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Machine translation using artificial intelligence models -GPT chat program as a model-

Nadjiba Mahdid ¹, Zohra Zenoud ², Mekki Bouder ³

¹ Hassiba benbouali university of chlef, Algeria. Email: m.nadjiba1987@gmail.com

² Hassiba benbouali university of chlef, Algeria. Email: z.zenoud@univ-chlef.dz

³ Al-Haj Lakhdar Batna University 1, Algeria. Email: mekki.bouder@univ-batna.dz

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Abstract:

translation is considered a global means of communication between peoples, without it many concepts and meanings are lost, and with keeping up with modern development and technology, the translation process has become easy and accessible, there is no need to waste a lot of time looking for the meaning of a word in the pages of the dictionary, as millions of words and meanings have become of the persons, perhaps the most important are such programs The GPT chat program, which also made its mark in the world of machine translation, and we will try to talk about the advantages of this program and the ways of using it and expose its most important uses, and no program is without shortcomings that need to be updated and modified, to what extent was the GPT program able to achieve efficiency in the world of machine translation ?Was his embrace of the Arabic language a service to her And how was that?

Keywords: translation-automation-intelligence-language-software....

Introduction:

Translation is the transfer of the meanings of a text from one language to another taking into account accuracy and style. This requires understanding the original text and expressing the content and style in another language. The translator must be fluent in both the translated and the translated languages, there are two known methods of translation. The first one is based on literal translation and adherence to the meanings of the vocabulary of the original text and transferring it to the second language, and the second method depends on understanding the general meaning and then expressing it in the second language in the style of the translator himself.

1-automatic translation:

It is a branch of automated language processing that deals with translating a language into other languages using digitization and aims to facilitate tasks for the category of "non-native speakers"¹.it is defined as the intervention of artificial intelligence by computer assistance to perform the act of translation by means of linguistic and cognitive patterns stored by structures and terms retrieved in exchange for the language from which it is translated²

2-the concept of artificial intelligence:

To find out what artificial intelligence is, you must first determine what is meant by human intelligence, it is related to mental abilities such as the ability to adapt to life circumstances, benefit from previous experiences and experiences, thinking, analyzing, planning, problem solving, sound

conclusion and feeling for others, in addition to the speed of learning and using what has been learned in a proper and useful way, artificial intelligence is a simulation of human intelligence and understanding of its nature by making computer programs capable of simulating intelligent human behavior, and artificial intelligence is currently everywhere around us, starting from self-driving cars, drones, translation software, or Investment and many other applications that are widespread in life³

From the above, we conclude that artificial intelligence means, in short, that a machine performs everything that a human being can accomplish from mental operations and tasks, and its fields include expert systems, cybernetics, Robotics, robot-assisted Education, Computer-Aided Engineering Design, Machine Translation, and automated processing of natural languages.

3-the historical stages of machine translation: machine translation has gone through three phases:

The first phase: the experiment began in 1940 to 1965, and was characterized by the development of some basic building blocks for the act of translation, and its importance increased due to the need required by the translation of documents obtained by intelligence, as the conflict was at its most intense during the Cold War, the United States of America focused all its efforts on simultaneous translation from the Russian language, and:

- 1.Relying on the bilingual electronic dictionary.
- 2.The use of methods for solving secret codes.
- 3.Rearrange the words.
- 4.Consideration of the word in the basic linguistic unit of translation
- 5.Not considering the structure of the sentence to determine the different syntactic relationships between its parts.
- 6.Failure to study the influence of context on the meanings of words.
- 7.Semantic analysis had no role in machine translation software.

The second phase: this development began from 1956 to 1975, during this period there was a relative development at the level of western, Chinese and Japanese languages, and this phase was able to overcome the problem of machine translation in how to choose the term required by the context, as was taken into account in the process of storing information and this phase was characterized by:

- 1.Change of meaning
- 2.Abstraction from meaning.
- 3.Meaning with it is impossible because of the similarity of the linguistic structure.
4. Do not take into account the language backgrounds in the language of origin or transfer.

The third phase: begins from 1975 to the present, which is the stage in which translation has known an amazing development that appeared from the Windows system (Windows) and its software in various disciplines, where this phase was characterized by:

Adding new terms and related information, especially in the fields of Science and technology, which classifies hundreds of words into the language annually, saving time and effort on the translator, researcher and linguist from the shadows of finding a comprehensive information base, and finding an effective way to coordinate efforts to standardize terms produce modern specialized dictionaries periodically and with less effort.⁴

4-machine translation steps: machine translation takes place in stages

The first step:

At this stage, we find that the text to be translated is entered, either through the keyboard in the computer or transferred to the computer by means of a cylinder or a magnetic tape and after several steps the text comes out to us in the target language, i.e. the translated language.

The steps through which machine translation is carried out are:

1.The human translator performs a preliminary review of the text to be translated, does not distinguish between the real word and proper names, the human must explain that this is a proper name, for example, and is not translated, and that these forms are not texts for translation, which is the step that is in the process of prior Editing.

2.The computer then performs morphological analysis of the text to identify the parts of words and their components, and this proceeds according to tables given to the computer. After the computer performs the morphological analysis process, it searches the lexicon (for example, where we find the word (Schools), it must analyze this morphologically, if you search for Schools) in the locket, you will not find it because the word consists of (schools) (school plus sign). Therefore, morphological analysis is necessary before considering the lexicon.

3.The computer performs morphological analysis and then looks at the lexicon provided to it, and then prints us the words that it did not find in the lexicon to tell us that these words do not exist in its dictionary, then the translators provide the computer with those words that were not stored in its memory and their equivalents, as well as with all the necessary morphological and morphological information.

4.The computer searches the dictionary again. The computer then performs a meta-analysis of the text.

The second step:

The translation steps begin, and here two steps are taken where the computer transfers the words according to the translation dictionary and transfers from the original language to the target language, taking advantage of the bilingual lexicon available to it. Then it performs the process of translating the structures: it puts the synthetic appetizers in the translated language, for example, the subject and the object, the additive and the additive to it, the adjective and the descriptor and so on, that is, the computer performs grammatical transfers between the two languages⁵.

The third step:

Here comes the stage of synthesis or synthesis, that is, the expression in the target language such as:

1.Put the verb at the beginning of the Arabic sentence, not starting with the verb as in English, for example, and put it after the additive and the adjective after the descriptor in Arabic, instead of their reverse order in many other languages.

2.Morphological generation by applying grammatical and morphological rules in the target language, such as noting that the word "hearer + plural + object" becomes hearers, while books + present tense + subject + masculine plural "become" they write " and so on, so there are three basic stages:

- Analysis
- Transfer (i.e. initial translation).
- Formation of sentences in the translated language.

This is, in short, an example of what a computer can do in translation, but the topic is not so simple.⁶

5-motives of machine translation:

The first and most important reason is that there is a huge amount of what needs to be translated, which is not enough for human translators to do a small part of it, especially after the explosion of the information revolution and the diversity of languages that produce knowledge today than those who do not speak that language should know. There are more than 4,000 living languages around the world today. Arabic is one of the top ten languages if we take into account the number of native speakers.

Despite the rich history of the Arabic language, today it is not the most important source in modern science and technology. Therefore, the process of translation from other languages to Arabic is of great importance for Arabic speakers. If they want to get acquainted with the latest findings of science, they can either learn another language (or languages) besides Arabic, or have the published science translated for them in other languages.

The second reason for the importance of machine translation is that the translation process for human translators is a boring and slow process, and the translator tries to overcome his boredom by changing his style at times and resting at times, and he, like human nature, sleeps, has fun, gets sick, changes his job and retires. All this determines the work of translators and makes them a rare commodity in the era of globalization. If we know that the translator often masters one language with the native language from which he is translating or to it, this means that it is very rare for those who master a language such as Korean or Japanese with Arabic.

This gives additional importance to machine translation, as the computer can work 24 hours a day and does not take a weekend off, and it can be replaced with something better and improve its performance and speed with the technical progress underway today. There are other reasons that stand besides machine translation, including the need of the commercial sector for a translation that gives a good idea of industrial and commercial products without being at a high level

With the increasing volume of such information that needs to be translated and expanded to include new languages in the era of globalization.

The importance of translation has gone beyond the mere transfer of ideas "on their importance", but for machine translation it has become of economic, social, political, scientific, cultural or philosophical importance. Translation is inevitable, as evidenced by the growing number of translated books.⁷

We are living in the era of the technological revolution that has dealt with various fields, and with this huge boom, the translator is no longer convinced of the concept of traditional translation because of the great trouble and slowness that he faces, and he is looking to keep up with scientific leaps to ensure his mastery and speed, or in other words speed and creativity, and the modern translator has become in the midst of the overlap between translation, terminology, specialization and electronics.⁸

6-chat GBT program:

Chatgpt is one of the most important and famous artificial intelligence applications, and it has already become the most famous of these tools that have become available and open for use by everyone. Chatgpt is a language model based on the GPT-3.5 architecture for modeling and understanding human language. Where ChatGPT has been trained on billions of words, sentences and texts written in English and many other languages. ChatGPT is based on artificial intelligence

technologies such as machine learning, deep neural networks and graphical convolution for natural language understanding and text production.

ChatGPT is one of the most powerful and advanced language models to date, and it is considered an important step in the development of language technology and improving human communication. ChatGPT has become used in many applications, including automated conversations, smart chat assistants, text analysis, new text generation, machine translation, language forecasts and many other applications that require accurate language understanding and language production⁹.

Unlike a simple voice assistant like Siri or Google Assistant, ChatGPT is built on the so-called LLM (large language model). These neural networks are trained on huge amounts of information from the internet for deep learning - which means they generate completely new responses, instead of just replaying specific canned responses, they are not designed for a specific purpose like chatbots in the past - and they are much smarter, this is embedded in the name "chat GPT", which stands for chat Generative converter pre-trained, in the case of the current version of ChatGPT, it is based on GPT-3.5 LLM, the model behind ChatGPT has been trained on all kinds of web content including websites books, social media, news articles and more - All tuned into the language model through supervised learning and RLHF (enhanced learning from human feedback), OpenAI says that this use of human AI trainers is really what makes ChatGPT stand out.

"Chat GBT" was first launched as a prototype to the public in November 2022, and quickly grew to more than 100 million users by January of 2023, making it the fastest-adopted software ever, although this record was beaten by the Twitter threads alternative, and also began to drop users for the first time, reportedly losing 10% of global users in June, but it is still very popular.

7 - The method of registration in the program "chat GBT":

First, go to OpenAI chat, if this is your first time, you will need to create a free account with OpenAI before starting, as well as you have the option to choose an easy login using a Google account or a Microsoft account, or just enter your email address.

You will then be asked to enter a phone number; however, keep in mind that you cannot use a virtual phone number (VoIP) to register with OpenAI, as you will then receive a confirmation number, which you will enter on the registration page to complete the setup, you will see some basic rules about "chatgpt", including possible errors in data, how OpenAI collects data, how users can send feedback - all wondering whether ChatGPT is safe to use or not, once you have done this you will know that you have successfully registered.

ChatGPT continued to amaze the internet with content created by artificial intelligence, as it turned from a new chatbot into a piece of technology leading the next era of innovation, as there is no technical product in recent memory that has aroused so much interest, controversy, fear and excitement, and "chat GBT" is a natural language chatbot powered by artificial intelligence, the user can ask him any question, and it will lead to getting an answer.

Using the chatbot ChatGPT itself is fairly simple, since all you have to do is type your text and receive information, which may support creativity by responding to various prompts, and if the user does not get the desired result, he can edit the question or give additional instructions to ChatGPT, for example starting with the phrase "explain how the solar system was created" will lead to a more detailed result with more paragraphs than "how the solar system was created", although both queries will give fairly detailed results.

Take a step forward by giving ChatGPT more instructions on style or technique, by saying "explain how the solar system was created, also provides another option related to more specific input

requests for an article with a specific number of paragraphs or a Wikipedia page, to see what he can do, try using ChatGPT in daily life or work activities to see how he can help you, ask him to write emails or formulate business proposals or ideas and others.

As long as he does not break some explicit or illegal content rules, the creator will do his best to execute the commands, and it is also likely that "chat GBT" will start filling in the gaps with incorrect data.

However, the user has the option to enter queries continuously until you close your browser or reset the thread to clear your previous requests, and these chats are also saved afterwards in the conversations in the sidebar, so that the chat is automatically named.

And from there you can manage and rename or delete these chats as needed, you can even "hide" certain conversations if necessary.

You also have the option to use ChatGPT in dark mode or light mode unlike bingchat, which can create photos using Bing Image Creator and receive photos as prompts for questions, "chat GBT" only works with text in both directions, this feature was also recently included in Google cool.

8-Areas of use of chat GBT:

Chat GPT is used in a variety of fields, and its most important uses are:

1. Automated communication: Chat GPT is used to improve automated communication between people, whether in the field of technical support, answering common questions, or meeting the needs of users.

2. Machine translation: Chat GPT is used to improve the quality of machine translation between different languages, allowing the opportunity to communicate between individuals who do not speak the same language.

3. Linguistic analysis: Chat GPT is used in the linguistic analysis of texts and documents, in order to obtain useful and valuable information about the linguistic style, hidden meaning and others.

4. Automated response: Chat uses GPT to automatically respond to frequently asked questions and handle key requests instantly, saving time and effort.

5. Machine learning: Chat GPT is used in machine learning, by analyzing available data and information and continuously updating linguistic and artificial models.

In short, Chat GPT is used in many areas, providing a lot of benefits and advantages for individuals, companies and organizations.

9 - advantages of chat GBT

Chat GBT has many advantages and features that make it a useful tool in many applications, the most prominent of these features are:

1. Natural language understanding: Chat GPT is characterized by its ability to understand natural language and interpret various meanings of words, phrases and sentences.

2. Handling different languages: Chat GPT can handle many different languages, which made it useful in language translation applications and international communication.

3. Continuous learning: Chat GPT is characterized by the ability to continuously learn, improve performance with constant use and experience more data and conversations.

4.Speed and accuracy: Chat GPT has the ability to produce answers with high speed and accuracy, which makes it useful in automated chat applications and fast communication.

5.Multitasking: Chat GPT can handle multiple tasks at the same time, which makes it useful in robotics and smart device applications.

6.Easy to use: Chat GPT is characterized by easy and simple use, which makes it useful for ordinary users and beginners in automated communication and chat applications.

In short, Chat GPT is a powerful and useful tool in automated communication and natural language handling, and is used in many different applications to improve performance and provide automatic answers.

10-Disadvantages of Snapchat GPT

Despite the advantages of chat GBT, it is not without some disadvantages and challenges, the most prominent of which are:

1.Limited ability of deep understanding: Chat GPT is considered an artificial intelligence tool but suffers from its limited ability to understand deep and complex meanings, which makes it unable to have some in-depth discussions.

2.Errors in text recognition: Chat GPT can make errors in text recognition due to the difference of utterances, phrases and language structures between different languages and different users.

3.Linguistic and cultural bias: Chat GPT can be biased in favor of a particular language or culture, which can affect the accuracy of the answers it provides.

4.Inability to learn from negative experiences: Chat GPT relies on only positive experiences to learn and improve its performance, which means that it cannot learn from negative experiences or mistakes it makes.

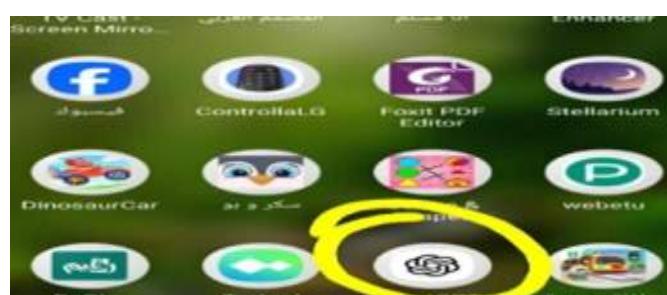
5.Data dependence: Chat GPT relies on the data and information it has to improve its performance, which means that it may lack the ability to respond to new or unfamiliar topics.

In short, GPT Chat can be subject to some errors and challenges, but it is still a useful tool in improving performance, facilitating automated communication and understanding natural language¹⁰.

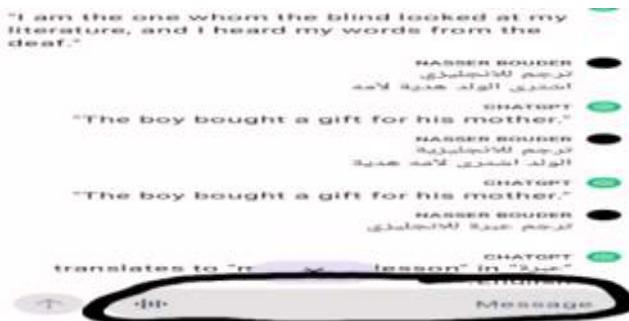
11-steps of translation using the chat GBT program:

In order to understand how to benefit from this program, follow the following risks:

1.You have to log in to the chat GTP website or application first



2.After that, use the search box or, as it is called, the question box.



3. Suppose you want to translate a text from Arabic to English, for which you write the following:



4. This paragraph is translated into English:



12-the role of the chat GBT program in the process of text translation:

1. Give instant and fast translation: by generating super fast translation, based on high technologies of artificial intelligence, all accurately and smoothly, whatever the nature of the content to be translated.
2. Improved translation: this is because chat GBT is able to understand different contexts and meanings, and translate them correctly, using advanced language techniques, and this, of course, will avoid the famous mistakes in the subject of machine translation.
3. A professional translation based on a large collection and a wide range of information found on the internet, including specialized translations in the technical and scientific fields.
4. Convert any unintelligible translation into a correct and understandable one; thus removing any complications in the language and in the substrate methods.¹¹
5. Accurate, modified and intelligent translation: because chatgpt relies on the details of the sentence and its different contexts, it can distinguish between the many meanings of one thing and gives a clear and accurate text.

6. Save time for translators as chatgpt translation is characterized by its speed, and real-time translation, which contributes to saving time and effort.

7. The fields of translation are diverse and not limited to one type: chatgpt can provide specialized translations, such as medical or technical translation, and others.

We must also point out that these ways that chat GBT can do in the field of translation still need the complementary role of the human element, as it is still important even despite the tremendous progress made by these large technologies, especially in some difficult structures and complex vocabulary that need a human mind to review and confirm.

Conclusion:

In conclusion, the use of chatgpt in the field of translation is a unique and powerful step in improving the quality of the translated text, which is reflected on the translation process as a whole, as well as helping linguists and translators in their work, by saving a lot of time spent searching for inaccurate translation sites, ChatGPT is not a substitute for a human translator, but a technical partner that enhances efficiency and shortens time, provided that it is used with critical awareness and careful review.

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