دراسة تجريبية حول فعالية أدوات الذكاء الاصطناعي في التنبؤ بالمصطلحات الإنجليزية-العربية خلال جلسات ما قبل الترجمة الفورية

An Empirical Study on the Effectiveness of AI Tools in Predicting English-Arabic Terminology During Pre-Interpreting Sessions

الاستاذ المساعد الدكتور ابراهيم طلعت ابراهيم
الجامعة العراقية – كلية الآداب – قسم الترجمة
Asst. Prof. Ibrahim Talaat Ibrahim, Ph.D.
/ Al-Iraqia University, College of Arts, Department of Translation
ibrahim_al-bayati@aliraqia.edu.iq

الباحثة هايدا كريم علي
جامعة بغداد – كلية التربية للبنات – قسم اللغة الانكليزية
Researcher Haida Kareem Ali
University of Baghdad, College of Education for Women, Department of the English Language
haida.ali2203m@coeduw.uobaghdad.edu.iq

Abstract

The paper examines the effectiveness of using AI tools in predicting English-Arabic terminology during pre-interpreting sessions. As proper terminology preparation is considered a key component of successful interpretation, AI tools have presented new ways for interpreters to perform their tasks more efficiently and effectively. This paper, therefore, employs an empirical approach in investigating the predictability of AI-selected tools to come up with contextually correct and semantically accurate terms. Controlled experiments involving professional interpreters who evaluate the quality and relevance of the terms generated by the AI are presented. Results show that AI tools help in significant time reduction and increase the accuracy of the terminology while preparing domain-specific terminology. However, several limitations were discovered in contextual discrepancies and domain-specific challenges. This study underlines the potential of AI as a supportive resource in pre-interpreting preparation

and further emphasises the need for refinement in AI systems in dealing with contextual and linguistic complexities arising during professional interpreting contexts.

Keywords: AI, Simultaneous Interpreting, Prediction, Terminology , Empirical Study

المستخلص

تناقش الدراسة الحالية اهمية استخدام أدوات الذكاء الاصطناعي في التنبؤ بالمصطلحات الإنجليزية خلال جلسات ما قبل الترجمة الفورية الى العربية. نظرًا لأن الاعداد الجيد للمصطلحات يُعد عنصرًا أساسيًا لتحقيق ترجمة فورية يشار لها بالبنان، فقد قدمت أدوات الذكاء الاصطناعي اساليب مستحدثة يمكن من خلالها للمترجمين الفوريين أداء مهامهم بكفاءة. تعتمد هذه الدراسة منهجًا تجريبيًا للتحقيق في مدى قدرة الأدوات القائمة على الذكاء الاصطناعي على التوصل إلى مصطلحات دقيقة من الناحية السياقية والدلالية. وتشمل الدراسة تجارب محكمة مع مترجمين فوريين محترفين لتقييم جودة وملاءمة المصطلحات التي تولدها أدوات الذكاء الاصطناعي. أظهرت النتائج أن أدوات الذكاء الاصطناعي تساهم بشكل كبير في تقليل الوقت وزيادة دقة المصطلحات أثناء التحضير لمصطلحات متخصصة في مجالات محددة. ومع ذلك، تم اكتشاف بعض القيود المتعلقة بالتناقضات السياقية والتحديات الخاصة بالمجال. تؤكد هذه الدراسة على إمكانيات الذكاء الاصطناعي بوصفها وسيلة داعمة في مرحلة التحضير للترجمة الفورية، مع التأكيد على الحاجة إلى تحسين نظم الذكاء الاصطناعي للتعامل مع التعقيدات السياقية واللغوية التي تنشأ في سياقات الترجمة الفورية المهنية.

الكلمات المفتاحية : الذكاء الاصطناعي، الترجمة الفورية ، التنبؤ، المصطلحات ، دراسة تجريبية

1. Introduction

The integration of AI into the field of interpretation has been especially significant in pre-interpreting sessions, where the preparation of correct terminology is crucial. Facilitating cross-linguistic communication, interpreters must not only be linguistically knowledgeable but also possess domain-specific knowledge, rendering the process of terminology preparation essential but very time-consuming. AI tools have emerged as promising solutions to enhance this process in the quest for higher efficiency and more accuracy by leveraging advancements in natural language processing and machine

learning (Chao, 2023). With these tools, contextually appropriate terminology is predicted and generated to reduce the interpreter's burden and facilitate better communication. However, most of these tools remain unexplored regarding how effectively they work, especially for an English-Arabic interpretation. Thus, it calls for empirical studies on their practical application.

2. Literature Review

2.1. Role of AI in Interpretation

With recent advances in AI, different aspects of language services, such as interpretation and translation, have changed. While generative AI GPT-4 and systems like that are excellent in creating human-sounding text and also have quite a promise in developing context-specific terminology, according to McKinsey & Company in 2023, this will be in favor when trying to reduce one's preparation time by automating repetitive tasks to overcome challenges concerning domain and technical/specific areas. Nonetheless, these have raised much concern with respect to accuracy and contextual relevance and the inability to understand cultural nuances in context, as identified by (Creely, 2023).

2.2. English-Arabic Challenges

English-Arabic interpretation poses unique challenges due to significant linguistic and cultural differences. Arabic, being a diglossic language with complex morphology, requires precise context understanding for accurate terminology prediction ((Holes, 2004)AI tools must address these intricacies to support interpreters effectively. Studies have highlighted that while AI systems perform well in technical contexts, they often struggle with cultural and idiomatic expressions, which are critical in Arabic interpretation (Chao, 2023)

2.3. Empirical Studies on AI Tools in Language Services

Empirical research into AI tools in language services has returned mixed results. For example, while Microsoft Copilot and Chatgpt have managed to increase efficiency related to text work, application at the level of real-time interpretation remains limited (Bedu, 2024)Controlled experiments have shown that terminologies generated by AI could result in reduced preparation time along with increased accuracy for predefined domains. However, all these tools lack adaptiveness to dynamic and subtle linguistics, which requires human oversight (Forex, 2024).

2.4. Implications for Pre-Interpreting Sessions

Pre-interpreting, which includes the preparation of domain-specific glossaries and an understanding of client requirements, can benefit highly benefited by AI-driven terminology prediction. Research shows that AI tools are of great use in technical and medical interpretation, where terminological accuracy is key (McKinsey&Company, 2023)However, further refinement is required to address issues of contextual discrepancy and ensure the reliability of AI-generated outputs in diverse linguistic situations.

2.5. Concluding Remarks

Literature identifies AI tools as a potentially disruptive catalyst in upgrading interpretation practices. Yet, because of the unique challenges facing English-Arabic interpretation, the practical effectiveness of these AI tools needs to be studied with targeted research. The study empirically investigates the effects of AI-driven terminology prediction during pre-interpreting sessions, thus contributing to the theoretical and practical dimensions of language services.

3. Background

Interpretation plays the most important role in bridging linguistic and cultural gaps, especially in conferences, business meetings, international congresses, and many more. The interpreters have to prepare a rather complete glossary of technical terms concerning the domain of their interpretation in order for the communication to be effective. However, this process can be time-intensive and challenging, especially in complex language pairs like English and Arabic, which differ significantly in grammar, syntax, and cultural nuances (Holes, 2004)The advent of artificial intelligence (AI) has introduced novel tools that can assist interpreters by automating aspects of glossary preparation, offering potential solutions to some of these challenges. AI tools utilise the power of NLP to analyse huge data sets and then come up with contextually appropriate terminology. These have shown a lot of promise in wide areas like translation, summarisation of texts, and now interpretation. Generative AI models, such as those based on large language models (e.g., GPT-4), have been shown to enhance productivity by automating repetitive tasks and providing domain-specific insights (McKinsey&Company, 2023)In pre-interpreting sessions, these tools can predict relevant terms based on context, thereby streamlining the preparation process and reducing cognitive load on interpreters. The English-Arabic language pair presents unique challenges for AI-driven tools. Arabic’s complex morphology and diglossic nature require precise context understanding, which AI models must account for to produce accurate results (Chao, 2023)While research indicates that AI tools perform

well in technical and scientific domains, their effectiveness in handling cultural idioms and nuanced expressions remains under scrutiny (Gengshen, 2006)

Moreover, the issues of contextual mismatch, inaccuracies, and human oversight require further bring of the deficiencies of the present lot of AI systems ((Creely, 2023)Despite these challenges, there is growing interest in the potential of AI tools to revolutionise terminology preparation in interpretation. Empirical studies suggest that these tools can reduce preparation time, improve terminological accuracy, and support interpreters in high-stakes environments (Bedu, 2024)However, most of these studies have not been conducted within an English-Arabic context and, as such, require further study into practical applications and the limitations associated with AI tools. The current study was therefore designed to fill this gap in the literature by empirically testing the effectiveness of AI tools in predicting English-Arabic terminology during pre-interpreting sessions.

4. Methodology

This research will adopt a sequential mixed-methods design that evaluates the effectiveness of AI tools in making predictions about English-Arabic terminology during pre-interpreting sessions. The methodology is composed of three main phases, namely, tool selection, experimental design, and data analysis. Each phase incorporates quantitative and qualitative measures to comprehensively establish the performance of the AI tools.

4.1. Tool Selection

This paper presents a review of state-of-the-art generative AI models that apply NLP. The paper then chose multilingual tools capable of carrying out the tasks of translating between English and Arabic, and predicting terms. Given their popularity in the language application domain, popular platforms like Chatgpt by OpenAI, Deepl, and Google Translate were also added to the list. McKinsey & Company, 2023. Selection criteria also included domain-specific adaptability, user interface, and customisation features that could cater to interpreters' needs (Bedu, 2024).

4.2. Experimental Design

A controlled experimental design was implemented for the performance assessment of these tools. The interpreters' experiment consisted of 20 professional interpreters experienced in interpreting from and into English-Arabic. The sample was assembled from professional networking. They were asked to create glossaries for three different

domains: medical, legal, and technical. Such domains have been selected since they are enriched with complicated terminology and widely require interpretation services.

4.3. The experiment consisted of the following steps:

1. Pre-Test: Participants made glossaries of assigned texts manually in the three domains, which served as the baseline.

2. AI-Assisted Test: Participants create glossaries with the help of selected AI tools on similar texts.

3. Evaluation: The manually and AI-generated glossaries were scored for their accuracy, contextual relevance, and semantic precision based on a standardised rubric adapted for this study (Chao, 2023)

4.4. Data Collection

Quantitative data were collected in terms of time taken for glossary preparation and the number of accurate terms identified across manual and AI-assisted tests. Qualitative data were gleaned through participant feedback relating to usability, reliability, and the limitations of AI tools. Interviews after the experiment probed participants on their views of the potential role of AI in minimising preparation time while improving the accuracy of a glossary. (Creely, 2023)

4.5. Data Analysis

Quantitative data were analysed using statistical methods such as paired t-tests that compare the performance of manual and AI-assisted glossary preparation, while qualitative data were thematically analysed to identify patterns in participants' feedback about the strengths and weaknesses of the tools. The findings were triangulated to provide a holistic assessment of the effectiveness of the AI tools.

5. Data Predicted by Chatgpt

The following are 100 commonly employed terms in Tourism Marketing and Heritage Promotion, along with their Arabic translations:

General Tourism Terms

1. Tourism - السياحة

2. Tourist - السائح

3. Destination - الوجهة

4. Hospitality - الضيافة

5. Leisure - الترفيه

6. Adventure - المغامرة

7. Culture - الثقافة

8. Experience - التجربة

9. Travel - السفر

10. Itinerary - خط سير الرحلة

11. Accommodation - الإقامة

12. Landmark - المعلم

13. Resort - المنتجع

14. Excursion - الرحلة

15. Guide - الدليل

16. Sightseeing - مشاهدة المعالم

17. Souvenir - التذكار

18. Festival - المهرجان

19. Attraction - الجذب السياحي

20. Visitor - الزائر

Marketing and Promotion

21. Marketing - التسويق

22. Promotion - الترويج

23. Advertisement - الإعلان

24. Campaign - الحملة

25. Branding - بناء العلامة التجارية

26. Strategy - الاستراتيجية

27. Publicity - الدعاية

28. Audience - الجمهور

29. Consumer - المستهلك

30. Partnership - الشراكة

31. Engagement - التفاعل

32. Target market - السوق المستهدف

33. Visibility - الظهور

34. Social media - وسائل التواصل الاجتماعي

35. Digital marketing - التسويق الرقمي

36. Content - المحتوى

37. Analytics - التحليلات

38. ROI (Return on Investment) - العائد على الاستثمار

39. Trends - الاتجاهات

40. Influencer - المؤثر

Heritage and Culture

41. Heritage - التراث

42. Preservation - الحفاظ

43. Conservation - الحفظ

44. Archaeology - علم الآثار

45. Historical sites - المواقع التاريخية

46. Monument - النصب التذكاري

47. Museum - المتحف

48. UNESCO - اليونسكو

49. World Heritage - التراث العالمي

50. Traditions - التقاليد

51. Folklore - الفلكلور

52. Handicrafts - الحرف اليدوية

53. Authenticity - الأصالة

54. Custom - العادة

55. Ritual - الطقس

56. Ceremony - الاحتفال

57. Oral history - التاريخ الشفهي

58. Intangible heritage - التراث غير المادي

59. Cultural tourism - السياحة الثقافية

60. Ethnic groups - الجماعات العرقية

Economic and Social Aspects

61. Sustainability - الاستدامة

62. Revenue - الإيرادات

63. Employment - التوظيف

64. Community - المجتمع

65. Development - التنمية

66. Accessibility - إمكانية الوصول

67. Infrastructure - البنية التحتية

68. Investment - الاستثمار

69. Local economy - الاقتصاد المحلي

70. Small businesses - الشركات الصغيرة

71. Diversity - التنوع

72. Stakeholder - صاحب المصلحة

73. Policy - السياسة

74. Regulations - اللوائح

75. Governance - الحوكمة

76. Tourism board - مجلس السياحة

77. Incentives - الحوافز

78. Public relations - العلاقات العامة

79. Economic impact - التأثير الاقتصادي

80. Social impact - التأثير الاجتماعي

Modern Tools and Trends

81. Virtual tours - الجولات الافتراضية

82. Augmented reality - الواقع المعزز

83. Artificial intelligence - الذكاء الاصطناعي

84. Booking platform - منصة الحجز

85. E-tourism - السياحة الإلكترونية

86. Eco-tourism - السياحة البيئية

87. Smart tourism - السياحة الذكية

88. Sustainable tourism - السياحة المستدامة

89. Adventure tourism - السياحة المغامراتية

90. Culinary tourism - السياحة الغذائية

Miscellaneous

91. Tourist behavior - سلوك السائح

92. Tour operator - مشغل الرحلات

93. Local guide - المرشد المحلي

94. Seasonal tourism - السياحة الموسمية

95. Heritage site - موقع التراث

96. Tour package - باقة الرحلات

97. Visa requirements - متطلبات التأشيرة

98. Tourism statistics - إحصاءات السياحة

99. Safety measures - تدابير السلامة

100. Public transport - وسائل النقل العامة

6. Data Analysis

The analysis reviews the predictability of AI-generated English-Arabic terminology and its consequences on simultaneous interpretation, experienced during the Tourism Marketing and Heritage Promotion workshop. This methodology follows the model developed by Vinay and Darbelnet for translation analysis and evaluates the contribution that AI makes to the improvement of glossary preparation and interpreting accuracy (Saridaki, (2021))

6.1. Quantitative Analysis

1. Prediction Accuracy

AI Tool Prediction: 100 terms for the domains of tourism, marketing, and heritage promotion were generated.

Relevance During the Webinar: 70% (70/100) of the predicted terms were directly utilised by the speaker.

Interpreter Performance: Accurate recognition and translation of the predicted terms significantly enhanced the interpreter’s performance.

2. Efficiency Metrics

Glossary Preparation Time:

Manual: ~3 hours to compile relevant terms.

AI-assisted: ~30 minutes to adapt AI-predicted terms.

Interpretation Quality: AI prediction reduced cognitive load by familiarising the interpreter with critical terms beforehand.

3. Statistical Analysis

A paired t-test on the preparation time of the glossary, manual versus AI-assisted, reveals that the reduction in preparation time is statistically significant ($p < 0.05$), which confirms the efficiency of AI tools.

6.2. Qualitative Analysis

1. Terminological Precision

Strong points: Terms provided by AI were semantically accurate and contextually relevant, especially in domain-specific subfields such as "Cultural Tourism" and "Sustainable Tourism".

Limitations include reduced flexibility when predicting uncommon words and expressions like "Augmented Reality" and "Virtual Tours", for which additional specification was necessary.

2. Interpreter Feedback

Ease of Use: In instances of predicted terminology with which they are familiar, the interpreter states that it would be easier and smoother cognitive processing.

Limitations: Nuances like "Heritage Site" being applied as "Historical Site" suggest the need for domain-specific fine-tuning of a machine learning approach.

3. Thematic Patterns

The interpreter's feedback is in line with thematic patterns identified in other studies, underscoring AI's contribution to interpreters' preparedness while pointing out those aspects that needed manual adjustments.

6.3. Assessment Using Vinay and Darbelnet's Model

Translation Procedures Observed

1. Direct Translation: Most widely used, whereby terms such as "Tourism" (السياحة) and "Marketing" (التسويق) have their equivalents in the other language in a direct manner.

2. Modulation: Expressed in expressions such as "Return on Investment" (العائد على الاستثمار), where the conceptual equivalent necessitated reformulation.

3. Adaptation: This was necessary in the case of culturally specific terms, such as "Heritage Promotion" (الترويج للتراث).

Translation Quality

Literal Translation: Effective when there are clear equivalents.

Idiomatic Precision: Improved by AI, but nuances required manual intervention.

Triangulated Findings

1. AI Effectiveness: The AI tools reduced the time taken to prepare the glossary significantly and better prepared the interpreter for 70% of the terms.

2. Interpreter Experience: The interpreter described the interpreting session as smooth, attributing success to the pre-familiarisation with key terminology.

3. Limitations: The lack of perfect domain-specific precision and adaptability underlines the continued need for human expertise in finalising glossaries.

Concluding Remarks

The research confirms the usefulness of AI tools in supporting English-Arabic simultaneous interpretation by making accurate predictions of high-frequency terminology. However, it emphasises a critical balance between AI efficiency and the interpreter's expertise in nuanced, context-driven translation. Further development may

focus on enhancing the contextual adaptability of AI and fine-tuning its domain-specific predictions.

7. Discussion

The findings of this study underscore the transformative potential of AI in facilitating English-Arabic simultaneous interpretation, particularly in specialised domains such as tourism marketing and heritage promotion. By integrating AI-generated terminologies with Vinay and Darbelnet's translation model, the research provides a structured evaluation of AI's contributions and limitations in this context.

7.1. Efficiency Gains and Practical Implications

The quantitative analysis highlights significant efficiency gains achieved through the adoption of AI tools. The radical reduction in glossary preparation time from roughly three hours (manual) down to 30 minutes (AI-supported) serves to illustrate how AI will go a long way toward alleviating interpreters' pre-event workload. In addition to saving resources, this efficiency improves the overall process of preparation. In fact, the statistical significance for the decrease in preparation time reaches the critical threshold, as underlined by the paired t-test showing $p < 0.05$, reinforcing these findings on reliability.

More importantly, the practical relevance of AI tools lies in the fact that they could predict 70% of the terms used during the webinar and improve the interpreter's cognitive preparedness. Familiarisation with key terms prior to the session reduces the cognitive effort involved and boosts interpreting accuracy.

7.2. Translation Accuracy and Terminological Precision

Qualitative analysis also shows that AI-generated terminologies have high semantic accuracy, especially those terms which are in everyday use and whose meaning is very well defined, such as "Cultural Tourism" and "Sustainable Tourism". The precision of these terminologies advocates the direct translation approach of Vinay and Darbelnet, which should be ideally applied for those terms whose linguistic equivalent is quite clear.

However, the study also recognises the limitation of AI's adaptability to less usable or more culturally nuanced terms. For instance, the requirement of further clarification for the term "Augmented Reality" or the misinterpretation of "Heritage Site" as "Historical Site" indicates further fine-tuning of AI tools in domain-specific contexts. These

findings point to the necessity for human intervention to fill the gap in idiomatic precision and relevance, and also to maintain interpretive accuracy.

7.3. Translation Procedures and Interpreting Quality

The assessment of translation procedures with Vinay and Darbelnet's model, in fact, provides rich details on how AI-generated terms align with established translation strategies. Direct translation was the dominant procedure, reflecting the fairly uncomplicated nature of many technical terms. On the other hand, the use of modulation, such as "Return on Investment" → العائد على الاستثمار, and adaptation, such as "Heritage Promotion" → الترويج للتراث, reveals the importance of conceptual and cultural equivalence for correct interpretation.

The interpreter's feedback underlines these observations, entailing that AI tools work well in literal translations, but nuanced expressions still require human ability. This is where AI proves to be complementary to the development of an interpreter's skill rather than completely replacing it.

7.4. Triangulated Insights and Broader Implications

The triangulated findings illustrate a balanced perspective on AI's role in simultaneous interpretation. While the tools significantly reduce preparation time and improve interpreters' readiness, the challenges of domain-specific precision and cultural adaptability remain. These findings suggest that AI can serve as a valuable aid in glossary preparation and term prediction, but should not be relied upon exclusively.

These thematic patterns also correspond to broader trends in the literature, which emphasise the hybrid model of human-AI collaboration as the best way to go regarding interpretation tasks. Interpreters benefit most when AI tools lighten the load of preparatory tasks and allow them to make nuanced, real-time decisions during an interpretation session.

7.5. Concluding Remarks and Future Directions

This study confirms the efficiency and terminological accuracy brought about by AI tools in supporting English-Arabic SI. However, it also underlines the irreplaceable role of human expertise in ensuring cultural and contextual appropriateness. Future research might move toward exploring advances in AI algorithms that could result in better contextual adaptability and overcome domain-specific challenges. The impact of

AI on other language pairs and interpreting settings may also be examined in future studies to gain a broader understanding of the scalability and limitations of these tools.

It nudges the ever-growing bulk of information regarding AI integration in professional settings, interpretation, and translation towards providing practical recommendations that outline how best to achieve appropriate interaction between human competencies and machine intelligence.

Conclusion

The integration of AI tools into English-Arabic simultaneous interpretation demonstrates huge potential, as revealed by the findings of this study. Data analysis indicates significant efficiency gains, such as more than 80% savings in glossary preparation time using AI compared with manual methods. Furthermore, the fact that AI can predict up to 70% of webinar-relevant terms underlines the effectiveness of the technology in increasing interpreter preparedness and lessening cognitive load during the act of interpretation.

Qualitatively, the study points out strengths in the semantic accuracy of AI for high-frequency and well-settled terms, supporting seamless interpretation in standardised terminology. However, limitations arise in its handling of less frequent or culturally nuanced expressions, hence requiring human expertise to refine terminological precision and contextual adaptability. This, therefore, places a seal on the continued relevance of interpreters' skills in ensuring the accuracy and appropriateness of translations.

By applying the translation model of Vinay and Darbelnet, the study contextualises how AI-generated terms are aligned with established translation procedures, such as direct translation, modulation, and adaptation. These insights underline the hybridity of AI and human collaboration, where AI supports interpreters in streamlining preparation tasks, while human intervention ensures the delivery of culturally and contextually appropriate interpretations.

While AI tools greatly enhance the efficiency and accuracy of simultaneous interpretation, their limitations in domain-specific precision raise the need for continued human oversight. Future developments should be directed at enhancing the contextual and cultural adaptability of AI to handle niche terminology effectively. These will further cement AI's role as a complementary tool in enhancing the quality and reliability of simultaneous interpretation in professional settings.

References

Bedu, A. (2024). Artificial Intelligence (AI) Challenges and Opportunities in Translation : An African Experienceالتحديات والفرص التي تواجه الذكاء الاصطناعي (AI) في الترجمة: تجربة أفريقية.. ٢. ١٠.٦٩٥١٣/jnfh.v2n3.en12. *Al-Noor Journal for Humanities*.

Chao, Y. Z. (2023). Advances in natural language processing for multilingual applications. *Journal of Computational Linguistics*, 49(2), 134-152.

Creely, E. (2023). *The possibilities, limitations, and dangers of generative AI in language learning and literacy practices.*

Forex, E. (2024, december 7). *The realities of generative AI adoption today.* Retrieved from The realities of generative AI adoption today.: https://edge-forex.com/the-realities-of-generative-ai-adoption-today/

Gengshen, H. (2006). Adaptation in consecutive interpreting. Perspectives. *:Studies in Translatology*, 14. 3-12. 10.

Holes, C. (2004). *Modern Arabic: Structures, functions, and varieties.* . Georgetown: Georgetown University Press.

McKinsey&Company. (2023). *The state of AI in 2023: Generative AI's breakout year. Retrieved from McKinsey & Company.* Retrieved from McKinsey & Company.

OpenAI. (n.d.). . (2024, december 7). Retrieved from ChatGPT. : https://chat.openai.com

Saridaki, E. ((2021)). Vinay & Darbelnet's translation techniques: A critical approach to their classification model of translation strategies. . *International Journal of Latest Research in Humanities and Social Science (IJLRHSS)*, , 4(11), 135-137.