МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ
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КАФЕДРА ИНОСТРАННЫХ ЯЗЫКОВ

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«ЛИНГВИСТИКА И ПРОФЕССИОНАЛЬНАЯ КОММУНИКАЦИЯ»

Сборник научных трудов по материалам

I-й Всероссийской научно-практической студенческой конференции с международным участием

Ярославль,

12 мая 2021 года

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В настоящий сборник включены научные статьи, содержание которых было представлено авторами в докладах на I-й Всероссийской научно-практической студенческой конференции с международным участием 12 мая 2021 г. в ФГБОУ ВО Ярославский государственный технический университет. Рассматриваются такие актуальные проблемы, как использование возможностей цифровой среды при изучении иностранных языков, лингвистические исследования в сфере профессиональной коммуникации, передовые научно-технические знания и достижения в профессиональной деятельности.
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ADVANTAGES AND DISADVANTAGES OF USING NEURAL MACHINE TRANSLATION (NMT) (BASED ON POPULAR ONLINE TRANSLATORS)

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Abstract. *This article is devoted to neural machine translation. The part of the text analysis is carried out with the help of different machine translation programs. The main advantages and disadvantages of these online services are also identified that provide transfer services. Assumptions are made about the possible ways of their development.*

Keywords: *translation activity, neural machine translation, online service, machine translation systems, advantages and disadvantages of machine translation.*

The object of this research is neural machine translation in linguistics. The subject of the research is advantages and disadvantages of using Google Translate.

Translation activities carried out by translators take place under different conditions: the texts to be translated differ in subject matter, language and mode of translation. And that makes it possible to create different kinds of translation, each of which has its own peculiarities. Nowadays, the attention of scientists is attracted by machine translation [1, c. 23].

Machine-assisted translation is known to mean the process of translating both oral and written texts from one natural language into another through specific computer programs.

In today's world, new technologies are designed not only to make human life easier, but also to propel human beings to new stages of technological development. Moreover, «information technologies ... lead to new ways of using language forms». A significant leap in development can be seen in the field of machine translation, which improves day by day.

Machine translation has undergone a long and complex development and has become an indispensable assistant, which greatly reduces both time and cost of translation. A notable development in this area has been the introduction of neural connections into machine translation technology.

Over the last few years, large companies like Google, Microsoft, and then Yandex have started to apply neural network technology to machine translation.

Neuronetwork machine translation does not simply search for and compare words and expressions of bilingual corpora, it makes it possible to penetrate more deeply the connections between words, and by a complex analysis of each sample being translated to examine their relationships in order to understand the context. For example, sentence "Can I have some tea?" will be statistically translated as « Я могу пить чай? », and neural network - «Можно чаю? ».

In machine translation, the following forms of computer-human interaction are possible:

- with post-editing. The source text is translated by the machine and the person edits the result.
- with pre-editing. First, the person recycles the text for subsequent machine processing. In doing so, it simplifies the text as much as possible, replacing complex words with synonyms and eliminating possible ambiguities.

- with inter-editing. The source text is translated by the machine, but the person interferes in its work and resolves difficult cases.
- mixed systems [2, c. 125].

Common examples include translation of sentence "Мама мыла раму" in English, which sounds like “Mum washed the frame”. If the received sentence is then translated again into Russian, the different translators give their results: "мама вымыла структуру" (translation Translate.ru – company PROMT) or "мама помыла рамку" (version Babelfish.yahoo.com). Everybody also knows the example of translation of a sentence “My cat has given birth to four kittens, two yellow, one white and one black” by an online translator of the company PROMT, which, in Russian, sounds like «Моя кошка родила четырех котят, два желтых цвета, одно белое и одного афроамериканца». It should be noted that the developers have been working on improving their product, as previously this proposal started with the absurd «Мой кот родил…», however, it is gratifying that this translator is competent in the matter of political correctness.

So the advantages of machine translation include:

1. Quick access and high speed.

The translator program is always at hand, and contacting a translation agency is often associated with additional time and effort. Just a few seconds – and we get a ready translation of the whole text. This allows you to quickly understand the general meaning, and if the program is conFig.d to translate texts of this particular topic, only minimal editing is required.

2. Comparatively cheap

The next benefit of machine translation is that it is comparatively cheap. Initially, it might look like a unnecessary investment but in the long run it is a very small cost considering the return it provides. This is because if you use the expertise of a professional translator, he will charge you on a per page basis which is going to be extremely costly while this will be cheap.

3. Protection and security of information.

Confidentiality is another matter which makes machine translation favorable. Giving sensitive data to a translator might be risky while with machine translation your information is protected.

4. Flexibility and versatility.

The concept of flexibility implies the ability to adjust either to a specific subject area (specialized dictionaries), or to adjust to a specific book or text (dictionaries created by users). Any translator always specializes in any one subject area, i.e. if a translator of fiction takes on the translation of scientific or technical texts, mistakes cannot be avoided. In turn, the machine translation system is universal. The user only needs to correctly connect a dictionary specialized on the relevant topic [3, c. 261].

Disadvantages include the following:

1. The main disadvantage of machine translation is low quality. Accuracy is not offered by the machine translation on a consistent basis. You can get the gist of the draft or documents but machine translation only does word to word translation without comprehending the information which might have to be corrected manually later on.

2. Systematic and formal rules are followed by machine translation so it cannot concentrate on a context and solve ambiguity and neither makes use of experience or mental outlook like a human translator can.

These are the primary advantages and disadvantages of using machine translation for a document regardless of language. They can be weighed and the right decision can be made depending on the information and the quality that is required.

Let's check the quality of translation of different sources in practice. To do this, evaluate the quality and compare the results of the translation of the four most popular online translators: "Google translate", "Yandex translate", "PROMT", "Systran translate". We will use the above-mentioned services to translate sentences of varying complexity from English to Russian. The results are shown in the Table 1.

Table 1 - Comparison of translation options

The original version of the text	Обычно вращение рулевого колеса через вал рулевого управления передается на шестерню, которая находится в зацеплении с зубчатой рейкой.
Translation provided by «Google Translate»	Традиционно, вращение рулевого колеса через рулевой вал передается на шестерню, которая находится в зацеплении с зубчатой рейкой.
Translation provided by « Yandex Translate »	Как правило, вращение рулевого колеса передается через рулевой вал на Шестерне, которая находится с одной шестерни в зацепление.
Translation provided by « PROMT »	Как правило, перенесет вращение рулевого колеса о рулевой волне на шестерню, которая стоит с жердью зуба во вмешательстве.
Translation provided by « Systran Translate »	Как правило, вращение рулевого колеса передается через рулевой вал на шестерню, которая зацепляется с шестерней.

Note - Source: Own development

The «Google Translate» was the best at this offer. It did not distort the meaning of the sentence. It is only necessary to replace the word "традиционно" with "обычно" or "как правило", and the translation will be quite correct. "Yandex Translate" conveyed the meaning of the sentence, but made several mistakes. "PROMT Translator" and "Systran Translate" performed worse than others. They distorted the meaning of the sentence and mistranslated some words. This is due to the fact that the translation was carried out without taking into account the context. However, the service "PROMT" can specify the subject of the translation. By choosing the topic "Technology: Cars", the quality of the translation has improved slightly, but still leaves much to be desired: "As a rule, it will transfer the rotation of the steering wheel about the steering shaft to the gear wheel, which stands with the gear rack in the engagement". Thus, only one translator out of four coped well with a complex sentence.

These examples show that it is much more difficult to teach the most modern computer language logic than mathematical algorithms and the logic of statistical analysis. To create a more or less coherent machine text, a program can only use a limited set of certain linguistic algorithms embedded in its base. First, the system analyzes the structural elements of the original sentence, then changes it in accordance with the rules of the language and gives the final version.

However, no matter how hard the manufacturers of machine translation programs try to improve their developments, no technology has yet stood up to comparison with the translation algorithms and numerous transformations that are taught to live translators in schools and universities. Of course, to get a coherent text, the program can be equipped with a rich vocabulary base, including stable expressions, as well as connect specialized dictionaries so that the translator can translate thematic texts [4].

But, as the real experience of working with online translators shows, this is only a small part of what is necessary to ensure acceptable quality. The main problem of such translators, as well as other machine translation systems, is the lack of background knowledge. The computer knows only the language correspondences, but the translator often has to go beyond the formal text and turn not to language knowledge, but to extralinguistic factors, including knowledge about the real world, culture, history, and technology.

Professional translators, especially technical ones, are very educated people, and all their knowledge is directly involved in the translation process. Only in this case can a truly first-class translation quality be guaranteed. Therefore, if the developers of online translation services strive to provide adequate, high-quality translations, they should provide their machine translators with the same background knowledge and, most importantly, teach them how to properly handle the stored

knowledge. Simply put, the program must understand that there is a problem that requires additional knowledge to solve, and correctly formulate a request to the existing database.

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Содержание

ДОКЛАДЫ ПЛЕНАРНОГО ЗАСЕДАНИЯ 6

Prasolova O.D. CULTURE SPECIFIC COMPONENTS OF THE CINEMATIC TEXT IN THE CONTEXT OF AUDIOVISUAL TRANSLATION 6
Nagornova E.A., Volodarskaya E.B. AUTHENTIC SONGS AS A WAY OF DEVELOPING FOREING-LANUAGE COMMUNICATIVE COMPETENCE 10
Novikova P.E., Kirillova E.B. BRANDS RULE THE WORLD 14

Секция «ИСПОЛЬЗОВАНИЕ ВОЗМОЖНОСТЕЙ ЦИФРОВОЙ СРЕДЫ ПРИ ИЗУЧЕНИИ ИНОСТРАННЫХ ЯЗЫКОВ» 18

Alekperova A.R., **Kobiakova T.I.**, **Suntsova N.L.** FOREIGN LANGUAGE FORMATION FOR DISTANCE LEARNING 18
Bazhenova K.Y., **Tolstikova L.V.** APPLICATION OF DIGITAL ENVIRONMENT TECHNOLOGIES IN LEARNING ENGLISH LANGUAGE 21
Egorova D.E., **Zhuk M.V.**, **Jilevich O.F.** METHODS OF LEARNING ENGLISH IN MODERN RELIGIONS 24
Fedoreeva S. E., Fokina D. D., Grishina A.S. ANALYSIS OF STUDENT SATISFACTION WITH THE EDUCATIONAL PROCESS IN THE CONTEXT OF DISTANCE LEARNING (ON THE EXAMPLE OF THE DISCIPLINE “FOREIGN LANGUAGE”) 28
Gabrovskaya O.A., **Ostrovskaya M.Y.**, **Jilevich O.F.** ADVANTAGES AND DISADVANTAGES OF USING NEURAL MACHINE TRANSLATION (NMT) (BASED ON POPULAR ONLINE TRANSLATORS) 31
Giesbrecht J., **Dr. phil. Lazovic Milica** DIE FÖRDERUNG INTERAKTIONALER ASPEKTE IM DIGITALEN WAHRNEHMUNGSRAUM DURCH DEN EINSATZ HUMORVOLLER SPRECHHANDLUNGEN 35
Ilyin S. Iu., Goman Iu.V. WAYS OF SELF-STUDYING A FOREIGN LANGUAGE: EXPERIENCE OF MINING UNIVERSITY STUDENTS 42
Kilenkov R.S., **Jilevich O.F.** WAYS OF LEARNING ENGLISH THROUGH INFORMATION TECHNOLOGIES 46
Kochetkova A.M., Vorontsova E.V. TEACHING FOREIGN STUDENT TO UNDERSTAND AUTHENTIC MEDIA TEXTS USING A VIRTUAL LANGUAGE LEARNING ENVIRONMENT 48
Kopylov D. A., **Moreva N.A.** CONCEPTUAL APPLICATION OF MACHINE TRANSLATION APPROACHES TO ENHANCE UNDERSTANDING AND LEARNING OF FOREIGN LANGUAGES 52
Korotkina D.A., **Jilevich O.F.** THE USE OF DIGITAL RESOURCES IN TEACHING A FOREIGN LANGUAGE 57
Klimenko D.I., Krot D.P., **Jilevich O.F.** USING THE POSSIBILITIES OF THE DIGITAL ENVIRONMENT WHEN LEARNING FOREIGN LANGUAGES 60
Krasnobaev T.A., Afanasiev M.A., **Zhiltsov A.A.** USAGE OF MACHINE TRANSLATION TOOLS TO SIMPLIFY THE TRANSLATOR'S WORK 64
Krylov R.I., Streltsova I.A., Demidova I.V. THE BENEFITS OF VIDEO GAMES FOR LEARNING FOREIGN LANGUAGES 67
Lychkovskaya P.M., Grishina A.S. ORGANIZATION OF PROJECT ACTIVITIES IN FOREIGN LANGUAGE CLASSES IN THE CONTEXT OF DISTANCE LEARNING 71
Redko I.V., **Surovets A.A.**, **Demidova I.V.** USING ONLINE SERVICES TO LEARN ENGLISH 74

Revink T., Dr. phil. Milica Lazovic DIE FÖRDERUNG INTERAKTIONALER ASPEKTE IM DIGITALEN WAHRNEHMUNGSRAUM DURCH DEN EINSATZ LERNFÖRDERLICHEN FEEDBACKS 78
Sherstobitova A.A., Gurtova K.P., Sulitskaya H.E. PROS AND CONS OF DIGITAL ENVIRONMENT FOR LEARNING FOREIGN LANGUAGES 86
Sudnitsyna M.A., Rubba A.K., **Serikova P.A.**, **Besedina E.A.** FOREIGN LANGUAGE STUDY IN THE DIGITAL ENVIRONMENT 89
Veselova Ekaterina, Dr. phil. Lazovic Milica NONVERBALE KOMMUNIKATION IM DIGITALEN UNTERRICHTSRAUM: ANALYSE AM BEISPIEL EINER UNTERRICHTSSEQUENZ 92
Vishnevskaya M.V., **Rinkevich O.V.**, **Jilevich O.F.** MOBILE APPS FOR LEARNING A LANGUAGE 97
Zaitseva K.D., **Kornienko A.A.**, **Demidova I.V.** FOREIGN LANGUAGE EDUCATION IN THE DIGITAL AGE 102
Zakharova D.S., **Nazarenko A.L**. TELETANDEM AS A SPECIAL METHODOLIGAL PHENOMENON: ADVANTAGES AND PROSPECTS 106

Секция «ЛИНГВИСТИЧЕСКИЕ ИССЛЕДОВАНИЯ В ПРОФЕССИОНАЛЬНОЙ СФЕРЕ» 110

Anipchenko P.S., Starostina J.S. LINGUISTIC MEANS OF EXPRESSIVENESS IN ENGLISH WEBCOMICS 110
Istomina M.A., Dmitrijev A.V. FEMINITIVES IN MODERN RUSSIAN IN THE LIGHT OF GENDER LINGUISTICS 114
Ivanenkova K.V., Belyutina J.A. THE CONCEPT OF GOD AS A KEY ELEMENT IN THE INDIVIDUAL AUTHOR'S WORLDVIEW (based on the novel by Elizabeth Gilbert "Eat, pray, love") 118
Kambarova E.S., Bruffarts N.S. LES EMPRUNTS COMME SOURCE DE RECONSTITUTION DU FONDS LEXICAL DE LA LANGUE FRANÇAISE AU SÉNÉGAL 121
Kozlov A.I., Kozlova O.A. SUR LA FORMATION D'UNE COMPETENCE LANGAGIERE PROFESSIONNELLE PAR LE MOYEN DE LA LECTURE ET DE LA TRADUCTION DES TEXTES DE SPECIALITE 124
Kukrey A.A., Starostina J.S. PRAGMALINGUISTIC CHARACTERISTICS OF DIALOGUES IN QUENTIN TARANTINO'S ART CINEMA DISCOURSE 128
Kurenkova S.A., Starostina J.S. CONCEPTUAL SPHERE OF ENGLISH SONG DISCOURSE: STYLISTIC ACCENTS 132
Loginova A.A. NATIONAL-KULTURELLE KOMPONENTE IM ROMANDER LETZTE MEINER ART 135
Lokatenko J.V., Starostina J.S. LINGUISTIC MEANS OF MOTIVATION IN ENGLISH PUBLIC SPEECHES 140
Mesherskaya A.D., **Aleshina L.N.** NEW VOCABULARY IN TOURISM 144
Platonova A.V., Zolotova S.V. ANALYSIS OF LINGUISTIC SPECIFICS IN DIAMOND IDENTIFICATION IN RUSSIAN LAW 148
Pshyhodski V.A., Zheleznyakova O.V. THE PECULIARITIES OF POETIC TRANSLATION ON THE EXAMPLE OF THE BALLAD "HEATHER ALE" BY R.L. STEVENSON 152
Selezneva Yu.S., Krivchenko I.B. MODERN TRENDS IN TRANSLATING ENGLISH FILM TITLES INTO RUSSIAN 156
Skripka K.A., **Gorokhova A.V.** FEATURES OF THE TRANSLATION OF IDIOMS IN THE NOVEL «HARRY POTTER AND THE CHAMBER OF SECRETS» BY J.K. ROWLING 161

Soltanova A.I., Kirillova E.B. EXHIBITION EVENTS AS A TOOL OF MARKETING COMMUNICATION 165
Starkova A.R., **Melnikova K.A.** IMPORTANCE OF THE RIGHT PRONUNCIATION IN FUTURE CAREER OF THE SPECIALIST 168
Tolokonina D.T., Lutskevich A.V., Shatrov I.N. LEXICAL TRANSFORMATIONS IN THE TRANSLATION OF R. RIORDAN'S NOVEL «THE LIGHTNING THIEF» 170
Zaychenko J.P., Semenova S.N., Babak O.V. CLASSIFICATION OF GEOGRAPHICAL TERMS (BASED ON THE MATERIAL OF R. KIPLING'S FAIRY TALE "THE CAT THAT WALKED BY HIMSELF" IN RUSSIAN AND ENGLISH) 174

Секция «ПЕРЕДОВЫЕ НАУЧНО-ТЕХНИЧЕСКИЕ ЗНАНИЯ И ДОСТИЖЕНИЯ В ПРОФЕССИОНАЛЬНОЙ СФЕРЕ» 178

Barannikova S.I., Vershinina D.E., Fedosova E.S., Basamykina A.N. THE RELATION OF THE ENVIRONMENTAL VOLUNTEERING AND THE ENVIRONMENTAL EDUCATION 178
Barteneva A.M., **Kirillova E.B.** MEDICAL APPLICATION OF COUMARIN DERIVATIVES 182
Belyankina E.R., **Moreva N.A.** UNMANNED CARS 185
Blagova V.A., Kirillova E.B. FROM TRADITION TO ECOLOGY 188
Bushnev A.E., **Zubkov A.D.** TECHNOLOGIES FOR TERTIARY FOREIGN LANGUAGE TEACHING AND LEARNING 191
Kartvelishvili I. R., Rudneva M.A. INDIGENOUS KNOWLEDGE: RANT OR MUST 194
Krivosheeva E.A., **Rudneva M.A.** FEEDING WINTERING BIRDS AS AN ENVIRONMENTAL PROBLEM 197
Kuznetsova E.D., **Belinov M.S.**, **Vakhromeeva O.V., Kirillova E.B.**, **Solovyov V.V.** DIFFERENT METHODS OF DISPOSAL OF SOSNOVSKY'S BORSCHEVIK 199
Primachev I.E., **Aleshina L.N.** DIFFERENT ASPECTS OF INTERCULTURAL NONVERBAL COMMUNICATION IN BUSINESS 203
Rabotnov L.A., Melnikova K.A. DENTAL IMPLANTATION IN MODERN MEDICINE 207
Sadeeva E.N., D.Yu. Chudinova CONCEPT OF SCIENTIFIC MODELING AND ITS DIFFERENT MODELS 210
Shanina A.N., Basamykina A.N. FRAGILE PLANT LIFE 213
Shinakova S.V., Kramnaya E.S. EXPERIENCE OF GREAT BRITAIN IN SUSTAINABLE DEVELOPMENT 217