ARTIFICIAL INTELLIGENCE IN TOURISM TRANSLATION: ADVANTAGES AND LIMITATIONS

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Annotation: *Artificial Intelligence (AI) has become an essential part of the tourism industry. The rapid integration of artificial intelligence to all spheres of our life is quickly transforming the tourism industry and the area of translation in particular. AI in tourism translation enables tourists and service providers to communicate with each other in real time and at a cheaper price. Several mobile translation applications use AI to facilitate communication between tourists and locals across the world. AI in tourism translation has a variety of applications which offer advantages to tourists and service industries. However, AI also poses challenges to the tourism sector in the form of inaccuracies, ethical issues, and limitations in functionality. AI technologies can be combined with the expertise of human translators to provide an improved and culturally appropriate experience for tourists travelling across the world. AI translation for tourism is advantageous as it enhances communication between tourists and tourism services, yet the disadvantages of AI in this area present challenges which must be overcome if AI is to be widely used in tourism.*

Keywords: *artificial intelligence, tourism, machine translation, neural machine translation, natural language processing, communication*

Introduction

The tourism industry is reliant upon effective communication between tourists and tourism service providers. Language differences between tourists and tourism service providers are one of the primary challenges for the tourism industry. Traveling to another country can be an exciting experience for all the holidays and the adventures of a lifetime. However, language differences between tourists and locals create stress and challenges for tourists when traveling abroad. Communication between tourists and tourism providers is, therefore, of the utmost importance within the tourism industry. Artificial intelligence in the form of machine translation has emerged as one of the solutions to the challenges created by language differences between tourists and tourism industries [10, pp. 15-20]. The tourism industry is rapidly integrating artificial intelligence into its services, much like industries have transformed as a result of artificial intelligence innovations [10, pp. 20-25].

Traditionally, the communication between tourists and tourism services providers relied upon the expertise of human translators, tourism guides, and tourist information brochures. However, the development of artificial intelligence has changed the tourism industry and its communication systems. Artificial intelligence can facilitate near-instant translations between individuals that speak different languages. Artificial translation systems use natural language processing and neural machine translation (NMT) algorithms to understand the language of one group of tourists and translate it into another language for another group of tourists to understand [5, pp. 5-12]. Such artificial intelligence translation systems are incorporated into various elements of the tourism experience, from travel booking platforms to tourism-based chatbots. Recent

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studies have indicated that artificial intelligence is integrated into most tourism services, such as tourism-based service chatbots [2, pp. 263-311].

Main part: The introduction of neural machine translation (NMT) has allowed for translation systems to understand entire sentences being spoken by tourists rather than individual words being spoken [1, pp. 22-34]. Furthermore, the development of large language models has enabled these systems to understand the context behind the language that is being spoken by tourists, increasing the accuracy of the translation provided by these artificial intelligence systems [4, pp. 10-18]. For example, if two tourists are attempting to communicate with each other with different languages and both use the same context and topic in their conversations, the artificial intelligence systems are able to translate the languages of the individuals while ensuring that the meaning of the tourists' communication is retained. Contextual understanding between language systems is essential for effective communication between tourists with different languages and tourism services within these countries [7, pp. 75-80]. However, the development of natural language processing and NMT systems occurred through a variety of approaches to understanding languages.

The first generation of AI translation systems relied upon rules-based approaches to language understanding. These approaches required tourism services to program the artificial intelligence translators with knowledge of individual languages, but their limitations in understanding these languages prevented them from understanding complex linguistic structures [3, pp. 200-210]. The second generation of AI translation systems relied upon statistical machine translation techniques that used probability to determine the most likely translation of a language from one system to another language system [8, pp. 101-110].

The third generation of AI translation systems employed the innovations of neural machine translation, allowing AI systems to understand entire sentences instead of individual words [6, pp. 3-9]. In contrast, the fourth generation of AI translation systems employed natural language processing and large language models that allowed artificial intelligence translation applications to understand the context behind language systems being spoken by tourists. These artificial translation technologies have allowed for the creation of real-time translation applications that allow for tourists to effectively communicate in their visited countries. Additionally, most luxury hotels use artificial intelligence chatbots to interact with travelers without the need for an added staff member [6, pp. 10-14]. Other tourism attractions have incorporated artificial intelligence into their offerings to provide multilingual explanations of the various tourism spots and their histories.

AI translation offers a variety of advantages to the tourism industry. First, AI translation increases accessibility of tourism experiences for tourists of all linguistic backgrounds. AI translation applications enable tourists to have near-instantaneous translations of their spoken languages, allowing for increased convenience and speed in their interactions with tourism providers. Additionally, the cost of employing translators or tourism guides is avoided with the use of AI translation technologies, reducing the costs of tourism services for travelers. Finally, the confidence of tourists to interact with tourism providers is increased by the availability of translation technologies [8, pp. 101-110; 3, pp. 200-210].

However, AI translation system have limitations to the tourism industry. For instance, many translation applications often struggle with understanding the context

behind language and correctly translating language into another language that may have idiomatic expressions or other contexts that the AI is incapable of understanding [6, pp. 3-9]. Furthermore, translation between languages requires an understanding of the cultural contexts of the languages being translated and the knowledge of tourism and cultural etiquette of the countries in which tourists arrive. The abilities of artificial intelligence to accurately understand and translate these cultural contexts is still a failure of current AI translation systems [10, pp. 120-128].

Accuracy of translations is often lacking by artificial translation systems, while the translations that are created may be grammatically correct and fluent in both languages, they are often not correct in the actual translations of the languages to one another [6, pp. 10-14].

Artificial intelligence translation systems may also possess biases that are inherent to the initial programming of the applications which can present ethical challenges for their implementation in the tourism industry [6, pp. 10-14]. Furthermore, many tourists may not verify the translations provided by the artificial intelligence applications, instead choosing to place trust in the AI systems, even when their accuracy has been proven lacking in previous studies. Additionally, as artificial intelligence translation applications become more widespread in the tourism industry, they may have a negative impact upon tourism experiences of the tourists themselves due to the loss of direct human interaction between tourists and tourism services providers. While tourism experiences may be created by direct human interaction with local cultures, the overreliance upon artificial intelligence technology may prevent tourists from engaging in these interactions. AI systems in the tourism industry should work as a complimentary tool to tourism services and providers rather than the technology of choice for tourism services and providers. Rather than complete reliance upon artificial intelligence translation, a combined model that incorporates the efficiency of AI with the understanding of human translators may be the best solution to translation within tourism services of all types.

Artificial intelligence translation systems for tourism services are currently experiencing a variety of developments and advances in their functions. For instance, the focus of artificial intelligence developers is increasing the contextual understanding of the language systems that AI applications use to provide real-time translations [9, pp. 55-63]. Furthermore, the developers are creating artificial intelligence translation systems that are more sensitive to cultural differences between languages and tourism services providers to ensure that translations are accurate and respectful of those different cultures [10, pp. 140-150]. Additionally, many developers are investigating methods of improving the translation of languages that have fewer resources allocated to their development in artificial intelligence technologies, which would help to address any inequalities that exist within existing AI translation systems [4=3, pp. 200-210]. Finally, developers are also focused upon improving the explainability of artificial intelligence translation systems, which would improve the trust of tourists in these technologies and allow them to be used in a more responsible manner within the tourism industry.

Conclusion: Artificial intelligence is an essential part of modern tourism industry. Whether in the communication between tourists and tourism services providers, or in translation of tourism brochures and websites for foreign markets, artificial intelligence plays a crucial role in the industry. The development of AI translation technologies for

tourism services allows individuals of any linguistic background to visit countries around the world. Yet, as has been proven throughout this paper, the technology is not without limitations and disadvantages. Its reliance upon contextual understanding of languages without human understanding of the context behind the languages spoken by tourists is one of the main limitations to artificial intelligence in tourism. The disadvantages of artificial intelligence relating to accuracy of translations, cultural sensitivity of AI applications, and the potential for the loss of interactions between tourists and tourism services providers highlight the need for artificial intelligence technologies to be used as a complimentary tool to tourism services rather than the technology of choice. Artificial intelligence translation systems are likely to continue to develop and gain new functionalities in the future. However, the role of AI in the tourism industry will always include the human factor in the tourism experience. Tourism is not just about movement from one point to another, but about cultural experience among tourists from all the world's cultures and the tourism industries that provide services.

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