

*M. Pylypchuk, Lecturer  
(National Aviation University, Ukraine);  
A.M. Podstawska, Assistant  
(University of Silesia in Katowice, Republic of Poland)*

### **Machine Translation of Aviation Related Texts: Profundity or Nonsense?**

*The article deals with machine (automatic) translation of aviation related texts and highlights the level of equivalence and adequacy of such English-Ukrainian and English-Russian translations. The most common problems faced by translators have been analyzed.*

Machine translation systems (MTs) continue to be one of the most intensively developed branches of computer linguistics. Studies of the MT were made by such scholars and translators as E. Dubrovina, A. Horodysheva, N. Valieieva and others. L. Neliubov in his interpretive translation dictionary defines MT as an automatic translation of the text based on a given program implemented by the computer, however, in linguistic practice, this type of computer translation is interpreted as a type of software that processes and translates a text from one natural language to another one with a maximum rendering of the content and structure of the original [3, p. 120]. The algorithm of the translation system cannot be subjected to direct linguistic analysis, therefore, in the applied linguistics, the subject of analysis is the end result, namely machine translation of texts.

The adequacy of the translated text towards original text is the most important criterion for MT. Adequacy is the ratio of the source and the final texts, which consistently takes into account the purpose of the translation [2, p. 36].

The type of translation we examine has certain advantages and disadvantages. Benefits of MT include the ability to process large amounts of data and speed of translation, while reducing the cost of translation. But so far, there are no programs for machine translation that would understand language nuances, hints in the text, what is called a subtle word game [2, c. 181]. The shortcomings should, first of all, be attributed to the low quality of the translation compared to the professional (human) translation. However, when assessing MTs, it is impossible to set for it the same requirements as for professional ones, because its goal is more global and we are able to get acquainted with the information we need, which is accessible only to foreign language resources. That is, in essence the MT is nothing more than a “draft translation”, which conveys the main idea of the outgoing message.

The aviation industry, due to its diversity, importance and specific multiculturalism, constantly demands translation and interpretation, localization and terminologisation in various spheres. Translation projects in this area include the translation of national and international legislation, general aviation rules, maintenance instructions, manuals etc. Such translations have special requirements [1, p. 183]. The terminology used is closely linked to science and engineering, that is

why it requires a thorough knowledge of these spheres for effective technical translation as well as adaptation to modern conditions and continuous updating of knowledge in the relevant fields, along with a deep knowledge of the source and target language.

Obviously, in such a complex industrial sector, computer translation is not capable of replacing a translation performed by a human. The quality of translations is the most important criterion in the aviation texts rendering, driven by the need for effective inter-language communication.

Today, there are several approaches to the MT process, namely: translation based on rules; statistical translation; Translation Memory Approach [3, p. 118]. In the modern world, there are many online machine translators, but Google translator takes the leading position among them. We carry out our research on the material of aviation texts machine translation with the help of Google translator. The aim is to check the received MT's sentences for the adequacy of the original content and the presence of grammatical and lexical errors in the English-Ukrainian and English-Russian translations. The basis of the research was based on the main groups of typical MT's errors, namely: the problem of the lexical-grammatical homonymy rendering, morphological failure, word-for-word translation, improper translation of narrow-terms. We randomly selected several sentences within the aviation sub-theme "Human Factor", which potentially comprise a complex machine translation vocabulary, and checked whether there were errors in translation. For each example, an adequate translation is provided.

Let us consider the following sentence: *The term "human factors" has grown increasingly popular as the commercial aviation industry has realized that human error, rather than mechanical failure, is the basis of most aviation accidents and incidents* [4]. – Термін «людські фактори» став більш популярним, оскільки комерційна авіаційна промисловість зрозуміла, що людська помилка, а не механічний збій, лежить в основі більшості авіаційних аварій та інцидентів [5]. The translation is done with the help of Google translator. As we can see, the Ukrainian translation transmits the overall content of the sentence; however, on the grammatical and lexical level it is inadequate. Firstly, *aviation industry has realized* is translated as *авіаційна промисловість зрозуміла*, that is, the aviation industry has a certain ability to perform an action, that is generally not acceptable for technical translation, therefore, the grammar of the sentence is distorted. As for the lexical analysis of translated units, we can see that the phrase *aviation accidents* is rendered as an *авіаційні аварії*. *Aviation accident* means a severe emergency or crash in the aviation industry; however, *aviation incident* can be translated like *авіаційні події*. So, this translation may be considered as inadequate reproduction of narrow-term. Also, the order of the words is inverted in translation, which carries some semantic changes in the sentence, that is unacceptable for technical translation. Adequately, it should be translated as the following: *Термін «людський фактор» набув досить великої популярності, оскільки в галузі комерційної авіації було виявлено, що саме людські помилки, а не механічні несправності, є причиною більшості авіаційних пригод та інцидентів.*

Let us look at the Russian translation of the same sentence: *Термин «человеческие факторы» стал все более популярным, поскольку индустрия*

коммерческой авиации осознала, что человеческая ошибка, а не механическая неисправность, лежит в основе большинства авиационных происшествий и инцидентов. As it is seen, the same abovementioned mistakes are made here.

Here there is one more example: *Because of improving human performance, a lot of focus is on designing human-airplane interfaces and developing procedures for both flight crew and maintenance technicians* [4]. – Оскільки поліпшення продуктивності людини може допомогти промисловості зменшити аварійність комерційної авіації, основна увага приділяється проектуванню інтерфейсів людини-аероплана та розробці процедур як для льотних екіпажів, так і для техніки технічного обслуговування [5]. In the given sentence we can observe morphological, lexical and again, grammatical failure in translation. As for morphological analysis, the *human-airplane* phrase is translated not quite adequately as *людини-аероплана*. Obviously, this translation is literal and does not conform to the norms of the translation of technical texts, because such a lexical unit as *людини-аероплана* does not exist at all in aviation Ukrainian terminology. It is clear that the author of the text meant a man-made plane, but in this context, this lexical unit acts as an adjective to the word *interfaces*.

Lexical unit *procedures* is reproduced as *процедур*, that is, calque, which is incorrect and inadequate in this case. You need to use one of the values of this word, such as *заходи*. Again, we see a tautology (repetition) in the translation of *техніки технічного обслуговування*, which is inadequate and completely distorts the text of the translation. Regarding grammar, there is definitely an incorrect word order and incorrect punctuation here. An adequate translation would sound like this: *Оскільки поліпшення рівня продуктивності людини може допомогти зменшити кількість нещасних випадків в авіаційній галузі, основна увага приділяється проектуванню інтерфейсів літаків, які керуються людиною, та розробці заходів як для льотних екіпажів, так і для технічного обслуговування*.

Russian translation of the same fragment is: *Поскольку повышение производительности человека может помочь отрасли снизить уровень авиационной авиации, большая часть внимания сосредоточена на разработке интерфейсов самолетов человека и разработке процедур как для летных экипажей, так и для техников по техническому обслуживанию*. It shows the same level of inadequacy and types of mistakes.

### Conclusions

Having taken into account the abovementioned examples we can claim that MT has a lot of typical errors in translation of aviation texts, because the automated translator is not able to reproduce one or another term correctly, to take the corresponding morphological characteristics, as well as to follow the grammatical rules of the original language. Therefore, based on the research material, we came to the conclusion that the use of MT in the translation of aviation texts partially distorts the general content and in some cases is not appropriate and understandable for a non-professional person. However, there are much more aviation documents translated from English into Russian than from English into Ukrainian and, therefore the database for English-Russian MT translation should be large, it can hardly confirm better quality, as this research proves. Summing up the results, we tend to

believe that the translation provided to us by computer systems can be used only if you want to familiarize yourself with the information, it should not be used as a complete translation, which is even emphasized by the developers of such systems. In order to transform the MT translation into a qualitative and adequate, the human translator needs to perform post-editing, correct lexical and grammatical mistakes, and more often completely transform the form and content of the source text.

### References

1. Арзамасцева И.В. Подход к корректному машинному переводу на основе автономных адаптивных интеллектуальных систем / И.В. Арзамасцева, И.В. Подгорный // Современные технологии обучения иностранным языкам. Международная научно-практическая конференция (Ульяновск, 25 января 2012 года): сб. науч. тр. / отв. ред. Н. С. Шарафутдинова. – Ульяновск: УлГТУ, 2012. – С. 181–186.

2. Миньяр-Белоручев Р.К. Общая теория перевода и устный перевод / Р.К. Миньяр-Белоручев. – М.: Воениздат, 1980. – 237 с.

3. Карасев И.В. Системы машинного перевода / И.В. Карасев, Е.А. Артюшина // Успехи современного естествознания. – М., 2011. – № 7. – С. 117–118.

4. Human Factors [Электронный ресурс]. – Режим доступа: [http://www.boeing.com/commercial/aeromagazine/aero\\_08/human\\_textonly.html](http://www.boeing.com/commercial/aeromagazine/aero_08/human_textonly.html)

5. Google Translate [Электронный ресурс]. – Режим доступа: <https://translate.google.com>