2026 كانون 2 مجلة دراسات في الإنسانيات والعلوم التربوية العدد 12
January 2026 Journal of Studies in Humanities and Educational Sciences No. 12
Print ISSN 3006-3256 Online ISSN 3006-3264

استخدام التحرير البشري لتجنب الأخطاء في ترجمة الذكاء الاصطناعي

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الملخص

ينبع هذا البحث من الرغبة في استكشاف التقدم الذي تحقق مؤخرا في مجال تقنيات التعلم الآلي في الترجمة الآلية والغرض منه هو إظهار على الرغم من مزايا برامج الترجمة الآلية ، والتي تتيح للمستخدمين تسريع عملية الترجمة ، فإن الترجمة التي يقوم بها محرك الترجمة الآلية الإحصائية لا تخلو من العيوب وتتطلب الكثير من عمليات التحرير والتدقيق اللغوي لهذا السبب ، وبعد أربعين عاما من استخدامه ، نجد أن العديد من الشركات قد بدأت ,وهذا يظهر بطريقة ودقة لا لبس فيها ، وهي الترجمة الآلية العصبية المدعومة بالذكاء الاصطناعي .ليس هناك شك في أن الذكاء الاصطناعي ، الذي تغلغل في جميع مجالات الحياة ، وخاصة مجال الترجمة ، جعل الأمر أسهل وأقرب إلى الترجمة البشرية .الآن ، أظهر الذكاء الاصطناعي نتائج مذهلة في الترجمة الآلية.

الكلمات المفتاحية : التحرير البشري – الاخطاء في الترجمة

Using Human Editing to Avoid Errors in AI Translation

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Abstract

This research stems from a desire to explore recent progress achieved in the field of machine learning techniques in machine translation and its purpose is to show despite the advantages of machine translation programs, which allow users to speed up the translation process, the translation performed by the statistical machine translation engine is not without flaws and requires a lot of editing and proofreading operations for this reason, and after forty years of using it, we find that many companies have begun to abandon it and follow the new and more flexible approach, and this shows in an unmistakable way and accuracy, which is neural machine translation supported by artificial intelligence. There is no doubt that artificial intelligence, which has penetrated all areas of life, especially the field of translation, has made it easier and closer to human translation. Now, artificial intelligence has shown amazing results in machine translation.

Keywords: Artificial Intelligence, Machine Translation, Types of Translation, Neural Machine Translation. Statistical Machine Translation

1.Introduction

Artificial intelligence, big data, cloud computing, and the Internet of Things have become hot topics after the Internet and mobile Internet. Under the drive of related information and communication technologies, artificial intelligence

has emerged with new algorithms, new technologies, and new experiences. A large number of artificial intelligence applications, such as image recognition, speech recognition, translation, medical care, and even robots, have emerged. The renewal of artificial intelligence technology also has a profound impact on the translation industry, which also undertakes information exchange and management. At the Boao Forum for Asia in April 2018, the speaker chatted and talked on the stage, while the screen next to him automatically converted the text into words and translated it into English in real-time. For a time, the artificial intelligence product of "simultaneous machines" quickly became the "web celebrity" in public view. Following AlphaGo , the application of artificial intelligence in the language field once again caught the public's eye. Based on the wave of localization triggered by the market-seeking investment of multinational corporations in the 1980s, the translation industry has seen a wave of rapid localization, which laid the foundation for the development of translation industrialization. [1] The foundation is embedding the traditional requirements of the translation industry into the industrialization of translation, so the translation became gradually commercialized. The cost, speed, and quality are regarded as the industry requirements for translation, and these three major guidelines lead the development and practice of the translation industry and become the main factors that measure the innovation of the translation industry model. Research on these issues is currently lacking systematic analysis at home and abroad, although, at the practical level, various translation service companies headed by artificial intelligence continue to emerge. In addition to the Tencent company that provided simultaneous interpretation for the Boao Forum for Asia, Microsoft, Google, IBM, Youdao, Sogou, etc. all developed their intelligent translation tools. However, they regarded as the industry requirements for translation, and these three major guidelines lead the development and practice of the translation industry and become the main factors that measure the innovation of the translation industry model. Research on these issues is currently lacking systematic analysis at home and abroad, although, at the practical level, various translation service companies headed by artificial intelligence continue to emerge. In addition to the Tencent company that provided simultaneous interpretation for the Boao Forum for Asia, Microsoft, Google, IBM, Youdao, Sogou, etc. all developed their intelligent translation tools. However, there are no clear ideas on how to meet individual needs and market positioning in the artificial intelligence environment, how to effectively select translation methods, and how to integrate the existing translation industry tools. Therefore, this paper tries to explore a better way to translate efficiently and effectively with a combination of machine translation and human translation and then puts forward a framework of machine translation blending human translation in an artificial intelligence environment. Here are no clear ideas on how to meet individual needs and market positioning in the artificial intelligence environment, how to effectively select translation

methods, and how to integrate the existing translation industry tools. Therefore, this paper tries to explore a better way to translate efficiently and effectively with a combination of machine translation and human translation and then puts forward a framework of machine translation blending human translation in an artificial intelligence environment.

1.2.Machine translation:

1.2.1.definition of machine translation:

It is the process by which a computer program translates text from one language (such as English) to another (Arabic), without any human intervention, and is mainly the use of programs specifically designed to translate oral and written texts from one language to another. The two best examples of machine translation are my services (Bing Translator), (and Google Translate), machine translation is becoming an increasing presence for translators, those who, see it as threatening their jobs to use it, but in an era when artificial intelligence continues to move forward, the idea of a machine-ruled world seems more likely, and this opinion is certainly worrying because people tend to be negative about these things in general. The language industry is a clear example of such a negative outlook, as many predicted that machine translation (it will eventually make human linguists useless, although this aspect is a bit exaggerated), which is why a lot of research highlights the way translators communicate with machine translation and their reactions to its progress.

1.2.2.Overview of the history of machine translation:

In the first half of the twentieth century, scientists were trying to bridge the gap between cultures through mechanical translation. Where he explains (Hutchins), the first significant translation operation that was proposed was in 1933 by (Smirnov Troyanskii), which was **in three stages:**

The process, which can be defined as the perception of both bilingual and multilingual translation, was first performed as a type of logical analysis of words by an editor defined in the source language. Machine 1 converted sequences of basic shapes and functions into similar sequences in the target language, and then finally, the device converted them into the target language by another editor known as the target language. Such an ambitious project was ahead of its time and was not known to Russia, but within a few years of its invention, the possibility of using computers for translation became known by Warren Weave, from the foundation" Rockefeller Andrew D. Booth," to prove the feasibility of machine translation. Experiment**s** and research began at the University (George Town), especially after the US government benefited from the British effort thanks to the British scientist (Alan Turing) to decrypt Morse-

coded wireless communications known as the "puzzle" or "Enigma," which was used by Nazi Germany to securely send messages between its armies. In January 1954, the first public appearance of the system was MT (machine translation), as a result of cooperation between (Dostert and IBM). A sample was taken of 49 Russian sentences that were translated into English. Despite the weak scientific value of this experiment, this project stimulated and widely funded machine translation research in the USA and inspired many to start machine translation projects in other parts of the world, in particular in the Soviet Union. From that year on, a combination of the basic theoretical and experimental methods was adopted in the development of machine translation. 1 Research groups have been established all over the world, including many European countries (France, Germany, Belgium, Hungary, Japan, China, and Mexico). In the United States, the main activity is focused on the translation into English of various Russian scientific and technical subjects. At the University of Washington, "Weaver" created a word-for-word approach that involves the construction of large bilingual dictionaries from a perspective similar to the idea of "Chomsky" about the grammar of the universal language. Weaver explained how the rule-based machine translation rule was built, which was developed in **two ways:** *First:* the direct and indirect approach, where the first is characterized by systems based on bilingual dictionary entries, analysis and Exchange in order, then translation of language pairs word by word, and in the latter. The system creates an abstract representation of the meaning of the source text, which is then translated into the output.

- **The second design strategy** is that it is possible to convert source language texts into common representations of more than one language. Thus, in SL, the translation process develops in two stages: from the source language (SL) to the intermediate language (IL), and then to the target language (TL). Despite the great optimism and hope for a significant improvement in the quality of machine translation that characterized the 1950s period of the last century, the disappointment was compounded by language problems. Especially with the Advisory Committee for Language Processing by 1 (ALPAC), which was formed in the United States to assess the progress made in computational linguistics in general and machine translation in particular, in her 1966 report she concluded that machine translation was slower, less accurate, and twice as expensive as human translation and that there was no benefit or any foreseeable probability of machine translation succeeding. "Hutchins predicted that there would be no future for machine translation because of the problem of linguistic ambiguity that the machine could not solve absolutely," he said. Although the Hutchins report was shortsighted and biased, it had a profound impact and effectively destroyed machine translation research in the United States for more than a decade. "For many years, it considered machine translation to be a failed project because of this report. Research in the United States was limited to

Russian scientific and technical materials, and the European scenario was different, as attention was focused on the growing demands for translations of scientific, technical, administrative, and legal documents from and to all European languages. Moreover, The high demand for translation from English to French was caused by the bicultural policy of the Canadian government. Consequently, the focus of machine translation research shifted from the United States to Europe and Canada for that decade, with a focus on experimental efforts in the main approach (interlingua), the intermediate language. By the mid-seventies of the twentieth century, this approach was questionable for its ambitions, and researchers widely believed that the method of transportation might have better prospects. In the eighties of the last century, machine translation witnessed a new recovery as a result of the emergence of automated operating systems and expanded research in many directions, resulting in one of the most successful operating systems (SYSTRAN), which was installed by the US Air Force for translation in 1970 (Russian-English) and also by European Communities for translation into English.

Then it was the (METAL) system dedicated to the translation of documents in the fields of data processing and telecommunications , (German-English), but after his failure, a group (Grenoble Automatique), (GETA Group d'Etudes pour la Traduction) Developing a system (Ariane) which in his conception was flexible and unified for static and dynamic grammar, to integrate different levels of representation, such as phrase structure, logic, thus providing great flexibility in multi-level transfer representations. Although, it never became an operating system, it has been in many similar projects around the world influential in the Eighties, such a system (Mu) which was developed in Japan at Kyoto University led by Makoto Nagao an operating system used to translate abstracts was developed later, by the Japanese Information Center for science and technology. But one of the best known projects of the Eighties was a system based on linguistic units named "Eurotra" This ambitious machine translation project was created with funding from the European Commission from1978 until1992 ,its purpose was to obtain high-quality machine translation, the project for which is one of the fundamental principles of the European Union the main motivation for its financing was to overcome language barriers so that all EU citizens could read in their own language. A project has been implemented "Eurotra" on the grammar-based approach, where English grammar and German grammar, for example, had to be written, and different rules for how to set English language representations in German and equivalent translation representations. In order to do this requires experts in the source language with experts in the target language, as well as linguistic information the opposite is in the middle. According to" Andy Way" that method didn't work, as it was very difficult to write down specific rules from multiple languages and get that desired result in the other language.

1.3.From a rules-based system to statistical machine translation systems

By 1989, the dominance of the rule-based approach was broken due to the emergence of new methods, strategies, and in that period computers became more powerful and as a result there was an increase in digital content online, and most importantly of all came the statistics-based machine translation model that was developed to explore the possibility of exploiting already translated texts as databases for machine translation**.**

1.4.Statistical Machine Translation SMT:

In this statistical approach1 a bilingual model is created where words and phrases are aligned as the basis for the translation model word by word and phrase by phrase and then given a sentence from the source language statistical machine translation searches the translation through all the target language sentences until it finds one more suitable translation. That is why the construction of high-quality bilingual texts is essential for the success of statistical machine translation and for achieving good quality for translation, the statistical approach is based on a large number of documents translated in a million-word language for a specific field and more than 2 specific means the more their number, the more they are for the general language, in order to train the statistical machine translation engine. In order to produce the translation, the system selects the most suitable words in the target language for each input word and then the device works To determine the most probable sequence of words. The downside of statistical machine translation is that it relies on huge amounts of identical texts with the inability to correct individual errors , for these reasons their use was abandoned in the late sixties and after almost three decades , especially with the success of the latest random technologies in speech recognition a team of IBM in (Yorktown Heights) Looking again at the application of machine translation and then reviving the statistical approach**1** with a project (Candide) Thus, they began to build language models. *The first method* in the statistical translation experiment involved the alignment of individual words, groups of words and identical text phrases, then calculate the probabilities but what is surprising is that this method surpassed all expectations, with almost half of the translated phrases either exactly match the translations or express the same meaning in slightly different words, but adherents of the grammar-based translation approach prevailing at the time consider it ineffective and believe that translation cannot be handled by mathematical probabilities. Regardless of skeptical expectations, the statistical approach has proven to be effective, the more the translation process is completed, the more new documents are produced, and therefore more materials for training statistical translation engines. In this way, advances in statistical methods lead to the improvement of their engines. In the nineties, the use of machine translation accelerated in order to meet the growing demand of large-scale translations, Primarily technical documentation from commercial agencies, government services and multinational corporations. According to

"Hutchins", the impetus for the use of machine translation was due to the requirements of large computer software companies that sell their products in international markets, with the aim of maintaining a competitive advantage if their documents are quickly and accurately translated into the local language.

1.5.The era of neural machine translation :

In the last four years, a new version of hybrid machine translation has appeared, which combines**1** combining the benefits of rule-based machine translation and statistical machine translation, namely neural machine translation. The most modern is the deep learning approach to machine translation, which has made rapid progress and is beginning to replace its predecessor based on rules and statistics. Despite the extremely high costs in terms of research and implementation of neural machine translation, the situation has changed since to the extent that scientists and computer linguistics experts called for calling the current time, 2015, the new era of neural machine translation.

1.5.1.Definition of Neural Machine Translation :

It is a machine translation method that uses a large artificial neural network in predicting the probability of a sequence of whole words. Unlike statistical machine translation, it is either in the form of sentences, which consumes more memory and time, neural machine translation trains its parts from start to finish to increase performance and is rapidly moving to the forefront of machine translation, where it has recently outperformed traditional forms of machine translation systems, the innovation of neural machine translation lies in the computational approach that was introduced, that is in the invention of artificial neural networks. What the current translation scenario has witnessed in the last four years , is the creation and improvement of machine translation tools using artificial intelligence that is able to learn and grow by means of data , like the first of the**1** neurons a small child learns new information every day. Artificial models were designed in 1942 by "McCulloch" the basis for most of the "Pitts" remains neural networks to this day, they are divided by the same organization as the neurons of the human brain , it consists of a mathematical function that includes a set of input information, a set of variable resistors, an element for processing and one output, the structure of which resembles the dendritic appendages of a human neuron cell .Its most important characteristic is adaptation to a changing environment.

- **Deep learning**

Which is called hierarchical learning or deep structured learn1 has emerged as a new field of machine learning research since 2006 and according to the strong ability of the deep learning property and what it represents similar to the human brain, deep neural networks have allowed to achieve significant breakthroughs in several areas such as speech recognition and natural language processing, and thanks to their strong structure they have become increasingly popular in the development of machine translation programs, through complex

and massive data structures, where deep learning allows machines to learn autonomously.

1.5.2.The artificial neural network relies on the interconnection of three types of data structure module to exchange Information:

***Input:**

The data structure module that receives and processes signals coming from connections from previously active neurons or through sensors perceives and adapts to the internal data structure module.

* **Hidden :**

A data structure module that implements the operation of real numbers through the use of algorithms, each independently of the other.

* **Output :**

It is the last layer in neurons, it includes a data structure module that collects the results of the preparation of the hidden layer and adapts them to the next block of the neural network**1**.

Artificial intelligence algorithms have resulted in more accurate language translations than previously thought unlike previous methods such as statistical machine translation, which translates parts of a sentence, neural machine translation translates entire sentences.

1.6.Neural network :

Evolving within the encryption and decryption System1: the cryptographic part of the system turns into evolving within the encryption and decryption system a sequence of words and then into a set of representations, which is repeatedly formed from words and decoding provides the probability that the word is a continuation of what was previously produced. This process is similar to the feature that is used to predict words in smartphone keyboards.

Neural machine translation employs only one neural network, which is trained to give RNN probabilities (more accurate in the data of both languages. Repetitive neural networks) work by processing the language s read one word at a time, that is, sequentially from left to right or from right to left forces the repetitive neural networks to perform multiple steps to make decisions, this model was the best choice for language translation due to its high accuracy.

1.6.1. Definition of Network Recurrent Neural: RNN

Recurrent Neural Network (A type of artificial neural network commonly called RNN) Their use in speech recognition and Natural Language Processing (NLP neural network) iterative is designed to recognize sequential characteristics of data and use several patterns for word prediction.

The repetitive neural network is used in deep learning and in the development of models that simulate the activity of neurons in the human brain is extremely powerful, in use cases where context is important for prediction and the result is

different from other types of neural networks**1** artificial neural artificial because it uses feedback loops to process a series of data that inform the final output .

Writing by repetitive neural network is a form of computational creativity and this simulation of human creativity became possible thanks to the understanding of artificial intelligence of the rules and semantics learned from training.

However, in 2017 Facebook's artificial intelligence (FAIR) published research presenting the first complete convolutional neural network, CNN is a model of sequential learning and according to the researchers the sequential learning model was highly computationally effective**2** and nine times faster than the recurrent neural network, which means that it is a super-powerful system that builds an alternative architecture for machine translation, which will open up new, repetitive possibilities for future word processing tasks.

1.6.2.Definition Convolutional Neural Network: CNN

It is a type of artificial neural network, used in image recognition and processing where deep learning is used to perform synthesis tasks, used in image recognition, processing and descriptive, along with recommendation systems and natural language processing.

Conventional neural networks are not ideal for processing images for low resolution, but the bypass neural network has special neurons located in the frontal lobe, which is the area responsible for processing visual effects in humans and animals. The layers of neurons are arranged in such a way that they cover the entire field of view while avoiding the problem of partial image processing of conventional neural networks. The convolutional neural network uses a very similar multi-layer perceptual1 system where the layers of the bypass neural network consist of a layer, designed to reduce the processing requirements of input, output layer and a hidden layer that includes multiple convolutional layers, aggregation layers and connected layers, resulting in increased efficiency in image processing and natural language according to, fully and normalization layers, a more efficient and simple system.

1.7. Definition of Transformers Google:

Researchers from the goggle company , a new model called transformers , In which the mechanism of self-attention is applied self-attention at each step in order to understand the relationships between all the words in the sentence, where the converter creates an initial representation of each word, and then by means of a self-attention mechanism compiles the information is from all the other words, so that the new representation of each word is generated across the entire context and then this step is repeated several times in parallel with all the words, to generate new representations in a row. The converters of the neural network structure are outstanding in the task of understanding the language and have taken advantage of the repetitive neural network the convolutional neural network which is superior in its architecture has to be considered because transformers have computational complexity significantly compared to other neural networks, it is suitable for machine Learning devices to provide high translations this new

approach is currently being studied and is being promoted by many researchers, so that during the month of May of the European Annual Conference 2018 (European1 EAMT) "For the European Machine Translation Association), their work based on the structure of transformers and the mechanism of self-attention is a promising direction to explore in the future. And also the chief scientist and CEO of systran, in an article written in the approach to self-interest converters 2018 ,September Allows engines (SAT) to look at several parts of the sentence at once by identifying words that can have a significant impact on understanding and accurate translation, so we, therefore, he should approach an approach that resembles human behavior}. Such claims may seem alarming to translators, as they seem to imply that the performance of machines will eventually lead to the elimination of their jobs and therefore their position in society.

1.8. The era of artificial intelligence

During the Second World War, the famous British computer scientist (Alan Turing) on breaking the machine code (Enigma) which was used by the German forces to send messages securely where he created (Alan Turing) and his team Machine**1** (Bombe) which were used to decipher letters (Enigma) its led the innovation of puzzle machines and Bombe to establish machine learning according to Turing{A machine that can talk to humans without humans realizing that it is a machine will win The Imitation Game and can be said to be intelligent}. In 1956, an American computer scientist (John McCarthy) organized the Dartmouth conference, where the term artificial intelligence was first adopted and then research centers1 appeared in all over the United States to explore the potential of artificial intelligence. The researchers had(Allen Newell and Herbert Simon), instrumental in promoting artificial intelligence as a field of computer science that can transform the world and make a scientific revolution.

1.8.1.Artificial Intelligence Research :

After the success of the algorithm(Newell and Simon develop both general problem solving algorithm for solving mathematical problems, known as the father of artificial intelligence programming language (LISP) which then became important in machine learning to solve mathematical problems and theoretics**2**. In the Sixties, other researchers worked on the development of algorithms ,then in the late sixties of the last century, computer scientists worked on building the first intelligent robot in Japan in 1972 . Despite this well-funded global effort over several decades, computer scientists have found it extremely difficult to create intelligence in machines because for AI applications to be successful, some requirements such as learning to see and process a huge amount of data must be met, since computers. They were not sophisticated enough to process such a large volume of data, and therefore governments and companies were gradually losing

confidence in artificial intelligence. That is why there is an acute shortage of funding for AI research, it has been lean years for its development research.

1.8.2. the new millennium and new opportunities:

In the late Nineties, American companies again became interested in artificial intelligence as they revealed the Japanese government announced plans to develop a fifth-generation computer to promote machine learning enthusiasts think for artificial intelligence that computers will soon be able to continue and return as well as in 1997 the first a computer from a company (IBM) strong wins over the world chess champion "Gary Kasparov", machine learning1 has continued its course, largely thanks to improvements in computers where companies and governments have successfully used machine learning methods in a variety of fields, huge gains in computer processing power of information and storage capacity have enabled companies to store , (Amazon) has benefited from huge amounts of data for the first time, in the last 15 years , (Google), (Baidu) and other large companies have taken advantage of the advantages of artificial intelligence in machines in facilitating, such as the feature of processing user data to understand his behavior , that's why the development of their business operations has become huge thanks to intelligence . Machine learning supported in many of the online services we use now, the technology sector is leading the US stock market and many global stock markets today.

1.8.3.Contributions of artificial intelligence to machine translation : Information that has improved over the past seventy years 1 Artificial intelligence has revolutionized processing and it seems that its technologies will contribute To make the machine translation process more sophisticated. This is why if there is a large-scale translation, and this is the goal in the development of machine translation technologies, the use of machine translation is the best option since 1949 using a computer without human interaction . Machine translation has continued to evolve and over time, the ways in which artificial intelligence tries to translate fluently have been adapted to a variety of languages. Initially, machine translation worked on a rule-based system, which is a combination of the rules of the language as the basis for translation, and in the nineties of the twentieth century, translation began to use statistical methods by having computers analyze data through the use of language.

This evolution1 and therefore the need for a segmentation tool, to create a more effective method of machine translation was necessary .translation Segmentation by definition is the way to translate units in order to work at full capacity by which technology can make better use of existing translation materials, as this tool can combine in the units of your documents and your previous translated text, which were originally from data that part of the statistical methods can be obtained by simply adding this information to the translation memory. While this was a step towards greater efficiency, machine translation and its built-in artificial

intelligence still rely on other variables to work accurately. Recently deep learning technology provides methods . And the latest methods of current translation developed by Allow translation platforms to work on their own as a model of a deep neural network. Artificial intelligence contributes to exploring the creative potential of linguistic diversity, making this diversity more visible and valuable and improving communication between cultures .

1.8.4.The benefits of artificial intelligence in machine translation :

The advances that are happening in technology 2 every day approximation a lot of wonderful things happen with the ability of machines to translate between languages, machine translation uses software to translate written or oral texts from one language to another. Although language is an art that must be mastered through hundreds and thousands of hours of training, there are some benefits great that can be learned from the use of machine translation.

For example, Google has created its own translation app that allows you to translate both words and phrases and get a good translation for so, all at the click of a button ,Although it is a professional text translation to do any legal or business translation using permanent manual, the following describes some of the main benefits *that can be obtained from machine translation:*

- **Save time:** Machine translation is much faster than human translation as it allows you to translate entire text documents in a matter of seconds while human translation takes much longer, especially if you have to search for specific meanings in the dictionary, although a skilled human translator1 will provide a better quality translation.
- **Reduced costs:** Although buying a professional language translation program may seem expensive at first, it is a much cheaper solution than hiring a human translator, the program will be accessible whenever it **is** needed in the future, and it should also be noted that there are many free solutions available on the market that can do various types of translation so that it is not too expensive project.
- **Memorizing key terms:** The main benefit that comes from machine translation is that many translation programs have the ability to memorize and thus reuse common words and phrases used in a particular field . The more you use it, the more**1** this means that translation programs will translate their work better.
- **Amenable to training :** Custom machine translation engines can be trained on content that has already been translated and with their debugging and then editing from human translators the translation is constantly improving over time.
- **Long-term investment** :The more the translation engines are fed and trained, the more accurate the translations they produce, which means that over time,

the lower the costs will decrease, the higher the quality translations will be produced and therefore less need for human editing.

- **Translation is improving all the time:1** In artificial intelligence technology, machine translation is being invested heavily and progress is continuing with better results than ever before . There are many benefits that come from being able to use machine translation many times machine translation is sufficient for a specific task, such as personal communication between friends or with co-workers, But keep in mind that it is important to have an optimal translation for legal and business purposes, Where there are many legal or commercial consequences if they are not, it is better to hire a professional translation company to do legal and commercial translations because they have the best experience in these genres.

1.9. Machine Learning and Translation Systems:

- **Modern forms of machine translation and the best:**

Machine learning is one of the sections of artificial intelligence and a branch of computer science that means that once you learn, these technologies give the machine the ability to learn and adapt its functions to the data provided in the machine Artificial intelligence continues to evolve, working without a n be programmed to do it. And through machine learning, a more accurate translation is produced than ever before, machine translation can be compared using machine translation, statistical division of words, a special translation technique and phrases for translating a text, which may this method makes sentences look choppy and some words are out of context, but when using machine translation the result of the translation will be as if it was done by a person and not by artificial intelligence.

- **Statistically based engines:**

Statistically based engines learn through statistical analysis of a bilingual text, generally provided by the developer or user, as these engines develop a way to understand existing rules to determine the unique relationship between the source language and the target language.

- **Neural network-based engines:**

Neural network-based actuators1 are the most modern approach to machine translation , where neural networks are designed to mimic how the human mind learns , gaining more knowledge over time, these engines seek to understand

the context of what is being translated to correctly predict and choose the right word. As a result, engines based on neural networks are better able to capture or understand the meaning of a sentence and so the old statistical models were quickly replaced , the idea here is not just to replace one word with another constructively instead, the neural machine translation engine works to understand the purpose behind the content of that translation and retain .

1.10.Translation Sites

1.10.1.Google Translate:

Google Translate service1 was introduced in 2006 as a tool for automatic translation, it has since developed to use, you can simply type a word or phrase into the text box , and choose the language you want to translate, and choose the language you are translating to the Google translation service started translating the foreign text first into English and then into the target language by attributing the text to a large number of documents and texts.

In 2016, Google translation services took a step forward by focusing on neural machine translation ,it is a deep learning method that mainly involves using a wide range of linguistic sources while looking at whole sentences instead of just words when translating, as the latest technology provided by Google neural machine translation allows their intelligence artificial intelligence better assessed the context of words and phrases in the closest imitation of the work of the human brain, producing a translation more smooth and easy to read in addition these services are now available for offline use they are ideal for traveling or when you do not have access to the internet, but despite their best efforts, no (Google Translate) is a reliable and consistent translation solution especially for companies .(Google Translate) supports the application more than 100 languages and can provide translations via text, images and audio available in 12 languages, it is also integrated with products such as(Chrome) it is available in applications(IOS), (Android), to translate texts, on the whole the quality of translations is acceptable and it is the most popular way to translate free texts, in short (Google Translate) is great for learning a new language and searching for individual words or phrases to see how they sound or pronounce in another language.

1.10.2.Bing Translator:

Translator1(Bing Translator) formerly known as (Windows live Translator) .It appeared in 2007 and provides free text translations on the web neural machine translation technology is the next generation of (Bing Translator) better translation as periodic updates are available on all platforms operating the service. It has developed (Microsoft) a research system that the company claims has been able to achieve human translation parity translation using the next generation of neural network architecture and binary learning, with an update to the translation API.

It has promised (to provide improvements on additional languages without mentioning any details, and in early 2019 Merged(Bing Translator) in an operating system(Windows), the translator is characterized by having a main translation engine with a programming interface free applications you will not find any problem in finding languages thanks to the auto discovery feature, it also has text recognition features to translate content on the screen in addition to providing translation of not many of the 60 languages.

1.10.3.DeepL translation :

In August 2017, a translator released (DeepL1) to the public with an unprecedented translation quality, as it provides a benchmark new to translation . The service uses the so-called deep learning technology based on artificial neural networks where train the neural network to translate by feeding it with previous correct translations and then linking them together so that it can deduce from which how to translate new texts learning from a neural network requires a very large effort, for example depends (DeepL) on a supercomputer with a performance of (5.1) Peta Flops, which is equivalent to the performance of a processor approximation of a Surface computer the office (DeepL). There is the main center(DeepL) for data processing in (Keflavik ,Iceland). There it is easy for the translation program to keep calm, especially with the low outside temperatures on an island located in the Atlantic Ocean makes Air conditioning in the data center is easier (DeepL) now supports nine European languages and (72) Group languages.

1.10.4. Amazon translate:

Amazon Translate is a text translation service that uses advanced machine learning technologies and a continuous learning model to improve the effectiveness of translation to provide high-quality translation over time with support for 25 languages on demand, where usage of (Amazon Translate1) .

1.10.5. SDL Translation:

Support service (SDL Free Translation) , about 45 languages for simple translations you can then listen to translate copy, share or print it easily and can benefit from writing it from the tools the site offers for free text translation the instant translation feature of receiving the translated text while for translators and interpreters Instantaneous and other professionals, also use the paid feature to download this, if you have, a document from a device your computer and then see the translation price of a long document that you need to translate in a hurry, this paid service may be worth a try.

1.10.6. Yendex Translation:

This service started in 2011, (Yendex Translation1), it translates a lot of languages , works very fast, it looks good and not only stops at regular text translations but it can also be used to translate entire websites and even to translate images. Translation offers: simultaneous translation of predictive writing, usage examples, pronunciation and much more.it supports 95 languages.

1.10.7. Systran Translation:

Since its foundation in 1968, it has been(Systran)2 a pioneer in the field of machine translation technology for decades where the company leads the industry with a number of innovations and advanced solutions that are used by many companies and consumers right now thanks to a strong focus on research and development, evolved Systran after 50 years, more innovative than ever, especially with its capabilities in the field of neural machine translation. The company first appeared(Systran) in the market in the seventies as a system machine translation based on grammar (RBMT), it was a successful business tool and remains to this day. Currently(Systran) is a hybrid system, the company claims that it combines the predictability and consistency of rule-based machine translation systems with machine translation, it has a machine learning module that uses it to train the system and make it more accurate and fast with long-term use.

1.10.8. Babylon Translation:

Babylon awarded a good program for translations, it can be downloaded on various platforms or work on the web interface his own , supports almost 30 languages the site may not have bells and alerts like other translation programs but its translation is considered accurate by many users.

Applied study

The first text:

Original English text1:

Causes of The Cold War

The Cold War can be described as a state of tension between countries in which each side develops policies that are made to strengthen it and weaken the other by falling short by actual war. However, the Cold War beginning in 1947 was more of a verbal war, which was mainly fought through newspapers, magazines, radio and other propaganda methods. The causes and developments of it can be debatable as the Cold War doubles as a conflict between two countries the USA and the USSR and between the two ideologies of Capitalism and Communism. These ideas were influenced by political, military and economic aspects, which majorly impacted in the conflict between the countries developing into the Cold War.

The result of the translation of the statistical mechanism Systran :

أسباب الحرب الباردة

يمكن وصف الحرب الباردة بأنها حالة من التوتر بين البلدان التي يقوم فيها كل طرف بوضع سياسات تقويتها وإضعاف الطرف الآخر بالتقصير في الحرب الفعلية. بيد ان الحرب الباردة التى كانت أكثر من حرب لفظية حاربت بشكل أساسي من خلال الصحف بدأت في عام ١٩٤٧ والمجلات والاذاعات ووسائل الدعاية الاخرى. ويمكن الجدال في أسبابها وتطوراتها، إذ تتضاعف الحرب الباردة إلى حد الصراع بين دولتين، أمريكا والاتحاد السوفييتي، وبين أيديولوجيتي الرأسمالية والشيوعية. وتأثرت هذه الأفكار بالجوانب السياسية والعسكرية والاقتصادية، التي أثرت بشكل كبير في الصراع بين البلدان النامية في الحرب الباردة.

The result of Google Neural Machine Translation:

أسباب الحرب الباردة

"يمكن وصف الحرب الباردة بأنها حالة من التوتر بين الدول التي يطور فيها كل طرف سياسات يتم وضعها لتعزيزها وإضعاف الطرف الآخر عن طريق الحرب الفعلية .ومع ذلك، كانت الحرب الباردة أكثر من حرب كلامية، والتي خاضت بشكل رئيسي من خلال الصحف التي بدأت في عام 1947 والمجلات والإذاعة وغيرها من وسائل الدعاية .يمكن أن تكون أسبابها وتطوراتها قابلة للجدل مع تضاعف الحرب الباردة باعتبارها الصراع بين بلدين - الولايات المتحدة الأمريكية والاتحاد السوفيتي وبين أيديولوجي الرأسمالية والشيوعية .تأثرت هذه الأفكار بالجوانب السياسية والعسكرية والاقتصادية، والتي أثرت بشكل كبير في الصراع بين البلدان النامية في الحرب الباردة".

The result of neural machine translation Bing:

أسباب الحرب الباردة

Total number of machine translated text words: 122	
Errors that violate meaning	Number of structural and syntactic errors
14	12

"ويمكن وصف الحرب الباردة بأنها حاله توتر بين البلدان التي يقوم فيها كل جانب بوضع سياسات ترمي إلى تعزيزها واضعاف الأخرى بالتقصير في الحرب الفعلية .ومع ذلك، كانت الحرب الباردة التي أكثر من حرب لفظيه، والتي خاضت أساسا من خلال الصحف والمجلات 1947 بدأت في والإذاعة وغيرها من وسائل الدعاية .يمكن ان تكون أسباب وتطوراته قابله للنقاش مع تضاعف الولايات الأمريكية والجمهورية السوفيتية وبين أيديولوجي – الحرب الباردة كصراع بين بلدين الرأسمالية والشيوعية .وقد تأثرت هذه الأفكار بالجوانب السياسية والعسكرية والاقتصادية التي أثرت علي الصراع بين البلدان النامية في الحرب الباردة".

Second text:

Original English text1:

Internet

The Internet has become very important in today's society. The Internet connects people from around the world on a daily basis. The Internet is used for communication, trading, buying, and selling of stocks. The Internet is also vital to the advertisement industry. The Internet has caused a revolution in the way business is conducted in the twenty-first century.

The result of the translation of the statistical mechanism Systran :

الإنترنت

"لقد أصبحت الإنترنت مهمة جدا في مجتمع اليوم .تربط شبكة الإنترنت الناس من مختلف أنحاء العالم على أساس يومي .وتستخدم شبكة الإنترنت في الاتصالات والتجارة والشراء وبيع الأسهم . كما أن الإنترنت حيوي أيضا لصناعة الإعلانات .لقد أحدثت شبكة الإنترنت ثورة في الطريقة التي تدار بها الأعمال في القرن الحادي والعشرين."

The result of Google Neural Machine Translation:

الإنترنت

"أصبحت الإنترنت مهمة للغاية في مجتمع اليوم .الإنترنت يربط الناس من جميع أنحاء العالم على أساس يومي .يستخدم الإنترنت للاتصال والتداول والشراء وبيع الأسهم .الإنترنت هو أيضا أمر حيوي لصناعة الإعلان .لقد تسببت شبكة الإنترنت في حدوث ثورة في طريقة إدارة الأعمال في القرن الحادي والعشرين".

The result of neural machine translation Bing:

الإنترنت

"لقد أصبحت الإنترنت مهمة جدا في مجتمع اليوم .الإنترنت يربط الناس من جميع انحاء العالم علي أساس يومي .يتم استخدام الإنترنت في الاتصالات، والتجارة، وشراء، وبيع الأسهم .الإنترنت هو أيضا حيوية لصناعه الإعلان وقد تسببت الإنترنت في ثوره في الطريقة التي تدار بها الاعمال التجارية في القرن الحادي والعشرين".

Total number of machine translated text words: 58	
Number of structural and syntactic errors	Errors that violate meaning
5	3

Third text:

Original English text 1:

European Exploration

During the Middle Ages, a new interest in exploration arose in Europe. Although there were many causes for the European age of exploration, fate, faith, and fortune were the most important. While each of those three factors played major

roles in the need for exploration, the thirst for fortune lead to a search for riches, which heavily impacted European exploration.

The result of the translation of the statistical mechanism Systran :

الاستكشاف الأوروبي

" أثناء العصور الوسطى، نشأ اهتمام جديد بالاستكشاف في أوروبا .وعلى الرغم من الأسباب العديدة التي أدت إلى عصر الاستكشاف الأوروبي، إلا أن القدر، والإيمان، والثروة، كان من بين أهم الأسباب .وفي حين أن كلا من هذه العوامل الثلاثة لعب دورا رئيسيا في الحاجة إلى الاستكشاف، فإن التعطش إلى الثروة يؤدي إلى البحث عن الثروات، الأمر الذي أثر بشدة على الاستكشاف الأوروبي".

The result of Google Neural Machine Translation:

الاستكشاف الأوروبي

"خلال العصور الوسطى، ظهر اهتمام جديد بالتنقيب في أوروبا .على الرغم من وجود العديد من الأسباب لعصر الاستكشاف الأوروبي، فإن المصير والإيمان والثروة هي الأهم .في حين لعب كل من هذه العوامل الثلاثة ،أدوار رئيسية في الحاجة إلى الاستكشاف، فإن التعطش للثروة يؤدي إلى البحث عن الثروات، والتي أثرت بشدة على الاستكشاف الأوروبي".

The result of neural machine translation Bing:

الاستكشاف الأوروبي

"خلال العصور الوسطي، نشا اهتمام جديد في الاستكشاف في أوروبا .علي الرغم من ان هناك العديد من الأسباب للعصر الأوروبي للاستكشاف، والقدر، والايمان، والثروة كانت الأكثر اهميه وفي حين لعب كل من هذه العوامل الثلاثة أدوارا رئيسيه في الحاجة إلى الاستكشاف، فان تعطش الثروة يؤدي إلى البحث عن الثروات التي أثرت بشده علي الاستكشاف الأوروبي".

Total number of machine translated text words: 60	
The number of structural and syntactic errors	The number of errors that violate the meaning
11	4

Conclusion

To answer the following problem / What are the contributions of artificial intelligence in machine translation:

It is also known that the development of the first computer during the Second World War by the British scientist (Alan Turing) it marked the world's entry into a new era in technical development, and the basic stone that paved the way for translation Mechanism and its aftermath in the development of artificial intelligence , since at first there was no experience with this new type of Translation that uses a machine instead of a human has been and remains something fascinating until now , as the years have passed and the emergence of new computer operating systems such as new operating systems for computers and also for smartphones as a system (Windows , Linux , MacOs), it gave more flexibility and created a favorable environment for the work of artificial

intelligence in accessing (Android ,IOS) ,firmly into the field of translation automating and making a breakthrough in the quality, accuracy and speed of translation , which is gradually approaching the level of human translation , this is due to the deep learning models and neural translation approaches adopted by most programs and websites translations such as (Google ,Bing ,Systran, Amazon Translate, Trados, ,SDLk and Deep Translate). Now, thanks to artificial intelligence in machine translation, the process of communication between peoples of different cultures has become a productive and effective real-time process, as there are no language barriers so that we get to know, open up and accept each other's culture.

Reference

[**1**]Abdullah bin Hamid, Al Hamadan, introduction to machine translation , Published by Obeikan library, on January 1, 2010.

[**2**]**1**Osama Tabash, machine translation, October 20/ 2016 https://www.alukah.net/culture/0/108766 .

[**3**]**1**Translation by Mohammed Suleiman Mohammed Musa, machine translation and computer-assisted human translation, Roger Chris fever. https://www.atinternational.org/forums/showthread.php?t=5047 .

[**4**]Hutchins, W. John. 1995. Machine Translation: A Brief History, in Concise history of the language sciences: from the Sumerians to the cognitivists. Edited by Koerner, E.F.K. and Asher, R.E. Oxford: Pergamon Press, pp. 431-445. (Last accessed 12/02/2019).

[**5**]1Aurelien Geron , Hands-On Machine Learning with Scikit-Learn and Tensor Flow , Publisher: O′Reilly, p28.45.

[**6**]1Google Advancing AI for everyone https://ai.google (Last accessed 07/03/2019). 2 Deep Learning by Ian Good fellow, Yoshua Bengio and Aaron Courville published by MIT Press, 2016.p140.

[**7**]1Google Advancing AI for everyone https://ai.google.

[**8**]Wills . W .The Science of Translation. Problems and Methods. Gunter Narr Verlag, Tubingen .1982 p801.

[**9**] **1**Translating Europe Forum. 2018. "How is artificial intelligence transforming society and the translation industry? Brussels, 8-9/11. (Last accessed 29.06.2019) .

[**10**]**1**European Association for Machine Translation: http://www.eamt.org/mt.php. (Last accessed 11/03/2019).

[**11**] **1**Abdo, Ali, discover artificial intelligence1https://www.arageek.com/tech/ai-first-step

[**12**] **1** Cronin**,** Michael. 2011. Translation and Globalization, London; New York: Routledge Taylor & Francis Group. (Last accessed 22/01/2019).

[**13**] https://www.lifewire.com/what)Last accessed 15/01/2019 intelligence-artificial-is. 1 4149995-.

[**14**] 1 Pushpak Bhattacharyya , Machine Translation , Chapman and Hall/CRC , Published January 13, 2015. P.36 (Last accessed 9/03/2019).

[**15**] 1 J. Kocar, Dr. Hendrik, professor and director of translation and interpretation studies in the humanities and social sciences at Hamid bin Khalifa University, the impact of machine translation on translators, June 9, 2019.

[**16**] 1Foundations of Artificial Intelligence - Neural Networks Building Artificial Brains http://www.cs.nott.ac.uk/~pszrq/files/2FAIANNa.pdf. (Last accessed 28/05/2019).

[**17**] **1**Networks Neuraling Translator B Microsoft1-use-accelerates-translator-017/11/15/microsofthttps://www.microsoft.com/enus/translator/blog/2/offerings-its- across-networks-neural-of. deepl.comDeepL: https://www.(Last accessed 15/01/2019).

[**18**] **1Yandex.Translate**:https//translate.yandex.com.

[**19**] **2**neural - http://www.systransoft.com/systran/translationtechnology/pureSYSTRAN Pure Neural MT: **(Last accessed 28/02/2019) translation/-machine.**

[**20**] 1Babylon Translator: software.com-https://www.babylon .

[**21**] 1https://www.exampleessays.com/viewpaper/213990.html

[**22**] 1https://www.exampleessays.com/viewpaper/77065.htm

[**23**] 1https://www.exampleessays.com/viewpaper/6893.html.