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Assessing Neural Machine Translation in Speech: Problems and Solutions in AI-Powered Translations

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Abstract — The swift progress of artificial intelligence (AI), particularly in Neural Machine Translation (NMT) systems, has substantially transformed the landscape of translation practices. While AI-powered applications such as Monica AI (Powered by ChatGPT) demonstrate a high degree of linguistic accuracy, there remains a notable research gap regarding the specific translation challenges encountered by professional translators when working with AI-generated outputs, especially in speech texts. The theoretical novelty of this study lies in integrating Nord's text-typological translation problem framework with Molina and Albir's translation technique model to evaluate NMT output, an approach rarely applied to spoken oratory texts. Empirically, the study provides a fine-grained error analysis of a ChatGPT-powered NMT system on formal political speech, quantifying problem types and mapping them to specific post-editing strategies. Utilizing a qualitative content analysis approach, this research examines a formal English-language speech text translated using Monica AI. A total of 282 source sentences, along with their AI-generated and post-edited versions, served as the corpus. Findings reveal that 91.1% of the translated sentences were accurate, while 8.9% contained identifiable issues, predominantly within pragmatic, conventional, and text-specific domains. This study emphasizes the indispensable role of human translators in ensuring cultural and contextual appropriateness in AI-assisted translation.

Keywords — AI-assisted Translation, Neural Machine Translation, Speech Translation, Translation Problems

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I. INTRODUCTION

The rapid advancement of artificial intelligence (AI) has positioned Neural Machine Translation (NMT) at the forefront of technological applications across diverse sectors, including education, healthcare, and international communication [1]. Widely adopted tools such as Google Translate and DeepL are prized for their ability to deliver faster and more accurate translations compared to traditional methods [2][3]. This technology not only serves as an aid for everyday translation tasks but also accelerates language acquisition and enhances cross-linguistic information accessibility [4]. In education, AI-driven translation has been shown to support the development of students' writing skills, as evidenced by recent scholarly investigations [5].

Within academia, NMT facilitates the translation of scientific materials, improves access to multilingual information, and accelerates international collaboration [6]. It also plays a significant role in translator training, supporting the competency development of future translators while bridging linguistic gaps that impede effective communication [7]. Specialized tools like BioTranslator have demonstrated improved translation accuracy in the medical field, while AI-powered chatbots such as DR-COVID have proven capable of delivering rapid and precise medical information, even during crises such as the COVID-19 pandemic [8].

Despite broad scholarly attention to AI applications in translation, research focusing on the translation of oratory or speech texts using NMT remains notably limited [9]. The translation of speeches introduces unique challenges seldom encountered in conventional text translation, including high

speech rates, culturally nuanced expressions, and colloquialisms that may not be directly interpretable by NMT systems [9][10]. This indicates that while NMT shows considerable promise in translating written texts, the domain of oral translation, particularly formal speeches, requires more focused research and technological refinement [9].

The present study offers both theoretical and empirical novelty. Theoretically, it operationalizes a combined framework of Nord's translation problem taxonomy (pragmatic, conventional, linguistic, text-specific) and Molina and Albir's translation techniques, which has not been systematically applied to evaluate NMT performance on speech texts. Empirically, it provides a granular, sentence-level analysis of a ChatGPT-powered NMT system (Monica AI) on a real political speech, including a full inventory of error types and their corresponding post-editing strategies. This moves beyond prior studies that focus on user perceptions or general utility without probing concrete challenges and solutions in AI-assisted speech translation.

Previous studies on AI-based NMT have reported positive outcomes. For instance, Polakova & Klimova (2023) observed that tools like DeepL significantly enhanced students' language skills, particularly in formal writing, based on pre- and post-test comparisons of English learners [11]. Alqahtani et al. (2023) affirmed the utility of AI translation technology as an aid for academics in translating textual materials [12], while Wang (2023) highlighted its importance in translator education for developing future competencies and mitigating language barriers [13]. Xu et al. (2023) examined AI translation tools such as BioTranslator, which enables multilingual translation in biomedicine [14], and Yang et al. (2023) explored AI chatbots like DR-COVID that provided accurate multilingual information during the COVID-19 pandemic, noting advantages in accuracy and efficiency over conventional chatbots [15].

Nevertheless, although numerous studies have investigated AI-assisted translation in educational, healthcare, and user-experience contexts, there remains a scarcity of in-depth research on the specific translation problems encountered by translators when working on speech texts with such technology. Much of the existing literature emphasizes positive user perceptions or general utility, without probing the concrete challenges faced by professional translators.

Moreover, while some studies touch upon translation quality, detailed analysis of the obstacles arising during the AI-assisted translation process is still limited. This line of inquiry is valuable as it can yield deeper insights into translator interaction with AI-based tools, identify prevalent translation problems, and elucidate strategies employed to overcome these hurdles. The findings are expected to contribute not only to translation studies but also to support translators in leveraging this technology more effectively.

Given the expanding use of AI-driven automated translation tools, it is essential to understand their existing challenges and limitations to ensure that output quality meets the standards expected by readers. This study seeks to address two main questions: 1) What major translation problems persist during the AI-assisted translation of speech texts? and 2) How does a translator address these problems?

II. METHODOLOGY

To accomplish the objectives of this study, the classification of translation problems proposed by Nord was applied as an analytical framework to approach and examine the challenges encountered throughout the translation process [16]. Translation techniques developed by Molina & Albir (2002) served as tools to address the identified obstacles [17]. As the primary data source, this research utilized a single speech text titled *Donald Trump Speaks for The 1st Time on the Assassination Attempt*, which was published on the FOX 9 Minneapolis-St. Paul YouTube channel on August 14, 2024. The speech comprises 1,465 words and employs formal English.

The study adopted a qualitative content analysis method [18], an approach centered on collecting non-numeric data such as documents, images, and verbal expressions. In this study, the data analyzed were derived from both the original speech text and its translated version. Since the source text was extracted from YouTube, the initial step involved converting the video transcript into a Word document. The source text was then input into Monica AI Powered by ChatGPT, an AI-based translation application. This application was selected due to its consistently high user ratings.

The output generated by Monica AI constituted the target text subjected to analysis. To facilitate systematic examination, three versions of the text (source text, target text, and a control text) were arranged in four-column tables, with an additional column designated for marking each identified translation problems (refer to the code list on TABLE 1-4 for further details).

The analysis began with proofreading the target text, during which segments containing translation problems were highlighted in bold and annotated with corresponding codes. This approach allowed for a straightforward comparison between the target text and the control text presented alongside it. To ensure reliability, two independent coders (both PhD candidates in translation studies) each analyzed a random sample of 20% of the corpus. Inter-coder agreement reached 89.7% (Cohen's kappa = 0.85), indicating strong reliability. The highlighted findings were then categorized according to the types of translation problems, based on Nord's framework, as summarized in the TABLE 1-4 that adopted from Untara & Setiawan (2020) [19] below:

TABLE I. PRAGMATIC TRANSLATION PROBLEMS

No.	Problem	Code
1.	Cultural-tied terms	P-c-tt
2.	Indication of the relationship between the communicating parties	P-i-orb
3.	References to time and place	P-r-ttp

TABLE II. TRANSLATION PROBLEMS RELATED TO CONVENTIONS

No.	Problem	Code
1.	Formal Conventions	C-rtp-fc
2.	Forms of Address	C-rtp-foa
3.	Measuring Conventions	C-rtp-mc

4.	Salution Formulas	C-rtp-sf
5.	Text-Type and Genre Conventions	C-rtp-tt_g

TABLE III. LINGUISTIC TRANSLATION PROBLEMS

No.	Problem	Code
1.	Sentence structure	L-Se-Str
2.1	Lexis Items	
	Item	Code
	Adjectives	L-Lexis-adj
	Adverbs	L-Lexis-adv
	Interjections	L-Lexis-intj
	Nouns	L-Lexis-noun
	Pronouns	L-Lexis-pron
	Verbs	L-Lexis-verb
2.2	Lexical Aspects in Grammar	Code
	Antonyms	L-lexis-ant
	Collocations	L-lexis-coll
	Conjunctions	L-lexis-conj
	Dictions	L-lexis-diction
	Homophones	L-lexis-homp
	Polysemy	L-lexis-poly
	Prepositions	L-lexis-prep
	Semantics	L-lexis-Sem
	Synonyms	L-Lexis-syn

TABLE IV. TEXT – SPECIFIC TRANSLATION PROBLEMS

No.	Problem	Code
1.	Alliteration	T-stp-alli
2.	Wordplay	T-stp-puns
3.	Rhetorical figures	T-stp-rhect
4.	Rhyme	T-stp-rhy

To support the analysis process, lexis was subdivided into lexical items and their grammatical aspects. The final phase comprised a qualitative examination of the groups of translation problems, wherein rational solutions for each issue were proposed based on Molina and Albir's translation techniques. The study concluded by synthesizing the overall findings.

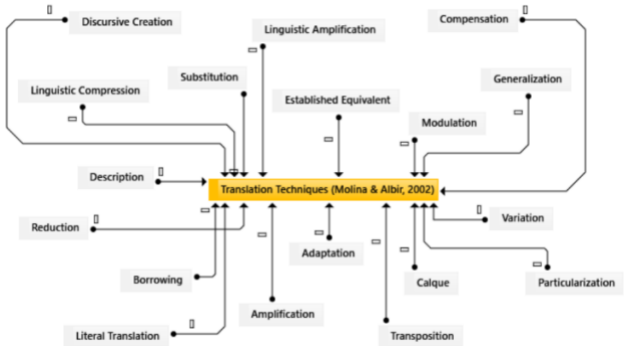

Fig. 1. Molina and Albir's Translation Techniques.

III. RESULT AND DISCUSSION

The initial analysis, which involved compiling a list and annotating the text, produced a six-column table containing 3,350 words. All six columns consisted of the following: a serial number, the source text, the target text, a problem column, the control text, and the translation technique. In the Word document, the resulting text extended to 15 portrait-oriented pages. The Source Text column served as the repository for the original material. Meanwhile, the translated text (generated using Monica AI) was placed in the Target Text column. Any issues identified within the Target Text were highlighted in bold and marked with the relevant Nord translation problem codes in the Problem column. The Control Text column contained the manually edited versions of the Target Text, serving as the corrected forms of the translations whenever any issues were observed. Below is the analysis that has been conducted.

A. Analysis of the Translation Performance of Monica AI Based on Christine Nord's Translation Problems Approach and Molina and Albir's Translation Techniques

1) Pragmatic Translation Problems

The primary challenge encountered by Monica AI during the experimental translation of this speech text was pragmatic translation problems. These challenges largely fell into two categories: terms bound to cultural context (cultural-tied terms) and indicators of relationships between the communicating parties. In contrast, no issues were identified concerning references to time and place throughout the analysis process.

a) Translation Problems Related to Culturally-Tied Terms

Overall, Monica AI performed adequately in handling terms with cultural associations. As a simple qualitative illustration, among 282 sentences translated from the source text, only six instances (2.1%) involved problems stemming from culturally-tied terminology. The following table summarizes the problems observed:

TABLE V. ANALYSIS OF PROBLEMS IN TRANSLATING CULTURALLY-TIED TERMS

Source Text	Target Text	Problem	Control Text	Translation Technique
"They are serious Trump supporters."	*Mereka adalah pendukung Trump yang serius.*	P-c-tt	*Mereka adalah pendukung Trump yang sangat berkomitmen.*	Adaptation: Replacing "serius" with "sangat berkomitmen" to better align with the target culture's connotation.
"He was a former fire chief, highly respected."	*Dia adalah mantan kepala pemadam kebakaran yang sangat dihormati.*	P-c-tt	*Dia adalah mantan kepala dinas pemadam kebakaran yang sangat dihormati.*	Linguistic Amplification: Adding "dinas" for greater contextual clarity.
"They were patriotic."	*Mereka adalah orang-orang patriotik.*	P-c-tt	*Mereka adalah orang-orang yang mencintai negara.*	Description: Substituting "patriotik" with a more accessible explanation.
"Very brave secret service agents rushed to the stage."	*Para agen Secret Service yang sangat berani*	P-c-tt	*Para agen rahasia yang sangat berani berlari ke panggung.*	Discursive Creation: Using "agen rahasia" as a more broadly

	berlari ke panggung.			understood term.
"They managed crowd control effectively."	*Mereka mengelola pengendalian kerumunan dengan efektif.*	P-c-tt	*Mereka berhasil mengatur kerumunan dengan baik.*	Compensation: Adding "berhasil" to convey a more positive nuance.
"Blood was everywhere."	*Darah mengalir di mana-mana.*	P-c-tt	*Darah berceceran di mana-mana.*	Generalization: Using "berceceran," a more general depiction of the situation.

b) Translation Problems Concerning the Indication of Relationships Between Communicating Parties

The indication of relationships between the communicating parties emerged as the second issue identified by the researcher during the analysis of the source texts and their translations. Out of the 282 sentences reviewed from the source texts, only 5 instances (1.8%) involved issues pertaining to this category. The problems identified are summarized below.

TABLE VI. ANALYSIS OF TRANSLATION PROBLEMS RELATED TO THE INDICIATONS OF RELATIONSHIPS BETWEEN COMMUNICATING PARTIES

Source Text	Target Text	Problem	Control Text	Translation Technique
"I want to thank the fire department and his family."	*Saya ingin berterima kasih kepada departemen pemadam kebakaran dan keluarganya.*	P-i-orb	*Saya ingin mengucapkan terima kasih yang tulus kepada dinas pemadam kebakaran dan keluarga almarhum.*	Description: A more comprehensive rendering, "Saya ingin mengucapkan terima kasih yang tulus kepada dinas pemadam kebakaran dan keluarga almarhum," provides additional context clarifying the relationship with the deceased.
"I felt safe because I knew God was by my side."	*Saya merasa aman karena saya yakin Tuhan di sisi saya.*	P-i-orb	*Saya merasa tenang karena saya yakin Tuhan selalu menyertai saya*	Modulation: Shifting from "I felt safe" to "I felt at ease" emphasizes a perspective that highlights tranquility.
"Now I ask all of us to take a moment of silence to honor our friend, Cory."	*Sekarang saya meminta kita semua untuk mengheningkan cipta sejenak untuk menghormati sahabat kita, Cory.*	P-i-orb	*Sekarang saya meminta kita semua untuk sejenak merenungkan dan menghormati sahabat kita, Cory.*	Linguistic Amplification: The phrase "sejenak merenungkan dan menghormati" adds a deeper nuance of reflection.
"I was almost killed by a killer bullet, just a quarter of an inch away."	*Peluru pembunuh hampir saja mengambil nyawa saya, hanya seperempat inci lagi.*	P-i-orb	*Saya hampir saja terbunuh oleh peluru yang mematikan, hanya seperempat inci lagi.*	Compensation: Replacing "peluru pembunuh" with "peluru yang mematikan" conveys stronger and more dramatic meaning.
"There is no greater love than to lay down one's life for another."	*Tidak ada cinta yang lebih besar daripada memberikan nyawa demi orang lain.*	P-i-orb	*Tidak ada cinta yang lebih besar daripada mengorbankan nyawa demi orang lain.*	Variation: Using "mengorbankan nyawa" instead of "memberikan nyawa" conveys a deeper emotional nuance.

2) Translation Problems Related to Conventions

Another challenge encountered by Monica AI in the experimental translation of this speech text pertained to the application of translation conventions. Most of these challenges can be classified into three main categories: formal conventions, forms of address, and measuring conventions. Meanwhile, the categories of salutation formulas as well as text-type and genre conventions did not emerge during the analysis process.

a) Problems in Translating Formal Conventions

Monica AI demonstrated very strong performance in resolving translation problems related to formal conventions. Of the total 282 source text sentences analyzed qualitatively, there were only 2 instances of errors in applying formal conventions (0.7%). The table below details these findings.

TABLE VII. ANALYSIS OF PROBLEMS IN TRANSLATING FORMAL CONVENTIONS

Source Text	Target Text	Problem	Control Text	Translation Technique
"I stand before you tonight only by the grace of Almighty God."	*Saya berdiri di hadapan Anda malam ini hanya karena kasih karunia Tuhan Yang Maha Kuasa.*	C-rtp-fc	*Saya berdiri di hadapan Anda malam ini hanya karena anugerah dari Tuhan Yang Maha Kuasa.*	Adaptation: the term "grace" was translated as *"kasih karunia"*, which is culturally acceptable, though *"anugerah"* would be more appropriate in the target context.
"We are united stronger than ever."	*Kita bersatu lebih kuat dari sebelumnya.*	C-rtp-fc	*Kita bersatu dengan kekuatan yang lebih besar dari sebelumnya.*	Linguistic Amplification: "We are united stronger than ever." was rendered as "Kita bersatu lebih kuat dari sebelumnya." While no significant details were added, the translator could have used amplification to emphasize the

				collective strength, for example: “Kita bersatu dengan kekuatan yang lebih besar dari sebelumnya.”

b) Problems in Translating Forms of Address

The use of forms of address constitutes the second problem identified by the researcher during the analysis process, particularly concerning the challenges of translating conventions. Out of a total of 282 sentences in the source text, only four instances related to forms of address were found (1.4%). The following table summarizes the identified problems.

TABLE VIII. ANALYSIS TRANSLATION PROBLEMS RELATED TO FROMS OF ADDRESS

Source Text	Target Text	Problem	Control Text	Translation Technique
"My dear compatriots."	*Saudara-saudara saya.*	C-rtp-foa	*Saudara-saudara sebangsa yang saya cintai.*	Adaptation: The researcher replaced a cultural expression with terminology more appropriate and familiar within the target culture’s context.
"Thank you all for being here tonight."	*Terima kasih kepada kalian semua telah hadir malam ini.*	C-rtp-foa	*Terima kasih kepada Anda semua yang telah hadir malam ini.*	Linguistic Amplification: The researcher added detail by using "Anda" to convey a more formal tone and demonstrate respect for the audience.
"I want to express my gratitude to the American people."	*Saya ingin mengungkapkan rasa syukur saya kepada rakyat Amerika.*	C-rtp-foa	*Saya ingin mengungkapkan rasa syukur kepada rakyat Amerika.*	Literal Translation: The researcher translated the sentence directly without altering its meaning, thereby preserving the essence of the original expression.
"I felt safe because I knew God was with me."	*Saya merasa aman karena saya yakin Tuhan di sisi saya.*	C-rtp-foa	*Saya merasa aman karena saya yakin Tuhan bersama saya.*	Literal Translation: The researcher rendered the sentence directly, maintaining the intended meaning and nuance.

c) Translation Problems Related to Measuring Conventions

The researcher identified measuring conventions as the third problem that emerged during the analysis, specifically concerning the challenges of translating certain conventions. Out of a total of 282 sentences in the source text, only two instances (0.7%) were identified as pertaining to measuring conventions. The details of these issues are presented below.

TABLE IX. ANALYSIS OF TRANSLATION PROBLEMS IN MEASURING CONVENTIONS

Source Text	Target Text	Problem	Control Text	Translation Technique
"A few inches away."	*Beberapa inci lagi.*	C-rtp-mc	*Hanya beberapa senti lagi*	Modulation: The translator adjusted the perspective or the mode of expression. In this instance, using "inches" versus "centimeters" reflects a shift to a unit of measurement more familiar to the target audience.
"A million thanks."	*Satu juta terima kasih.*	C-rtp-mc	*Terima kasih yang sebesar-besarnya*	Adaptation: A cultural expression was modified to better fit the target cultural context. "Terima kasih yang sebesar-besarnya" conveys a deeper nuance and is more in line with customary expressions of gratitude in the target culture.

3) Specific Translation Problems Related to the Text

The subsequent challenge faced by Monica AI in translating this speech text concerns particular constraints inherent to text translation. Most of these constraints can be grouped into three main categories: challenges in rendering wordplay, the use of rhetorical figures, and elements of rhyme. However, issues related to alliteration were not identified during the analysis process.

a) Problems Translating Wordplay

Monica AI demonstrated a satisfactory capacity to address the complexities of translating wordplay. Throughout the translation of 282 source sentences, only three instances of difficulties connected to wordplay were documented, representing approximately 1.1% of the total sentences. The table below details these problems.

TABLE X. ANALYSIS OF WORDPLAY TRANSLATION PROBLEMS

Source Text	Target Text	Problem	Control Text	Translation Technique
"No love is greater than giving life for	*Tidak ada cinta yang lebih besar daripada memberikan nyawa*	T-stp-puns	*Tidak ada cinta yang lebih besar daripada mengorbankan nyawa*	Adaptation: The phrase "giving life" from the source text was rendered as "mengorbankan

others. "	*demi orang lain.*		*demi orang lain.*	nyawa" to better align with the cultural context and audience understanding. Linguistic Amplification: T he word "stronger" was translated as "lebih bertekad," introducing a nuance of determination that reinforces the intended message beyond a literal translation. Description: The phrase "will never forget" was expressed as "akan selalu mengingat." This lexical choice emphasizes a sustained commitment to remembrance, enriching the emotional tone of the translation.
"We are stronge r than ever."	*Kami lebih kuat dari sebelumny a.*	T-stp-puns	*Kami lebih bertekad dari sebelumnya.*	
"We will never forget them."	*Kami tidak akan pernah melupakan mereka.*	T-stp-puns	*Kami akan selalu mengingat mereka.*	

b) Problems in Translating Rhetorical Figures

Monica AI demonstrated a fairly reliable capacity in addressing challenges related to the translation of rhetorical figures. Out of a total of 282 source text sentences translated, only two instances of issues involving rhetorical figures were identified, representing approximately 0.7% of the total. A more detailed description of these issues is provided below.

TABLE XI. ANALYSIS OF PROBLEMS IN TRANSLATING RHETORICAL FIGURES

Source Text	Target Text	Problem	Control Text	Translation Technique
"We are united in our grief."	*Kami bersatu dalam kesedihan kami.*	T-stp-rhect	*Kami bersatu dalam duka cita.*	Adaptation: In the sentence “Kami bersatu dalam duka cita,” the term “duka cita” is used instead of the more literal “grief” to better align with the cultural context of the target audience. Compensation: In the sentence “Kami akan bangkit dari keterpurukan,” the addition of “keterpurukan” conveys a deeper, more contextual meaning than a literal translation of “ashes,” thereby enriching the conveyed message.
"We will rise from the ashes."	*Kami akan bangkit dari abu.*	T-stp-rhect	*Kami akan bangkit dari keterpurukan.*	

c) Problems in Translating Verse

In addressing the challenges inherent in translating verse, Monica AI demonstrated a commendable level of performance. Out of a total of 282 source text sentences processed, only a single issue was identified as pertaining specifically to poetic elements, representing approximately 0.4% of the overall corpus. A detailed account of this constraint is presented in the table and subsequent analysis below.

TABLE XII. ANALYSIS OF VERSE TRANSLATION PROBLEMS

Source Text	Target Text	Problem	Control Text	Translation Technique
"In times of darkness."	*Di saat-saat tergelap.*	T-stp-rhy	*Di masa-masa kelam.*	Adaptation: The phrase “Di masa-masa kelam” may also be classified as an example of adaptation, wherein the expression is adjusted to align more closely with cultural and emotional contexts relevant to the target audience.

B. Performance Outcomes of Monica AI as an Auxiliary Tool in Speech Text Translation

Based on the analysis conducted previously, Monica AI represents a promising tool for translators, supporting them throughout the translation process of speech texts. The following chart illustrates the results of the translation analysis.

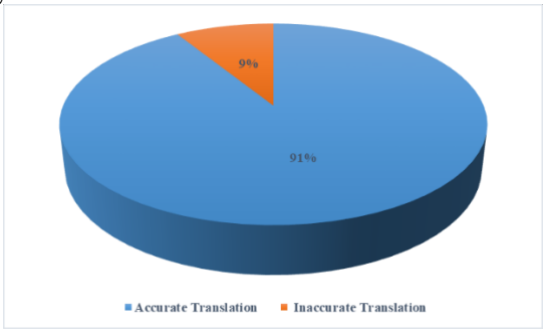

Fig. 2. Recapitulation of Translation Problems Identified by Monica AI.

Out of the 3,350 words and 282 sentences translated in total by Monica AI, there remained 25 sentences that were inaccurately rendered. In other words, Monica AI succeeded in translating 91.1% of the 282 sentences in the test text. The figure of 25 errors (8.9%) is not absolute, as it was obtained through MS Word software, which automatically tallied erroneous words or sentences in the source text file after tagging. Consequently, it is possible that certain words and sentences were included in the count despite not warranting consideration, such as prepositions, demonstratives, and conjunctions. Therefore, the actual error rate may be lower than this figure suggests. These errors were distributed mainly across pragmatic issues, conventions, and domain-specific text.

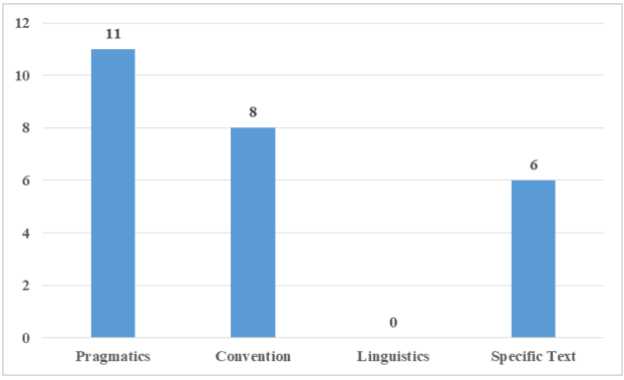

Fig. 3. Detected Problems in Monica AI Translation Performance.

The chart above illustrates that, among the four types of translation problems identified by Nord, pragmatic issues constitute the primary challenge requiring translators' focused attention. The other translation problems described by Nord, those pertaining to linguistic aspects, were virtually absent. Subsequently, the issues identified in the translation process were addressed by applying Molina and Albir's translation techniques. The following chart presents the results of employing these techniques on the target text (translated by Monica AI).

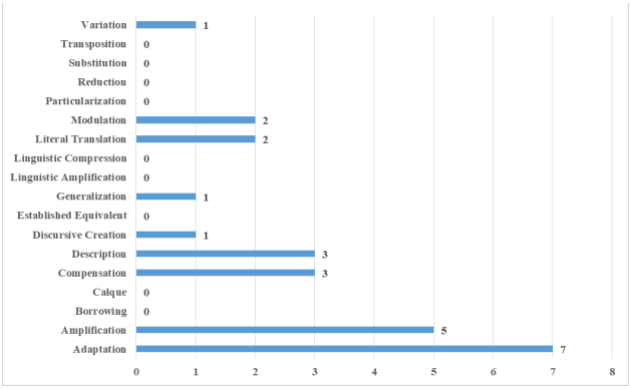

Fig. 4. Recapitulation of Techniques Implemented to Address Translation Problems.

Of the 18 translation techniques proposed by Molina and Albir, nine were employed to address the translation challenges identified in the data. The techniques utilized included adaptation, linguistic amplification, description, compensation, discursive creation, generalization, modulation, variation, and literal translation.

According to the findings, adaptation emerged as the most frequently applied technique, with a total of seven occurrences. This prevalence indicates that the translator often chose to adjust cultural references from the source text to align with the cultural context of the target language, thereby ensuring that the intended message could be accurately conveyed to the reader. Additionally, the technique of amplification was used five times, suggesting that the translator considered it necessary to incorporate additional details to clarify or expand the meaning of the original text, particularly when the source context was deemed insufficiently explicit for the target audience.

Other techniques frequently employed were compensation and description, each occurring three times. These uses reflect the translator's efforts either to recover meaning that might otherwise be lost or to replace certain terms with clearer explanations. Techniques such as literal translation and modulation, each used twice, demonstrate the need to maintain literal structures in some sections while adjusting perspectives in others. Meanwhile, discursive creation, generalization, and variation were applied only once, indicating that creative rephrasing, the use of more general terminology, or stylistic variation were reserved for specific circumstances in which they were essential.

In contrast, the remaining nine techniques including borrowing, calque, established equivalent, linguistic compression, particularization, reduction, substitution, and transposition were not employed at all. The absence of these techniques suggests that the test text did not necessitate the direct incorporation of foreign terms or significant grammatical restructuring. Overall, the predominance of adaptation and amplification underscores that the translator prioritized cultural adjustment and semantic enrichment over literal or purely structural approaches, with a clear emphasis on contextual appropriateness and audience comprehension.

The finding that pragmatic problems (3.9%) outnumbered conventional (2.8%) and text-specific (2.1%) problems aligns with Wang's (2025) observation that NMT systems struggle most with culturally embedded meanings in oratory texts [9]. Unlike Polakova & Klimova's (2023) study on written texts, where linguistic errors were more common [11], the present study found zero linguistic errors in the AI output. This discrepancy suggests that current NMT architectures (e.g., Transformer-based models) have largely mastered morphosyntactic accuracy but remain vulnerable to pragmatic and rhetorical nuances, a pattern also noted by Berisha & Liss (2024) in clinical speech AI [10].

The complete absence of linguistic errors in this corpus is striking and may be explained by the formal, scripted nature of the source speech. Unlike conversational or improvised speech, political speeches follow predictable syntactic patterns, which are well-represented in NMT training data. However, the persistence of pragmatic errors (e.g., cultural-tied terms like "serious supporters") confirms that even state-of-the-art NMT systems lack the cultural and situational awareness that human translators possess, a limitation highlighted by Sánchez-Gijón (2022) [7].

This study contributes to translation theory by demonstrating the applicability of Nord's text-typological framework to NMT evaluation. Traditionally used for human translation pedagogy, Nord's problem categories proved effective for diagnosing AI weaknesses, particularly in distinguishing between linguistic competence (where AI excels) and pragmatic competence (where AI lags). This suggests that NMT evaluation should move beyond automatic metrics (BLEU, TER) toward functionally oriented, error-based assessments.

Furthermore, the predominance of adaptation and amplification as post-editing strategies supports a functionalist, skopos-oriented approach to human-AI collaboration. Rather than aiming for literal equivalence, the human translator acted as a cultural mediator, adjusting the AI output to fit the target audience's expectations—a role that machines cannot yet replicate.

The findings suggest that translator education programs should emphasize post-editing skills, particularly in identifying pragmatic and text-specific errors. Trainees should be exposed to AI-generated translations and taught to apply

adaptation and amplification techniques systematically. This aligns with Wang's (2023) call for integrating AI tools into translator competency development [13].

IV. CONCLUSION

This study examines the challenges of translating formal speech with AI, using Monica AI (ChatGPT-powered) as the case. The analysis reveals recurring issues in pragmatics, culture-specific expressions, formal conventions, and speech features such as rhetorical devices and wordplay. Theoretically, it demonstrates that Nord's translation problem framework is applicable to NMT evaluation, revealing a dissociation between linguistic accuracy (high) and pragmatic adequacy (moderate). Empirically, it provides a replicable methodology for error analysis and post-editing strategy mapping.

Three limitations apply. The study analyzes only one speech transcript, limiting transferability. It also evaluates a single AI tool, so cross-platform comparisons were not addressed. In addition, the qualitative approach offers detailed insights but cannot show how these issues affect audience understanding without reception-based quantitative data.

Future work should include varied speech types (e.g., impromptu, conversational), multiple AI platforms (e.g., DeepL, Google Translate, Claude), and mixed methods that combine textual analysis with audience evaluation to guide best practice in professional workflows.

REFERENCES

[1] C. M. Ionașcu, "Artificial Intelligence Adoption in the European Union: A Data-Driven Cluster Analysis (2021–2024)," 2025. doi: https://doi.org/10.3390/economies13050145.

[2] Z. Li, "Artificial Intelligence Machine Translation Based on Fuzzy Algorithm," Mob. Inf. Syst., vol. 2021, no. 1, p. 1827627, Jan. 2021, doi: https://doi.org/10.1155/2021/1827627

[3] Q. Ai, Q. Ai, and J. Wang, "Exploration on advanced intelligent algorithms of artificial intelligence for verb recognition in machine translation," ACM Trans. Asian Low-resour. Lang. Inf. Process., vol. 23, no. 8, pp. 1–18, 2024, doi: https://doi.org/10.1145/3649891

[4] P. Armenteros-Cosme, M. Arias-González, S. Alonso-Rollán, S. Márquez-Sánchez, and A. Carrera, "Advancements in Artificial Intelligence and Machine Learning for Occupational Risk Prevention: A Systematic Review on Predictive Risk Modeling and Prevention Strategies," 2025. doi: https://doi.org/10.3390/s25175419

[5] W. Zhu, L. Wei, and Y. Qin, "Artificial Intelligence in Education (AIEd): Publication Patterns, Keywords, and Research Focuses," 2025. doi: https://doi.org/10.3390/info16090725

[6] T. Kim, D. Agarwal, J. Ackerman, and M. Saha, "Steering AI-driven personalization of scientific text for general audiences," Proc. ACM Hum. Comput. Interact., vol. 9, no. 7, pp. 1–28, 2025, doi: https://doi.org/10.1145/3757660

[7] P. Sánchez-Gijón, "What experts say about increasingly relevant translation technologies," Tradumàtica tecnol. trad., no. 20, pp. 295–301, 2022, doi: https://doi.org/10.5565/rev/tradumatica.322

[8] Z. Yang et al., "ShennongAlpha: an AI-driven sharing and collaboration platform for intelligent curation, acquisition, and translation of natural medicinal material knowledge," Cell Discov., vol. 11, no. 1, p. 32, 2025, doi: https://doi.org/10.1038/s41421-025-00776-2

[9] Y. Wang, "Enhancing english oral translation through cross-modal learning and synchronous optimization," PLoS One, vol. 20, no. 8, p. e0329381, 2025, doi: https://doi.org/10.1371/journal.pone.0329381

[10] V. Berisha and J. M. Liss, "Responsible development of clinical speech AI: Bridging the gap between clinical research and technology," npj Digit. Med., vol. 7, no. 1, 2024, doi: https://doi.org/10.1038/s41746-024-01199-1

[11] P. Polakova and B. Klimova, "Using DeepL translator in learning English as an applied foreign language – An empirical pilot study," Heliyon, vol. 9, no. 8, p. e18595, 2023, doi: https://doi.org/10.1016/j.heliyon.2023.e18595

[12] T. Alqahtani et al., "The emergent role of artificial intelligence, natural learning processing, and large language models in higher education and research," 2023. doi: https://doi.org/10.1016/j.sapharm.2023.05.016

[13] Y. Wang, "Artificial Intelligence Technologies in College English Translation Teaching," J. Psycholinguist. Res., vol. 52, no. 5, pp. 1525–1544, 2023, doi: https://doi.org/10.1007/s10936-023-09960-5

[14] H. Xu, A. Woicik, H. Poon, R. B. Altman, and S. Wang, "Multilingual translation for zero-shot biomedical classification using BioTranslator," Nat. Commun., vol. 14, no. 1, 2023, doi: https://doi.org/10.1038/s41467-023-36476-2

[15] L. W. Y. Yang et al., "Development and testing of a multi-lingual Natural Language Processing-based deep learning system in 10 languages for COVID-19 pandemic crisis: A multi-center study," Front. Public Heal., vol. 11, 2023, doi: https://doi.org/10.3389/fpubh.2023.1063466

[16] M. T. Krause, C. Nord, and P. Sparrow, Text Analysis in Translation: Theory, Methodology, and Didactic Application of a Model for Translation-Oriented Text Analysis, vol. 76, no. 4. Rodopi, 1992. doi: https://doi.org/10.2307/330103

[17] L. Molina and A. H. Albir, "Translation techniques revisited: A dynamic and functionalist approach," Meta, vol. 47, no. 4, pp. 498–512, 2002, doi: https://doi.org/10.7202/008033ar

[18] K. Krippendorff, Content Analysis: An Introduction to Its Methodology. Sage publications, 2022. doi: https://doi.org/10.4135/9781071878781

[19] W. Untara and T. Setiawan, "PROBLEMA MESIN PENERJEMAH BERBASIS AI DALAM PROSES PENERJEMAHAN BUKU INGGRIS-INDONESIA DAN SOLUSINYA," Adab. J. Bhs. Dan Sastra, vol. 4, no. 1, pp. 92–115, 2020, doi: https://doi.org/10.14421/ajbs.2020.04105