

A COMPARATIVE ANALYSIS OF POETRY TRANSLATION USING THREE AI TOOLS

Clara Herlina Karjo

Creative Digital English, Faculty of Humanities, Bina Nusantara University
clara2666@binus.ac.id

ABSTRACT

AI tools today enable faster and easier translation. However, because some AI technologies are not designed specifically for translation tasks, especially literary translation, such as poetry translation, they may not always provide appropriate translations. AI systems may not translate well if they are not properly prompted. This study analyses the translation of Indonesian poetry 'Hujan bulan Juni' by a renowned Indonesian poet, namely Sapardi Djoko Damono, into English by three AI tools: QuillBot, Google Translate, and Chat GPT. The purpose of this study is to find out the translation differences in terms of structure and diction and to discover which AI tools offer the best translation that can keep the aesthetics of the poetry in the target language. The data is the poetry titled 'Hujan Bulan Juni' which is downloaded from the internet. This poem consists of twelve lines, forming six complete sentences. The poetry is then submitted to the three AI tools to be translated into English. The three translations were then compared in terms of the word choice and the structures used in the target text translations. The title 'Hujan bulan Juni' is translated as 'June Rain' by QuillBot, 'the rain of June' by Google Translate, and 'the rain in June' by ChatGPT. These samples show that each tool has a certain preference and technique when structuring the translations even though the meaning might be similar. Results show that in terms of translating poetry, QuillBot gives the most natural translation, followed by ChatGPT and finally Google Translate, particularly in the choice of words and structure. For instance, QuillBot translates 'rintik rindu' into 'drops of longing,' while GT and ChatGPT render it just as 'longing.' QuillBot maintains its faithfulness to the source text, making it more natural in the target text. However, the AI translators cannot fully create an aesthetic translation of poetry, as the target language translation still feels like a word-for-word translation. GT, for example, translates 'arif' and 'bijak' as 'wise', which does not convey the subtle difference of the source texts. The findings of this study imply that AI can be a valuable tool in improving productivity in translating poetry or other kinds of literary works. The findings also suggest that AI-generated machine translations offer significant potential for literary translation, yet human touch is still needed to create more aesthetic target language translation. Therefore, a hybrid approach that combines AI efficiency and human expertise is still needed in practicing, studying or teaching

Keywords: poetry, AI translators, structure, diction, hujan bulan juni

ABSTRAK

Perangkat AI memungkinkan penerjemahan yang lebih cepat dan lebih mudah. Akan tetapi, karena beberapa teknologi AI tidak dirancang khusus untuk tugas penerjemahan, khususnya penerjemahan sastra, seperti penerjemahan puisi, mereka tidak selalu memberikan hasil terjemahan yang baik. Sistem AI mungkin tidak bisa menerjemahkan dengan baik bila tidak dipromp dengan benar. Studi ini menganalisa penerjemahan puisi Indonesia berjudul 'Hujan Bulan Juni' karya seorang penyair Indonesia terkenal bernama Sapardi Djoko Damono, kedalam bahasa Inggris dengan menggunakan tiga perangkat AI yakni QuillBot, Google Translate, dan Chat-GPT. Tujuan studi ini adalah menemukan perbedaan penerjemahan dalam hal struktur dan pemilihan kata dan untuk menemukan perangkat AI mana yang menghasilkan terjemahan yang paling berterima yang dapat mempertahankan keindahan puisi dalam bahasa sasaran. Data berupa puisi berjudul "Hujan Bulan Juni" yang dapat diunduh dari internet. Puisi ini terdiri dari dua belas baris, membentuk enam kalimat lengkap. Puisi ini kemudian diterjemahkan oleh tiga perangkat AI ke dalam bahasa Inggris. Ketiga hasil terjemahan dibandingkan dalam hal struktur dan diksi dalam bahasa sasaran. Judul puisi 'Hujan Bulan Juni' diterjemahkan sebagai 'June Rain' oleh QuillBot, 'the rain of June' oleh Google Translate, dan 'the rain in June' oleh Chat-GPT. Contoh-contoh ini menunjukkan bahwa setiap perangkat memiliki kecenderungan dan teknik tertentu ketika menyusun terjemahan meskipun secara makna serupa. Hasil studi menunjukkan bahwa dalam hal penerjemahan puisi, QuillBot memberikan terjemahan paling alami, diikuti oleh Chat-GPT dan akhirnya Google Translate, terutama dalam hal pilihan kata dan struktur. Misalnya, QuillBot menerjemahkan 'rintik rindu' menjadi 'drops of longing', sedangkan GT dan Chat-GPT hanya menyebutkan 'longing'. QuillBot mempertahankan kesetiiaannya pada teks sumber, sehingga lebih alami dalam teks sasaran. Akan tetapi, penerjemah berbasis AI tidak bisa sepenuhnya menciptakan terjemahan estetik untuk puisi, karena terjemahan bahasa sasaran masih terasa sebagai penerjemahan kata per kata. GT, misalnya menerjemahkan kata 'arif' dan 'bijak' sebagai 'wise', yang tidak mencerminkan perbedaan makna halus dari kedua kata asal. Temuan penelitian ini menyiratkan bahwa AI bisa menjadi alat berguna untuk meningkatkan produktifitas dalam penerjemahan karya sastra atau jenis lainnya. Temuan ini juga menyiratkan bahwa terjemahan berbasis AI menawarkan potensi penting untuk penerjemahan karya sastra, tetapi sentuhan manusia masih dibutuhkan untuk menciptakan terjemahan bahasa sasaran yang lebih estetik. Karenanya, pendekatan campuran yang

menggabungkan efisiensi AI dan keahlian manusia masih dibutuhkan dalam praktik, studi dan pengajaran penerjemahan.

Kata kunci: puisi, penerjemah AI, struktur, diksi, hujan bulan juni

INTRODUCTION

AI has dramatically changed how people do their work. One example is in doing the translation of text from one language to another. As a Large Language Model program, AI tools such as ChatGPT can translate Source Language text to Target Language text in mere seconds. Thus, translation can be done very fast, and the message can be conveyed immediately.

However, AI translations do not always give satisfactory results. Some researchers have studied the results of AI translators for different types of text. (Memoona Mohsan & Durr-e-Nayab, 2024) found that Chat GPT cannot translate technical, scientific or complicated topics, yet it is still helpful for translating simple word-to-word translation. Munthe et al, 2023 conduct an analysis of GT translation of a scientific article 'The economics of happiness'. They found that GT translation is less accurate than professional translator. Similarly, Li, Grasser & Cai (2014) found that GT lack proficiency while translating complex sentences and it can be used for quick translation like word-to word translation.

Most of the studies, however, only use one or two AI tools and specific types of text. There have been relatively few studies that compare the translations of poetry by three AI tools. Therefore, the present study chooses three AI tools namely Google Translate, Quillbot, and ChatGPT to perform the translation of poetry. A specific poetry was chosen, titled "Hujan Bulan Juni", by a famous Indonesian poet Sapardi Djoko Damono.

There are two research questions which will be undertaken in this study:

- What semantic and structural differences occur in the translation of poetry in three AI tools?
- Which AI tool can deliver the most natural translation of poetry?

Studying the translation results of AI translators, especially in the translation of poetry, will enable readers or users to evaluate the most reliable AI tools for doing the translation. Moreover, this study will enrich the literature on AI translation research.

LITERATURE REVIEW

AI Literary translation

Several studies have already attempted to analyze the translation of literary works using AI tools. For example, (Manapbayeva et al., 2024) examine how well human translator (Dorrian Rottenberg) and AI, specifically OpenAI's Chat GPT-4 perform in translating Kazakh poem "Spring" by Abai Kunnanbayev into English. The results demonstrate the strength and weaknesses of existing AI models in literary translation, indicating that although AI has a lot of promise, hybrid strategies that blend AI effectiveness with human knowledge may be more advantageous.

Another study by (Kamal Ayaseh, 2023) examines the differences between AI and human translation in conveying the nuances of classical Arabic poetry. The research focuses on how each translation method handles metaphors, word choice, tone, and emotional depth, using Dr. Ghazi Al-Qusaibi's poem "Tell Her" as a case study. Ayaseh applies a qualitative approach and evaluates the effectiveness of various translation techniques, including those suggested by Newmark. The findings indicate that human translation is more successful in preserving the emotional resonance, metaphors, and the speaker's attitude in the poem. In contrast, AI translation struggles to accurately convey these elements, highlighting the essential role of human involvement in translating complex poetic works.

Another study that compared human and AI translation was conducted by (Alowedhi et al., 2023). They investigated the discrepancies between machine translation (MT) and human translation of Arabic poetry into English. The research aimed to explain how AI-based MT compares to human translation in capturing cultural and linguistic nuances in poetry. The study analyzed two Arabic poems, *Nothing of Note* and *One Day*, with both machine-generated and human translations. Using a critical linguistic examination, the researchers compared the outcomes. The findings revealed that MT failed to capture the cultural context and nuances, such as using incorrect adjectives and misrepresenting figurative language, historical references, and genre. MT also created discrepancies, such as changing the poem's meaning and structure, which human translation preserved. The study concluded that MT lacks the ability to

understand and convey the cultural context and meaning in Arabic poetry, making it unsuitable for translating such works.

The challenges for translating poetry by AI-based MT can be larger due to the fact that MT are typically designed to translate text word-for-word. (Alowedhi et al., 2023) claimed that MT can be problematic for poetry, which often relies on the nuances and associations of words and phrases rather than their literal meanings. Similarly, (Al-Khalafat & Haider, 2022) mentioned that poetry often employs figurative language, wordplay, and other literary devices that can be difficult for MT algorithms to identify and accurately render it in another language. In addition, poetry also has multiple layers of meaning, and the effect of poetry depends on the reader's interpretation and emotional response to the work. Thus, the subjective element of poetry makes it difficult for machine translation algorithm to capture the full meaning and impact of a poem (Xu et al., 2018).

The above studies concur that in terms of translating poetry, MT or AI lack the ability to fully convey the emotional resonance and cultural context and meaning. Thus, while AI can translate accurately, the essence of poetry is still missing in the translation.

The translation of poetry

Poetry is a personal expression of a poet, and it is considered success if the readers can experience the same journey by reading their poems (Alowedhi et al., 2023). Translating poetry, therefore, is not an easy endeavor, since it relies on the nuances of language and the specific cultural and historical context in which it was written (Venuti, 1993). Even the words in the poetry can be translated, the overall effect of the poem may be lost if the essence of the original language and cultural context of the SL poems are not transferred in the translation. Humans may produce near accurate translation of poetry if the translator has adequate exposure of the target culture and language, so that the target language reader can feel the same impact as if it is written in the target language.

Research on the translation of poetry mostly focuses on the procedures or techniques of translation as portrayed in the following research.

Terayanti et al. (2023) analyzed the translation techniques of Damono's poetry collection in English by Harry Aveling. Aveling translated 'Sihir Hujan' into Black Magic Rain. In this study, the researchers identified 12 out of 18 translation techniques, such as literal translation, adaptation, and amplification. Among these techniques, literal translation emerged as the most dominant method. The research highlights the challenges of preserving meaning while adapting to the cultural and poetic elements of the source language.

Another study by Puspani & Indrawati, 2018, discusses translation procedure of poetry translation from English into Indonesian. The poetry being analyzed is 'Corner Phonebox' by Andrew Taylor into 'Nyanyian Malam di Gardu Telepon' by Sapardi Djoko Damono. The author employed Newmark's translation theory for analysis and identified techniques such as modulation, transposition, and descriptive equivalent. This study highlighted the intricate task of maintaining figurative language, cultural resonance, and aesthetic value in poetry translation.

The next study focuses on the students' ability in translating Indonesian poetry. Saleh & Weda (2018) found that even after being formally trained, students were struggling with lexical and syntactical errors when translating Indonesian poetry into English. The findings emphasized the complexity of translating figurative language and cultural nuances in poetry.

AI Literary translation

As stated by Newmark (1988), the procedures can be applied i.e.: (1) transference in case the translator is faced with the choice to translate a word unfamiliar in the TL, which in principle should be a cultural word whose referent is peculiar to SL culture; (2) naturalization is type of transference and adapts the SL words first to the normal pronunciation then the normal morphology of the TL; (3) cultural equivalent procedure is an approximate translation where the SL cultural word is transferred by a TL cultural word; (4) functional equivalent is a procedure applied in translating cultural word, requires the use of cultural free word sometimes with a new specific term thus naturalizes the use of the SL word; (5) descriptive equivalent is a procedure that has to weigh against its function. (6) synonymy where a sense of near equivalent to a SL word in a context, or when the SL word does not have clear one to one equivalent in the TL; (7) shift (Catford's term) or transposition (Vinay and Darbelnet) is a translation procedure involving change in grammar of the SL in the TL, one type of change from singular to plural; (8) modulation as defined by Vinay and Darbelnet is a type of procedure to explain variation through change

of point of view, perspective or change of thought;(9) compensation is happened when loss of meaning, sound effect, metaphor or pragmatic effect in one part of the sentence is compensated in another part; (10)paraphrase or descriptive equivalent is an explanation of meaning segment of a text; and couplet is couplet, triplet and quadruplet's combine of two, three or four of the previous mentioned procedures.

METHODOLOGY

The data for this study was taken from the internet source (www.gramedia.com). The source text is an Indonesian poetry titled “Hujan Bulan Juni” by Sapardi Djoko Damono. It consists of 56 words, divided into 12 lines. The source text is then submitted to three AI tools, which are Quillbot (herefore QT), Google Translate (herefore GT), and Chat GPT (herefore CT).

To analyze the data, the three translation results are compared in two levels. The first comparison is based on semantics or word choices. The second comparison is based on the syntactic or sentence structure. Each translation was given a score ranging from 1 to 3; 1 being the least acceptable and 3 the most acceptable translation.

Semantic and syntactic comparison of AI translation

The original poem has six sentences which are divided into twelve lines. Each sentence is described accordingly.

Table 1. Sentence 1

<i>No.</i>	<i>Translator</i>	<i>Translation</i>	<i>Score</i>
1.	Source Text	Tak ada yang lebih tabah dari hujan bulan Juni	
2.	QuillBot	There is nothing more patient than the June rain	2
3.	Google Translate	Nothing is more steadfast from the rain of June	3
4.	Chat-GPT	Nothing is more resilient than the rain in June	1

In the first sentence, we will see the translation of the word ‘tabah’ and the phrase ‘hujan bulan Juni’. The word ‘tabah’. In Indonesian, ‘tabah’ means ‘tetap dan kuat hati’. In the translation, each tool uses different words for ‘tabah’, those are *patient*, *steadfast*, and *resilient*. ‘Steadfast’ means not changing your attitudes or aims, ‘resilient’ able to recover quickly after something unpleasant such as shock, injury, etc., while ‘patient’ means able to wait for a long time or accept annoying behavior or difficulties without becoming angry. In this context, the rain is ‘tabah’, therefore the most accurate one would be ‘patient’ because of its ability to wait for something to happen (as indicated in the second sentence).

The second phrase that should be noted is ‘hujan bulan Juni’ which is also the title of this poem. This title contains a paradox, as June is included in dry season where rain is not likely to fall during this month. So, the phrase ‘hujan bulan Juni’ indicates the (extraordinary) rain that is falling in the month of June. The translations “the June rain”, “the rain of June” and “the rain in June” basically share similar meaning. However, “the rain in June” seems to convey the message indicated by the source text.

The original sentence uses a comparative structure ‘lebih... dari’, which is equivalent to the English comparative structure ‘more..... than’. Generally, all tools use the same structure, except for GT that changed the word ‘than’ into ‘from’ which is the literal translation of ‘dari’. The other difference is the translation of ‘tak ada’ which is translated as ‘nothing’ by GT and CT, but ‘there is nothing’ by QT.

Table 2. Sentence 2

<i>No.</i>	<i>Translator</i>	<i>Translation</i>	<i>Score</i>
1.	Source Text	Dirahasiakannya rintik rindunya kepada pohon berbunga itu	
2.	QuillBot	It keeps the drops of longing secret from that flowering tree	1
3.	Google Translate	He kept his longing a secret to that flowering tree	3
4.	Chat-GPT	It keeps its longing secret from the flowering tree	2

In the second sentence, we'll discuss two phrases 'rintik rindu' and 'pohon berbunga'. The phrase 'rintik rindu' consists of the word 'rindu' (longing) and 'rintik' (drops), which is usually used for rain. QT renders this phrase as 'drops of longing', while GT translates it as 'drizzle of longing. In contrast, CT omits the words 'rintik' in the translation. The second phrase 'pohon berbunga' is translated similarly by the three tools as 'flowering tree', which is a literal translation of the source text.

This sentence in ST uses the passive structure "dirahasiakannya rintik rindunya kepada pohon berbunga itu" which can be changed into an active one "Ia merahasiakan rintik rindunya kepada pohon berbunga itu". QT and CT use the active construction with a slight modification of structure in their translations. In ST, the word 'merahasiakan' is a verb, while in English there is no equivalent word, so it should be turned into 'Keep (something) secret'. GT applies similar structure, but it uses past tense and changes the subject into 'he', that personifies the rain.

Table 3. Sentence 3

<i>No.</i>	<i>Translator</i>	<i>Translation</i>	<i>Score</i>
1.	Source Text	Tak ada yang lebih bijak dari hujan bulan Juni	
2.	QuillBot	There is nothing wiser than the June rain	1
3.	Google Translate	No one is the wiser from the rain of June	3
4.	Chat-GPT	Nothing is wiser than the rain in June	2

This sentence is similar to the first line. The word 'bijak' is translated as wise by all three tools. This sentence also uses a comparative structure. QB is consistently using the structure "there is nothing wiser than..", and CT uses the similar structure "nothing is wiser than.." On the other hand, GT tends to personifies the rain by changing the subject into "no one is the wiser from.." Again, structurally, GT does not do well in the translation of this sentence.

Table 4. Sentence 4

<i>No.</i>	<i>Translator</i>	<i>Translation</i>	<i>Score</i>
1.	Source Text	Dihapusnya jejak jejak kakinya yang ragu ragu di jalan itu	
2.	QuillBot	It erases the hesitant footprints on that path	1
3.	Google Translate	Erasing his hesitant footprints on the road	3
4.	Chat-GPT	It erases the footprints that hesitated on the path	2

The noun phrase in sentence 4 "jejak kakinya yang ragu ragu" can be interpreted as "hesitant footprints", in which 'hesitant' is an adjective meaning doubtful, or "footprints that hesitate", in which 'hesitate' is a verb describing footprints that are reluctant to do something. In this context, the more suitable translation would be 'hesitant footprints' rather than 'footprints that hesitated' as footprints cannot think or hesitate to do something.

Meanwhile, for the structure, QT and CT use the active construction "It erases.." for the passive ST "Dihapusnya..". GT, on the other hand, produces an incomplete sentence by eliminating the subject 'it' and beginning the sentence with the verb "erasing..".

Table 5. Sentence 5

<i>No.</i>	<i>Translator</i>	<i>Translation</i>	<i>Score</i>
1.	Source Text	Tak ada yang lebih arif dari hujan bulan Juni	
2.	QuillBot	There is nothing more discerning than the June rain	1
3.	Google Translate	There is no one wiser from the June rain	3
4.	Chat-GPT	Nothing is more discerning than the rain in June	2

In sentence 5, the word ‘arif’ is used to describe the rain. The word ‘arif’ is synonymous with ‘bijaksana’ or ‘bijak’ in sentence 3. GT translates it into ‘wiser’, while QT and CT use the word ‘discerning’. This word is an adjective meaning ‘showing good or outstanding judgment and understanding’, which is more appropriate in this context. In terms of structure, QT and CT use the same structure of comparative sentence. Again, GT shows a deviation in referring the rain into a person (no one) and using ‘from’ instead of ‘than’.

Table 6. Sentence 6

No.	Translator	Translation	Score
1.	Source Text	Dibiarkannya yang tak terucapkan diserap akar pohon berbunga itu.	
2.	QuillBot	It lets the unspoken be absorbed by the roots of that flowering tree	1
3.	Google Translate	He lets what was unspoken absorbed by the roots of the flower tree	3
4.	Chat-GPT	It lets the unspoken be absorbed by the roots of the flowering tree	2

For this sentence, the phrase ‘yang tak terucapkan’ is translated appropriately by the three tools into ‘the unspoken’, yet GT uses the noun phrase ‘what was unspoken’. The ST sentence uses double passive construction ‘dibiarkannya... diserap oleh...’, which can be separated into two active clauses ‘ia membiarkan (yang tak terucapkan)’ and ‘akar pohon berbunga menyerap (yang tak terucapkan)’. The translations by QT and CT use the active voice for the first clause but keep the passive on the second clause. They produce a similar translation “it lets the unspoken be absorbed”. In contrast, GT uses the subject ‘he’ to describe the rain.

Acceptability of AI translation

The term acceptability here can be broadly defined as the most natural equivalent translation. The following table shows the results of acceptability scores for each AI translator.

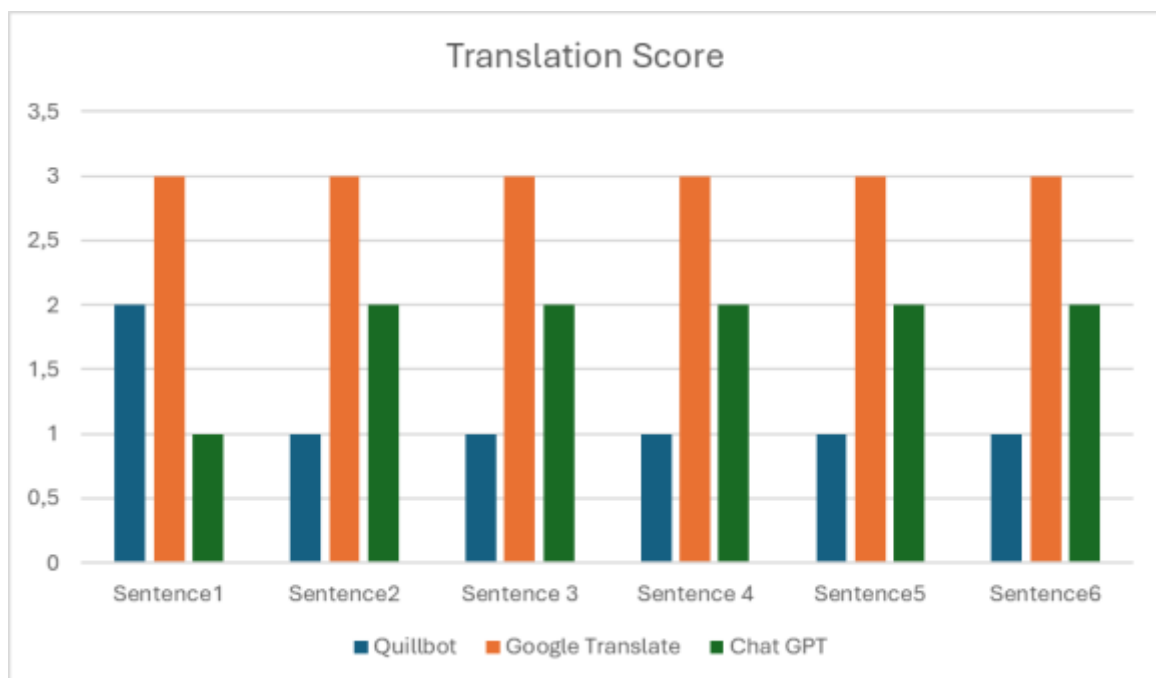


Figure 1. Translation acceptability

Figure 1 shows the scores given to each sentence translation, ranging from number 1 to 3. Score 1 means the most acceptable and 3 is the least acceptable. Of the six sentences, Quillbot gives the most natural translation, Chat GPT in the second place, while Google Translate comes at the last place. Quillbot can give better translation as it is basically an AI tool that provides paraphrasing. Naturally it has more varied

vocabulary for different contexts. Chat GPT is a more general language model that can provide general tasks, and it is not specific for translation. Unexpectedly, GT which is specifically built for translation, still does not give satisfactory translation of poetry. GT still makes mistakes in sentence structure and its choice of words is a bit literal. For example, in all sentences, GT consistently refers to the rain as 'he', making it unnatural and awkward translation.

CONCLUSION AND SUGGESTION

AI-based machine translation tools are now readily available to make translation processes faster and more efficient. However, when translating poetry, MT has not given a satisfactory translation due to their inability to translate cultural nuances and aesthetic value of the poetry in the target language.

In this study, the poetry 'Hujan bulan Juni' was translated into English by three AI tools, Quillbot, Google Translate, and Chat-GPT. The translations were evaluated based on the word choice and sentence structures used by the three AI translators. The results show that Quillbot gives the most natural translation, followed by Chat-GPT, and Google Translate is the least accurate, particularly in the word choice and structure used.

In this study, however, the three AI translators have not shown their ability to create an aesthetic translation of poetry. The TL poems still feel like word-for-word translation and do not emit a certain impact toward the readers. In the future, we may hope that AI translators can be improved to be better in conveying the deeper feeling of the poetry author.

REFERENCES

- Al-Khalafat, L., & Haider, A. S. (2022). A corpus-assisted translation study of strategies used in rendering culture-bound expressions in the speeches of King Abdullah II. *Theory and Practice in Language Studies*, 12(1), 130–142.
- Alowed, N. A., Mohammed, A. A., & Al-Ahdal, H. (2023). Artificial Intelligence based Arabic-to-English machine versus human translation of poetry: An analytical study of outcomes. *Journal of Namibian Studies*, 33–35.
- Kamal Ayaseh, A. (2023). *A comparative study between human and machine translation of the poem "Tell Her" by Dr. Ghazi Al-Qusaibi*. <https://doi.org/10.13140/RG.2.2.34870.72005>
- Manapbayeva, Z., Zaurbekova, G., Ayazbekova, K., Kazezova, A., & Pirmanova, K. (2024). AI in Literary Translation: ChatGPT-4 vs. Professional Human Translation of Abai's Poem 'Spring.' *Procedia Computer Science*, 251, 526–531. <https://doi.org/10.1016/j.procs.2024.11.143>
- Memoona Mohsan, & Durr-e-Nayab. (2024). Estimating and Comparing Translation Skills: A Comparative Study of ChatGPT and Human Translation. *Journal of Development and Social Sciences*, 5(III). [https://doi.org/10.47205/jdss.2024\(5-III\)08](https://doi.org/10.47205/jdss.2024(5-III)08).
- Puspani, I. A. M., & Indrawati, N. L. K. M. (2018). Translation Procedures in Translating English Poem into Indonesian. *International Journal of Applied Linguistics and English Literature*, 7(6), 12-17. <https://doi.org/10.7575/aiac.ijalel.v.7n.6p.12>
- Saleh, N. J., & Weda, S. (2018). Indonesian Poetry Translation: The Problem Within. *Journal of English as an International Language*, 13, 64–87.
- Terayanti, Y. A., Mu'in, F., & Nasrullah, N. (2023). The Translation Techniques of the Translation Damono's Poems in English. *Elite Journal: International Journal of Education, Language, and Literature*, 1(19), 2023. <https://journal.unesa.ac.id/index.php/elite>
- Venuti, L. (1993). Translation as cultural politics: Regimes of domestication in English. *Textual Practice*, 7(2), 208–223.
- Xu, L., Jiang, L., Qin, C., Wang, Z., & Du, D. (2018). How images inspire poems: Generating classical Chinese poetry from images with memory networks. *Proceedings of the AAAI Conference on Artificial Intelligence*.

CURRICULUM VITAE

Complete Name : Clara Herlina Karjo
Institution : Bina Nusantara University
Education : DR in Applied Linguistics
Research Interests: Applied linguistics, translations, digital discourse