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Is Machine Translation Sexist?

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Abstract

The purpose of this research is to find out if machine translations are sexist. In addition, throughout the project, Google Translate and DeepL will be tested in order to answer the hypothesis question “DeepL is much more sexist than Google Translate”. This investigation will be divided into five parts (literature review, methodology, results, discussion, and conclusion). The literature review is where I got the background information about the main topic from different authors, linguists, translators... The methodology section explains the following two sections and how are they going to be done. Testing both MTs is crucial in the development of the project. The last part is the conclusion of this project which will include some recommendations for future research.

Keywords: Machine translation, sexism, translations, Google Translate, DeepL.

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1 Introduction

This project aims to compare two of the biggest machine translations worldwide (Google Translate and DeepL), in order to find out which one receives the sexiest input from their designers. During the literature review, I will analyze some articles which gave me relevant information in order for my research to be done.

I chose this topic because I am very into the translation processes, and I wanted to fully understand the way machine translations work and how they receive input, and hence, how sexist language could be subtly incorporated.

The objectives of this project are to help people realize that MTs are not fully reliable and that they can give sexist translations by ignoring one gender. This is very important as users tend to rely on the translation results without making sure if they are receiving the most accurate translation. An example would be: “I am a dancer.” → “Soy bailarín.” (Page 12). In this example, DeepL only provided one default male translation, and perhaps a female English speaker who introduces this sentence into the MT will use the provided result without checking it twice, and hence, getting the wrong translation.

2 Literature review

In this section, I will introduce key ideas on which this TFG project will be based on. To start with, I will read, analyze, and explain through academic articles, interviews, papers, and blogs, how Google Translate and DeepL work, what kind of pattern do they follow when translating, and why they do that. Moreover, I will seek to illustrate how these machines receive input and through which ways they are taught. I will also do some research to try to understand how these machines can become sexist and if there is a way of avoiding this problem.

Machine translation tools such as Google Translate regularly translate gender-specific sentences such as “He/she is a doctor” into “He/she is a nurse” making a visible change in the gender of the noun used. However, since December 2018, GT provides two versions of the same sentence in order to avoid sexism in its translations. “My friend is a doctor” → “Mi amiga es doctora” (femenino) and “Mi amigo es doctor” (masculino). In this example, the user can choose the translation that they are looking for according to gender.

According to Johnson (2020), this technique works well for translations from English to Spanish and vice versa, but not with languages that do not apply this rule of giving two correct solutions to avoid sexism in translation.

Prates, Avelar, and Lamb (2019) concluded in their study that GT’s algorithm is strongly connected with real-world data and so it is just a representation of how humans use language to talk about women’s positions in jobs. Also, they found out that GT gave predominantly male translations when talking about jobs in the field of science (Science, Technology, Engineering, and Maths).

They also discovered that GT chose to add female pronouns on its translations in adjectives such as *shy* or *desirable*, while added male pronouns on adjectives such as *guilty* and *cruel*.

In addition, for further investigation, Prates, Avelar, and Lamb (2019) made use of **U.S. Bureau of Labor Statistics data** in order to know the implication of women in each job position. They realized that there was no correlation between the real-world facts on women's job positions and the incidence of female translations.

Finally, they say that GT results can be unbiased and totally improved without much effort and without having to do a great investment.

In 2020, GT was updated and added a tool that, apart from rewriting the terms or sentences that are sexist, also checks their accuracy (Johnson, 2020). However, not all gendered words have two versions of translation. Lopez Medel (2021) tested how in sentences where the referent is unknown, GT decides to neutralize it. She also shows that capitalization and punctuation play an important role in the way GT gets the information and hence gives a more adequate translation. She finds that most of the Spanish invariable nouns that she tests in GT are translated into English by adopting a masculine form. Out of 74 nouns, only four assimilate the feminine form. For example, "Es estudiante." was translated by GT as "He is a student". And only *dressmaker*, *feminist*, *transgender*, and *transsexual* were translated into the feminine form: "She is a..." from their respective base noun in Spanish. For example, "Es feminista." is translated by GT as "She is a feminist.". Medel (2021) finds that unfinished sentences in Spanish like "Es ingenier..." are translated by default by GT as "He is an engineer.". Again, the MT appeared to stereotype these jobs/nouns giving the sexist option.

When translating from English to Spanish, when Medel (2021) translated “I am a surgeon.” in GT, it gave two versions of the translated sentence, with the feminine one being the first option to appear. However, when adding an adjective in the sentence, i.e., “I am a beautiful judge.”, the MT gave a random version of gender i.e., “Soy un juez hermoso.” instead of “Soy una jueza hermosa.”.

Medel (2021) also discovered that the MT gives better translations from English to Spanish, where it gave two versions of the translated word or sentence 57% of the times, whereas when translating from Spanish to English, the MT chose the masculine version of the translations 97% of the times. In this last case, stereotyped adjectives and non-gendered plurals sentences gave a masculine translated form.

In fact, the machine is also unable to recognize if the previous noun of a sentence “The inspector...” was a female or a male when adding “is a man” or “is a woman” to it. The result was that 58% of the times, the MT provided masculine gender forms. I.e., “The inspector is a woman.” was translated by GT as “El inspector es una mujer.” instead of using the female version of the noun as in “La inspectora es una mujer.”. However, this only worked when in the English sentence only one gender was valid, so for example, “The pianist is him.” was translated as “La pianista es él.” or “El pianista es él.” which was unnecessary as the female version is incorrect.

Medel (2021) concludes that, in agreement with Prates, Avelar, and Lamb (2019), Google Translate’s algorithms tend to give masculine forms in translations related to careers and are thus derogatory towards female workers and their jobs.

Kate McCurdy (2018), a linguist, states that machine bias is not only about algorithms, but it also gets the information that we use to instruct them. She mentions that the meaning of a word comes after considering the other words surrounding it.

Moreover, McCurdy (2018) affirms that the meaning of words in machine translation tools is not only ascertained by language, but that culture also plays an important role in it. In addition, she also explains that she has been studying how algorithms in MTs choose gender according to “noise”. That means that machine translation tools do not know semantics as we do and hence do not know the meaning we give to words. This leads the algorithm to misunderstand some words’ genders like the example she gives of the word “table”, which in Spanish is feminine, while in German it is masculine. The semantic gender of this word in each language will be directly associated by the MT with other words of the same gender.

McCurdy (2018) says that the way to avoid sexist language in MT is to educate the algorithms to choose a corresponding non-gendered word. However, this technique cannot be used in all languages and will not work for them. Moreover, she states that these biases made by MTs can be so slight that could not be seen, and this could lead to future problems in translator’s careers and job opportunities.

At the end of the interview, McCurdy (2018) claims that to solve gender problems among other problems in MTs it is fully necessary not only to have the best engineer designers but to actually have people whose background and knowledge addresses directly to these issues.

Pérez Piñero (2021) stated that gender bias is generated by MTs through a misunderstanding in the translation of non-gendered languages like English into gendered languages like Spanish. He explains that if an MT has to translate the sentence “The quick brown fox jumps over the lazy dog” it will have to decide whether to use a masculine or feminine pronoun and noun, and also the adjectives used could change depending on the chosen gender. This could lead to confusion. This is just an example of what can happen when the MT does not use the appropriate gender decision and hence, end up causing a

sexist problem in the user's translation. In addition, context is really important in these situations. That is why a human translator would not have problems to translate words like "secretary" or "judge" because of the background information they could have. However, MTs do not work like that and may make a "mistake". This mistake can be understood as a problem in the learning process of the machine. That means that the typos MTs can produce come intrinsically from the wrong spelling materials these machines were trained with. With this information, we can see that the sexist and stereotypical patterns MTs may have, are not deeply related to the MT itself but to the translation processes it has acquired.

As Pérez Piñeiro (2021) mentions, sexism in MTs can be avoided. However, it would require a lot of hard work, and solving all the gender-biased problems would take a very long time, and lots of human translators as he says that most of the data given to MTs is completely automated. Piñeiro (2021) insists that there is a way for solving these problems and says that using the most modern technologies could be a great way of helping to improve gender bias in MTs.

DeepL's software is based on Linguee, an online dictionary. In addition, this MT has been said to be the best MT on the internet. However, and despite of having a similar interface as Google Translate, DL does not have the two gendered options when translating from English to Spanish as GT does (GT is the only MT with this option). In DL's favor, its translation gives the user a dictionary section in the translated words so you can check the accuracy by yourself.

Rescigno, Vanmassenhove, Monti, and Way (2020) looked at translated gendered adjectives and found out that 39.2% of the times GT gave male adjectives while 37.3% of the times it gave female adjectives, which is almost fair as the MT gives the two

gendered versions. DeepL, on the other hand, gave male adjectives 45.6% of the times and 22.8% of the times it gave female adjectives.

In their second study, Rescigno, Vanmassenhove, Monti, and Way (2020) focused on career bi-gendered nouns. In this case, they centered on English to Italian translations and the results were in GT a 46.1% of the times, the algorithm gave a male noun, and only 35.8% of the time it gave a female noun. Again, DeepL did a worse job with a 60.4% of the times giving a male noun and only 7.5% of the times a female noun.

In a third study, Rescigno, Vanmassenhove, Monti, and Way (2020) realized that in sentences like “I am a (career noun)” DeepL provided the user mostly with masculine nouns. However, when they added an adjective before the noun like “beautiful”, the MT gave almost all the times female nouns, all that in three different languages (Italian, French, and Spanish). GT provided the most sexist results in the adjective plus noun study. (See table 1)

DL	IT			FR			ES		
	F	M	N	F	M	N	F	M	N
no adj	30.0	70.0	0.0	20.0	63.3	16.7	3.3	76.6	20.0
beautiful	83.3	16.7	0.0	73.3	26.7	0.0	96.7	3.3	0.0
other adj.	53.3	43.3	<i>Q*</i>	13.3	83.3	3.3	6.7	93.3	0.0
GT	IT			FR			ES		
	F	M	N	F	M	N	F	M	N
no adj.	6.7	93.3	0.0	6.7	90.0	3.3	3.3	66.7	30.0
beautiful	43.3	56.7	0.0	80.	20.0	0.0	80.0	20.0	0.0
other adj.	3.3	96.7	0.0	3.3	96.7	0.0	3.3	96.7	0.0

Table 1. Results in % for male (M), female (F) and neutral (N) forms generated for EN → IT, FR and ES for DL and GT

GT overall gave the most variation in gender (more male than female) when translating nouns and adjectives. In sentences, this MT was the one in which the end of the phrase was predominantly male.

DL, as mentioned, gave translations that were mostly male in nouns and adjectives.

3 Methodology

In this section, I will explain how I will work in the results section of this project and the way I will develop such activities.

This TFG project's name is actually the first research question: Is machine translation sexist? However, this question has already been answered. Throughout the literature review section of this project, I realized that, in fact, MT is sexist. But, how? According to the linguist Kate McCurdy (2018), these machines receive input from people all over the world with different cultures and backgrounds. This leads the MT to produce high percentage of translations being derogatory towards women and hence, sexist.

Here in this research, I will discuss the role of stereotyped gender roles in career nouns such as "lawyer" or "model" and also, I will demonstrate the grammatical dominance of the masculine in MTs such as Google Translate and DeepL.

From this point, two more questions came out of the original research question. These are: Is it possible to avoid sexist language in MT? and: Can people avoid sexism in MT?

Throughout the research done in the literature review section on this project, this question was already answered. In fact, MTs are sexist because the people producing the input into these translation tools are human beings.

The second and third research questions, which came out of the first, will be addressed in the next section to test if the questions can be answered and their possible explanation.

In addition, there is also a practical part in which I will try to demonstrate that DeepL is much more sexist than Google Translate.

In order to address these questions, I will work with GT and DL by putting in some phrases that include gendered and non-gendered nouns and other words, from Spanish to English and from English to Spanish, and see how the MTs react.

Moreover, I will try to use some translation solutions from Spanish to English which have been used by Spanish speakers in recent years. For example, the use of @ to avoid gendered words like ‘compañer@’ including both genders. Both MTs will be tested, and we will see if the MT systems are capable of understanding them and giving accurate translations.

4 Results

In this section, I will test Google Translate and DeepL by translating some sentences from English to Spanish and vice versa to see their results individually. In addition, I will examine both MTs by applying some Spanish translation solutions (e, @, x) and see whether they recognize them or not. The motivation behind these two evaluations is to find out which MT is the most sexist.

4.1 Examples of sexist algorithms in GT and DL

This section will be divided into four parts in which I will be testing the same sentence structures in both MTs in order to see the differences in their translation results. This test will also help me to recognize which MT is more likely to follow the stereotyped and sexist input given by translators, editors, designers, etc.

4.1.1 From English to Spanish (GT)

The following examples were produced by Google Translate (English-Spanish) I have chosen two sentences to see the MT's reaction when an adjective is added to a career noun.

“I am a dancer.” → “Soy bailarín.” and “Soy bailarina.”

“I am a pretty dancer.” → “Soy una bonita bailarina.” and “Soy un bonito bailarín.”

By adding the adjective “pretty” before the noun “dancer”, the first solution the MT gives is feminine and not masculine, as it was when we did not use the adjective.

“I am a painter.” → “Soy pintora.” and “Soy pintor.”

“I am a hardworking painter.” → “Soy una pintora trabajadora.” and “Soy un pintor trabajador.”

“My best friend is a model.” → “Mi mejor amiga es una modelo.” and “Mi mejor amigo es un modelo.”.

“My best friend is a lawyer.” → “Mi mejor amiga es abogada.” and “Mi mejor amigo es abogado.”

“A friend of mine.” → Unexpectedly, for this sentence, the MT gave two extra solutions in Spanish which were both masculine: “Un amigo mío” and an alternative solution for “A friend of mine told me” → “Un amigo mío me dijo”. In the default translation solutions of GT, the first solution was feminine “Una amiga mía” and the second solution was masculine “Un amigo mío”.

4.1.2 From English to Spanish (DL)

The following examples were produced by DeepL (English-Spanish). As in the previous test, I will write two sentences (one of them will be modified by an adjective) to see the MT’s reaction to it.

“I am a dancer.” → “Soy bailarín.” In this case, if we add the full stop to the English sentence, the MT provides us with a masculine translation and some feminine alternatives. However, if we erase the full stop, the MT provides us a feminine translation and some mixed gendered alternatives.

“I am a pretty dancer.” → “Soy una bonita bailarina.” In this case, if we use the final dot in the original sentence, the MT provides us with a feminine translation and another feminine alternative, and one single masculine alternative. Nevertheless, if we erase the

final dot in the original sentence, the result is quite interesting. Now, we have got a feminine translation and three more feminine alternatives with synonyms of the adjective “pretty” (bonita, linda, bella, guapa).

“I am a painter.” → “Soy pintor.” In this case, we have a masculine translation in Spanish and two more masculine alternatives, and one single feminine alternative. When we erase the full stop from the original sentence, the main translation remains the same and we only get one alternative, which is masculine as well.

“I am a hardworking painter.” → “Soy un pintor muy trabajador.” Surprisingly, this time DL’s algorithms only choose one masculine alternative: “Soy un pintor trabajador.” and zero female alternatives. If we delete the final dot in the original sentence, the results remain the same.

“My best friend is a model.” → “Mi mejor amiga es modelo.” In this sentence, the default translation solution the MT gives for the noun “friend” is feminine. If we erase the full stop from the original sentence, the result is exactly the same. In the alternative options, we have two male solutions and one more female solution.

“My best friend is a lawyer.” → “Mi mejor amigo es abogado.” Surprisingly, by adding a career noun which is socially more related to male workers, the default translation solution was masculine. The MT also gave two alternative solutions: one masculine and one feminine. Again, for this example, the full stop did not make any changes in the solutions given.

“A friend of mine.” → “Un amigo mío”. As we can see, the first translation solution we have from DL is masculine. However, there is an alternative option in feminine “Una amiga mía” and one more masculine alternative “A un amigo mío”. If we erase the final dot in the original sentence, the second masculine alternative disappears.

4.1.3 From Spanish to English (GT)

The following examples were produced by Google Translate. This time, the translation will be done from Spanish to English. I will write some sentences with the verb “Be” in the third person in Spanish “Es”, which is non-gendered, in order to see what pronoun in English it chooses when giving the translation result.

“Es juez.” → “He is a judge.” In this case, GT provided a masculine English translation.

However, if we erase the full stop from the original sentence, the translated version also erases the pronoun “he” → “is a judge”, perhaps to avoid this sexist problem.

“Es taxista.” → “He is a taxi driver.” In this case, the MT only provided a masculine translation in English and if we erase the full stop from the original sentence, the result remained the same.

“Es electricista.” → “He is an electrician.” The MT only gave us one translation solution which is masculine.

“Es trompetista.” → “He is a trumpeter.” In this example, the MT only provided one masculine translation.

“Es maquinista.” → “He is a machinist.” Surprisingly, for this example, the MT provided two translations. If we keep the full stop in the sentence, we get the translation mentioned before. However, if we erase the full stop in the original sentence, the MT gives us the following: “is a machinist”, perhaps to avoid sexism.

4.1.4 From Spanish to English (DL):

The following examples were produced by DeepL. This time, the translation will be done from Spanish to English. I will write some sentences with the verb “Be” in the third person in Spanish “Es”, which is non-gendered, in order to see what pronoun in English it chooses when giving the translation result.

“Es juez.” → “He is a judge.” Again, the MT provided a masculine translation in English and gave a feminine alternative. Moreover, if they delete the full stop from the original sentence, the result is completely different. This time the first option is masculine once again, but we have got “Judge”, “Is a judge”, and “He is judge” as alternatives. The first two alternatives seem to be avoiding sexist language. However, we have got two male options and zero female options.

“Es taxista.” → “He is a taxi driver.” Interestingly, the MT’s algorithm only provided a masculine translation in English and gave zero feminine alternatives. If we delete the full stop from the original sentence, the main translation remains the same, but we got two alternatives: “Is a taxi driver” and “taxi driver”. None of the alternatives are feminine but as they do not have a pronoun it avoids sexist language.

“Es electricista.” → “He is an electrician.” As what happened with GT, DeepL only gave us one masculine translation solution. In addition, the MT provided two more alternatives: “Is an electrician” and “Electrician”.

“Es trompetista.” → “He is a trumpet player.” In this example, the default translation was masculine. It also provided two more alternatives; “He is a trumpeter” which is masculine again, and “She is a trumpet player” which is feminine. However, if we delete the full stop, the female option disappears, and instead “Trumpeter” appeared, in this case, it is

only the career noun, without the full structure of the sentence and hence, avoiding sexism.

“Es maquinista.” → “He is a machinist.” For this example, the results were the same with and without the full stop in the sentence. The default translation is masculine and so were the three alternatives the MT provided. “He is an engine driver.”, “He is a machine operator.”, and “He is an engineer.”.

4.2 Spanish translation solutions (e, @, x)

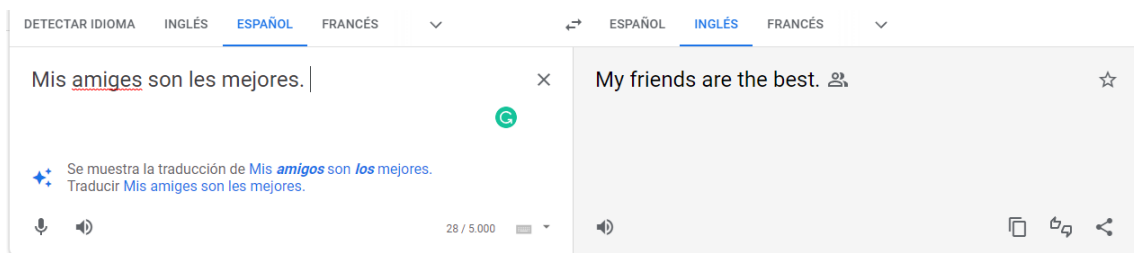
For the next examples, I will introduce some translation solutions in the Spanish language in both MTs (GT and DL) in order to avoid gender bias.

4.2.1 Solutions in GT

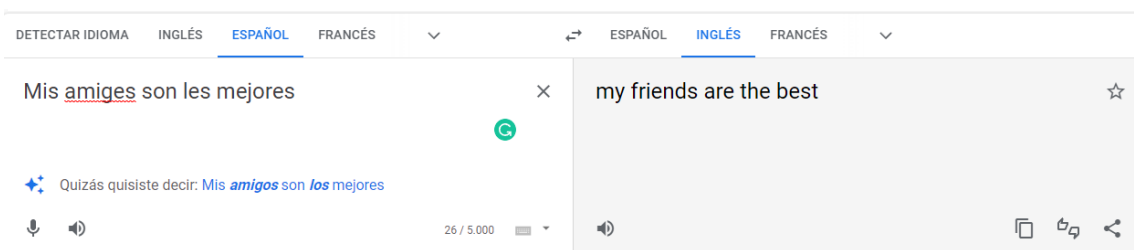
1. In the past few years, the usage of the letter “e” at the end of a gendered noun in

Spanish has become very popular. For example:

Example 1



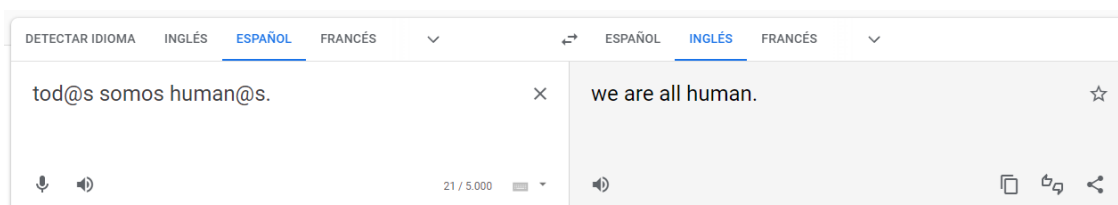
Example 2



Even though the translation solution in English is accurate, the MT is showing a solution for the sentence “Mis amigos son los mejores” (see Example 1). When we click on the option “Traducir Mis amiges son les mejores” the result is exactly the same. Nevertheless, the MT insists on catching a misspelling in the sentence (see Example 2).

2. Another way of avoiding sexism in Spanish is the usage of “@” in gendered words. For example:

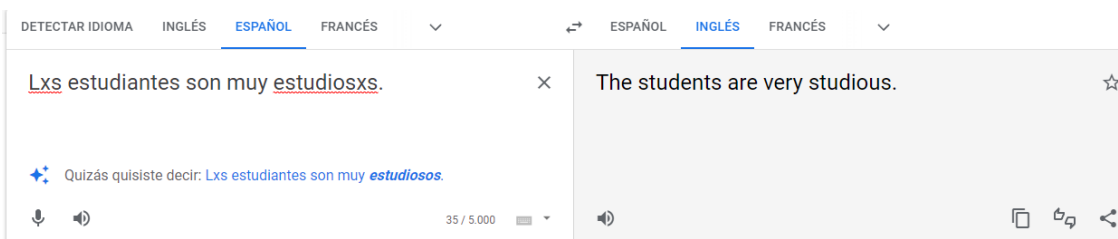
Example 3



Surprisingly, for this solution, GT recognized the “@” as part of the words and sentence, and gave an accurate translation solution (see Example 3).

3. Finally, as in the previous examples, there is another way of avoiding using gendered words in Spanish but this time by using the letter “x”. For example:

Example 4

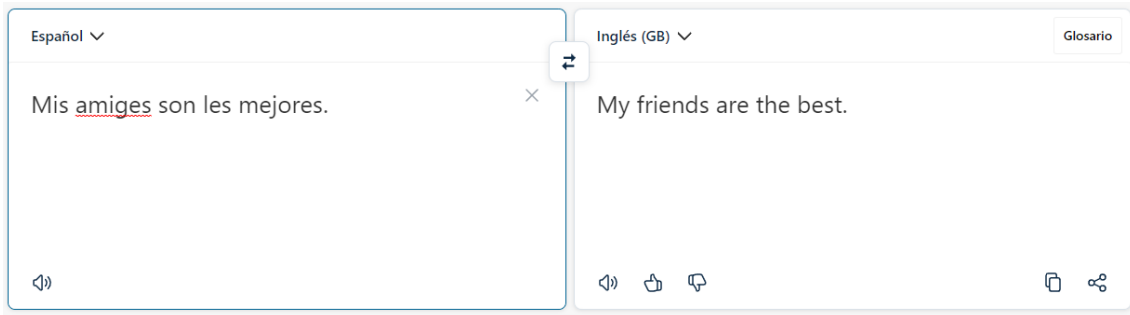


Again, in this example, GT recognized a misspelling in the original sentence. However, the first word of the sentence “Lxs” is comprehended and translated accurately (see Example 4).

4.2.2 Solutions in DL

1. In the past few years, the usage of the letter “e” at the end of a gendered noun in Spanish has become very popular. For example:

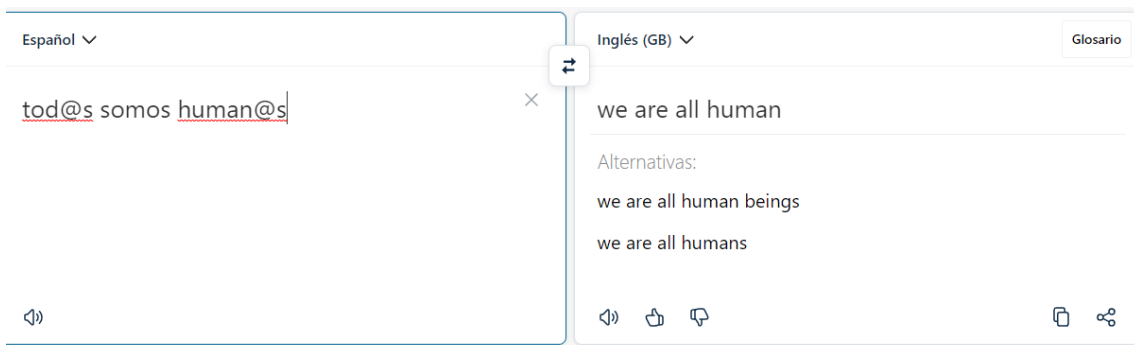
Example 4



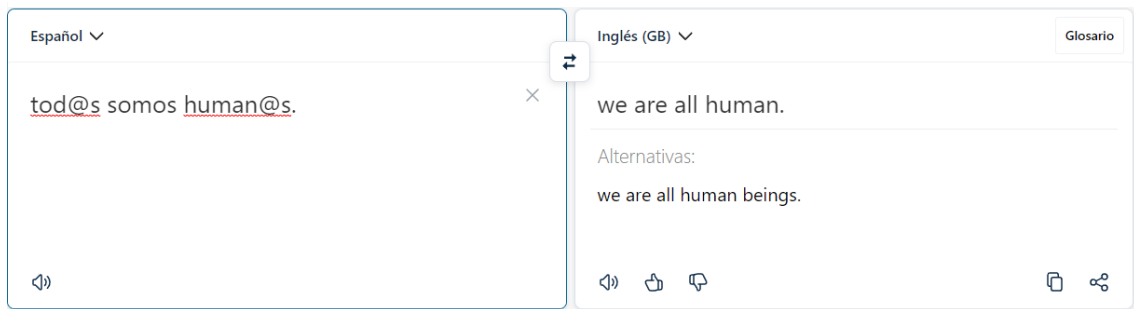
DL did a very good job on translating this sentence. The MT completely understood the usage of the letter “e” to avoid sexist language and gave an accurate translation solution without highlighting the fact that it was misspelled (see Example 5).

2. Another way of avoiding sexism in Spanish is the usage of “@” in gendered words. For example:

Example 5



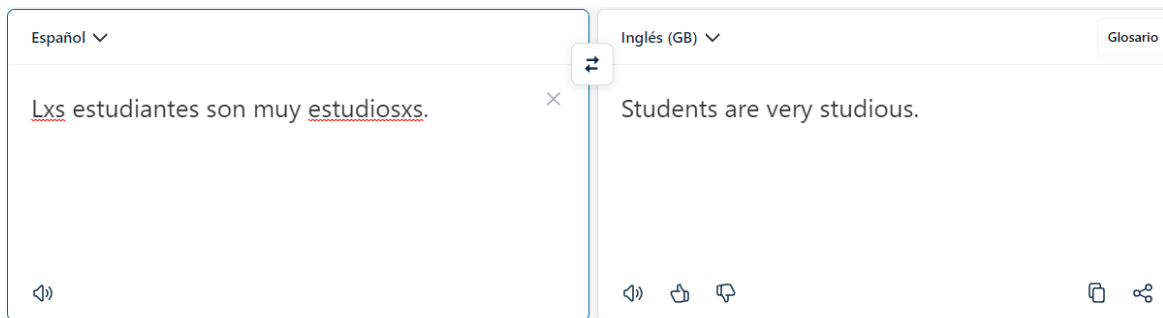
Example 6



In this example, DL again did a very good job understanding the use of the “@” to avoid gender bias (See Example 6). In addition, when adding a final dot in the original sentence, we lose one alternative option in the translation solutions (see Example 7).

3. Finally, as in the previous examples, there is another way of avoiding using gendered words in Spanish but this time by using the letter “x”. For example:

Example 7



For this example, DL accurately recognized the Spanish solution and provided a precise translation without highlighting mistakes in the spelling (see Example 8).

5 Discussion

After analyzing the results, I realized that in the first practical exercise, GT was actually less sexist than DL. On the one hand, in the translation study “from English to Spanish”, GT seemed to provide two translation solutions, one masculine, and one feminine. However, depending on the career noun or adjective used in the sentences, the first default translation followed stereotypical input, and the order of the results varied depending on that. On the other hand, DL had the same issues as GT. In addition to that, the MT had some variations in the results when erasing the final dots in the English sentences. Mostly all solutions followed stereotypical data and feminine translations were less commonly used. Nevertheless, if the adjective used was about weakness or beauty, the MT provided feminine alternatives.

The second practical exercise was divided into two parts. The first part was the same activity as in the first practical exercise; comparing GT and DL “from Spanish to English” by correlating sentences. The second part was about applying some translation solutions in some sentences in Spanish and seeing how the MTs would react.

In the first part of the activity, “from Spanish to English”, the results in both MTs were quite similar. In GT all solutions were masculine while DL, from three examples, only one got a female alternative, not even as the default translation.

The results of the second part of the second practical exercise were quite interesting. The first translation solution applied in both MTs was the use of the letter “e” to avoid gendered words. In this case, GT seemed not to comprehend this solution and provided some gendered alternatives. Despite the fact of not acquiring the use of “e”, GT provided an accurate translation. DL did a very good job. The MT provided an accurate translation of the original sentence and did not spot any spelling mistakes.

The second solution was the use of the “@”. In this case, both MTs provided accurate translations and seemed to comprehend the solution given.

The third and last solution was the use of “x”. Again, in this example, DL did a better job understanding it and accurately translated the example sentence. Nevertheless, GT seemed to understand the use of the solution with ‘Lxs’ but not in ‘estudiosxs’. The MT highlighted the last word as misspelled.

From the research questions: “Is it possible to avoid sexist language in MT?” and “Can people avoid sexism in MT?”, I would say that it is one hundred percent possible. However, as Pérez Piñeiro (2021) stated, sexism in MTs can be avoided, but he claims that most of the data given to MTs is fully automated, so solving all of the gender-biased problems would take a very long time, and many human translators. From my point of view, if we, users, keep using the MTs with determination and taking advantage of the correction tools that GT and DeepL provide us, we will be able to little by little fix gender bias in the input that MTs receive. In addition, one way of avoiding sexism in MTs could be by introducing to them the required input for them to comprehend the translation solutions tested on page 16.

Medel (2021) and Prates, Avelar, and Lamb (2019) concluded that when translating careers nouns, Google Translate uses masculine forms, which is derogatory towards female workers and their jobs. However, and after my research, I found out that when comparing GT and DeepL, GT was a pioneer in giving two solutions to these nouns in both genders. DeepL, on the other hand, does not have that option and ended up being the most sexist.

Finally, Rescigno, Vanmassenhove, Monti, and Way (2020) said that during their studies, DeepL was the MT with the higher percentage of male solutions in their translations.

Nevertheless, in my testing processes, I found out that in fact, DeepL is more sexist than GT in the first part of my results (Page 11) when translating adjectives + career nouns and non-gendered career nouns in Spanish, but GT was more sexist in the second part of my testing processes (Page 16) when adding Spanish translations solutions into sentences which were not well comprehended by GT. In this last test, DeepL did a very good job.

6 Conclusion

After this research journey, I must say that the results have surprised me. To start with, I expected DeepL to be more sexist than Google Translate. In first stage, and during the first practical part, this seemed to be true. Both MTs appeared to be stereotyped against both genders but the dominance of the masculine in almost every translation was clear. However, as I kept working on the second practical part, I realized that DeepL was more up-to-date in Spanish translation solutions than Google Translate.

As a conclusion, I would say that both MTs are equally good, but they have some tools which if mixed could be surprisingly improved. On the one hand, GT provides two solutions for both genders so the user can use the most accurate one. On the other hand, DeepL, despite of not having two gendered options, provides one default translation and the user can click on the gendered word and choose the right option they are looking for. Nevertheless, users may not know about this option, and perhaps could choose the wrong translation.

This research could go further. In the future, it could be a great idea to combine this project and try to find out a way of mixing both MTs' means of translating and see if this gender bias problem could be improved.

Since I have been working and analyzing both MTs, I would clearly recommend users to only use them when it is intrinsically necessary. A human translator will always be more reliable. However, having to choose between an MT and a human translator will always be a hard decision to take as MTs are mostly free but not really reliable, and for a human translator you will always have to pay for their services, but their results will be way more trustworthy.

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