

Exploring Translation Technology in the 21st Century: The Fate of the Human Translator

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Abstract

Original Research Article

This paper sensitises translators on the extent and impact of translation technology and Artificial Intelligence (AI) on translation activity. The paper highlights and acknowledges the tremendous technological progress made so far by modern translation technology which has improved the translation activity. However, despite the progress made so far, there exist still challenges and shortcomings. There are socio-cultural and ethical problems like taboos, privacy, security, cultural nuances, biases and data privacy related issues which cannot be corrected even with the latest technology gadgets. The paper is a systematic review that provides a comprehensive overview of the current state of translation technology, focusing on Machine Translation (MT) and AI using comparative, interpretative and analytics methods. This paper observes that the human translators touch is still needed and cannot be replaced with any modern translation technology gadgets. The research objectives are to: evaluate the impact of MT and AI on the quality and efficiency of translation processes, assess the evolving role of human translators in the age of AI and MT and investigate the ethical implications of using MT and AI in translation, particularly concerning issues of data privacy, intellectual property, and cultural sensitivity. Consequently, the paper recommends an effective combination of human and machine translation technology and advocates the sound mastery of the workings of modern translation technology and AI gadgets by human translators. Only this, will result in accurate, fluent and meaningful translations and keep the human translators' job intact.

Keywords: Translation Technology, Artificial Intelligence, Human Translators, biases, cultural nuances

INTRODUCTION

Translation, according to Lederer (126), is an act where conceptual and rational contents in a text in one language are transferred to an equivalent text in another language by translators who are perfectly bilingual, fully identified with the original author, and aware of the probable reactions of the translation's readers. Translation technology involves the use of software algorithms and Artificial Intelligence (AI) features to facilitate the translation process. The continuous advancement of technology has significantly transformed translation practices, leading to easier communication and fostering international understanding.

According to Zaki (40), translation technology refers to the technology applied to translation that facilitates the translation process. For the purpose of this paper, the researchers will focus on two main aspects of translation technology: Machine Translation (MT) and Artificial Intelligence (AI).

Machine Translation (MT) refers to the automated translation of text or speech from one language

to another using computer software. It leverages complex algorithms and extensive linguistic databases to provide quick and often accurate translations, making it a valuable tool for both professional translators and casual users. AI in translation encompasses various AI-driven technologies and methodologies, such as Neural Networks (NN) and Deep Learning (DL) models, which enhance the quality and accuracy of translations. AI not only improves the translation process by learning from vast amounts of data but also adapts to new languages and dialects, making it an essential component of modern translation technology. The integration of MT and AI into translation practices has revolutionised the field, making it more efficient and accessible, and furthering the goal of global communication and understanding.

Human translators are highly skilled language professionals trained in the art of conveying meaning and intent across languages. They are not simply word-for-word replacers but act as cultural navigators, ensuring translations resonate with the target audience (Muftah, et al., 2022). Most translators believe that MT and Ai have taken over translation process or industry. In reality, these

sophisticated machines serve as aid to translator not to take over from him. AI can never replace human translator but collaboration with AI can make translation more sophisticated than ever. The research gap lies in understanding the potential negative impacts of AI-powered translation tools on cultural diversity and linguistic heritage, and exploring strategies to mitigate these risks while maximising the benefits of these technologies. It is against this background that the paper explores ethical implications of using MT and AI in translation process especially data privacy, intellectual property and originality.

The rationale behind this research is to identify through evaluation and comparison the role of machine translation, Artificial Intelligence and human translator: is it machine or human translation? Likewise, the research also compares the intelligence in the human translator and that of AI in translation technology.

The research objectives are to:

1. evaluate the impact of MT and AI on the quality and efficiency of translation processes.
2. assess the evolving role of human translators in the age of AI and MT.
3. investigate the ethical implications of using MT and AI in translation, particularly concerning issues of data privacy, intellectual property, and cultural sensitivity.

The following research questions are:

1. What is the impact of MT and AI on the quality and efficiency of translation processes?
2. What is the evolving role of human translators in the age of AI and MT?
3. What are the ethical implications of using MT and AI in translation concerning issues of data privacy, intellectual property, and cultural sensitivity?

The significance of this paper is to recognise that MT and AI are here to support human translator in efficiently in translation process. The MT and AI are only sophisticated in terms of speed, accuracy, and volume of tasks in the translation process but human translator is more creative.

Machine Translation (MT)

This refers to the use of computer algorithms and models to automatically translate texts or speeches from one language into another. It is a sub-field of AI.

Examples include:

- Google Translate
- DeepL
- CAT Tools
- Microsoft Translator

According to Rakhmatova, (2022) MT offers instantaneous, rough translations, allowing translators to grasp the gist of a text rapidly. While not perfect for nuanced content, MT can be appreciated for initial drafts, on one hand. On the other hand, CAT Tools are software like Trados and OmegaT (Hüseyin, 2023) which goes beyond simple translation. CAT tools manage translation memories (databases of previously translated segments),

glossaries (specialised term lists), and project workflows.

These systems use statistical and neural networks based on approaches to improve translation accuracy. Types of Machine translation include:

- a) Rule-Based Machine Translation (RBMT). This type relies on linguistic rules and dictionaries to translate texts.
- b) Statistical Machine Translation (SMT). This type uses statistical models to analyse large amount of bilingual texts data and learn patterns to make translation easy.
- c) Neural Machine Translation (NMT). This type employs deep learning techniques, particularly neural networks to learn and understand the context of words in sentences thereby improving the quality of translation. Generally, Machine Translation (MT) does not involve any human input or intervention.
- d) Computer-Aided Translation (CAT). CAT Tools are software applications that assist human translators to do their work. These tools are designed to improve the efficiency and accuracy of the translation. CAT implies translating with human intervention but with the help of a computer or software. According to Somers (6), “the translator would be provided with the software and other computer-based facilities to assist in the task of translation which remained under the control of the human translator”. CAT does not translate a text, it supports the translation process and allows the human translator to edit, store and manage translation and terminologies.
- e) Human Assisted Machine Translation (HAMT). This refers to a translation method that combines the effort of both human translator and machine translation systems. This approach takes advantage of the strengths of both human and machines to achieve higher quality translations.

The mechanism starts with a machine translator system generating an initial translation of the source text into the target language text/ the human translator then assesses the accuracy, fluency and context of the output and corrects errors, ensures that the translation is culturally adequate and refines the language.

This process which is done by the human translator involves reviewing and editing which is known as postediting. S/he may also improve on the structure and coherence of the translation to make it more natural and readable. S/he may also involve additional checks by involving human reviewers who are professional experts.

Some Advantages of Machine Translation

This paper briefly explains what Machine Translation (MT) means. For clarity, MT refers to the use of computer

software to translate text or speech from one language to another. Its development has led to the discovery and use of various tools and applications to improve translation. Some of the obvious advantages of MT include the following:

1. It has helped to break down language barriers.
2. It has fostered global understanding and communication.
3. It has enabled cross-cultural collaborations.
4. It has led to globalisation in translation. In other words, it has not only achieved language translations but has also helped consider cultural nuances, preferences, and sensitivities to create translations that resonate with the target audience.

Artificial Intelligence (AI)

AI refers to the stimulation of human intelligence in machines that are programmed to think and learn like human beings. It implies the development of computer systems and algorithms that perform tasks that require human intelligence. AI, particularly neural network-based machine translation, has made main breakthroughs and is widely used. This is because it can imitate human-like intelligence and has greatly enhanced the accuracy and efficiency of machine translation, (Zou et al, 86). AI is also designed to analyse data, make decisions, solve problems and even interact with human beings in natural languages. It involves tasks like problem-solving, learning, speech recognition, and planning, (Fredrik, 2022). The two main approaches to AI are reasoning and learning, which are combined to reform intelligence in machines, (Abdulrahman, 2021). The AI system essentially shapes a model based on the patterns it finds in the data. This model can be a network of interrelated nodes. As the system processes more data, the model is advanced and upgraded. Once trained, the AI system can practice its model to make predictions or decisions on new, unseen data. Suffice it to say that it is an imitation of the human brain introduced to mimic the human brain and replicate human behaviours. In summary, AI serves as aid to human translators.

Components of AI in Translation

Technology

The components work together to create effective AI translation systems capable of handling a wide range of languages and contexts. Some components of AI include the following:

1. Machine Learning (ML). This is a subset of AI that focuses on developing algorithms that enable computers to learn from and make predictions or decisions based on data. It improves its performance overtime without being explicitly programmed.

2. Deep Learning (DL). This is a subset of ML that involves neural networks (deep learning models) with many hidden layers.
3. Data Training. It involves large datasets of text in multiple languages that are aligned at the sentence level. These are crucial for training translation models. And, single-language text data used to improve language understanding and fluency in translations.
1. Natural Language Processing (NLP). This involves enabling machines to understand, interpret and generate human languages in a valuable and meaningful way. Examples include machine translation, chatbots (dialogue system). It's ultimate goal is to read, decipher, understand and make sense. It relies heavily on machine techniques.
2. Neural Networks (NN). These are type of ML inspired by the structure of the human brain that consists of interconnected neurons that process information and learn patterns from data.
3. Computer Vision. This involves enabling computer to interpret and understand vision information such as videos and images. It uses Convolutional Neural Networks (CNN) which is a class of DL model. It can be used for facial recognition and object detection.
4. Neural Machine Translation (NMT). This is an AI based method. It is a recent approach of MT that uses Artificial Neural Networks (ANN) to learn the relationship between words and phrases in different languages. NMT models have shown remarkable performances and improvements over traditional machine translation systems since they can handle complex sentence structures and capture semantic nuances, it also processes full sentences at once in contrast to earlier systems.
5. Generative Pre-trained Transformer (GPT). This is a type of AI language model developed by open AI. It can generate texts trained on a large data set before being fine-tuned for specific tasks. It can perform tasks like translating languages, writing essays, answering questions and creating poetry. These are best achieved with the knowledge of command prompts or prompting. These commands provide with increasingly more intrusive editing such as "proofread this, but only fix grammar: text", "proofread this, lightly improving clarity and flow: text", "rewrite this: text", "proofread and improve: text" and "paraphrase and improve the following: text".
6. Cloud Infrastructure and Hardware. These are powerful GPUs and TPUs to train and run large-scale neural networks efficiently. Platforms like

Google Cloud, AWS, and Microsoft Azure provide the necessary infrastructure for deploying translation models at scale.

7. **Evaluation Metrics.** BLEU (Bilingual Evaluation Understudy) is a common metric for evaluating the quality of machine-translated text by comparing it to reference translations. And METEOR, TER, and ROUGE are additional metrics used to assess various aspects of translation quality.

Some Obvious Contributions of AI

1. **Machine Learning:** AI facilitates the development and use of machine learning algorithms, enabling systems to learn from data and improve their performance over time.
2. **Machine Code/Language:** AI contributes to the creation and optimization of machine code and programming languages, enhancing the efficiency and capabilities of software development.
3. **Computer-Aided Translation Tools:** AI provides advanced tools for computer-aided translation, assisting human translators with suggestions, terminology management, and error detection.
4. **Human-Assisted Machine Translation:** AI supports human-assisted machine translation, where human expertise complements AI-generated translations to improve accuracy and fluency.
5. **Natural Language Processing (NLP):** AI advances the field of NLP, enabling machines to understand, interpret, and generate human language with increasing sophistication.
6. **Deep Learning:** AI drives the progress in deep learning techniques, allowing for the development of models that can process and analyze vast amounts of data with high accuracy.
7. **Automated Learning:** AI enables automated learning processes, where systems can autonomously improve their performance based on new data and experiences.

Challenges/Shortcomings of AI

This paper appreciates the role of AI applications in the translation process as outlined and exemplified by the components and their various applications. Despite its wide range of applications across industries including healthcare (diagnosis and treatment recommendations), finance (fraud detection) personalized learning experience, scientific research and many others. This paper has observed and noted the following underlisted challenges or shortcomings:

1. Inability to capture the nuances of human languages and cultures. These include idiomatic expressions, proverbs, cultural traits and highly context-dependent expressions. Most of these enumerated elements have different connotations in different cultures,
2. Absence of historical events like pop culture and local parlance are basically absent in AI and MT tools. Loss of knowledge of these elements and events lead to loss in translation,
3. Serious consequences may arise when translations are made of topics that are considered as taboos in some cultures,
4. Legal, scientific/technical terms may not have same direct equivalents in different languages which may lead to litigations,
5. AI appliances and MT do not capture formalities, politeness and respects procedures as these elements differ from one language/culture to another,
6. Languages that have limited data do not enjoy accurate translation. These include languages of low diffusion,
7. MT/AI tools do not ensure fluency and accuracy because the automated systems sometimes produce errors,
8. These modern technological gadgets have difficulties in handling sensitive and confidential information since it opens to all and sundry,
9. Most users have problems of obtaining gadgets while network poses a great problem in some areas, and
10. MT/AI lacks the creativity and nuanced understanding that human translators bring. This can be especially problematic in translating literature, poetry, or any content requiring a deep understanding of metaphor and style.

CONCLUSION

This paper observes that translation technology (MT and AI gadgets) has made significant advancements in the field of translation. However, these MT/AI tools have their shortcomings. The paper observes that complex and highly specialized content texts still require human translation to achieve the highest level of accuracy especially when cultural nuances and idiomatic expressions are involved. Also, there exist biases in the training data and there can privacy concerns when handling sensitive or confidential information.

Consequently, a combination of human expertise and MT gadgets is highly recommended. This is to do the following:

- a) Ensure the highest translation quality, editing and error corrections,

- b) Since modern translation models are typically trained on large datasets, they may not align with specific company's style, tone and branding. Human translators are ideal for providing customised translations tailored to a company or individual.
- c) It is possible and easy to make judgement calls and contact specialist in specialised fields during translation but translation technology gadgets cannot,
- d) While MT gadgets are necessary to assist human translation by speeding up the job, providing

initial suggestions, the final quality control and adjustments are done by humans. Human beings are unique in the following ways: adaptation, aesthetics, contextual understanding, cognition and cultural baptism.

It should be noted that for professional translation services, a combination of human and MT is required. However, this effective combinations and use of modern translation technology has to evolve from the traditional translation method to the mastering of modern translation tools. This is imperative for the human translator, if s/he wants to move along with time.

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