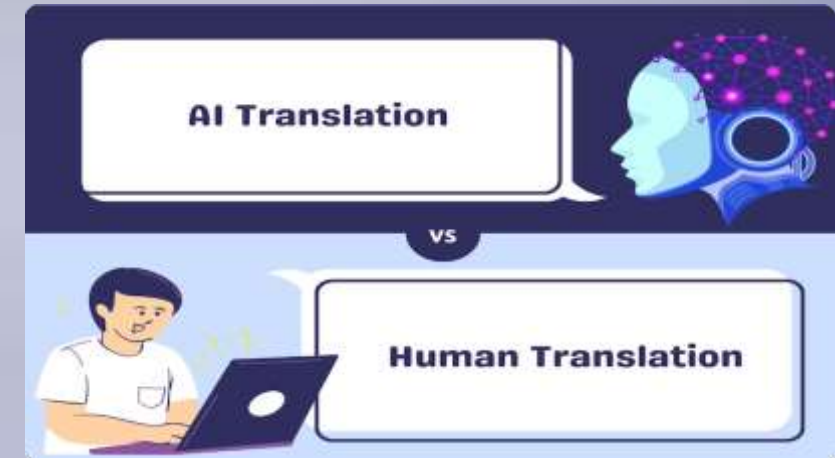
Cannot effectively translate idiomatic expressions that require cultural understanding



Context

Processes sentences in isolation, missing broader document context

As Bar-Hillel (1953) noted, machine translation cannot handle many tailored solutions, especially with cultural nuances and context-dependent meanings.



Google Translate:

- **English (source):**

Google Translate is a multilingual neural machine translation service developed by Google to translate text, documents and websites from one language into another.

- **Macedonian (translation):**

Google Translate е повеќејазична услуга на неурално машинско преведување развиена од Google за преведување на текстови, документи и веб-страници од еден јазик на друг.

- **Spanish (translation):**

Google Translate es un servicio multilingüe de traducción automática

If we try with an idiomatic phrase, Google Translate still struggles.

- **Macedonian phrase (source):**

Да му ја фатиш сламката на спасот.

- **Spanish phrase (source):**

Agarrarse a un clavo ardiendo.

- **English (output from Google Translate):**

To grab the straw of salvation. / To cling to a burning nail.

Here, the translations are literal and fail to fully capture the idiomatic meaning, which in both Macedonian and Spanish corresponds to the English idiom “*to clutch at straws*.”

Example of Google Translate limitations

- Macedonian (source): *Без мака нема наука.*
- Spanish (source): *Quien algo quiere, algo le cuesta.*
- English (Google Translate output): *There is no science without effort.*

From this example, it is clear that Google Translate often fails to capture the intended meaning or context. The correct English equivalent here would be: “*No pain, no gain.*”

Translation Quality Evaluation

BLEU Score

- Bilingual Evaluation Understudy (BLEU) is the most widely used metric for evaluating machine translation quality.
- Compares machine output with human reference translations
- Measures n-gram precision (sequences of consecutive words)
- Scores range from 0 to 1, with higher scores indicating better quality

❖ Despite limitations, BLEU remains fundamental for benchmarking and tracking progress in machine translation.

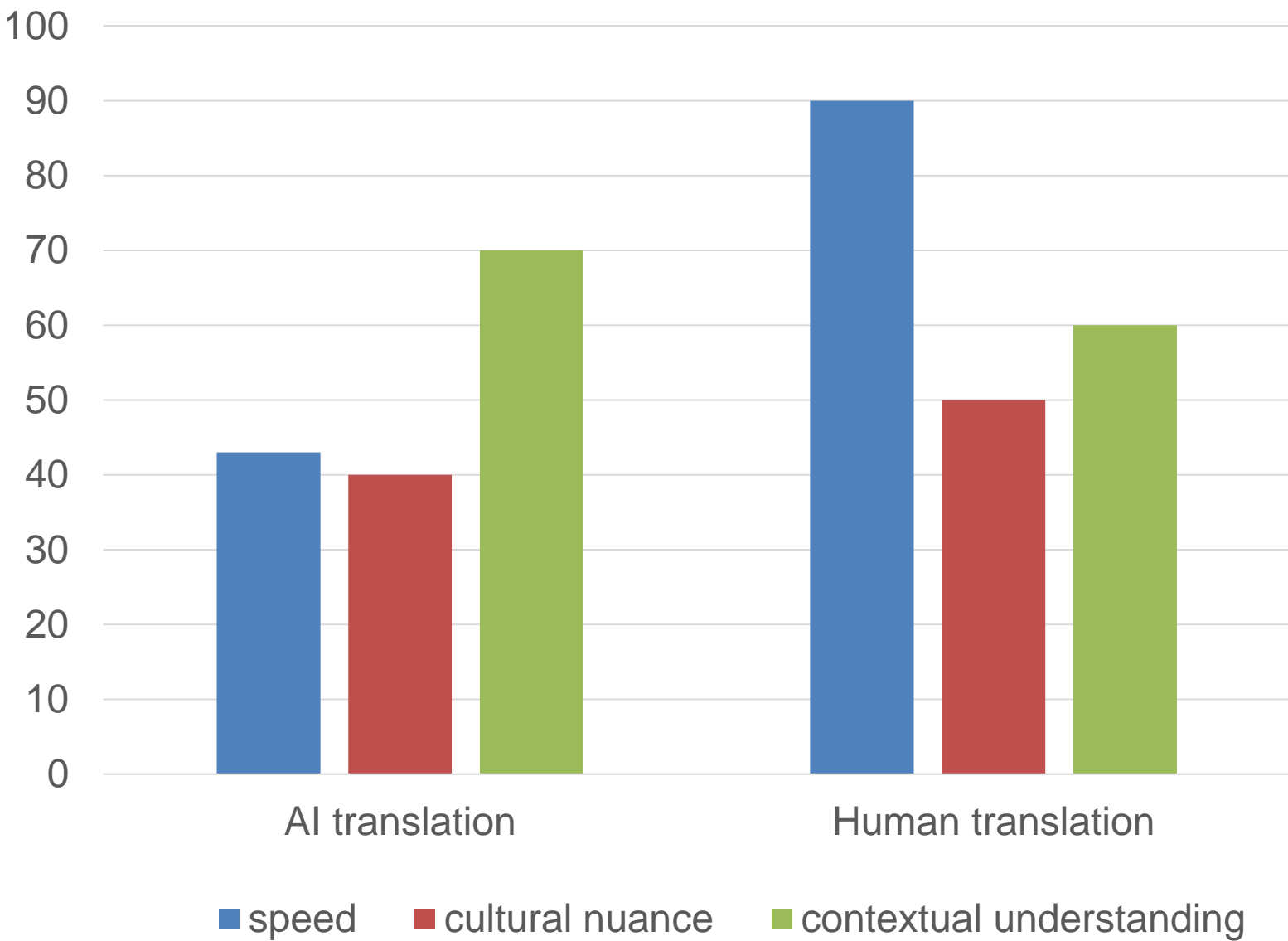
Limitations of BLEU

- Doesn't account for fluency
- Doesn't fully capture meaning adequacy Can penalize longer sentences
- Favors translations that closely match references
- May miss important factors coherence and naturalness

Tool	English Description (Paraphrased)	Macedonian Example	Spanish Example	English Translation (Contextual / Idiomatic)
Google Translate	Free multilingual neural machine translation tool. Widely used, supports 133 languages, but may fail with idioms or complex grammar.	Без мака нема наука.	Quien algo quiere, algo le cuesta.	No pain, no gain.
DeepL	High-quality translation service, focuses on European languages, often more natural and contextually accurate than Google Translate.	Секое зло за добро.	No hay mal que por bien no venga.	Every cloud has a silver lining.
Smartling	Cloud-based translation management system combining AI with human translation for business content.	Времето е пари.	El tiempo es oro.	Time is money.
Unbabel	Combines AI with human post-editing for accurate translations, especially useful in customer support.	Подобро еден ден лав, отколку цел живот глушец.	Más vale un día león que cien años ratón.	Better one day as a lion than a lifetime as a mouse.

Bing Microsoft Translator	AI-powered multilingual translation tool integrated with Microsoft products, supporting instant translations and collaboration.	<i>Кoj секако сака, нешто ќе чини.</i>	<i>El que algo quiere, algo le cuesta.</i>	<i>Nothing ventured, nothing gained.</i>
Alexa Translations	Cloud-based AI translator focusing on business and customer support content; allows integration with platforms and workflow automation.	<i>Еднаш видено, подобро е од сто пати слушано.</i>	<i>Una vez visto, vale más que cien veces oído.</i>	<i>Seeing is believing.</i>
ChatGPT	AI language model capable of translating over 95 languages. Allows refinement of tone, style, and cultural nuances; excellent for idioms and context-aware translations.	<i>Без труд нема успех.</i>	<i>Sin esfuerzo no hay recompensa.</i>	<i>No pain, no gain.</i>

Comparing AI vs. Human Translation



While AI excels in speed, humans maintain significant advantages in understanding cultural nuances and context.

This suggests that AI and human translators may be most effective when working together rather than as replacements for each other.

The Future: Human-AI Collaboration

AI Translation

Handles high volume, routine content with speed and efficiency

Post-Editing

Humans correct and refine machine output for accuracy and fluency



AI Learning

Systems improve from human corrections and feedback

Human Expertise

Applied to complex, creative, and culturally sensitive content

Conclusion: Complementary Tools, Not Replacements

While AI translation offers significant advantages in speed, cost- efficiency, and accessibility, it cannot fully replace human translators. The most effective approach combines:

AI for processing large volumes and routine translations

Human expertise for complex, creative, and culturally sensitive materials

As Luckin notes, we should view AI not as a replacement for human intelligence but as a study of intelligence that remains "far behind the sophistication of human intelligence."



Key Takeaway: The future of translation lies in achieving balance between automation and human touch, leveraging the strengths of both AI and human translators.



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