



Assessing the Capacity of the Machine Interpreting Technologies: The Russian Experience

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Abstract

The role and efficacy of various machine interpreting technologies are widely discussed nowadays. These technologies are viewed from both theoretical and practical angles. Technical characteristics, the potential and prospects of their development are considered in research papers. As far as the practical application is concerned, the study of machine interpreting technologies and their use is integrated in the curriculum of higher education institutions. Interpreters-to-be are trained to use machine interpreting technologies in their professional activity. The output of machine interpreters is compared to the output of human interpreters. The specific features of machine interpreters; the ways of their use in practice are the subject of professional analysis of interpreters-to-be. The current paper provides the findings of the research held by the Department of Foreign Languages of Law Institute, RUDN University (Peoples' Friendship University of Russia). The research had the following purposes: first, to examine the fidelity of the samples interpreted from a foreign language into Russian made with the help of machine interpreting technologies and second, to present some aspects of training interpreters-to-be in legal setting. The paper shows the results of the practical experiment.

Keywords: machine interpreting, modern interpreting technologies, experiment findings.

1. Introduction

Translation and interpreting computer-aided technologies have become very popular nowadays. They are part of the curriculum at higher education institutions especially in the translators and interpreters' training courses. These technologies are studied both from a theoretical angle [1-10] and their practical application. The efficiency of the interpreting machine technologies in practice was the subject of the research hold by the Department of Foreign Languages, Law Institute, RUDN University.

2. The Course of Experiment

The application of machine interpreting tools was studied at the classes "ICT for language learning" where the students are trained to use various online dictionaries and resources both English-English and English-Russian, essential links for preparing research papers and bachelor and master thesis. The students were supposed to learn how to use machine interpreting tools in practice.

For this purpose, the circuit of two gadgets was used. One device imitated the speaker in a source language and another device was used as an on-line interpreter, that generated speech in the target language.

The following online machine interpreting tools were tested: Google Interpreter, API Microsoft Interpreter as the most well-known software and Yandex online interpreter the product of Russian developers. These applications should realize interpreting samples of the accented speech from English into Russian.

The materials of the experiment were the vides from the YouTube with the recordings of people from Africa, Latin America, Asia, East European countries who spoke with a strong local accent. Then, fragments of about 1-minute length were extracted for machine interpreting and further analysis. However, at this level of the experiment neither of the systems recognized the speech in the source language and consequently did not generate a speech sample and interpreted it into the target language.

At the second level of the experiment each speech sample was divided into separate semantic segments consisting of from 2 to 7 words. Afterwards, each segment was tested by the interpreting systems mentioned above. The examples of the results of interpreting are given in Table 1.



Original Segment N	Microsoft Translator Speech API	Google Translator	Yandex Speech Interpretation system
2. Thank you so much as you've said my name is Foni Joyce	Thank you. So much I'll have saved my name is 20 days Спасибо. Так много я спас мое имя 20 дней	Thank you so much I can take my name is funny J's Большое спасибо что я могу принять что меня зовут Веселье Джи	Thank you so much Огромное спасибо
3. I was born in Sudan but originally from South Sudan	I was born in Sudan but originally from South Sudan Я родилась в Судане, но родом из Южного Судана	I was born in Sudan but originally from South Sudan Я родилась в Судане родом из Южного Судана	I was born in Sudan Я родилась в Судане

Table 1. Examples of machine interpreting output

The results of the interpreting were generalized and then assessed from the point of view of lexical and grammar validity. If a lexical unit was recognized in a wrong way or was not recognized at all, it was considered as a lexical mistake. As far as the grammar structure of the languages is concerned, apparently, that the English and Russian languages have different morphology and syntax that are not identical. In some cases, the language transformations in the grammar structures are not justified. If such changes were reasonable, and the fidelity of the grammar of the interpreted sample was approved, it was assumed that there were zero grammar mistakes. If the changes were not reasonable, the fidelity of the interpreting from the grammar point of view had not been achieved, the level of grammar mistakes was assessed in two points.

Finally, all results were generalized and compared. The examples are given in Table 2.

Segment N	Microsoft Translator Speech API		Google Translator		Yandex Speech Interpretation system	
	Lexical	Grammar	Lexical	Grammar	Lexical	Grammar
2	4	2	3	1	5	1
3	1	1	1	1	4	1,5
7	4	2	6	1	7	2
Average	3,0	1,7	3,3	1,0	5,2	1,5

Table 2. Interpretation mistakes

3. Conclusion

The analysis of the experiment data showed that

- Yandex Speech Interpretation system makes grammar mistakes in almost all semantic segments. The number of lexical mistakes made by this Interpretation system also exceeds the results of other systems. The least number of mistakes was made by Microsoft Translator Speech API, namely 3, 3 lexical mistakes and 0, 7 grammar mistakes for 40 semantic segments;
- Microsoft Translator Speech API had the highest level of fidelity and less mistakes made in speech recognition and generation. Whereas the Yandex Speech Interpretation system has the worst results.

However, these data cannot be considered as final. The issue examined during the experiment should be studied further. First, as the Yandex Speech Interpretation system was developed by the Russian researchers, the experiment where the source language is Russian, and the target language is English should be held. Presumably, the results of the experiment will differ. Second, another pair of



languages e.g. English – German or German – Spanish etc. should be tested. The concentration on Chinese or Arabic languages might cause much interest.

Furthermore, these Interpretation systems should be tested not only on the samples of general language, but also on the texts of special domains i.e. interpreting of the language for specific purposes should be also studied.

Such experiments can be the center of the students' projects and increase their motivation in studying foreign languages at universities.

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