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Engl 110, Section L39127

April 16, 2019

What I Translate

On December 3, 2014, I received an email from Japan Translation Federation (JTF), a professional organization of commercial translation. It said “JTF will have a seminar focusing on Machine Translation in Osaka on January 30, 2015. We will discuss how we should face it. Hope to see you there.” I decided to participate it because I had respected the inventors who had been improving our lives by creating breakthrough ideas as a patent translator and hoped that technologies would develop as much as possible, and thus I was shocked at the news that a cutting edge technology, machine translation, might affect my job in a negative way or take my job in the near future. The advent of Artificial Intelligence (AI) is drastically changing our lives, especially intellectual activities including language usage. It is predicted that AI will take some jobs with its overwhelming computing power in 15 to 20 years. Google translation, which uses AI, translates 5,000 English words into Japanese in a second whereas an average human translator translates 2,000 words a day. These numbers show how much Machine Translation can reduce the time and cost for translation. In other words, AI can much more efficiently work than us in some cases. However, human beings are not only intelligence. We are more complicated and incalculable existences. Your ideas come from your experience and are expressed with words. Thus, even if we leave translation based on calculation to AI, we still have our bodies that experience events and create new ideas. Human translators translate not your words but your thoughts and feelings produced by the events your body experienced and expressed with words.

Language is a fundamental and extricable part of our lives. Myers and DeWall describe that language enables us to understand even what we have not seen before or abstract ideas and exchange information with others. Human beings have a natural gift for language. We memorize several tens of thousands of words and choose, combine and output them in a flash. We can simultaneously choose appropriate words for the situation. We understand the meanings of words and use the words based on common sense in order to form your thoughts and communicate with others. (344-345). You need language because various events happen to you everyday and you sense, feel, and think about them and often share them with others. Language changes your experience into happiness, sadness or anger and allows you to express them or empathize with your friends. In other words, we need language because we live in a society. On the other hand, computers do not experience or feel something because they are not organisms. This human embodiment probably makes us differ from computers. Similarly, Matsuo points out that teaching computers common sense is very difficult because we have an enormous amount of common sense. A project to input common sense such as “Bill Clinton belongs to the collection of U.S. presidents”, “All trees are plants”, and “Paris is the capital of France” into a computer started in 1984 and has continued for more than 30 years (91-92). This is also because computers are not organisms and understanding common sense without experience is very difficult. Helen Keller touched and felt water and thus she understood the meaning of the word “water”. We, however, cannot pour water over a computer to explain what water is. Language requires experience and experience requires language.

Machine translation is one of the most difficult things for computers because they cannot understand the meanings of languages so far. Thus, there are two different approaches for machine translation: Statistical Machine Translation (SMT) and Neural Machine Translation (NMT). SMT, which has widely been used since 2000, selects the phrases most frequently used and puts the selected phases in the order most frequently used in the past data called translation corpus based on probability (Sumita 13-15). SMT just puts the words in the past translation without considering the meanings of the words and sometimes outputs contextually wrong words or makes obvious mistranslation. Neural Machine Translation (NMT) was invented as an entirely new method in 2014. Most translation service providers use NMT because NMT more focuses on the meaning of the sentence. NMT uses not only the past translation data but also a neural network that imitates the human neural structure and analyzes the features of the information in the data so that the more important information can be weighted. This is considered to work similarly to the functions that work when we read and interpret a sentence.

NMT mainly includes three parts: an encoder, an attention mechanism, and a decoder. First, the encoder converts a word into a high dimensional vector that presents the meaning of the word with numbers. For example, a mathematical equation: the vector for “king” - the vector for “man” + the vector for “woman” = the vector for “queen” is considered to hold using the vectors (although we cannot see the calculation process just as we cannot see how a human brain processes a language.) The encoder examines the relationship between a word and the previous or next word and adjusts the vector. Next, the attention mechanism weighs each vector. The weight works like the line that connects human neurons, and the mechanism gradually increases or decreases the weights so that the correct translation is output. In other words, the more the mechanism pays attention to the word, the more the word is weighed. The mechanism multiplies the vectors by the weights and adds up them. Then, the decoder uses the sum as the information to determine the vectors of the possible words in the target language. The decoder calculates the probabilities of the determined vectors, and outputs the word that corresponds to the vector with the highest probability as the translation (Nakazawa 300-302).

NMT handles a sentence as a piece of information and tends to omit less weighed words and repeat more weighed words. This sometimes causes under-translation (an error in which a word is not translated) and/or over-translation (an error in which a word is translated twice or more). NMT is often used in industrial fields where a vast number of technical documents are issued and the readers often have basic knowledge about the contents of the document. For example, the Japanese Patent Office, which publishes more than 200,000 patent documents every year, introduced NMT. Some automakers also use NMT for in-house documents to immediately share the latest research results. Both of them demand speed and cost reduction rather than adequacy. When more accurate information is required, human translators check and post-edit them. However, deep learning is rapidly improving day by day. This means that the attention mechanism of NMT will also drastically improve by analyzing the information and more accurately extracting the features of the information in more layers of a neural network. Thus, the quality of NMT is highly likely to surprisingly improve in a few years. This will allow us to more quickly and effectively exchange especially scientific information, for example, about medicines, machines, or electrical and electronics.

According to Matsuo, AI completely masters languages when it reaches singularity by deep learning. Singularity is a point at which computers understand concepts and start gaining knowledge by themselves. At this point, AI can allocate an appropriate word to each concept by understanding the meaning. Experts have been waiting for the singularity while holding their breath with a mixture of anticipation and dread. Stephen Hawking warned that we should carefully prepare for the potential risks of AI development because AI could process information at a higher level than human beings do. Elon Mask warns that we should carefully develop AI because we cannot control a thing more intelligent than us (201-203). Elon Mask also points out that the struggle for AI hegemony could cause a world war. Bill Gates argues that, if AI takes the place of human workers, it should pay income tax to prevent AI from producing the gap between the rich and the poor. On the other hand, Mark Zuckerberg welcomes AI (Arjun Kharpal). Meanwhile, many IT giants such as Google and Facebook have been investing a huge sum of money in the research and development of AI language processing. In other words, it might be said that even the experts do not know how AI will affect us in the future but nobody stops the development. As for translation, however, if AI reaches the singularity and it enables machine translation to provide more accurate output, it might happen in a very different way from human translators do. This is because AI never experiences and feels anything, and thus, if it understood your thoughts and feelings, the understanding would be different from ours. This might be similar to that we can personify a tree but we never know what the tree actually senses. AI perfectly knows the characteristics of water and the words that describe them. But, it cannot imagine how you felt when you touch or drink water. Thus, it will probably provide the translation based on the characteristics of water instead of based on your experience. On the other hand, human translators always think about the author and the readers.

Translators choose the words while imagining the author’s and readers’ thoughts and feelings. Professor Unger, a novelist and a Spanish-English translator, tells that readability is important for translation and he chooses the words for the readers or changes them in cooperation with the editor (the interview on April 4, 2019). Readability depends not only on what the translator knows or how the translator understands the contents of the document but also on how the translator gives adequate thought to the author’s and readers’ minds. Translators connect the author to the readers who often feel differently the similar experiences or feel the same through different experiences. Similarly, when I translate a patent document, I add as many notes as I can in order to explain why I translated the sentence like that. In addition, I often find that the parts that the author strongly emphasized and the parts that the author might have felt tired from or difficulty in writing. I more carefully read and translate them because such parts often include a very important message or a critical error. Machine translation will probably not consider the author’s and readers’ feelings no matter how much it develops. It can provide very accurate translation but the accuracy is of the original words and not of the author’s intention. Translators always talk to the author “This is what you want to tell the readers, isn’t it?” and to the readers “What would you say to this?”

Machine Translation is rapidly improving everyday by grasping the words in a different way from human translators. Machine Translation focuses on the words whereas human translators see the author’s and readers’ thoughts and feelings through the words. Unless Machine Translation has embodiment, the words cannot touch the readers’ hearts. However, Machine Translation will make our lives better with its amazing rapidity. On the other hand, human translators are always beside your thoughts and happy to help to spread your thoughts worth to share with people all over the world as a human being who also lives and feels.

Reflection

Argumentative essay is an essay that describes the author’s argument about a topic with reliable evidence and appropriate examples. My paper is an argumentative essay because it includes a position I established to the topic, translation, and also includes the counter opinions to my position that helps to examine my position from a different view and evidence and examples that supports my position in order to explain my position. The media is an electrical document for online submission and a printed document for the submission in class. The audience would mainly be translators who worry about how the development of Machine Translation will affect human translator’s job and aspiring translators who would like to know how Machine Translation and human translators work. However, the potential customers who need to internationally exchange information for their businesses or studies or the Machine Translation service providers might read this, too because the customer would like to know which translation is better for their purposes and the providers might refer to what human translators do in order to improve Machine Translation. The purpose is to inform the audience what Machine Translation can do at present and in the future and how human translators are different from Machine Translation. The exigence is that I heard that some companies started using Machine Translation and human translators mainly checked and edit the machine-translated documents at the companies. I love my job and the check or post-edition that the in-house translators do sound boring to me. I wanted to know whether Machine Translation continues to change or take our jobs in the future and I will have to find another job. Thus, I need to correctly understand what Machine Translation can do. My stance should be not only persuasive but also calm because I believe that the development of technologies should not be denied as long as it progresses in a safe way in order to improve our lives. Thus, I need to figure out the advantages of Machine Translation while pointing out that human translators have different benefits from the rationality of Machine Translation.

I met CLOs 1, 2, 3, 4, 6, and 7. I met CLO 1, explore and analyze, in writing and reading, a variety of genres and rhetorical situations, because I carefully analyzed the genres and rhetorical situations to effectively draw the readers’ attention to the topic and my argument. I partially met CLO 2, develop strategies for reading, drafting, collaborating, revising, and editing, because I collected appropriate sources and learned about the topic from them a lot but I read them and established my argument too slowly and this reduced the time for revising and editing and degraded the quality of my essay. I met CLO 4, engage in the collaborative and social aspects of writing process, because I asked my professor advice several times and she gave good advice every time. Especially, I had an opportunity to have an interview with an expert. This helped me decide my argument. I met CLO 6, locate research sources (including academic journal articles, magazine and newspaper articles) in the library databases or archives and on the Internet and evaluate them for credibility, accuracy, timeliness, and bias, because I also tried to read as many articles as I could and asked the expert some questions in order to collect and evaluate the sources because I need to provide the readers with reliable information and trustworthy argument. I met CLO 7, compose texts that integrate your stance with appropriate sources using strategies such as summary, critical analysis, interpretation, synthesis, and argumentation, because I chose and used appropriate sources and examples to effectively describe my position in a neutral way. I tried to summarized the sources or write the examples so that the readers who are not familiar with AI and translation can understand the topic and my argument. On the other hand, I still need to practice for CLO 3, 5 and 8. I would like to study CLO 3 more, recognize and practice key rhetorical terms and strategies when engaged in writing situation, because I struggled with determining the audience and my thesis at the last minute and changed them again and again and thus could not used key rhetorical terms. I would like to study CLO 5 more, understand use print and digital technologies to address a range of audiences, because this project included presentation and I created a power point data for the presentation. But I could not design each slide in an effective in which the audience enjoy them. I would like to study CLO 8 more, practice systematic application of citation conventions, because I used books in Japanese and the interview I had and I found that I need to prepare for citing any types of source.

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