

The Implications of Machine Translation

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Abstract

In this paper we take a broad look at the likely implications of future developments in machine translation. In order to do this effectively we consider firstly what constitutes machine translation in all its various forms. We then take a number of scenarios which differ in the extent to which machine translation is successful.

1 What is machine translation?

A number of answers are possible for this depending upon (amongst other things) one's outlook. At its crudest, MT:

is the 'translation' of text from one language into another by a computer

Clearly this is a common notion of MT. However we had to use two not very well defined concepts in this definition: *language* and *translation*. We said nothing about conservation of meaning which of course has to be one of the major features of a successful MT system. Nor have we said anything of what constitutes a computer for our purposes. We shall leave the reader to decide what scope 'computer' has in the definition.

Firstly we need to be clear about the concept of language. Is the translation of a computer program, from source code to machine code, machine translation? Clearly in both the translation of natural language (NLMT) and computer language (CLMT) there are texts. There are source and target languages and a large number of common terms. However, if a compiler is a very successful MT system then could it not be argued that rather than putting greater and greater efforts into improving our NLMT systems, perhaps we should improve our source and target languages. In fact the formalisation of natural languages seems to be a growth industry in some sectors.

There is also some pressure to improve the ability of computers to translate from human language to computer language. This, after all, has been the trend in programming language design. That we are a long way from natural language computer programming might indicate the difficulty that we might expect to face when trying the more complex task of human language to human language machine translation.

Secondly, if the concepts of source and target languages are clearly defined, then how accurate must a translation be in order to be considered as a successful machine translation? In CLMT most of the time we achieve very high accuracy. Is there such a thing as high accuracy in NLMT? Clearly there are good and bad translations but surely the meaning of a piece of text depends upon both the reader and the writer, their shared experiences and the areas where experiences differ.

One of the 'experiments' I perform on my Natural Language students is to ask them in class what the word 'cat' means. Clearly this is not a difficult question for them to answer. I then ask the colour of the cat. Surprisingly most have no difficulty with that question either. Not surprisingly

they give me different colours! I could ask many questions about the cat and they could answer with differing amounts of certainty.

In the following sections we are going to look at some possible levels of achievement for MT and, for each level of achievement, the effects that might come from them.

2 Complete failure

We start with complete failure because it is the easiest to consider since it can not happen. In this scenario the world would no doubt continue. People would misunderstand each other, as they do even when speaking the same language. We suppose that there are more misunderstandings between people who use different languages than amongst those using the same language but we are not completely sure about this! The history of international relations might give us a clue on this.

As in the past, some people would put a great deal of effort into learning other languages while others would not be bothered. Probably some languages will flourish at the expense of others. The dominating languages may be different in different circumstances. For example American might dominate the 'Pop Culture' whilst French might dominate culinary language, Italian dominate music and German dominate engineering.

3 Partial success

Suppose then the current state of partial success prevails well into the future. Would that be a bad thing? We manage now with armies of human translators doing what can at best be described as computer aided translation. This state of affairs enables many people to make a reasonable living from translation. True there is often a considerable time delay between the start of the translation process and the delivery of the final translation, but we manage to live with it.

Many people learn foreign languages for a variety of reasons. They may find employment as translators or interpreters. They may want to read text in its original language or they may just want to converse with the natives whilst on holiday. Much of this learning is unaffected by the existence of machine translation save that small devices can be used on holiday and some machine aid could be used at work and at home.

However many people learn one of the dominate language (English, German or Spanish) because they feel obliged to in order to have a fair chance of a good job. These people, or their compatriots, often feel resentment towards the dominant languages and accuse their country of origin with some sort of linguistic hegemony.

4 Complete Success

Complete success might well have a profound influence upon the evolution of natural languages. If a cheap, fast and accurate system were available to all then there would be much less need to learn foreign languages.

This may have a little negative effect upon the understanding between nations if less exchange were to occur due to the reduced need for foreign language learning.

A positive effect may be that there would be more equality between the languages and thus between the speakers of the languages. Of course it would depend upon which language pairs translation was available for. Fewer languages would die out. The world may stay a richer place in terms of language diversity.

5 Conclusion

The success or otherwise of machine translation brings with it a number of advantages and disadvantages which goes beyond the simple ability of people to understand each others language. Though we look forward to the success of the enterprise it is important that those involved in making it happen should also consider the implications of its success.