Machine Translation: New Dimensions in Translating and Translators' Roles

الترجمة الآلية: أبعاد جديدة في الترجمة وأدوار المترجمين

Dr. GHEDEIR BRAHIM Mohammed
University of El-Oued–Algeria
ghedeir-mohammed@univ-eloued.dz

Received 05/08/2021 Accepted 30/10/2021 Published 01/01/2022

Abstract
This study aims at touching upon effects of technological developments, precisely, machine translation (MT) on translating and translators roles. As computational activities become more mainstream and the internet opens up the wider multilingual and global community, research and development in MT continues to grow at a rapid rate. It is expected that this study will constitute a theoretical basis for translating and translators in the era of machine translation and translation technology.
Key words: Human translation, Machine Translation (MT), Translation technology

Résumé
Cette étude vise à aborder les effets des développements technologiques, précisément, la traduction automatique (TA) sur les rôles de traducteur et de traducteur. Alors que les activités informatiques deviennent plus courantes et qu'Internet ouvre une communauté multilingue et mondiale plus large, la recherche et le développement en MT continuent de croître à un rythme rapide. On s'attend à ce que cette étude constitue une base théorique pour la traduction et les traducteurs à l'ère de la traduction automatique et de la technologie de traduction.
Mots clés : traduction humaine, traduction automatique (TA), technologie de traduction,

الملخص
تهدف هذه الدراسة إلى التطرق إلى تأثيرات التطورات التكنولوجية ، وعلى وجه التحديد ، الترجمة الآلية على أدوار الترجمة والمترجمين، ونظرًا لأن الأنشطة المتصلة بأجهزة الحاسوب أصبحت أكثر انتشارًا كما أن الإنترنت مهدت لخلق مجتمع عالمي متعدد اللغات ، يستمر البحث والتطوير في الترجمة الآلية في النمو بمعدل سريع .ومن المتوقع أن تشكل هذه الدراسة الأساس النظري للترجمة والمترجمين في عصر الترجمة الآلية وتكنولوجيا الترجمة .

الكلمات المفتاحية: الترجمة البشرية، الترجمة الآلية، تكنولوجيا الترجمة.

Introduction

The mechanization of translation has been one of the humanity' s oldest dreams. In the twentieth century it has become a reality, in the form of computer programs capable of translating a wide variety of texts from one natural language into another.

Machine Translation (MT) is a process, sometimes referred to as natural language processing which uses a bilingual data set and other language assets to build language and phase models used to translate text.

Developments in Information Communication and Technology (ICT) have brought revolution in the process of MT. Several tools are now available which support translation of a text into one or more languages. Over internet, online translation is offered by Yahoo and Altavista through Babelfish. Bing Translator of Microsoft and Google Translate from Google are tools widely used for the translation by librarians and members of web community. There have been major initiatives from various research organizations and government agencies to develop tools for automatic translation of texts. This is to achieve wider outreach and bridge the gap of language diversity.

This study traces the definition(s) of MT as well as the history of efforts to develop computer programs (or software) for the translation of natural languages, commonly and traditionally called "Machine Translation" (MT) . Elements of the history, state of the art, and probable future of (MT) are discussed.

1 . Definitions of Machine Translation (MT)

The term Machine Translation (MT) is an automatic translation system responsible for the production of translations from one natural language into another, with or without human assistance.

Earlier names such as "mechanical translation" and "automatic translation" are now rarely used in English, but their equivalents in other languages are still common (e.g. French traduction automatique).

The term MT includes systems in which translators or other users assist computers in the production of translations, including various combinations of text preparation, on-line interactions and subsequent revisions of output. It

should be noted that the boundaries between the sub-categories of MT, Machine Aided Human Translation (MAHT) and Human –Aided Machine Translation (HAMT) are often uncertain, and the term Computer-Aided (or Computer-Assisted) Translation (CAT) can cover both. However, the central core of MT is the automation of the full translation process.

2 . Machine Translation: a Concise History

We may trace the origins of MT back to the twentieth century (1933) with two patents issued in France and Russsia to Georges Artsrouni and Peter Trojanskij respectively. Artsrouni' s patent was for a general-purpose machine that could also function as a mechanical multilingual dictionary. Trojanskij' s patent , also basically for a mechanical dictionary, went further with proposals for coding and interpreting grammatical functions using universal symbols in a multilingual translation device (Hutchins & Lovtsky, 2000: 47).

In 1946 Andrew Booth and Warren Weaver met together and put forward the first tentative ideas for using the newly invented computers for translating natural languages (King, 1987: 74). Then, in 1948 Booth worked with Richard H. Richens on morphological analysis for a mechanical dictionary. By this time the idea of mechanical translation had occurred independently to a number of people.

In May 1951 Yehoshua Bar-Hillel was appointed to do research at the Massachusetts Institute of Technology (MIT) and in June 1952 he convened the first MT conference at (MIT), which was attended by nearly everyone already active in the field. It was already clear that full automation of good quality translation was a virtual possibility, and that human intervention either before or after computer processes (pre- and post- editing respectively) would be essential as means of reducing ambiguity problems. Various suggestions for future activity were proposed, as such, Leon Dostert from Georgetown University argued that what was required was a public demonstration of the feasibility of MT in order to attract research funding (O' Brien, 2007: 86-89).

Accordingly, Yehoshua Bar-Hillel collaborated with IBM n a project that resulted in the first demonstration of a MT system on 7th January 1954. As a result of the joint effort of Peter Sheridan of IBM and Paul Garvin at Georgetown, a carefully selected sample of forty-nine (49) Russian sentences

were translated into English using a very restricted vocabulary of 250 words and just six (06) grammar rules (Hutchins, 2004: 107). The demonstration attracted a great deal of media attention in the United States.

In 1964 the government sponsors of MT in the United States formed the Automatic Language Processing Advisory Committee (ALPAC) to examine the prospects. In its influential 1966 report it concluded that MT was slower, less accurate and twice as expensive as human translation and stated that "there is no immediate or predictable prospect of useful Machine Translation". The report saw no need for further investment in MT research; instead it recommended the development of machine aids for translators, such as automatic dictionaries and continued support of basic research in computational linguistics. This negative report brought a virtual end to MT research in the United States for over a decade and damaging the public perception of MT for many years afterward.

In the following decades, MT research took place largely outside the United States. Research groups were established in Canada and Europe and the movement of creativity and innovation in the field of MT develops and prospers.

3 . Human vs. Machine Translation

In any translation, whether human or automated, the meaning of a text in the source language should be fully transferred to its equivalent meaning in the target language' s translation. While in the surface this seems easy, it is often far more complex. Translation is never a mere word-for-word substitution.

A human translator must interpret and analyze all of the elements within the text and understand how each word influence the context of the text. This requires extensive expertise in grammar, syntax, semantics, in the source and target languages, as well as expertise in the domain (Slocum, 1984: 76).

Human and MT each have their share of challenges. As such, no two individual translators will produce identical translations of the same text in the same language pair, and it may take several rounds of revisions to meet the client' s requirements. In the same vein, automated translations find difficulties in interpreting contextual and cultural elements of a text, and quality is dependent on the type of system and how it is trained.

While MT faces some challenges, if implemented correctly MT users can achieve benefits from economies of scale when translating in domains suited to MT.

4 . Approaches to Machine Translation

It is known that MT is one of the research areas under the umbrella of "computational linguistics". Various methodologies have been devised to automate the translation process. However, the objective has been to restore the meaning of original text in the translated verse. In general, various approaches have been adopted to achieve the automated translation of the text. The present study deals with only three (03) approaches:

4.1 . Metaphrase

Metaphrase means "word-to-word" translation. It relates to "formal equivalence", that is, the translated version will have "literal" translation for each word in the text. However, the translated text may not necessarily convey the meaning of the original text. That means sometimes the semantics may differ from the original text (Trujillo, 1999: 112).

It relates to "dynamic equivalence", that is, the translated text would contain the gist of the original text but may not necessarily contain the word-to-word translation.

4.2 . Dictionary Based Machine Translation

This method of translation is based on entries of a language dictionary. The word' s equivalent is used to develop the translated verse the first generation of MT was entirely based on machine-readable or electronic dictionaries**.** To some extent this method is still helpful in translation of phrases but not sentences. Most of the translation approaches developed later-on more or less utilizes bilingual dictionaries with grammatical rules (Heyn, 1998: 123-126).

4.3 . Rule Based Machine Translation

Rule Based Machine Translation (RBMT) has much to do with the morphological, syntactic and semantic information about the source and target language. Linguistic rules are built over this information. Also millions of bilingual dictionaries for the language pair are used. RBMT is able to deal

with the needs of wide variety of linguistic phenomena and is extensible and maintainable**.** However, exceptions in grammar add difficulty to the system (Hutchins, 1978: 47).

The objective of RBMT is to convert source language structures to target language structures**.**

5 . The effects of MT on the Future of Translating and Translators' Roles

There is a fear that technology could cause deprofessionalisation of the translator as it becomes more accessible to those who cannot translate but can implement automation to provide the service.

Many organizations are already using crowd sourcing for translation without maintaining control. Many beginners translate within these groups, some for free, others for pay.

To prevent or undermine deprofessionalisation , some corporations only hire translation graduates, but many also only hire from certain institutions because the quality of training varies greatly (Massey 2011: 27-28).

There has been an explosion in translator training programs in an attempt to produce more qualified translators to meet the demand for translation. In some countries, these programs are useful and many organizations hire on the basis of the university degree.

As far as MT is concerned, it is agreed that the image of translators as lone figures working in their rooms or offices in front of their computers belongs to the past. Today, translation has become a social profession where team work is a must, and the ability to interact and network efficiently and effectively has become an essential requirement. Translators need to be able to interact with their clients, to sell their services, and to understand what they need. Cooperation and exchanges with colleague translators are also important, as it is the ability to work with experts in MT to exploit the opportunities offered by the new technologies. Additionally, words like flexibility, adaptability, and mind-openness have also been a sort of leitmotiv, accompanying the whole debate. When speaking about flexibility, the first thing which comes to mind is the willingness to use the new technologies which have been strongly impacting the profession in the past years. Also the

training of translators, including the continuing training and the re-training of experienced translators, is another burning issue. The whole responsibility of training cannot be left to universities. More synergies should be created among the various actors, notably training institutions and the industry, to offer well adapted and targeted training opportunities. In this respect the cooperation and synergy between the academic world and the industry could and should be reinforced and new strategies should be explored (Massey, 2011: 39-40).

Conclusion

The translation issue will never go away, and human solutions do not now, and never will, suffice. MT systems have already scored successes among the user community, and the trend can hardly fail to continue as users demand further improvements and greater speed, and MT system vendors respond. The half million pages of text translated by machine in 1984 is but a drop in the bucket of translation demand. For sure, the need for research is great, and the development of translation as an application of Computational Linguistics will require substantial research in its own right, in addition to the work necessary in order to provide the basic multilingual analysis and synthesis tools. Translators must be consulted, for they are the experts in translation. None of this will happen by accident; it must result from design.

References

Heyn, M. (1998). Translation Memories: Insights and Prospects. In Bowker et al. (eds), 123-136.

Hutchins, W.j. (1978). Progress in Documentation: Machine Translation and Machine-Aided Translation. Journal of Documentation, 34 (2): 119-159.

Hutchins, W.J. and Lovtsky, E. 2000. "Peter PetrovichTroyanskii (1849-1950): a forgotten pioneer of machine translation". Machine Translation, 15 (3), 187-221.

Hutchins, W.J. (2004). The Georgetown IBM experiment demonstrated in January 1954. In AMTA (2004), 102-114.

King, M. 1987. Machine translation today: the state of the art. Edinburgh: Edinburgh University Press.

Massey, G and Ehrensberger-Dow, M. (2011). Commenting on Translation: Implications for Translator Training. The Journal of Specialized Translation, 16: 26-41.

O' Brien, S. (2007). An empirical investigation of temporal and technical post-editing effort. Translation and Interpreting Studies, 2 (1), 83-136.

Slocum, J. (1984). Metal: The LRC Machine Translation System. Presented at the Second Annual Conference of the European Chapter of the Association for Computational Linguistics, University of Geneva, Switzerland.

Trujillo, A. (1999). Translation engines: Techniques for Machine Translation. London: Springer.