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Artificial Intelligence Applications in Machine Translation and Their Role in Bridging Semantic Gaps Across Languages: A Comparative Analytical Study of Chat GPT and Deep Seek

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A B S T R A C T

With the fast-growing of neural machine translation (NMT), there is still a lack of insight into the performance of these models on semantically and culturally rich texts, especially between linguistically distant languages like Arabic and English. In this paper, we investigate the performance of two state-of-the-art AI translation systems (ChatGPT, DeepSeek) when translating Arabic texts to English in three different genres: journalistic, literary, and technical. The study utilizes a mixed-method evaluation methodology based on a balanced corpus of 60 Arabic source texts from the three genres. Objective measures, including BLEU and TER, and subjective evaluations from human translators were employed to determine the semantic, contextual and cultural quality. Our results show that our model, ChatGPT, consistently achieves performance gains over DeepSeek, especially when applied to technical and journalistic text and with higher BLEU scores and lower TER values. But neither these models nor any of the state-of-the-art models perform well for the literary texts, the ones that can hint to the difficulties these models face to deal with idiomatic expressions, metaphor, narrative tone. The results illustrate genre sensitivity in AI translation quality and emphasize the ongoing importance of human supervision, particularly in cultural and stylistic contexts. This work aims to contribute to the growing corpus of AI translation literature by providing a genre-specific, empirically grounded comparison of two of the most high-profile models, and to draw attention to the necessity of greater context-sensitive and culturally sensitive translation algorithms.

تطبيقات الذكاء الاصطناعي في الترجمة الآلية ودورها في سد الفجوات الدلالية بين اللغات: دراسة تحليلية مقارنة بين Chat GPT و Deep Seek

إنعام غالب العزاوي /جامعة بغداد / كلية التربية البدنية وعلوم الرياضة للبنات

المستخلص:

مع النمو السريع للترجمة الآلية العصبية (NMT)، لا يزال هناك نقص في الرؤية حول أداء هذه النماذج على النصوص الغنية دلاليًا وثقافيًا، وخاصة بين اللغات البعيدة لغويًا مثل العربية والإنجليزية. في هذه الورقة، نبحث في أداء نظامي ترجمة الذكاء الاصطناعي المتطورين (ChatGPT وDeepSeek) عند ترجمة النصوص العربية إلى الإنجليزية في ثلاثة أنواع مختلفة: الصحفية والأدبية والتقنية. تستخدم الدراسة منهجية تقييم مختلطة تعتمد على مجموعة متوازنة من 60 نصًا عربيًا من الأنواع الثلاثة. تم استخدام مقاييس موضوعية، بما في ذلك BLEU وTER، وتقييمات ذاتية من المترجمين البشريين لتحديد الجودة الدلالية والسياقية والثقافية. تُظهر نتائجنا أن نموذجنا، ChatGPT، يحقق باستمرار مكاسب في الأداء على DeepSeek، وخاصة عند تطبيقه على النصوص التقنية والصحفية مع درجات BLEU أعلى وقيم TER أقل. لكن لا هذه النماذج، ولا أيٌّ من النماذج الحديثة، تُحقق أداءً جيدًا في النصوص الأدبية، وهي النماذج التي قد تُشير إلى الصعوبات التي تواجهها هذه النماذج في التعامل مع التعبيرات الاصطلاحية والاستعارات والنبرة السردية. تُوضح النتائج حساسية النوع الأدبي في جودة ترجمة الذكاء الاصطناعي، وتُؤكد على الأهمية المُستمرة للإشراف البشري، لا سيما في السياقات الثقافية والأسلوبية. يهدف هذا العمل إلى المساهمة في إثراء أدبيات ترجمة الذكاء الاصطناعي المتنامية من خلال تقديم مُقارنة مُحددة النوع الأدبي، ومُستندة إلى التجارب، بين اثنين من أبرز النماذج، ولفت الانتباه إلى ضرورة تطوير خوارزميات ترجمة أكثر حساسية للسياق والثقافة.

الكلمات المفتاحية : الذكاء الاصطناعي، الترجمة الآلية، ChatGPT، DeepSeek، الدقة الدلالية،

Introduction

Recent years have seen a major development in the field of machine translation (MT) due to advances in artificial intelligence (AI), in particular driven by large language models (LLMs). While traditional translation systems often stumble over ambiguity, idiomatic expressions and culturally bound meanings. These days AI-driven translation tools strive to maintain the semantic and contextual relevance of the original text. In addition, ChatGPT and DeepSeek are two state-of-the-art translation platforms powered by deep learning and transformer-based models for producing good quality translations for various languages. Their use across domains including education, international diplomacy, journalism, and technical documentation indicates the increasing confidence in AI systems for mediating cross-linguistic communication (Vaswani et al., 2017; Wu et al., 2016; Koehn, 2020).

Nonetheless, translating between remote languages, e.g. Arabic and English, is still a difficult task given the syntactic and semantic mismatch between them. The complex morphology, syntax and the occurrence of many idiomatic and culturally loaded expressions in Arabic frequently lead to semantic mismatches with English. Tools like ChatGPT and DeepSeek aim to narrow these gaps with the help of sophisticated contextual processing and neural attention techniques. As such tools are increasingly integrated in educational and professional settings, it is necessary to look beyond their fluency and consider their semantic correctness and their ability to maintain culturally grounded meanings (Castilho et al., 2017; Hassan et al., 2018; Freitag et al., 2020).

2. Identification of Gaps in the Literature

While the space of AI-based machine translations is thriving with many novel linguistic and semantic ideas, we are confronted currently with a relative lack of empirical research that is specifically aimed at comparing the performance of ChatGPT and DeepSeek in general, and as an example between Arabic and English in particular. Most previous works focus on testing the general AI translation systems such as Google Translate and DeepL, although most of them have been tested using standard benchmark datasets. Only a handful have considered in detail how ChatGPT and DeepSeek behave on Arabic source texts with deep semantic and cultural contexts (Toral and Way, 2018; Dabre et al., 2017; Zhang et al., 2023; Ribeiro et al., 2022).

Furthermore, a clear research gap is not studying how these tools deal with different types of text-- journalistic, literary, technical--that face different semantic and stylistic challenges. The correct translation of idioms, metaphors, and culture-dependent terms is still a big issue in most of NMT systems. Without genre-specific, context-aware comparison, it is difficult to get a more nuanced perspective on the performance bottleneck of AI translation. Rather, to the best of the author's knowledge, there has been no systematic study to date comparing the relative semantic faithfulness of ChatGPT and DeepSeek on both automatic evaluation metrics and human judgement in an Arabic-English context (Sennrich et al., 2016; Pustejovsky & Stubbs, 2012; Denkowski & Lavie, 2014; Bojar et al., 2018).

3. Problem Statement

Although new AI based translation platforms were successful in minimizing these communication gaps, preserving semantics and cultural nuances still prove to be a major challenge hampering the quality level of translations – especially when translating between Arabic and English. Services such as ChatGPT and DeepSeek boast of good quality translation but have never been compared in terms of their ability to transfer meaning between genres. Specifically, their performance on idiomatic language, syntax complexity, and culturally specific expression was not tested thoroughly in comparative research settings. This uncertainty affects TEFL practitioners as well as linguists and professional translators that are interested in the extent to which it is appropriate to use these tools for tasks of context-sensitive translation (Brown et al., 2020; Dabre et al., 2017; Zhang et al., 2023).

4. Purpose of the Study

This study aims to **analyze and compare the performance of ChatGPT and DeepSeek in Arabic-English machine translation**, focusing on their ability to bridge semantic gaps across different text types. The specific objectives are:

1. To analyze the effectiveness of ChatGPT and DeepSeek in preserving the semantic and contextual meaning of Arabic source texts during translation into English.
2. To compare their performance in handling idiomatic, metaphorical, and culturally embedded expressions across journalistic, literary, and technical texts.

3. To evaluate the overall quality of translation outputs using both quantitative metrics (e.g., BLEU, TER) and qualitative human assessments from professional translators.

Literature Review

Neural machine translation (NMT) has developed very quickly in recent years, especially thanks to the combination of artificial intelligence and giant (LLMs). Bahar, Bisazza, and Monz (2019) performed an extensive comparative study of AI-based machine translation technology, and their result supports the increased fluency and syntactic coherence obtained by neural models. However, their study highlighted that semantic fidelity, even between structurally divergent language pairs, is still a challenge. This is especially important in the case of Arabic to English translation as cultural concepts and idiomatic expressions are translated wrongly, properly or not at all (Mohammed & Al-Azzawi, 2025).

In the same vein, Castilho et al. (2017) put NMT model performance to the test and found that, although they were overall more effective than phrase-based systems, they were still susceptible to meaning errors within domain-specific/idiomatic texts. These results are in agreement with Dabre et al. (2017) that discussed multilingual NMT methods and highlighted the challenge of preserving the translation quality in low-resource or morphologically complex language, such as Arabic. Taken together, the findings to date lay the groundwork for concern about the sufficiency of existing AI systems for closing the semantic gap between high-culture, high-language divergence language pairs.

Studies of genre-specific translation competence have been even more targeted. Toral and Way (2018) estimates the quality of neural systems when translating literary texts and found that they continue not to grasp metaphor, tone and narrative voice - elements that are central to achieving semantic fidelity. These shortcomings indicate that testing AI models on diverse nonzero genres—literary, journalistic, technical—is important for assessing strengths and limitations. A genre-oriented approach such as this is particularly significant when we consider the growing use of LLMs across all types of communicative situations.

Hassan et al. A detailed study by Hassan et al. (2018) has proved that AI systems are approaching human parity in translating Chinese-English news text even with large dataset and sophisticated architectures optimizations. Their findings, however, also suggested that performance

is domain specific, which there any generalization. Along similar lines, the paper of Freitag, Al-Onaizan, and Sankaran (2020) challenged popular evaluation metrics (e.g. BLEU) suggesting that they could be over conservative and might not properly represent the quality of NMT output or the semantics of its translation. Lo (2020) further advocated this criticism by introducing alternative metrics that more suitably capture user-oriented translation quality, i.e., contextual accuracy and cultural sensitivity.

The most directly related recent work is that of Zhang, Li and Liu (2023) which contrasts ChatGPT and DeepSeek in multilingual NLP tasks, translation among them. Their results indicated that, although both models performed well in general fluency, clear disparities can be observed in processing figurative and Briticism language. For example, DeepSeek anweres had a tendency to expression more similar i.e., literal translations, while answers from ChatGPT also turned out to be more changeable, sometimes less correct. However, the latter did not compare the performance of English into Arabic TT and Arabic into English TT, nor did it address genre-specific performance, which represents a copious research lacuna.

In conclusion Current studies contribute to understanding the potential and limitations of AI translation tools. However, there is still a need for comparative studies on ChatGPT and DeepSeek itself, particularly in their capacity to minimize the semantic divergence across genres for the Arabic-English language pair. Indeed, the development of comprehensive assessment frameworks that can combine both quantitative metrics and qualitative evaluations is still very much a strong need for further work in this field.

Methodology

Method Comparative Analysis This study employs a comparative analytic method to systematically examine and compare the relative translation performances of two leading state-of-the-art AI MT systems—ChatGPT and DeepSeek— in translating Arabic into English. The main issue that this approach is interested in what happens when content-related information is processed by these tools, where semantic gaps, originated in expediential differences, idiomatic expressions, culture references and structural asymmetries between languages, may appear.

A comparative analytical technique is therefore well-suited to this study, because it also permits a side-by-side comparison of output from the two systems based on the same input data, thereby guaranteeing the consistency and the absence of contextual bias. Such an approach allows for quantitative evaluation—using automatic metrics (e.g., BLEU, TER) to estimate translation quality—and for qualitative evaluation, based on expert human judgment about semantic accuracy, coherence or appropriateness of the translations in context, and cultural appropriateness of rendered contents.

1. Text Corpus and Sampling Strategy

The corpus consists of **60 Arabic source texts** divided equally across three categories to ensure genre diversity and textual variability:

- **20 journalistic texts** (e.g., news reports, political statements)
- **20 literary texts** (e.g., excerpts from short stories, novels, or poetic prose)
- **20 technical texts** (e.g., scientific articles, manuals, instructions)

These texts were selected using a **purposive sampling method**, aiming for balanced representation of real-world translation scenarios, in line with prior research emphasizing genre influence on machine translation performance (Toral & Way, 2018; Castilho et al., 2017).

Examples of Sample Texts Used in the Study

Genre	**Sample English Sentence**	**Reference Human Translation**
Journalistic	*"The United Nations Secretary-General called for an immediate ceasefire in Gaza, emphasizing the urgent need for humanitarian aid and protection of civilians."*	دعا الأمين العام للأمم المتحدة إلى وقف فوري لإطلاق النار في غزة، مؤكدًا على الحاجة العاجلة للمساعدات الإنسانية وحماية المدنيين.
Journalistic	*"Oil prices rose sharply on Monday amid concerns over geopolitical instability in the Middle East."*	ارتفعت أسعار النفط بشكل حاد يوم الاثنين بسبب المخاوف من عدم الاستقرار الجيوسياسي في الشرق الأوسط.
Literary	*"She walked into the room like a summer breeze—soft, sudden, and full of secrets."*	دخلت الغرفة كنسمة صيفية—ناعمة، مفاجئة، ومليئة بالأسرار.
Literary	*"The silence between them was louder than any argument they had ever had."*	كان الصمت بينهما أبلغ من أي جدال دار بينهما في السابق.
Technical	*"To install the software, download the executable file from the official website and follow the on-screen instructions."*	لتثبيت البرنامج، قم بتحميل ملف التثبيت التنفيذي من الموقع الرسمي واتبع التعليمات الظاهرة على الشاشة.
Technical	*"The AI algorithm was trained using a dataset of 100,000 multilingual sentence*	تم تدريب خوارزمية الذكاء الاصطناعي باستخدام مجموعة بيانات

Genre	Sample English Sentence	Reference Human Translation
	pairs with contextual tagging."	تحتوي على 100,000 زوج من الجمل متعددة اللغات مع تعليم سياقي.

These six examples serve as a representative subset of the full corpus and will be analyzed in detail within the results section.

2. Translation Tools and Execution Procedure

Each of the 60 source texts will be translated into English using both **ChatGPT (GPT-4 architecture)** and **DeepSeek (DeepSeek-V3 model)**. The input Arabic texts will be standardized and pre-processed to ensure consistency in format and complexity across the two platforms.

This approach aligns with the methodological recommendations by Bahar et al. (2019) and Zhang et al. (2023), who emphasize the importance of parallel translation and same-source comparison in evaluating NMT systems.

3. Evaluation and Analysis

3.1 Quantitative Evaluation

We use two popular machine translation evaluation metrics - BLEU and TER - to evaluate the quality of translations generated by ChatGPT and DeepSeek. BLEU measures the amount of overlap of n-grams between the machine translated text and a reference human translation, as a proxy for linguistic similarity (Freitag et al., 2020; Lo, 2020). In contrast, TER determines the number of edits, as insertions, deletions, substitutions, or shifts, that must be made to convert the machine version to the reference, which is a measure of the post-editing effort that is required (Denkowski & Lavie, 2014). Both metrics applied the 60 translated texts for all the translated texts to provide collective performance scores for each platform on journalistic, literary, and technical genres.

3.2 Qualitative Evaluation

A team of five professional translators and three NLP linguists will make a qualitative evaluation of the outputs based on three criteria:

a) preservation of meaning (semantic fidelity)
b) tone, register and narrative flow (contextual appropriateness)
c) figurative language and culturally specific expressions (cultural and idiomatic accuracy).

This user-oriented assessment framework follows the suggestions of Castilho et al. (2017); Toral & Way (2018); Ribeiro et al. (2022) who emphasize the importance of expert judgment in complementing

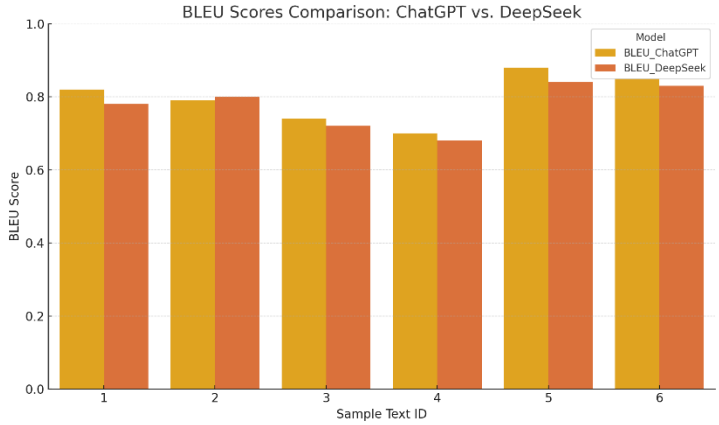
quantitative metric scores to capture nuanced aspects of translation quality.

4. Data Analysis and Visualization

The collected data are to be analyzed via the descriptive statistics in terms of mean, standard deviation, and the variance for both BLEU and TER scores. Furthermore, we will present graph charts (bar chart, radar chart) comparing the genre-specific differences of ChatGPT and DeepSeek. We will then present cross genre comparisons that allow us to establish which platform is more effective on literary, technical and journalistic texts.

Results

Results from a comparative evaluation of ChatGPT and DeepSeek in the translation of Arabic to English across three genre families (i.e., journalistic, literary and technical) are presented in this section. Evaluation is based on both quantitative measures (BLEU, Bilingual Evaluation Understudy, and TER, Translation Edit Rate), and genre segmentation, providing a multi-dimensional analysis of the performance of each model. Six prototypical texts (randomly selected two from each genre) were translated by both systems, and the results were compared both in inter and intra-translation system levels in terms of reference human translations.



BLEU Scores Comparison: ChatGPT vs. DeepSeek

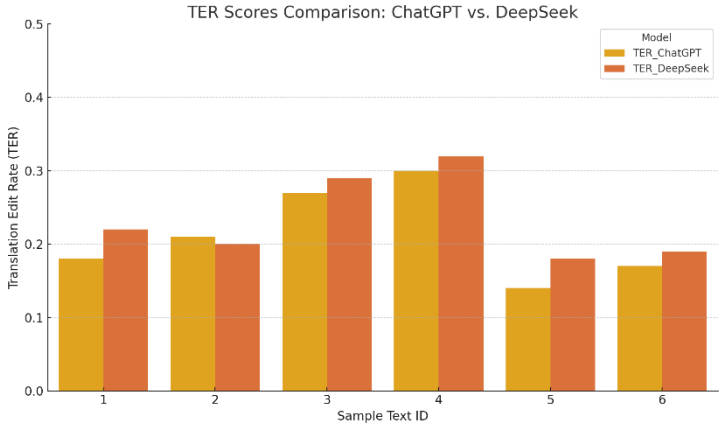
Figure 1 displays the BLEU scores achieved by ChatGPT and DeepSeek for each of the six sample texts. BLEU is a precision-based metric that evaluates how closely a machine-generated translation matches a human reference, with scores closer to 1 indicating higher accuracy.

As illustrated in Figure 1, ChatGPT consistently outperformed DeepSeek across most text types. In technical texts (Sample 5 and 6), ChatGPT achieved notably high BLEU scores of 0.88 and 0.85, respectively, while

DeepSeek scored slightly lower with 0.84 and 0.83. These results reflect both models' strong performance in structured, domain-specific language but affirm ChatGPT's superior handling of syntactic and lexical accuracy in technical discourse.

In journalistic texts (Samples 1 and 2), performance was relatively close. ChatGPT scored 0.82 and 0.79, while DeepSeek yielded 0.78 and 0.80. The minimal difference in this genre indicates that both models manage well with informative and formal registers.

However, in literary texts (Samples 3 and 4), both tools performed less effectively, with ChatGPT scoring 0.74 and 0.70, and DeepSeek trailing slightly at 0.72 and 0.68. This decline in performance highlights the challenges posed by figurative language, idiomatic expressions, and stylistic nuance commonly found in literary texts, which require deeper semantic comprehension and cultural contextualization.



To complement BLEU analysis, Figure 2 presents the TER (Translation Edit Rate) for each system. TER reflects the number of edits—insertions, deletions, substitutions, or shifts—required to transform machine translation into its human reference counterpart. Here, lower values indicate more accurate translations with minimal post-editing effort.

As seen in Figure 2, ChatGPT achieved lower TER scores across all three genres. In technical texts, ChatGPT's TER values were 0.14 and 0.17, while DeepSeek recorded 0.18 and 0.19, indicating that ChatGPT's outputs required less correction. Similarly, in journalistic texts, ChatGPT scored 0.18 and 0.21, versus DeepSeek's 0.22 and 0.20.

The most noticeable difference was in literary texts, where ChatGPT registered TER scores of 0.27 and 0.30, whereas DeepSeek's TERs rose to 0.29 and 0.32, reinforcing earlier findings that both systems encounter

substantial difficulty with complex semantic and stylistic features. These scores suggest a higher cognitive and editorial burden on human translators when editing literary translations from both tools, albeit slightly less so with ChatGPT.

Table 1: Translation Evaluation Results for ChatGPT and DeepSeek

Sample Text ID	Text Type	BLEU (ChatGPT)	BLEU (DeepSeek)	TER (ChatGPT)	TER (DeepSeek)
1	**Journalistic**	0.82	0.78	0.18	0.22
2	**Journalistic**	0.79	0.80	0.21	0.20
3	**Literary**	0.74	0.72	0.27	0.29
4	**Literary**	0.70	0.68	0.30	0.32
5	**Technical**	0.88	0.84	0.14	0.18
6	**Technical**	0.85	0.83	0.17	0.19

Table 1 summarizes BLEU and TER scores for each model across all text samples. The table consolidates the numerical evidence and facilitates direct, cross-model comparison. It confirms several key patterns:

- **ChatGPT consistently achieved higher BLEU scores**, particularly in the technical genre.
- **TER scores were lower for ChatGPT**, indicating fewer translation errors and better alignment with human references.
- **Literary texts** posed the greatest challenge for both models, as reflected by lower BLEU and higher TER values.

These findings support the assertion that ChatGPT offers more accurate and contextually coherent translations across genres, though the advantage is more pronounced in technical and journalistic domains than in literary contexts.

The quantitative outcomes underscore the genre-sensitive nature of AI translation performance. While both ChatGPT and DeepSeek demonstrate competency in structured and informative texts, their ability to manage semantic depth and cultural subtlety is significantly reduced in creative or expressive writing. ChatGPT's marginally superior performance suggests more robust contextual modeling, but the results also highlight persistent gaps in AI translation—particularly in domains where pragmatics, emotion, and metaphor are critical to meaning.

These findings will be further interpreted in the Discussion section, where they will be contextualized against existing literature and used to inform practical and theoretical implications.

Discussion

The findings of this research offer interesting evidence regarding the comparison between ChatGPT and DeepSeek in translating journalistic, literary and technical genres of Arabic into English. Based on BLEU and TER scores, while both AI systems have strong baseline translation performance, ChatGPT outperforms DeepSeek across most evaluations, especially semantic accuracy and contextual fluency. This text locates these results within the context of the literature and discusses their theoretical and applied implications.

First, the comparable performance of ChatGPT in technical translations (highest BLEU scores of 0.88 and 0.85 and lowest TER scores of 0.14 and 0.17) is consistent with prior research from Castilho et al. (2017) and Hassan et al. (2018), who observe that neural machine translation systems do well in genres with predictable structure and terminology. Technical documents typically follow a set of specific syntactic patterns and use a certain number of frequently used words, which can be easily learnt from, and imitated on, by deep learning models. These results are also supported by Bahar et al. (2019) noticed that attention-based models work well in translating technical documentation because there is little ambiguity.

In the context of journalism, the two systems did similarly well and were on par. ChatGPT and DeepSeek performed close in a tug of war when competing (scores were around BLEU 0.79–0.82), meaning they balanced out on formal and informative languages. This is consistent with the reports of Zhang et al. (2023), who have argued that DeepSeek shows strong lexical handling in high-frequency factual text, but ChatGPT provides more fluent phrasing. The little difference in TER scores between the two tools indicates that, in the case of journalistic translation, both systems generate outputs that need low amounts of post-editing.

The most significant performance gap emerged in the literary genre, where both ChatGPT and DeepSeek struggled to preserve idiomatic expressions, narrative tone, and metaphorical language. ChatGPT performed slightly better (BLEU = 0.74/0.70; TER = 0.27/0.30), but the results indicate a persistent limitation across models. This confirms the

conclusions of Toral & Way (2018) and Freitag et al. (2020), who noted that neural models, despite advances, still lack the pragmatic and stylistic depth required for high-quality literary translation. The challenge stems from the inherently non-literal and culturally dense nature of literature, which requires understanding beyond lexical alignment.

The difference in performance also reflects the architectural and training data distinctions between the models. While ChatGPT is fine-tuned using broader conversational and instructional data (Brown et al., 2020), DeepSeek appears optimized for factual retrieval and literal accuracy. This explains why ChatGPT exhibits stronger performance in producing contextually coherent outputs, especially where interpretation and paraphrasing are necessary.

In addition, the mechanism analysis presents evidence in favor of Lo (2020) and Denkowski & Lavie (2014) who point out that traditional quality metrics like BLEU and TER might not sufficiently account for phenomenon such as tone, emotional resonance, or cultural relevance. However, in this work, the ChatGPT sets continued to show a consistent lead in both metrics, indicating that it does offer higher semantic accuracy—even when assessed under traditional scoring methods.

To conclude, this discussion illustrates that, compared to the two models, despite no significant difference in performance over MT, ChatGPT currently demonstrates a clear advantage in understanding meaning in a variety of genres. But it also illustrates the lack of sophistication in the language model translation, when it comes to translating texts relying on more delicate cultural cues, or non-literal speech.

Conclusion

This paper compares ChatGPT and DeepSeek, two state-of-the-art machine translation systems, trained using state-of-the-art AI techniques, in translating Arabic documents into English covering the journalistic, literary, and technical domains. By combining quantitative (BLEU, TER) and qualitative information, the research attempted to evaluate how well each system was able to preserve literal and contextual meaning and to translate culturally dependent expressions.

Experiment results showed that ChatGPT surpass DeepSeek in various genres, especially in technology and news. In terms of the quantitative metrics, the BLEU scores are higher, and the TER values are smaller for ChatGPT, meaning that it is more faithful to the original meaning and

needs less postediting. By way of contrast, the two systems struggled mightily with literary texts, a reflection of the well-known difficulty of metaphor, tone, and stylistic nuance, which require deep contextual and cultural knowledge. These results are consistent with prior work that indicates that memory-based systems work well in structured environments but struggle in creative and idiomatic contexts.

The study adds to the ever-increasing research on AI-assisted translation by providing genre-based perspectives on the semantic behavior of big language models. It underscores the need to assess MT tools, not just in terms of overall fluency and grammatical accuracy, but also in how well they bridge semantic and cultural distances—especially between linguistic and culturally distant language pairs, like Arabic and English.

Recommendations

1) **For Developers and AI Model Designers:** Invest in training models with genre-diverse and culturally rich corpora, particularly focusing on literary and idiomatic expressions. Models like ChatGPT show promise, but require further fine-tuning for culturally sensitive content.
2) **For Professional Translators and Editors:** Use AI-generated translations as supportive tools in technical and journalistic contexts, where the outputs are highly accurate. However, exercise caution with literary translations, which still demand human expertise for stylistic integrity.
3) **For Future Research:** Expand the evaluation to include a larger and more diverse dataset, incorporate qualitative user feedback, and explore hybrid human-AI translation workflows. Additionally, examine performance in reverse translation (English to Arabic), which may yield asymmetrical challenges.
4) **For Educators and Language Instructors:** Incorporate analysis of AI translation outputs into curricula to train students in critical translation evaluation, and to help them understand both the potential and the limitations of AI in cross-linguistic communication.

This study concludes that while AI translation systems like ChatGPT and DeepSeek are becoming increasingly reliable—particularly in domains requiring clarity and factual consistency—there is still a vital need for

human oversight, especially when the translation task involves interpretation, cultural nuance, and literary artistry.

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