

## **Problems of Machine Translation**

Machine translation systems nowadays play only a supportive role since they are able to deal only with relatively simple syntactic and lexical structures. They are unable to understand multiple meanings, majority of epithets, metaphors etc. That is why they cannot replace professional translators yet. On the other hand, it cannot be displaced because it is free (not all of them are free, but the most) and available for everyone at any time. The main advantage of machine translation systems is that they let us deal with large amounts of information extremely quickly and cheap. In this paper, we have considered the main problems of machine translation, both solved and unsolved.

Machine translation is the process of translating language by computer [1]. It is a process, sometimes referred to as Natural Language Processing which uses a bilingual data set and other language assets to build language and phrase models used to translate text. Using of computer in order to translate texts was suggested as soon as it was invented. The Georgetown-IBM experiment, presented in 1954, was the first demonstration of the machine translation to public [2]. Despite the fact that the system had a vocabulary consisting of 250 words, could use 6 grammar rules and translate only a few phrases, it drew attention of people to prospects of computational linguistics.

Since then machine translation industry has experienced up and downs and now it is very popular all over the world. People use it when they face the need to understand general meaning of a text, multilingual information in the Internet, quickly correspond with people in social networks. As can be seen, it is mainly used when something must be translated quickly or in case you do not need to understand the information completely.

Machine translation systems work more efficiently on technical and specialized texts, which are edited afterwards. It is possible to simplify the task significantly by preliminary text editing. There is a simple rule that helps to improve the quality of machine translation from English into another language: no passive voice, gerunds and compound sentences. Each sentence should consist of one thought.

There are two types of machine translation: Rule-Based Machine Translation and Statistical machine translation.

Rule-Based Machine Translation (RBMT) is based on linguistic information about original and target languages, consisting of grammar rules, lexicon, morphological, and syntactic regularities of each language. Algorithm of the systems is simple: rules are applied to the target text, which are put in correspondence with structure of the original and target languages. Initial stage of work includes morphological, syntactic, semantic analysis of the text for creating an internal representation of it. Translation is generated by using bilingual dictionaries and grammatical rules. Advantages include syntactic and morphological accuracy, stability and predictability of the outcome. Disadvantages are complexity and duration of development, necessity to maintain and update the linguistic database [3].

Statistical machine translation is based on finding the most probable sentences with using a bilingual corpus of texts. Computer does not operate linguistic algorithms, but calculates the probability of a particular word or phrase. A word or sequence of words, which have the optimal probability, are considered the most appropriate translation of the source text and substituted by a computer in the resulting text. Advantages include Quick Setup, easily addition of new translation directions; numerous grammatical errors, instability of translation are considered as disadvantages [4].

Nowadays the most popular systems of machine translation are: Google Translate, Toolkit, Systran, PROMPT, Freetranslation, Translate, etc. Their algorithms of works are different.

It is obvious that machine translation is still imperfect and people face with a lot of problems during the process of translation. There is inaccuracy, grammatical and lexical errors, but the main

difficulty is that it is hard to formalize natural languages. Therefore, there are so many jokes about low quality of content, translated by computer.

We considered the problem of corresponding the translator database of words to the source text contents by translating the same phrase from English into Russian with some machine translation systems and inverse translation as well:

The number of Russian banks declined from 1000 before 2008 to about 900 in 2012. Many of these are so-called pocket banks, serving the needs of their owners rather than retail clients.

Using [translate.google.com](http://translate.google.com)

Ряд российских банков сократилось с 1000 до 2008 года до 900 в 2012 году Многие из них так называемых карманных банков, обслуживающих потребности своих владельцев, а не розничным клиентам.

A number of Russian banks decreased from 1000 to 2008 to 900 in 2012. Many of these so-called pocket banks serving the needs of their owners, rather than retail customers.

Using [www.translate.ru](http://www.translate.ru)

Число российских банков уменьшилось от 1000 до 2008 к приблизительно 900 в 2012. Многие из них – так называемые карманные банки, удовлетворяя потребности их владельцев, а не продают в розницу клиентов.

The number of the Russian banks decreased from 1000 to 2008 to about 900 in 2012. Many of them – so-called pocket banks, satisfying needs of their owners, but do not sell at retail clients.

This example indicates that existing machine translation systems cannot provide required quality.

Using of machine translation depends on the information and the quality that is required. Machine translation is becoming popular, which means that machine translation systems are evolving and being improved. In spite of continuous improvement of machine translation systems, they are still imperfect and do not guarantee the absolute accuracy of the translation, that is often required.

## References

1. Oxford Language Dictionaries Online URL: <http://www.oxforddictionaries.com/ru/%D0%BE%D0%BF%D1%80%D0%B5%D0%B4%D0%B5%D0%BB%D0%B5%D0%BD%D0%B8%D0%B5/learner/machine-translation>
2. Wikipedia, the free encyclopedia
3. URL: [https://en.wikipedia.org/wiki/Georgetown-IBM\\_experiment](https://en.wikipedia.org/wiki/Georgetown-IBM_experiment)
4. Nikitin I.K. Systemy mashinnogo perevoda. URL: [http://www.academia.edu/3439645/%D0%A1%D0%B8%D1%81%D1%82%D0%B5%D0%BC%D1%8B\\_%D0%BC%D0%B0%D1%88%D0%B8%D0%BD%D0%BD%D0%BE%D0%B3%D0%BE\\_%D0%BF%D0%B5%D1%80%D0%B5%D0%B2%D0%BE%D0%B4%D0%B0\\_Machine\\_Translation\\_System\\_Comparison\\_](http://www.academia.edu/3439645/%D0%A1%D0%B8%D1%81%D1%82%D0%B5%D0%BC%D1%8B_%D0%BC%D0%B0%D1%88%D0%B8%D0%BD%D0%BD%D0%BE%D0%B3%D0%BE_%D0%BF%D0%B5%D1%80%D0%B5%D0%B2%D0%BE%D0%B4%D0%B0_Machine_Translation_System_Comparison_)
5. Nikitin I.K. Raspredelennoye programmno-informatsionnoye obespecheniye statisticheskoy modeli perevoda yestestvennykh yazykov. URL: <http://www.slideshare.net/w-495/dsmts-diplomatext>

*Scientific Adviser: N.V. Kourkan, Senior Language Instructor, TPU, Russia*