

# Machine Translation: Deficiency in Translating English Sentences with Different Temporal References into Arabic

Mohammad Al-khawalda<sup>1</sup>, Ahmed Al-Oliemat<sup>2</sup>

1. Department of English Language and Literature, Mu'tah University, Jordan, P.O. BOX 7, e-mail: mkhawalda@yahoo.com
2. Department of Modern Languages, Alalbayt university, Jordan, e-mail: a\_oliemat@hotmail.com,

## Abstract

The study investigates the accuracy of machine translation from English sentences with different temporal references into Arabic. Google translator (GT) was used in this experiment. 12 English sentences with different temporal references divided into 3 sectors, present, past and future sector, were given to GT to and translated into Arabic. The output was again given to Google were to retranslate them back into English (round-trip translation). Furthermore, Arabic equivalent sentences for the English 12 sentences were given to GT to check their English translation. Results suggest that instead of facilitating English language in general and temporal references in particular, GT is a source of confusion for nonnative English speakers. It turns out also that GT is inaccurate in its translation of English sentences with different temporal references into Arabic.

**Keywords:** translation, Machine Translation, Arabic, temporal reference, tense

## 1.1 Introduction

"Translation" generally refers to transfer data from a source language (ST) into a target language (TL). Equivalency is the main aim of translation. That is, the value of translation can be measured according to the degree of equivalency between the input language and the output. Translation appears to be of great potential interest to linguists. It is the primary means of transferring ideas, thought, etc. cross-culturally. It narrows the gap between languages, cultures, people, etc. Recently, globalization has affected the lives of people all over the world and brought nations, languages, and cultures together. Accordingly, developing intercultural communication has become a matter of great importance. Many people, while sitting in their homes, spend an enormous amount of their time communicating with people of different languages and cultures around the world using different sites such as Skype, Yahoo Messenger, etc.

The importance of translation comes from the importance of languages in human life. Mattsuura's (2008), Director-General of UNISCO, states that "Languages are indeed essential to the identity of groups and individuals and to their peaceful coexistence. They constitute a strategic factor of progress towards sustainable development and a harmony between the global and the local context (Mattsuura, 2008: 11). Since the past few decades, machine translation (MT) has been the focus of much interest because of globalization, the rising of international trade, the expansion of mass media and technology, the increase of migration, the recognition of linguistic minorities, etc.

Informational technology, educational explosion and the wide spread of net and smart phones are among those advances that made MT one of the necessary issues in modern life. Moreover, the rapid rise of social networks such as Facebook, Yahoo Messenger, Skype, Google Talk, MSN Messenger, etc. which put people speaking different languages in communication with each other, increase the necessity for MT. Although MT has its root in the past, its importance has raised since the middle of the twentieth century. According to Wikipedia (2013) "The field of machine translation" appeared in Warren Weaver's *Memorandum on Translation* (1949). The first researcher in the field, Yehoshua Bar-Hillel, began his research at MIT in (1951); In the same year a Georgetown MT research team followed with a public demonstration of its system in 1954. MT research programs emerged in Japan and Russia in (1955), and the first MT conference was held in London (1956). Since then, lots of work has been done either to improve or to evaluate MT. Many MT companies have been launched, i.e. 'Tradoes' which was the first which developed translation memory technology in 1998. 'SYSTRAN' offering a web free translation of small texts in 1996. 'Alta Vista Babelfish' a famous translation site launched in 1997. Google launched its MT translation and was considered the best in a competition in 2003. Actually, Google translation is the most famous among non-native speakers of English (personal observation as university Professors.).

There are various ways to evaluate the quality of the output of MT, one of which is human judgment. Another typical way to evaluate the accuracy or quality of MT is to translate from a source language to a target language and back to the source language with the same engine which is called round-trip translation (RTT) (Samor, 2005) in which a given text or sentence is translated into a foreign language by the MT system (the 'forward translation' (FT)), then translated back into the original language by the same system (the 'back translation', BT). Although round-trip translation is considered to be a poor predictor of quality (see Anoun, 2005), it shows the accuracy of MT. Since RTT means back translation of what was translated, it is assumed that it would be a

word-for-word translation identical to the original source text. Lots of work has been carried out to show the accuracy of RTT. It should be noted her that we don't want to check the validity and reliability of round-trip translation, but it is used to check the accuracy of machine translation.

## 1.2 Methodology

This experiment consists of two inter-related processes. First, 12 English sentences were used in this experiment. They cover most, temporal references (see Comrei, 1985; Al-Khawalda, 1997). They were divided into three sectors:

- Firstly, present sector which includes simple present, present progressive, present perfect and present perfect progressive;
- Secondly, past sector includes simple past, past progressive, past perfect and past perfect progressive;
- Thirdly, future sector includes simple future, future progressive, future perfect and future perfect progressive.

These sentences were used as an input to Google translator to translate them into Arabic (forward translation). The output sentences (Arabic sentences) were the input to the same system to translate them back into English (back translation or round-trip translation).

Second, 12 Arabic sentences which are equivalent to the English sentences were used an input to the same translator (GT) to translate them into English.

## 1.3. Data and Discussion

### 1.3.1. Present sector

Table (1-a): This table shows Google translation of four sentences related to present sector. In column (A) the English sentences which were used as input for the translator, in (B), the Arabic translation and in (C) back translation of the Arabic sentences in (B).

A- The given English sentences	B-Google translation of sentences in A	C- Google translation of sentences in B
1-The student writes his homework.	الطالب يكتب واجبه المنزلي.	The student writes his homework
2-The student is writing his homework.	الطالب يكتب واجبه.	The student writes his duty.
3-The student has written his home work	وقد كتب الطالب واجبه المنزلي	The student writes his homework
4-The student has been writing his homework	وقد الطالب كتابة واجبه المنزلي	The student writing his homework

Table (1-b): this table shows Google's translation for the Arabic sentences which are equivalent to the English sentences in A (Table, 1-a) above.

D- The equivalent Arabic sentences to those in A	E- Google translation of Arabic sentences
5- يكتب الطالب واجبه	Writes the student and his duty
6- يكتب الطالب واجبه الان	Writes the student and his duty now
7- كتب الطالب واجبه الان	Wrote the student and his duty now
8- مازال الطالب يكتب واجبه	Still a student writes his duty

As noted from the above table (1a), except the first sentence, the translation of the simple present, all others are ungrammatical. Simple present was translated into a grammatical Arabic sentence and then 'perfectly' back into English. The English present progressive (A2) was translated into Arabic simple present (B2) then back into English simple present (C2). The present perfect (A3) was translated into Arabic simple past (B3) and then back into English simple presents (C3). Present perfect progressive (A4) was translated literally into meaningless Arabic sentence (B4) and then ungrammatical sentence when translated back into English (C4). We have to admit that the difference between simple present and present progressive in Arabic is not expressed by the verb form, but rather by the usage of present adverb, i.e 'al?aan' (now) (see Aziz, Y, 1989). For instance, if we say 'yaktubu alTalbu wajebahu', it can be translated into English as (the student write/is writing his homework). However, to restrict it to present progressive, we say 'yaktubu alTalbu wajebahu al?aan'. Also the difference between present perfect and simple past is expressed by the present adverb rather than by the verb form (see Al-Khawalda, 1997, 2001). Since the outward journey is incorrect, it is expected that the return trip would be incorrect as well.

In the second step, Google translator was given the Arabic equivalent sentences to the English ones in (A-table-1a). None of the English translations is correct. That is, they were translated into meaningless English sentences.

It seems that Google translator translates the sentences word by word, thus it violates the norms of word order in English. Out of 12 processes carried out by Google translator in present sector, only two were correct. To be more specific the accuracy of Google translator in translating sentences from English into Arabic and visa versa was around 16.6%.

### 1.3.2. Past sector

Table (2a): this table handles the tenses of the past sector. in (A) the target English sentences. In (B), the Arabic translation of the English sentences in (A). Then in (C), the Arabic sentences were retranslated into English.

A- The given English sentences	B-Google translation of sentences in A	C-Google translation of sentences in B
9-The student wrote his homework	كتب الطالب واجبه	Student writes his home
10-The student was writing his homework	كان الطالب يكتب واجبه	The student writes his duty
11-The student had written his homework	وكان الطالب كتابة واجبه	And a student writing his homework
12-The student had been writing his homework	وكان الطالب قد يكتب واجبه	The student may write his duty

Table (2-b): This table shows Google translation of the correct Arabic sentences which are equivalent to the original English sentences in (A) table (2a) above.

D-The Arabic sentences which are equivalent to the English sentences in the past sector (in A-table 2a)	E-The Google translation of the Arabic sentences
13- كتب الطالب واجبه	Student writes his duty
14- كان الطالب يكتب واجبه	The student writes his duty.
15- كان الطالب كتب واجبه	The student wrote his duty.
16- كان الطالب ماز ال يكتب واجبه	The student still writes his duty.

The past sector includes four types of sentences, simple past, past progressive, past perfect and past perfect progressive. The first two sentences (8 & 9) were translated idiomatically into meaningful Arabic sentences but then translated back erroneously into simple present. However, GT failed to translate the past perfect and past perfect progressive (11-12) into correct Arabic sentences. Again, in RTT, from Arabic back into English, GT failed to translate both, it translated 11 (past perfect) into ungrammatical sentence and 12 (past perfect progressive) into simple present with 'May'. Thus, the RTT was incorrect.

In the second step, in which the translator was given Arabic sentences equivalent to the original English sentences, GT failed to translate any of them correctly. The English simple present is used in all cases except in the case of past perfect where simple past is used.

The situation in the past sector was not better than the one in the present sector. Out of 12 processes, only two processes were correct (16.6%).

### 1.3.3. Future sector

Table (3a): tenses of the future sector: in (A) the target English sentences, in (B) the Arabic translation of the English sentences in (A). Then in (C), the Arabic sentences were retranslated into English.

A-The given English sentences	B-Google translation of sentences in A Into Arabic	C-Google translation of sentences in B Back into English
17-The student will write his homework	سيقوم الطالب كتابة واجبه المنزلي	The student will write his homework
18-The student will be writing his homework	يكون الطالب كتابة واجبه المنزلي	The student write his homework
19-The student will have written his homework	ولقد كتب الطالب واجبه المنزلي	The student writes his homework
20-The student will have been writing his homework	وسيكون قد تم الطالب كتابة واجبه المنزلي	The student will have been writing his homework



27- a-Kataba (wrote-he)

Kaana kataba  
Be-past he write-past-he (past in the past)  
'he had written'

b-Sayakuunu kataba  
Fut-be-he write-past-he (past in the future)  
'he will have written.'

c- kaana yaktubu  
be-past-he write-pres-he  
'he was writing.'

In addition to such combination, certain temporal references are expressed by the combination between the verb and adverbs. For instance, The combination between the past form of verb, i.e. /kataba/ (write-past-he) and the adverb /al?an/ (now) results in a meaning similar to the present perfect in English.

28- kataba al?an  
Write-past-he now  
'he has written'

Google translator takes word by word without considering the whole structure or such combinations. Let us consider the following examples:

29-

A- الان واجبه الطالب يكتب  
B- now His homework The student Write-pres-he  
C- 'Writes the student and his duty now'  
D- The student is writing his homework now

30-

A- الان واجبه الطالب كتب  
B- now His homework The student Write-past-he  
C- 'Wrote the student and his duty now'  
D- The student has just written his homework

31-

A- واجبه يكتب الطالب مازال  
B- His homework Write-pres-he The student still  
C- 'Still a student writes his duty'  
D- The student has been writing his duty

In the above examples (29-31), A: is the Arabic sentence, B: paraphrasing it in English, C: Google's translation and D is the equivalent English sentence. Sentence (29A) starts with the present form of the verb 'write' followed by the subject/agent 'the student', then the object 'his homework' and finally with the adverb 'now'. As stated above in its translation, Google followed word by word translation so the result is the sentence in (29C) which is ungrammatical and meaningless English sentence. The same can be applied to all the sentences (29-31). The second important issue is that the combination between the present form and the adverb 'now' in Arabic expresses a meaning similar to the present progressive in English. But the translator ignored translating each sentence separately in (29C). The same problem appears in (30). The combination between the past form and the adverb 'now' is used to express a meaning similar to the English present perfect. Google translator has not recognized that and translates each sentence separately as in (30C). In (31A) the adverb 'still' is used with the present form of the verb. This combination results in a meaning similar to the present perfect progressive in English. But as can be noted from the sentence in (31C) such meaning was deteriorated by Google translator. To have a clear picture about the deterioration of the temporal reference by Google translator, compare the sentences in (C), the translation of Google, with those in (D), and the correct English sentences which are equivalent to the Arabic sentences in (A).

### 1.5. Conclusion

The results reached at in this paper show that MT faces serious problems when translating text with temporal references; the examples tested all through this paper show, beyond doubt, that Google translator translates Arabic sentences word by word which consequently leads to the violation of the norms of word order in English. Further, another serious problem that faces MT is the structural differences between the source language and target language. Both languages English and Arabic, which are our concern here, differ significantly in many respects. For instance, Arabic has a free word order whereas English has a fixed word order; MT seems to fail in handling such a problem. Results also show that to cope with Arabic form and tenses seems to be considered the most serious problem which faced by Google Translator.



The research shows the limitations of MT. However, it could be effective when dealing with vocabulary and certain fixed collocation structures and expressions. Lots of work is required to overcome such problems and to make MT effective and beneficial. Moreover, human editing is still necessary to arrive at valuable, accurate, authentic translation. Further research is still needed to further examine the extent to which MT translation can succeed in translating texts beyond the sentence level, for example, sampling more sentences and introducing more languages.

## References

- Al-Khawalda, M. and Assiri, Fahad (2011). Misinterpretation of English Cultural bound Expressions by English Majors at Saudi University. *The International Journal of Language Society and Culture*. **33**: 95-107
- Al-Khawalda, Mohammad, (2004), "The Deterioration of the usage of kaana via translation". *BABEL*. **50**:3, 215-229.
- Alkhuli, M. (1999). *Comparative Linguistics: English and Arabic*. Alfarah publication, Amman.
- Anon. (2005), *Gotcha: Translation software. Software that translates text from one language to another may be a big help—or hindrance—to businesses and relief agencies alike*. Baseline, May 2, 2005. [www.baselinemag.com/arti-cle2/0.1397.1791588.00.asp](http://www.baselinemag.com/arti-cle2/0.1397.1791588.00.asp)
- Armellino, Elisa (2008). 'Translating Culture-Bound Elements in Subtitling: An Example of Interlinguistic Analysis: a scene from 'Scent of a Woman''. *Translation Journal*. **12**(2). available on: <http://translationjournal.net/journal/44culturebound.htm>.
- Aziz, Y. (1989). *A Contrastive Grammar of English and Arabic*. Al-Watania, Baghdad.
- Comrie, Bernard (1985). *Tense*. Cambridge University Press.
- Franz Josef Och and Hermann Ney. (2004). The alignment template approach to statistical machine translation. *Computational Linguistics*, **30**(4):417–449.
- Matsuura, K. (2008). A Message from Mr. Koichiro Matsuura, *International Year of Languages 'Languages Matter!'*.
- Nagao, M. (1989). *Machine translation: how far can it go?* Oxford University Press, Oxford.
- Newton, J. (ed), (1992). *Computers in translation: a practical appraisal*. Routledge, London.
- Somers, H. (2005). "Round-trip Translation: What Is It Good For?"
- Somers, H., Gaspari, F. and Ana Niño (2006) "Detecting Inappropriate Use of Free Online Machine Translation by Language Students: A Special Case of Plagiarism Detection". *Proceedings of the 11th Annual Conference of the European Association of Machine Translation*, Oslo University (Norway).
- Weaver, W. (1949). *Translation*. Repr. in: Locke, W.N. and Booth, A.D. (eds.) *Machine translation of languages: fourteen essays* (Cambridge, Mass.: Technology Press of the Massachusetts Institute of Technology, Yehoshua Bar-Hillel, (1951). The present state of research on mechanical translation. *American Documentation*, **2** (4), 229-237.
- <http://translate.google.com/>
- <http://www.alt.aunz.edu.au/events/altw2005/cdrom/updates/ALTA200519.pdf>