

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
KYIV NATIONAL LINGUISTIC UNIVERSITY
FACULTY OF GERMANIC PHILOLOGY AND TRANSLATION
Department of Theory and Practice of Translation from the English Language

TERM PAPER

IN TRANSLATION STUDIES

**under the title: Translation Peculiarities of Scientific and Technical
Terminology in the Computer Industry**

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Pa 08-19

Educational Programme:
**English and a Second
Foreign Language:
Oral and Written
Translation**
Majoring 035 Philology
Research supervisor:
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Kyiv – 2023

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
Київський національний лінгвістичний університет
Факультет германської філології і перекладу
Кафедра теорії і практики перекладу з
англійської мови

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КУРСОВА РОБОТА

З ПЕРЕКЛАДУ

ОСОБЛИВОСТІ ПЕРЕКЛАДУ НАУКОВО-ТЕХНІЧНОЇ ТЕРМІНОЛОГІЇ В КОМП'ЮТЕРНІЙ ГАЛУЗІ

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Керівник курсової роботи _____
(підпис)

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Київ – 2023

КИЇВСЬКИЙ НАЦІОНАЛЬНИЙ ЛІНГВІСТИЧНИЙ УНІВЕРСИТЕТ

Кафедра Теорії і Практики Перекладу
з Англійської Мови

Завідувач кафедри теорії і практики

Перекладу з англійської мови

к.ф.н., Мелько Х.Б.

«_____» вересня 2022р.

ЗАВДАННЯ

На курсову роботу з перекладу з англійської мови
для студентів IV курсу

студент IV курсу, групи ПА 08-19 факультету германської філології і перекладу КНЛУ, спеціальності **035 філологія**, спеціалізації **035.041 Германські мови та літератури (переклад включно)**, перша – англійська, освітньо-професійної програми **Англійська мова та друга іноземна мова: усний і письмовий переклад**.

Тема роботи: Особливості перекладу науково-технічної термінології в комп'ютерній галузі.

Науковий керівник: Іваненко К. В.

Дата видачі завдання _____ вересня 2022 року

№ п/п	Найменування частин та план курсової роботи	Термін звіту про виконання	Відмітка про виконання
1.	Аналіз наукових першоджерел і написання теоретичної частини курсової роботи (розділ 1)	1-5 листопада 2022р.	
2.	Аналіз дискурсу, який досліджується, на матеріалі фрагмента тексту; проведення перекладацького аналізу матеріалу, матеріалу дослідження і написання практичної частини курсової роботи (розділ 2)	7-11 лютого 2023р.	
3.	Написання вступу і висновків дослідження оформлення курсової роботи і подача завершеної курсової роботи науковому керівнику для попереднього перегляду	28-31 березня 2023р.	
4.	Оцінювання курсових робіт науковими керівниками , підготовка студентами презентацій до захисту курсової роботи	25-30 квітня 2023р.	
5.	Захист курсової роботи (за розкладом деканату)	2-13 травня 2023р.	

Науковий керівник _____ (підпис) Студент  (підпис)

РЕЦЕНЗІЯ НА КУРСОВУ РОБОТУ
З ПЕРЕКЛАДУ З АНГЛІЙСЬКОЇ МОВИ

Студент IV курсу, групи ПА 08-19, факультету германської філології і перекладу КНЛУ, спеціальності 035 філологія, спеціалізації 035.041 Германські мови та літератури (переклад включно), перша – англійська, освітньо-професійної програми Англійська мова та друга іноземна мова: усний і письмовий переклад.

Мізецький Стас Олександрович

За темою: Особливості перекладу науково-технічної термінології в комп'ютерній галузі

	Критерії	Оцінка в балах
1.	Наявність основних компонентів структури роботи – загалом 5 балів (усі компоненти присутні – 5 , один або декілька компонентів відсутні – 0)	
2.	Відповідність оформлення роботи, посилань і списку використаних джерел нормативним вимогам до курсової роботи – загалом 10 балів (повна відповідність – 10 , незначні помилки в оформленні – 8 , значні помилки в оформленні – 4 , оформлення переважно невірне – 0)	
3.	Відповідність побудови вступу нормативним вимогам — загалом 10 балів (повна відповідність – 10 , відповідність неповна – 8 , відповідність часткова – 4 , не відповідає вимогам – 0)	
4.	Відповідність огляду наукової літератури нормативним вимогам — загалом 15 балів (повна відповідність – 15 , відповідність неповна – 10 , відповідність часткова – 5 , не відповідає вимогам – 0)	
5.	Відповідність практичної частини дослідження нормативним вимогам — загалом 20 балів (повна відповідність – 20 , відповідність неповна – 15 , відповідність часткова – 10 , не відповідає вимогам – 0)	
6.	Відповідність висновків результатам теоретичної та практичної складових дослідження — загалом 10 балів (повна відповідність – 10 , відповідність неповна – 8 , відповідність часткова – 4 , не відповідає вимогам – 0)	

Усього набрано балів: _____

Оцінка: «До захисту» _____
(42-70 балів) (підпис керівника)

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INTRODUCTION

Computer terminology are pretty sophisticated component of computer discourse which characterized its unique pattern of vocabulary, syntax and semantics base. Computer terms are the most important elements of computing habitat. They are used by engineers, IT-specialists, journalists, web-workers and other jobs related to scientific and technical field and not only. To execute an adequate translation of texts of computer discourse a translator must be aware of main peculiarities of computer terms and their options of translations into the Ukrainian language.

The aim of the research is to define and analyze the main translation peculiarities of English computer terminology in scientific and technical texts into Ukrainian on the basis of English internet articles.

The main objectives of the research are:

- To study the notion of computer terminology;
- To study the notion of computer discourse;
- To analyze a test of computer discourse;
- To figure out the techniques of translation of English computer terms into Ukrainian;
- To analyze lexical and grammatical transformations in the translation of computer terms.

The investigation subject is ways of translation of English computer terms into Ukrainian.

The object of the research is English computer terms and their translation into Ukrainian.

Data sources are dictionaries, scientific and technical articles, internet publications, instructions.

The methods which were used in the research are following:

- The method of translation analysis in order to figure out the main translation transformations that are used in the process of translation of computer terms;
- The method of quantitative analysis in order to determine the main options of translation of computer terms.

The theoretical value of the research is that the theoretical part can be useful during the study of translation techniques of computer translation.

The practical value of the research is based on creating entire new definitions and dictionaries of computer terms, which would contain options for translation and, of course, examples of the use of these terms.

The structure of the research paper includes Introduction, two Chapters, Conclusions, Bibliography, List of Reference Sources, List of Data Sources, Annex and a Summary in Ukrainian.

CHAPTER 1

SCIENTIFIC AND TECHNICAL TERMINOLOGY AS A LANGUAGE PHENOMENON AND TRANSLATION CHALLENGE

1.1 Linguistic peculiarities of computer industry terminology

First things first, we must observe that modern languages have quite specific peculiarities in computer terminology. One of them is to give "*figurativeness*" to its terms, for example, the term "*mouse*," which from the point of view of a regular person can be interpreted as an animal, but in the computer industry is a device with the help of which we manage cursor on a computer or laptop. As a matter of fact, in the computer industry, scientific and technological texts are characterized by the absence of any emotional or figurative ways of transferring the meaning. Also, we cannot avoid the origin of why computer terminology is developing so quickly, its intensity of growth, and the benefit of the mother tongue in general. Returning to the statement of what terminology is, the linguist Sager proposed the following classification based on their definition, namely [23: 347]:

1. the set of practices and methods used for the collection, description and presentation of terms;
2. a theory, i.e. the set of premises, arguments and conclusions required for explaining the relationships between concepts and terms which are fundamental for a coherent activity under;
3. a vocabulary of a special subject field;

Given that, the digital era began in 1946 and is still evolving today, it took less than a century to change the entire world in its own unique way and connect everyone to the global web. The advancement of the information technology industry reactivates nominative processes, resulting in the creation of a large profusion of terminological lexical units. And putting forward the peculiarities of

such a sphere of terminology, notwithstanding the other technical terms, as a consequence of the deep penetration of computer technology into all spheres of social life, they gradually lose their highly specialized nature of functioning and become commonly used vocabulary.

Thus, computer jargon quickly became one of the most progressive parts of the linguistic sphere, accounting for more than 10% of total innovations, according to linguists. The main requirement for the translation of terms is the complete preservation of the semantic content of the translation unit. Translation is characterized as a process of secondary nomination, and the parlances that are translated occupy a justifiable place in the terminological structure of any language and even receive the status of *lingua franca*.

The evolution of terminology's growth depends on the intensiveness of scientific field development, the wider range of fields, and the greater variety and polysemy of terms. According to Kocherhan, who stated that changes in the terminological system reveal themselves under the influence of linguistic and extralinguistic factors [9: 2]. The linguistic factors related to the unification of language, which changes its vocabulary, include the enlargement of dialect, the systematicity of linguistic means, as well as variability and emotional and stylistic expressiveness. Extralinguistic contributors are affected by changes in the environment, connected with more mundane factors, namely the rapid pace of perfection in various fields of science and technology and innovation in cultural and social domains of life. Therefore, we can draw a parallel with the problems of terminology in scientific and technical fields, where the internal and external challenges of translators are clearly defined. In this direction, the perfection of the computer industry is predominantly related to terminology.

One of the peculiarities of terminology is that it belongs to the system of terms, which means it can exist only in a specific fiefdom of science or discipline. A system

of terms is a condensed collection of terms linked together by bonds and their meanings. Other linguists and translators have their own definitions of this term, but Vasenko stated it is a set of terms used to support a scientific theory or scientific fundamental principle in a specific region of technical or scientific knowledge. [9: 2]. Consequently, computer terminology is a system of terms in the information sphere that is inherent only to it, and the variety of which can be multi-valued. This is explained by the fact that this industry is relatively new in a person's life, because it started at the end of the 20th century in the timeframe of great innovations in the informational industry. The majority of linguists believe that terminology or a system of terms is a combination of meanings and definitions inherent to a specific field of work that has a high level of informativeness and exactness. Kocherhan stated the most concise and, synchronically, most fidelity characteristic of what is terminology in such manner [9: 3]:

1. A systematic character (each term belongs to some term system and gets its meaning in this system);
2. The existence of a definition (the term is defined rather than interpreted);
3. A tendency towards monosemanticity (within its terminological field, that is, within the limits of a certain science, the term should have only one meaning);
4. An absence of expression;
5. Stylistic neutrality.

Computer terms are at close quarters dependent on an acknowledged language, and as a result, they acquire innominate unequivocal features, such as imagery, expressiveness, and stylistic shades. In such a sense, computer terms are words or phrases that have a specific, well-defined meaning in the field of industrial science. The indispensable feature of computerese is that it accurately expresses the concepts, processes, or names of things that are specific to information technology

[9: 3]. As noted by another linguist, IEnikieieva, an attribution of computer terms is that, with the assistance of the deep insinuation of computer jargon in all spheres of society, they gradually lose their highly technical pattern and become part of ordinary language. The computer's system of terms is made up of [9: 4]:

1. Terms that are associated with common words; in plain English, a word gains new meaning as a result of its omnipresent use, such as “*a button*”, “*to edit*”, “*to clear*”, “*a web*”, and so forth.

2. The general terms are used not purely in the computer field, but also in other scientific systems. For example, the term “*driver*” in the computer field refers to a computer program, but it can imply something antithetical in the scientific or technical fields.

3. Special computer terms, such as “cyber security,” “cybernetics,” “web program,” “software,” and so on, have consistent meanings and semantics.

4. Terms have two or more meanings in the computer industry. To illustrate, “*record*” can refer to both a process during voice recording and the structure of a computer's software.

According to Baliuta and IEnikieieva, all terms are decomposed by their morphological structure into [9: 4]:

a) Simple (button – a button on a system block, cable – a connecting cable, program – a computer program, etc.)

b) Complex (hotlist – a list of addresses, keyword – a main word, chipset, database, bookmark, etc.)

c) Combinations of words (burst speed – the highest speed at which a device can operate, fire button – the button to start a program, data type – data type in programming, etc.)

There is contemporarily no agreement on which part of the language terms refer to; a number of linguists accredit that only nouns can be terms, while others

affirm that almost any part can be terms if they express a specific concept, a precise definition, or brevity. So there are four generally accepted categories of terms [9: 5]:

1. Terms denoting objects – nouns.
2. Terms denoting processes and phenomena – verbs.
3. Terms denoting qualities – adjectives.
4. Terms denoting magnitudes – adverbs.

Linguists use nominative criteria to investigate the semantic peculiarities of computer terminology, which include the separation of semantic groups of lexic units, integration by context, demonstration of conceptual, subjective and functional resemblance of phenomena. As in the case of scientific and technical texts, computerese cries out for detailed study and analysis of linguistic methods. The theoretical foundations of the study of these compilations are formulated on several methods, videlicet: the descriptive method, the observation method, deduction, and induction [3: 2]. The next stage of study is connected with structural characteristics; here we used such methods as the comparative method, the method of classification, the descriptive method, quantitative analysis, and systematic and statistical methods [21: 137]. And the last one, the final phase, is a fusion of the previous two, seeing as the structural analysis of terms is impossible without making allowance for their semantic features. In that case, these two stages of terminological units are incorporated. In spite of the fact that there is no concordant solution for terminology word-formation, linguists come up with four types of analysis: structural, word-forming, classification, and comparative analyses of the definition of terminological units of the computer system of terms [8: 36]. Word-formation is a way of replenishing the vocabulary of the language to declare the phenomena and concepts of human culture and civilization, which dictate the development of the language and its renewal. The strain of words building in computer terminology are as follows [9: 6]:

- Morphologic: affixation, abbreviation, acronyms.
- Syntactic – the creation of terminological compounds.
- Morphologic-syntactic

Affixation is the formation of a new lexical unit by adding an affix (suffix, prefix, interfix, infix, etc.) to the stem. The most persuasive types of such derivations are [9: 7]:

- Prefixation, formation of a lexical unit by adding a prefix or affix before its beginning, for example mini-, cyber-, techno- etc.
- Suffixation, formation of a lexical unit by adding a suffix, which is placed between the stem and the ending, for example –er, -ise, -ing, -ish etc.
- Prefixal-suffixal, formation of a lexical unit with a prefix and suffix, for example reassignment, disintermediation, co-registration, outliner etc.

There is also another type of alignment, compounding, which is, the combination of two or more bases into one word, for example, *laptop*, *keyboard*, *background*, etc. Some linguists recommend separating complicated words and sentence patterns assumed from semantic, morphological, orthographic, phonetic, and other characteristics [9: 7]. They all have the same meaning and make up one lexical unit, regardless of how many word compounds they are made up of. Conversion is the formation of a new stem from an already existing one on the strength of a simple reinterpretation of the latter without any transfiguration in its form; it is not an affixal type of transition to another enclosure of language, such as *to enter*, *to download*, *to freeze*, etc. An alternative, furthermore important, is reverse word formation or reversion, the clipping of affixes in the creation of new words, such as *double-click*, *loading*, *filling*, etc. [9: 8].

Blending as well engrosses a special position because the ambiguity of words is the main problem of terminology in general [9: 8]. This method of creation forms a new word by influencing it and embodies features of both words, respectively, for

example, *hacktivist*, *netiquette*, *screenager*, *twiddle*, *webisode*, etc. Abbreviation is the shortening of words using apocope, apheresis, and syncope, which are divorced into graphic and lexical categories [9: 8]. Graphical abbreviations are used only in writing; in speech they are fully reproduced, for example, *etc.*, *etcetera*. Lexical contractions are truncations of words that are divided into truncations by the initial part, at both ends (apocopes) and in the middle of the word (syncope). Abbreviation is the formation of words from their first letters or parts of these words; they are used both in writing and in speech, for example, "PC" for *personal computer*. They are split up into acronyms and acoustic acronyms. The classification of abbreviations is divided into three categories: partial, initial, and combined [9: 9].

Computer terminology is characterized by the fact that it has a high affinity with other areas of use and can go from narrow to generally accepted implementation; moreover, it is characterized by such particularities as expressiveness, imagery, and stylistic shades [9: 10]. The analysis unfolded that structural analysis and semantic features, which is, lexical units, are integral parts of the computer system of terms; its word-formation, which has a wide variety of ways of updating and creating new terms, is this analysis that dispenses the greatest chance of transmitting an adequate translation.

1.2 Theoretical background of translating scientific and technical terminology

The time being, scientific terminology is one of the highest results of human brainwork, namely the reflection of what has been achieved in the field of science and technology. Since the basis of each terminology is the words that came from the nationality, it is not surprising that scientific and technical texts are one of the dominant language spheres for terminology [15: 1]. The defining attributes of a technical or scientific style are objectivity, correctness, and rationality (the connection seen between the basic theme and the details). When it comes to the

grammar portion of the subject, participial, infinitive, and gerundive constructions in technical or scientific texts are exceptional. These constructions make it challenging for the reader to fully comprehend the text's meaning or its key point.

It is ubiquitous for practitioners of various nationalities to use various methods and theories in the domain of terminology (also known as terminology science). Terminology is domain-specific, accordingly A mouse, for example, can have several different concepts in different areas. A terminology can only involve definitions and terminologies that are essential to a number of fields. An idiom shouldn't be used to correspond to more than one concept in a particular domain [13: 5].

In the list of the main characteristics of scientific and technical texts is the abundance of terms, which says that approximately 25% of such texts are terminological or such like are general scientific, general technical and colloquial vocabulary [22: 185]. As a result, the vocabulary of scientific and technical texts is broken down into terminological and non-terminological categories, but such classifications can be considered conditional due to the enrichment process of new terms and word polysemy, which permits them to work in multifarious spheres of lexical replenishment of the language.

To illustrate, as is the case, every language has a dissonant meaning for the same word, its own cogitation. The term "*valve*" refers to a lamp, a crane, a valve in the engine industry, instrumentation; in other areas, it serves as a warehouse, storage, and accumulation. The term "*frame*" can refer to a frame in any device, a frame in machine tools, or a frame in construction [6: 1]. Based on these examples, we can say that this particular area of terminology may be used in various spheres and can turn out to be polysemic [22: 185].

As a result, we moved on to the translation of these sciences, because scientific and technical translations are interpreted with different meanings. The very

definition of scientific and technical translation is a certain practical activity, which includes comprehensive and systematic evaluation of the physical and natural world's structure and function via experimentation and observation. Byrne provides a very detailed description of the difference between science and technology with regard to translation, stating that "technical translation refers to how scientific knowledge is actually put to practical usage while scientific translation relates to pure science in all of its theoretical, arcane and introspective glory" [11: 7]. Relying on this statement, with the help of Pinchuk's classification, he defined three basic categories of its definition, namely: the results of basic or pure science; the results of applied scientific research geared towards solving particular problems; the work of technologists, which is intended to create marketable industrial products or processes. [10: 2]

With these means, it is all-important to understand and, more monumentally, translate such types of texts, because translating scientific and technical texts requires immense accuracy from the translator. That is why the main direction of the project is to guarantee a fast turnaround of both translations with the best quality. And here we can provide one of the main challenges and problems in such an area of translation, owing to the fact that technical and scientific translations are pretty demanding on the knowledge of numerous ground of study or themes [20: 36]. As we already know, technical translation is a type of specialized translation involving the translation of documents produced by technical writers (owner's manuals, user guides, etc.) or, more specifically, texts that relate to technological subject areas or texts that have dealings with the practical application of scientific and technological information [18: 1]. But the terminology itself is inoperative to classify such texts as technical; you also need to consider the technique of translation and the intelligence of this field individually, not just the terminological part of it.

Persisting with technical translation parsing, the technical translation itself is more problematic because the rate of enhancement of translation is fast-paced and therefore demands new definitions over existing terms, which for translators is nothing but a challenge. In this case, the researchers and translators provide a documentary process of some features in this field that, in turn, guarantees the definition of appropriate terms for the target culture. The cooperation between fields of translation in progressive discourse plays a meaningful role; they feed all and sundry with the new terms and designations that help to build up both vocabulary and polysemy of the words. For example, in communications, translators need to use branch-wise dictionaries and glossaries in telecommunications, radio electronics, microelectronics, computer science, economics and finances, advertising and marketing, and often in mass media, which narrows the zone of using such terms. After all, you need almost the same information sources to translate a guide for car owners [11: 8].

In actual fact, technical translation became on its path of development for superior use, and with the start of a new decennary it entered its "prime phase," or, in other words, revived its importance, not only from a theoretical way of thinking, but also in the case of actuality for translators, which nowadays is quite relevant, as far as technical translation is used for 25% of the translation of general scientific, technical, and commonly used words, becoming more recognized and in turn expanding branches of research in this field. Despite this, technical translation still has flaws, and the majority of these flaws are not visible to the untrained eye because they materialize all through the translation itself, in a circle of translators, and are caused by disagreements about context, meaning, and definition; such issues are referred to as "*internal*." The main idea behind such issues relates to the development of language and its evolution in the translation process. Such challenges are

generated by translators, who create for themselves models and definitions for translation in their work.

The translation's problematic is more sizable at this level, and the thing is that the translation itself is connected with each stage of its expansion, so the issues, whatever their internal problems, are allied to factors, circumstances, and restrictions that come into view in our world and that the translation does not concern. The complexity of technical translation, which in most cases is associated with a change of work, can be made up of various professional and technical challenges, one of which is that they may require givens that can be used from other disciplines, such as technical communication and psychology, which help to understand the meaning of the translation. We can now take the next step to the culmination part of understanding and technical translation complexity perception, which is divided into internal and external, where we can draw an impact from every aspect on translators' final product.

Internal Challenges, at the outset, the peculiarities of why technical translation controversial are that there are inconsistent interpretations of the translation itself, especially the definition of "theory of translation," which has innumerable explanations and can be treated as a sphere of work or in terms of operations in other disciplines [18: 4]. These issues arose partly as a result of their associations with language for specific purpose (LSP) [5: 192]. The idea of this discipline is that it implies the translation of customized texts, which are written in a special language for apposite knowledge [18: 4]. It could be scientific texts, business texts, political texts, legal texts, or derivatives. The subject here is that technical translation is frequently confused with special translation, so technical translation becomes more interchangeable with special translation. Although, on the other side of the coin, such collaboration is good enough because it includes the translation in copious fields of study but also brings new problems, the reason why the technical translation is one

of the types of special and/or LSP and not the prevailing term of the translation is speculative. So the main problem was the discovery of technical translation texts, that simply do not belong to them [5: 192]. Before you start working on your translation, the first thing you need to do is determine whether this text is technical.

This field of investigation is more complicated because the external challenges are greater than the internal ones, which are more important in the field of translation theory [18: 5]. The demonstration here is the Internet, which is an absolutely formidable technological tool and the reason why the nature of such texts changes. All this is due to the fact that in our millennium, all texts will be evaluated in the original language, not a translation, which means the translators must be more extravagant and cognizant, which puts them in a difficult position. There is, therefore, a pronounced convergence between technical translation and technical writing, and this can be quite problematic for traditional translation studies. I've come to the conclusion that the majority of problems stem from a deficiency of clear definitions and the theory's inability to determine them. The external constraints given by numerous technological, legal, and professional issues require a rethinking of the technical translator's position and what it is fair to expect such a translator to do [7: 5]. Then, as such problems grow in scale, they affect educators and researchers, for both technical translation and others.

Scientific translation is the translation of terms in any field of science, like medicine, physics, chemistry, computer science, etc. Despite the technical translation, which has a larger scope of coverage, scientific translation is concentrated on specific fields, such as law, medicine, chemistry, and so on. It shall be deemed particularly crucial as the world develops and increasingly new terms appear, which in turn produce new problems. Inherently, these two types of translation are differing, but the scientists are more vulnerable to the fact that, in attitudes towards the translation of terms, they have common techniques of

translation. The most typical lexical features of scientific and technical fields are the saturation of text with special terminology and terminological collocations. The terms express concepts that have been scientifically processed and are specific only to a specific field of science and technology.

Scientific and technical terms as language signs representing the concept of a special, professional field of science or technology are one of the difficulties of translation, the aspects of which may be the lack of an equivalent, ambiguity, or nationality. One of the special factors is polysemy, and the thing here is that in scientific and technical terms, it is spreading and being denominated as semantic word formation, that is, one word may have several meanings. An example of it can be the meaning of a term that belongs to several fields of establishment, and the only solution for perfect translation here is the context. In a special context, such occasions look to be remarkable difficulties for translators; after all, for full understanding of new terms, also known as terms-neologisms, a translator needs to analyze the project and convey its terminology and transfer of its terms established in science. Among the lexical difficulties, one can single out such a type as "false friends of a translator," namely groups of international words that, despite their similarity in sound, differ from each other in terms of semantics and stylistic coloring, which, of course, is individually inherent to each language [17: 39]. Such errors in translation can result in an incorrect perception of information in a foreign language, which eventually leads you away from the text's theme [22: 185]. It is the neglect of the context that leads to challenges in translation; it is the context that eliminates the ambiguity of the term and ensures the specification of the meaning. If in the text, lexical differences are more visible, like terms or special vocabulary, then the grammar is built slightly differently, namely the availability of complex and compound sentences, since the differences in sentence formation cause crucial

problems from the grammar point of view, for example, variations in the syntactic system of languages.

The problematic nature of scientific texts lies in the stylistic sphere; the problems of genre and style are also germs of such issues during the translation, namely the use of words, constant expressions, clichés and phraseology. To overcome them, translators need to know how to deal with such difficulties, taking into account principles of ST, TT, and adaptation of the original text at the time of translation. The difficulties and challenges that translators face when translating scientific and technical texts, as well as semantic relations and sentence structure, have the greatest impact on their work.

1.3 Specifics of contemporary computer discourse text analysis.

Discourse is one of the most important and principal categories of linguistics; its importance lies in the fact that here the specifics are studied and the all-around theory of communication is authorized, which is one of the main ones in the linguistic field and other advanced domains of research, containing the computer industry. This instant, computer technologies are implemented in almost all spheres of social life [7: 1]. The term "*discourse*" has been studied for a long time, but until now scientists have not given a clear interpretation [7: 5]. Computer discourse can be classified according to the following criteria: sphere of communication, social context, the addressee as a producer of information, the user (addressee), a generator of ideas and a collection of linguistic means [4: 51].

The controversial nature of the term is due to its history of formation. When the semantic "*memory*" of the lexeme preserves signs of its previous uses and the very concept of discourse is interpreted in different ways, it can be used as a means of thinking and conversation, which, like genres, can become ritualized; as a sequence of certain testimonies that are related to each other; it can be defined

through the text, and the text itself can be designated through it. In particular, the concept of discourse is associated with all manifestations of communication in society, the manifestation of communication rules, methods of presentation and implementation of the pragmatic goal of speakers. The term "*discourse*" as a concept of a linguistic nature was proposed by the German philosopher Jürgen Habermas who in his publication interprets discourse as a form of communication determined by argumentation [14: 235].

In the case of linguistic studies, the term discourse as a linguistic unit first came into general use following the publication of a series of papers by Zellig Harris from 1952, reporting on the work from which he developed transformational grammar in the late 1930s. Words and phrases with equivalent information occur within the same column of an array [16: 3].

This interpretation was spread and supplemented in other fields, such as semiotics, logic, philosophy, and others [21: 137]. Discourse is a communicative type of activity that has different forms of expression, i.e., oral, written, and paralingual, and takes place within a specific communication zone [7: 6]. If we examine the discourse analysis itself, it is divided into communicative, speech, and conversation. Communicative is the work of several subjects in the research text, and speech is regulated by the rules of interphase discourse, which include phoric connections, sequences of tenses, functional perspective, and canons of text construction [7: 6]. Matter of fact, what is important in this definition for translators – that is discourse used to be materialized in speech on the basis of the relevant tests, so to say, is embedded into interaction on a different levels of perception, like political, economic, cultural and many more [3: 11].

The discursive space of computer discourse is communication in actual and virtual environments, which is a set of communicative units, written and spoken, completed and uncompleted statements [7: 7]. Despite the fact that computer

discourse entered our lives not that long ago, some linguists define it as a corpus of texts united by a common theme, which should be tied to information technologies [22: 2].

However, despite the fact that real bodies (and their actions) are technically absent from the Internet, language is doing so in the purest performative sense there (Kolko, 1995), so it follows that scholars of computer-mediated behavior need methods for analyzing discourse. CMDA is a great example of such an analysis, which is very close to CD in nature [12: 539]. Computer-Mediated Discourse Analysis (CMDA) applies methods adapted from language-focused disciplines such as linguistics, communication, and rhetoric to the analysis of computer-mediated communication. At its core, CMDA examines logs of verbal interaction (characters, words, utterances, messages, exchanges, threads, archives, etc.) [15:1].

Although the latest research assumes that text message discourse will exhibit particular grammatical attributes due to the technological constraints placed on text message formation, it is also hypothesised that all these features will be similar to those identifying other CMC modes [24: 80]. The CMC itself was identified by Herring and Androutsopoulos as communication that developed as a result of people interacting with one another with the help of networked or mobile computers, where "computers" is a general term that encompasses any form of digital communication device, including a pad or a smartphone. In other words, it is any analysis based on the study of online text [19: 28].

Computer communication is divided into oral and written forms, and the perception of such information is further split up into actual, real-time communication and virtual communication with fictitious interlocutors. So, computer discourse is communication in a virtual environment that takes place with the help of a computer and is an aggregation of texts united by a common theme.

The computer discourse has sufficiently specific features that allocate it among others, namely:

Electronic communication channel. This feature, like any other model of communication, allows the sender and recipient to create and receive messages in a variety of ways. The majority of scientists and researchers in this field tend to assume that this type of communication is defined as "*computer-mediated communication*." Computer communication typically uses an artificial canal because, on the one hand, there is a computer and, on the other, modern communication technology. CMC discourse, also known as computer discourse, has a broad range of coverage because it works in tandem with internet discourse [2: 876].

The following type is Mediation, which in turn comes from the term "computer-mediated communication." The prominent feature of this type is the use of technical and electronic means of communication by users [2: 876].

Distance means that everyone in the computer interaction placement is quite far apart and does not have visual contact in most cases [2: 877]. One of the most expressive traits of transmitting emotions and other non-verbal means are "*emoji*" or sometimes "*emoticons*." With their help, we can express our emotions, for example:

-) – smile
- (- sadness or resentment
- ☺ - happiness
- :-E – anger
- :-I – apathy
- Etc.

Hypertextuality [2: 877]. The traditional form of text on the internet is changing and gaining a new hypertextual form. In computer discourse, such texts

represent themselves as hypertextual systems, which consist of assemblies and the associative connections assigned to them.

The type that follows is virtuality, which is a method of combining computer-mediated interaction with interaction in an existing environment. Manuel Castels named modern culture "the culture of real virtuality," which was created with the help of communicative processes, in the body of which lies "*the creation and consumption of sign*," whence this type. Because of the complexity, and sometimes impossibility, of supervising or controlling internet communication, the natural trait of computer discourse is the anonymity of its users. Its users, in no time, can be whatever they want; indeed, all you know about your partner is his nickname and the information that he provides you.

Creolization. This statement is interpreted to mean that in texts, not only linguistics but also paralinguistic means, such as pictures, photos, different fonts, and symbols, can be used. The main distinction of this type of discourse is the distinction between written and oral form.

And the last one is ethics and etiquette. Participants have a certain communicative status, which is revealed, maintained, and played out in the process of communication with the help of an entirety of special techniques and skills, which can be defined as "*etiquette*," also known as "*network etiquette*".

In conclusion, computer discourse is a specific type of communication that is characterized by a number of features that make it unique and not similar to other types of discourse [2:878]. It has inherent features that can be compared with other types of discourse, but its individuality at the same time makes it a unique type of communication and at the same time enriches our language with new terms and concepts that we use every day [7: 8].

TEXT ANALYSIS

3D remote visualization is useful for earth maps or small patch of geographic area on mobile devices [1]. 3D remote visualization for scenery features of cities such as terrain, building, road etc [2]. 3D visualization of complex stream based data like video games etc. and visualization of 3D models like vehicle at remote side [3, 5]. The main goal is to access ambient intelligent environment by implementing, and evaluating a 3D-based user interface. Previously there were so many problems like interaction with small devices without their own user interfaces, finding and accessing devices in an invisible and unfamiliar environment etc. So with the help of 3D visualization and 3D UI a logical link has been created between physical devices and performs virtual representation on mobile devices [6]. To perform 3D visualization on mobile devices of outdoor environment GPS tracing system is used. This system may use with 2D visualization but it gives very poor sight as compare to 3D. Here authors focus on 3D visualization for real time indoor location tracing system on mobile devices [7]. Software architecture is capable to International Journal of Computer Science & Information Technology (IJCSIT) Vol 3, No 6, Dec 2011 100 support the execution of agent-based participatory simulation activities and to provide them in a 3D virtual environment on mobile devices. Simulation and agent based modeling are the scientific methodology. This is also known as Agent Based Modeling Simulation (ABMS) technology. The main part of this system is to represent visual simulation using 3D visualization engine on mobile devices [8]. The main objective is to view 3D virtual reality data on mobile devices. Today's mobiles are more powerful however there is a need to reduce the content and need of processing data. Here Markus Feibt and Andreas Christ concentrate on most famous technology data compression. To achieve this, data has been first pre process at server side. As the mobiles which are at client side have so many limitations so to display 3D virtual reality data, concentration is only on device specific properties.

To provide 3D virtual reality there is use of VRML. As the wireless connection via wireless network is not more reliable due to their limited bandwidth therefore 3D virtual reality has been optimized before going towards wireless network [9]. Here the focus is on remote 3D visualization of large cities using expressive or non-photorealistic rendering (NPR). To perform such rendering client server system and preprocessing optimization technique has been introduced. Here buildings are considered as simple texture blocks which are photographs of real building frontage. It also implements pipelines from real building frontage in prototype system which has been sent to remote clients [10]. As the mobile devices have so many limitations therefore 3D rendering on mobile is a challenging task because it requires huge network band width and computing resources. To solve this problem there is use of real time remote rendering of 3D video with the help of proxy based structure. Proxy server performs the rendering of complete 3D video and then transfers the render picture on mobile via wireless network [11]. It is possible to visualize image data at client side from server at remote side. Server is a web server which provides images to client on its demand.

The text under analysis is untitled “Technical analysis of remote 3d visualization on mobile devices”. The extralinguistic factors of this text are guidelines. This text belongs to scientific discourse. It is an example of artifact text due to reflection in the text of the real world and real things.

The analysis shows that there are the following stylistic items in the text of the article: analogy, metonymy. Also, it is full of special literary vocabularies, proper names; subject field terms; abbreviations, neologisms, poetic and highly literary words, proper names, items of technical lexicon.

Among the new words of the terminology of the computer industry, the following groups of lexical units were distinguished: new computing terms;

neologisms that relate to computer discourse. The following structural types of computing terms of the computer sphere were identified in the process of analysis: acronyms; compounding; derivation; two-component terms; complex terms.

Neologisms that relate to the computer discourse were divided into the following thematic groups: neologisms of social distancing; neologisms of computer industry; scientific and technical terms which are connected to this topic; new terms that are blends of other words, transferred words that gained new meaning, internationalisms. The analysis shows that this text is pretty saturated on new created words which can be inherited to a specific field of discovering, in this case, computer industry and technical and scientific fields; the examples of it can be weasel words, buzzwords, internationalisms.

URL: <https://airccse.org/journal/jcsit/1211csit08.pdf>

CHAPTER 2

SCIENTIFIC AND TECHNICAL TERMINOLOGY: DISCOURSE FEATURES, TRANSLATION OPTIONS

2.1 Lexical transformations in the translation of scientific and technical terminology of the computer industry.

1. **Practical transcription** is a reproduction of the SL lexical items or phonemes by TL graphemes (letters).

(1) *Nanometer* – нанометр. *Some of these tools are so precise they can be controlled to within half a nanometer, the width of two silicon atoms* (B: URL). – Деякі з цих пристроїв настільки точні що можуть контролюватись з точністю до половини нанометра, шириною двох атомів кремнію. In this case, the word “nanometer” is rendered into Ukrainian as “нанометр”, with the help of practical translation. We identified it as a practical translation because there is no other equivalent for this word and it can be transferred into Ukrainian with PT method only. ‘*Nanometer*’ is a measure of length in the metric system, which is used in the context of miniature computing devices [28: URL].

(2) *Chips* – чіпи. *But PC sales have fallen over the past five years with the rise of smartphones, and Intel was slow to develop lower-power chips suited for those devices* (B: URL). – Але за останні 5 років з початком розвитку смартфонів, продажі ПК впали, й Intel дещо забарились з розробкою низькопотужних чіпів що підходять для цих девайсів. This example also represents practical transcription; in fact, in this case, we can use regular transcription as it also provides its sound translation. A chip is comprised of semiconductor material that is cut from a larger wafer of material that is only a few millimeters on one side. It also can work in such combinations as RAM chip, GPU chip, and, silicon chip [28: URL].

(3) *Programs* – програми. *A home office computer should fulfill all of the needs you have for your work. If you work with spreadsheets and multiple programs, you will want a good processor (PCW: URL).* – Комп'ютер для домашнього офісу повинен задовольняти всі ваші робочі потреби. Якщо ви працюєте з електронними таблицями та кількома програмами, вам знадобиться хороший процесор. This term was rendered into Ukrainian with the help of practical transcription. 'Program' is a common computer term that can be used as both a noun and a verb, in this case, we used this word as a noun [29: URL].

So here, we can confer the analysis of this way of translation: practical transcription is flawlessly one of the easiest ways of delivering the meaning of the word among the formal lexical transformations, and at the same time, it is not wrapping the structure of the term and conveying the information at an affordable level for the recipient, having the absence of the direct meaning of the word in the target language.

2. **Transliteration** is a reproduction of the letters of the source language lexical items by the target language letters, or in other words, a representing written characters of one language by the characters of another one.

(4) *Internet* – інтернет. *It's impossible to say for certain when **the internet** began, mainly because nobody can agree on what, precisely, the internet is* (TG: URL). – Неможливо сказати напевне коли почалась ера Інтернету, в основному через відсутність одностайної думки того що саме являє собою Інтернет. In this example, we used transliteration to translate this term to a broader group of people, because in English computer discourse this term is also known as web or net, which for recipients can cause a misunderstanding in the context of use. 'The Internet' is a global wide area network that connects computer systems across the world [29: URL].

(5) *Website* – веб-сайт. *If you've ever needed a website, you might have used a drag-and-drop website builder (PCW: URL).* – Якщо вам коли-небудь потрібен був веб-сайт, можливо, ви використовували конструктор веб-сайтів із функцією перетягування. In this case, we used transliteration as a tool of translation, however, we can also use a transcription here as it corresponds to its sound form. A website is a collection of webpages grouped together using the same domain name and operated by the same person or organization. Furthermore, this term has a second separate spelling, *web site*, which could be classified as transcription [29: URL].

From these examples right above, we discovered several words from these abstracts in the context of using transliteration, where some of them were a sort of fusion of transliteration and traditional graphic and phonetic reproduction. Given the versatility of these words, they can work with only transliteration while maintaining the context of the text as well as both of them.

3. **Loan translation** (Calque) is a translation of foreign words or expressions by using native lexical units.

(6) *Honeypot* – Пастка. *A honeypot is either a real computer or a virtual one within a larger computer designed to snare malware (TA: URL).* - «Пастка» це водночас реальний комп'ютер й віртуальний у більшому комп'ютері, призначений для виявлення зловмисного програмного забезпечення. This term was rendered into Ukrainian with the help of loan translation. However, such an idiom can be translated into Ukrainian by means of incrustation, as it is partially the proper name, namely the name of the project. 'Honeypot' is an Internet-attached server that acts as a decoy, luring potential hackers to study their activities and monitor how they can break into a system [30: URL].

(7) *Emoji* – смайлики. *Many are also uninteresting, as the emoji examples show (TA: URL).* – Й багато іншого нудного, ось як на прикладі смайликів. This

term was rendered into Ukrainian by means of loan translation. Matter of fact, this term can also be rendered into Ukrainian with the help of transcription and its meaning remains the same, but in this case, it was used in terms of the context. The word ‘emoji’ is a combination of the Japanese characters "e" and "moji," which mean "picture character." A tiny icon known as an emoji can be used in line with the text [29: URL].

So, as we can see, the amount of loan translation is pretty resplendent, which means that the majority of terms, idioms, and words are being transferred into Ukrainian with the help of transliteration, transcription, or any other way that conveys their meaning without changing the structure, such as internationalism, buzz words, etc. In this case, we used loan translation to give a reader the closest meaning of their native lexicon that they could understand.

4. **Descriptive translation** is aimed at using the phrase in the target language to convey the meaning of the term.

(8) *Office-suite* – пакет офісних програм. *That could help automate work, but it’s just as likely to create new demands for Office-suite integration, just as previous add-ons such as SharePoint and Teams did (TA:URL).* – Це може допомогти автоматизувати роботу, але це лиш настільки ж ймовірно як створення нових вимог щодо інтеграції пакету офісних програм, як у минулих доповненнях таких як SharePoint та Teams. This term was rendered into Ukrainian by means of descriptive translation. ‘Office-suite’ is a certain set of applications that have the same style of the user interface. Usually, such sets sell as a package of updates for your program, such as Microsoft Office, and at the same time can be sold separately at the demand of the customer [27: URL].

(9) *bulletin-board* – електроні дошки оголошень. *Deliberately or not, they helped encourage a vibrant culture of hobbyists on the fringes of academia – students and rank amateurs who built their electronic bulletin-board systems and*

eventually FidoNet, a network to connect them (TG: URL). – Свідомо чи ні, вони допомогли захопити яскравою культурою любителів на периферії академічних кіл – учні та дилетанти які збудували їхні власні електронні дошки оголошень, що вилилось в FidoNet, мережа що підключає їх один до одного. This example was used to render it into Ukrainian with the help of descriptive translation. The thing here is that this example could be considered a case of omission and related to the grammatical transformation if the term itself were named ‘electronic bulletin board’. ‘Bulletin-board system’ describe text-based virtual forums that people can access through specialized software and the Internet. The bulletin board system, which preceded the web, had a popular Telnet service. The power of the Internet to create sizable virtual communities was first proven by bulletin board systems [28: URL].

So, this lexical transformation is more usable in a sphere like the computer industry because some of the terms are rather difficult to explain, which makes it more important to deliver the right meaning to them. And descriptive translation is a very good choice since we don’t have the direct equivalent; even though these expressions are not detailed, they still convey their meaning.

5. **Differentiation** is caused by the fact that many English words with broad meaning do not have direct equivalence in their translation, in such cases, we must choose the most appropriate variant of translation which suits the context best of all.

(10) *Drive* – накопичувач. *If you plan to store a lot of games on your computer, then you will most likely want a 1TB or larger drive (PCW: URL).* – Якщо ви плануєте зберігати багато ігор на своєму комп’ютері, то, швидше за все, вам знадобиться накопичувач об’ємом 1 ТБ або більше. This term was rendered into Ukrainian by means of differentiation. This one transformation was used there because of the versatility of the term, so to say, we can render it into Ukrainian as *іхати, доводити, приводити* and so on. The only thing that defines it correctly is

the context. ‘Drive’ may be an area (medium) that can store and study data that is not effectively expelled, like a disk or disc. All drives store records and programs utilized by your computer [26:URL].

(11) *Worm* – вірусний черв’як. *The worm, once nestled inside a computer, began automatically scanning for new computers to invade, so it spread exponentially (TA: URL).* – Як тільки вірусний черв’як осядеться у вашому комп’ютері, він почне автоматично сканувати наявність нових комп’ютерів для їх захоплення, що показує його експоненціальне поширення. This term was rendered into Ukrainian by means of differentiation. The term ‘Worm’ is a pretty tricky one because we can construe this expression either with loan translation or with loan translation + addition, but in this very abstract context, we can use only differentiation. ‘Worm’ is a unique kind of malware that regenerates itself but does not change any of the files on your computer. Nevertheless, worms can still create chaos by growing so much that they occupy all of the hard drive or memory space on your computer. Your computer will function very slowly and possibly even crash if a worm consumes all of your RAM [25: URL].

Now we proceed to the next transformation, known as differentiation, and as we can see, there are plenty of examples of how many variations there can be in only one single discourse of the same term.

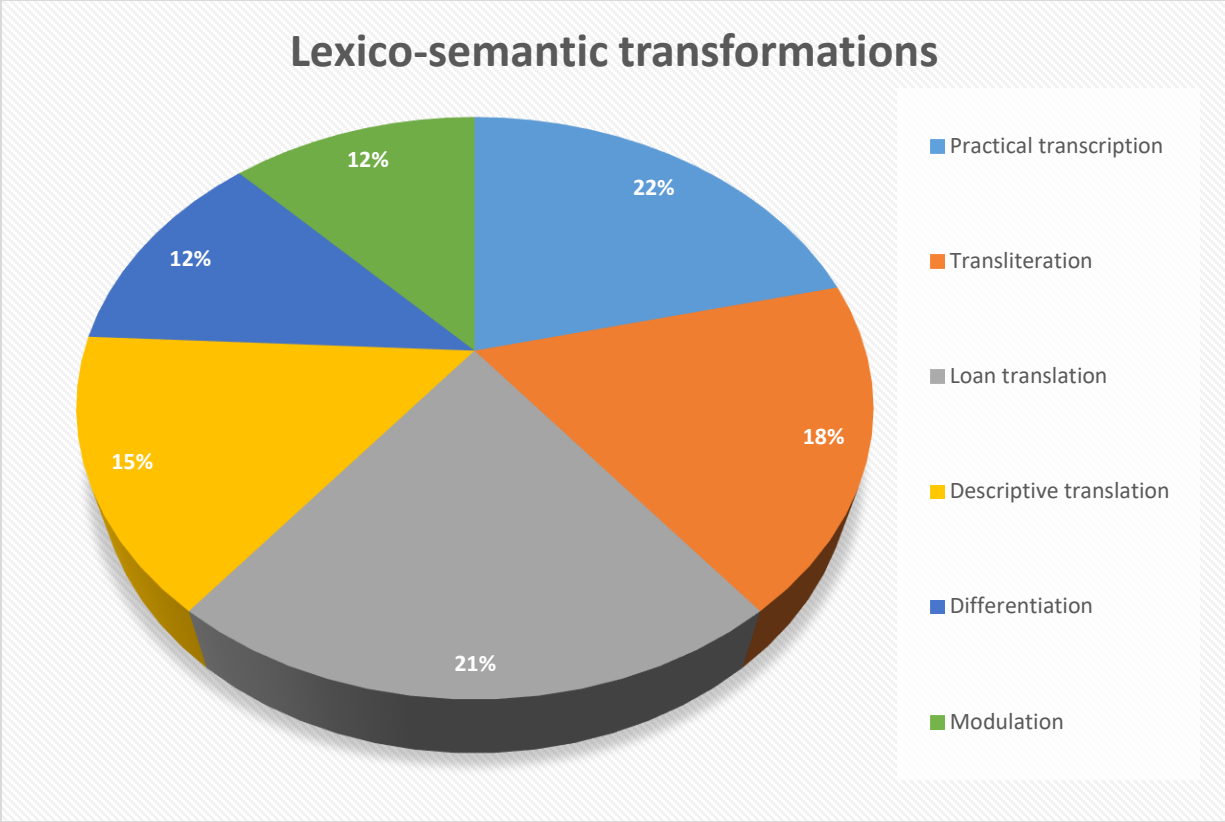
6. **Modulation** is the replacement of the SL word or phrase by TL item, which is logically connected with the original item, (sometimes also called logical development).

(12) *Storage* – пам’ять. *It packs good performance with a Core i7 and plenty of storage, but the 1440p touch display at this price range makes it a steal (PC: URL).* – Він має хорошу продуктивність із Core i7 і достатньою пам’яттю, але сенсорний дисплей 1440p у цьому ціновому діапазоні є невиправданою. This expression was rendered into Ukrainian with the help of modulation. In this very

example, storage means a place where you can save your files, sometimes it can also be your computer's drive. 'Storage' which includes magnetic disks, solid state drives (SSDs), and USB drives, is a storehouse that holds its content without the assistance of power. All of these storage systems are "non-volatile." Magnetic tapes and rewritable CDs, DVDs, and Blu-ray discs are instances of non-volatile storage [27: URL].

(13) Boot – завантажувати. *You boot the PC for the first time, and Windows asks you to create an account and set up a password (PCW: URL).* – Ви завантажуєте ПК вперше, і Windows просить створити обліковий запис і встановити пароль. This expression was rendered into Ukrainian by means of modulation. To boot a computer is to power it on, to put it briefly. The "boot process" begins when the system is turned on. The computer's ROM needs to be first preloaded with startup instructions before the current boot disk can be utilized to load the operating system [25: URL].

These 13 (33 units) analyzed computer industry terms were rendered into Ukrainian by means of lexical transformations. The main types of transformations and the percentage of their use in the process of translation can be analyzed from the following diagram:



According to the information presented above, we can see that computer terminology is plenty rich in lexical transformation; its amount of versatility is pretty huge and consists of 6 types of transformation, namely: practical transcription, transliteration, loan translation, descriptive translation, modulation, and differentiation. And what is impressive here is that this field of science is pretty balanced. We faced an almost equivalent ratio of transformation in our case; we have two of them with an equal proportion of practical transcription and loan translation, which proves one more time that the computer industry remains the most progressive science in modern linguistics for creating terms with new meanings. However, the other two techniques of translation, namely transliteration and descriptive translation, were varied and also occupies a big place in the creation of new terminology. As we can see from the diagram, they are approximately on the same level, and the last one represents sometimes cases when the transfer of translation is

impractical or unnecessary. The last usable ways of rendering the expressions from our project are differentiation and modulation, even though they occupy 12 percent of both of the main transformations, which makes the lexical-semantic types of rendering into the Ukrainian language equal to each other and proves that computer terminology is a rather flexible discipline in terms of meaning transfer and translation into another language.

2.2 Grammatical transformations in the translation of scientific and technical terminology of the computer industry.

1. Addition is used to compensate for semantic or grammatical losses and often goes along with such transformations as transposition and grammatical replacement.

(14) *Hardware* – апаратне забезпечення. *New hardware sometimes makes an appearance at WWDC as well, and it's usually the stuff that developers want, namely "Pro" model Macs (MW: URL).* – Нове апаратне забезпечення іноді з'являється на WWDC, і зазвичай це те, чого хочуть розробники, а саме моделі Mac «Pro». In this example we rendered this term with help of addition, however, we can also translate this expression by means of loan translation as 'апаратура'. 'Hardware' refers to a physical part of the computer system and its derivative structures or devices. It's divided into internal hardware (such as RAM, hard drives, DVDs, SSDs, etc.) and external hardware (such as keyboards, monitors, speakers, etc.) [25: URL].

As we can see from the result of this transformation, addition is more likely to be used when the term is considered to be more descriptive, to concretize its meaning in a certain context. Mostly, it is used to clarify the type of term or definition and which part of the sentence it is used in the text.

2. **Transposition** is the change in the order of words in phrases or sentences, which is often caused by structural differences in expressing the theme and the rhyme in different languages.

(15) *Adware* – Рекламне ПЗ. *It may be that what's slowing your PC down isn't Windows 11, but bloatware and adware that takes up CPU and system resources (CW: URL).* – Іноді вашу систему не сповільнює Windows 11, ваші системні ресурси та потужність процесора можуть забирати вірусні та рекламні ПЗ. This term was rendered into Ukrainian by means of transposition. However, it can also be used with another transformation, namely descriptive translation. Free software that is sponsored by advertisements is known as adware. Toolbars are a type of adware that frequently runs on your computer's desktop or in conjunction with your web browser [31: URL].

(16) VR headsets – гарнітура віртуальної реальності. *It makes Quest virtual reality headsets for Meta Platforms Inc. and Sony Group Corp.'s PSVR devices (TA: URL).* – Для таких компаній як Meta Platforms Inc. та пристроїв PSVR для Sony Group Corp., вони розробляють гарнітуру віртуальної реальності Quest. This example was translated into Ukrainian with help of transposition. A device is worn on the head that entirely encloses the eyes for a fully immersive 3D experience (virtual reality headset). VR headsets, sometimes known as "VR goggles," can be completely self-contained, like the Meta Quest or HTC Vive. They are expensive and require a powerful computer to conduct the animation [27: URL].

So, given this analysis, we can see that transposition occupies much space in the creation of terminology. We can see the diversity of the translation of terms and their meaning depending on where they are in the sentence and sometimes what role they play in it.

3. **Omission** is a transformation opposite and is used to avoid redundant information.

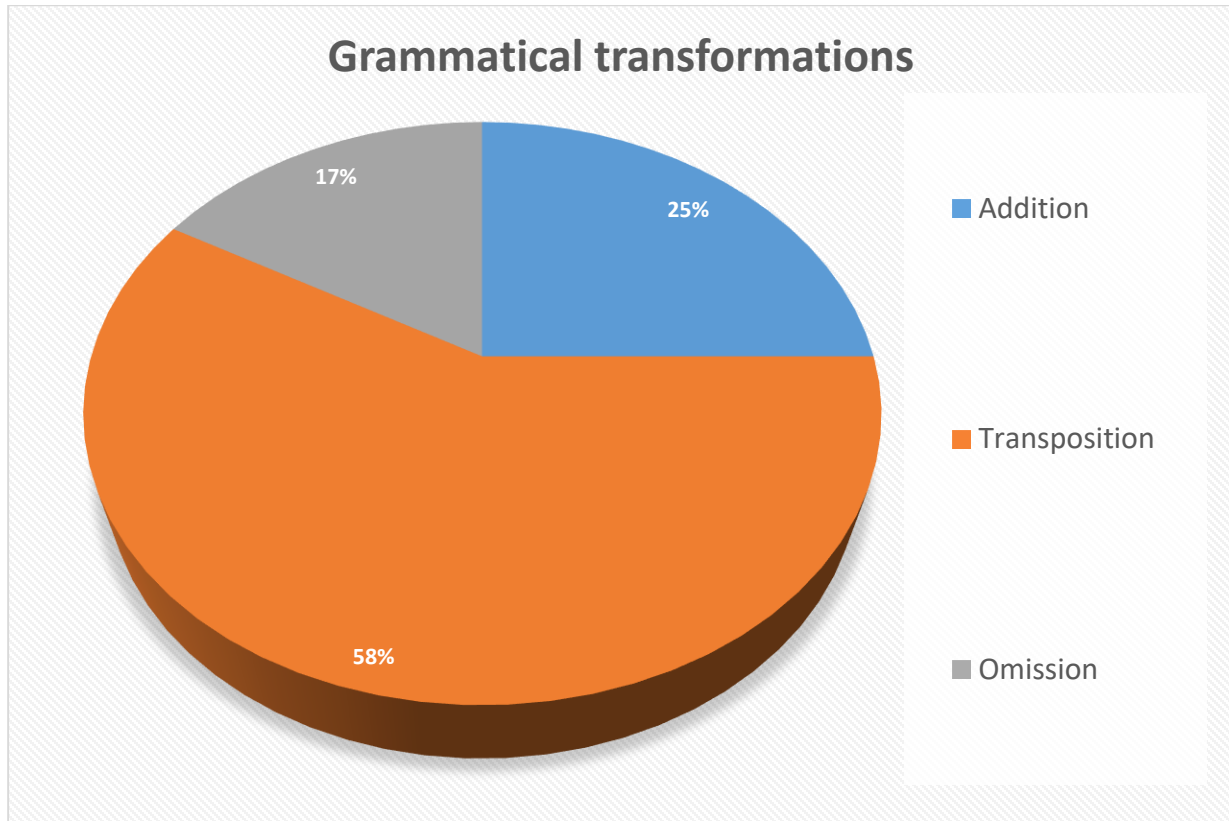
(17) *Recycle bin* – корзина. *A user calls in a panic; he accidentally deleted an important file and then emptied the recycle bin (CW: URL).* – Користувач кричить в паніці; він випадково видалив важливі файли й спорожнив корзину. This expression was rendered into Ukrainian by means of omission, as in this context we can use the term *recycle bin* with a narrower meaning as it fully corresponds to its definition. ‘Recycle bin’ is a kind of program in your operating system to store your files, it temporarily stores files and folders before they are deleted from your PC forever [25: URL].

(18) *Antivirus software* – антивірус. *From operating systems to antivirus software, to cloud services, to hardware devices, virtually none of the technology we use is static (CW: URL).* – Від операційних систем до антивірусів, хмарних сховищ і апаратних пристроїв – практично жодна з технологій які ми використовуємо не є статичною. This expression was rendered into Ukrainian by means of omission. ‘Antivirus software’ is a software program that scans for viruses. Likewise called a "virus scanner." The antivirus provider adds new viruses' binary patterns and behaviors to a database that is frequently downloaded via the Web to the user's antivirus program [27: URL].

Close to the last point of grammatical transformations, namely omission, we can observe how this technique of translation can change the structural component of a sentence without changing the meaning of the term, that is, changing the phrase practically does not affect the original transformation product, but only removes unnecessary or unimportant information words.

In this section, we analyzed 5 (12 units) transformation techniques of grammatical translation, which have a much smaller number of examples than the previous one, which means that the majority of phrases and terms in the computer

industry are created on a lexical level. The main types of transformations and the percentage of their use in the process of translation can be analyzed from the following diagram:



So, these 12 sentences were rendered into Ukrainian with the help of such grammatical transformations as addition, transposition, and omission. In the process of analysis, it was revealed that most transformations were detected with the help of transposition; 7 out of 12 computer terms were rendered by this technique. The next one is addition, which has a modest number; only three sentences have been translated through this transformation, and the last one is omission, which has two examples of transformation. In this part of the chapter, we discovered the rendering of the computer industry terminology with the help of grammatical transformations. In these examples, the word order of the parts of the sentences was changed without creating a new meaning for legal terms in the target language.

2.3 Lexico-grammatical transformations in the translation of scientific and technical terminology of the computer industry.

1. **Total reorganization** is considering to rearranges the inner form of any segment of the text, be it a word or phrase or even the whole sentence. Such reorganization is integral so that visible structural relationships between the inner form of the source and target language segments cannot be traced anymore.

(19) *Completely and utterly hosed* – остаточно зачухнув. *The carefully sequestered, rock-solid-reliable PC I use to test graphics cards became completely and utterly hosed this week (PCW: URL).* – Гарно ізольований, потужний ПК я використовую щоб тестувати графічні карти, цього тижня остаточно зачухнув. This term was rendered into Ukrainian as a means of total reorganization; in this case, we used the words completely and utterly as an addition to the term hosed. ‘Hosed up’ means that something in your system is broken or operating incorrectly compared to its normal state of operation [27: URL].

(20) *Bells and whistles* – примочки. *Although it could stand to improve in photo quality and especially scan quality, it might offer enough bells and whistles for many small offices to overlook the shortcomings (PCW: URL).* – Хоча це могло б покращити якість фото і особливо сканування фото, це може запропонувати достатньо примочок для багатьох невеликих офісів затемнюючи недоліки. This expression was rendered into Ukrainian by means of total reorganization. a colloquial English word for a product's unique attributes. In the context of computers, it often refers to features of the software that, while occasionally not necessary, may be highly valued by particular users. Bells and whistles are additional "goodies" that are frequently included to enhance the appeal of the product [27: URL].

Based on this, we can conclude that the lexical-grammatical transformation known as total reorganization is quite common in computer industry terminology

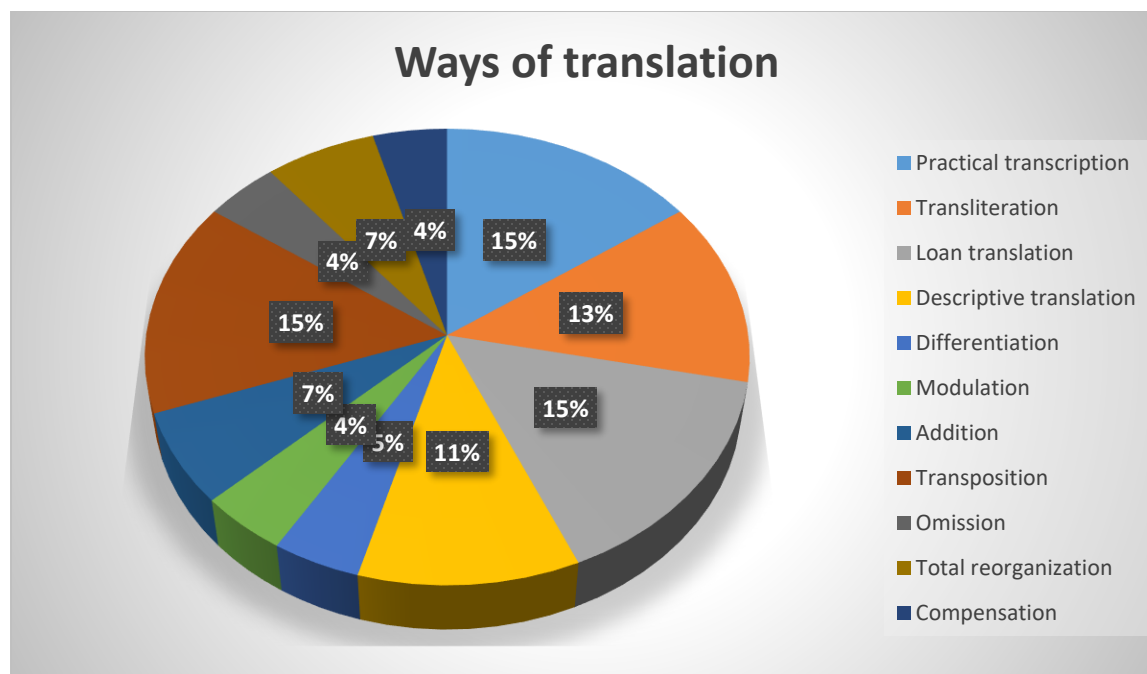
and takes its place among techniques that can convey information about a sentence or an expression by changing the definition of the term but leaving its meaning.

2. **Compensation** is a way of translation in which some elements of the original text, which have been lost in the process of translation, are transferred in the text in some other way to compensate for the semantic loss.

(21) AI-powered services – Послуги на основі ШІ. *Additional AI-powered services will be added to Opera's sidebar, the company said (PCW: URL).* – Додаткові сервіси на основі ШІ будуть додані до бокової панелі Opera – заявила компанія. This example was rendered into Ukrainian with the help of compensation. AI development's main objective is to employ computers to carry out duties that previously needed human labor and to discover new or more effective ways to complete those tasks, it can be AI-powered programs, search engines, video games services, chatbots, etc. [29: URL].

And the last is compensation; this transformation is probably one of the toughest techniques to render any terms because the versatility of the terminology, especially if it is computer science, has a huge impact on the final product.

So these two transformations complement the basic picture of lexical and grammatical transformations to make the variability of this discipline and discourse as a whole more extensive. Now I can provide you with the diagram of all this transformation as a single element in the following diagram:



So, we have analyzed 50 sentences with computer terminology that were translated from English into Ukrainian. As we can see, about 63 percent of all terms were rendered into Ukrainian by means of lexical transformations, the following 26 percent by means of grammatical transformations, and mere 11 percent by means of lexical and grammatical transformations. On the basis of the first diagram, we can point out lexical transformations that include practical transcription, transliteration, loan translation, descriptive translation, differentiation, and modulation, which are used most often in this type of discourse.

In the process of translating computer terminology, we have found that practical transcription, transposition, and loan translation are the most usable types of translation in computer discourse. It comprises 45% of all transformations, while descriptive translation comprises 11%. We can consider these two methods productive for legal translation. Addition and total reorganization comprise 7% each, differentiation – 5% and the rest of the transformation less than 4%. So we consider

these last transformations to be unproductive for the translation of English computer discourse terms into Ukrainian.

CONCLUSIONS

In the process of our research, we have analyzed the main peculiarities during the translation of English scientific and technical terminology in the computer industry into Ukrainian on the basis of the texts in computer discourse.

In the theoretical part, we studied the structure of scientific and technical texts in the computer discourse and the computing terminology itself, which plays an important role in the vocabulary system of the language. It is the system of terms and, at the time – word formation. A term is a linguistic unit that designates a concept in the system of concepts. It is a characteristic feature of a discourse and can appear in it as a noun, verb, adjective, or adverb. The majority of linguists divide terms into two sub-categories, namely, general terms and special terms.

Scientific and technical terminology expresses the concept of computing development and expansion of the vocabulary range with the help of new terms. One of the main characteristics of scientific and technical terminology is its systematic nature, the existence of a definition, the absence of expression, and stylistic neutrality. In the process of our research, it was revealed that a computer's system of terms can be created as terms that are associated with common words, general terms that can have versatility definitions, special computer terms, and terms that can have two or more meanings. Also, we have discovered that one of the interesting peculiarities of computer terminology is their methods of creation, such as the methods of classification, quantitative, comparative, systematic, statistical, and descriptive.

The ways of forming computer terms are the following: morphologic (affixation, abbreviation, acronyms), syntactic (the creation of terminological compounds), and morphologic-syntactic. Computer discourse is a discourse of

computing science that is derived from the style and context of the texts, for example, guides, PC manuals, instructions, mass media articles, researches, etc.

In the practical part of our research, we analyzed 50 examples (of which 21 were highlighted) of computer terms in scientific and technical texts that were found in internet articles and options for their translation. These options were divided into 3 groups: lexical transformations (practical translation, transliteration, loan translation, descriptive translation, differentiation, modulation), grammatical transformations (addition, transposition, omission), and lexical and grammatical transformations (compensation and total reorganization). On the basis of our research, it was revealed that 63% of analyzed terms were rendered into Ukrainian by means of lexical transformations, 26% - by means of grammatical transformations, and 11% - by means of lexical and grammatical transformations.

Practical transcription, transposition, and loan translation (45% of analyzed terms each) and transliteration (13% of analyzed terms)—numbering the most examples of computer terminology are often used in the process of computer term translation. On the basis of our research, we can define other ways of translating computer terms: descriptive translation (11%), addition (7%), total reorganization (7%), differentiation (5%), modulation (4%), omission (4%), and compensation (4%).

In conclusion, computer terminology is a system of newly created terms that extend to other areas of use, not limited to scientific and technical texts. This field is diversified with terminology and meanings that are widely used in other discourses. It can be widely used in various spheres of social life, not only restricted by scientific and technical texts, from internet articles and other sources of internet documents to guidelines or manuals. Computer terminology is an important ingredient for the work of such types of jobs as engineer, IT specialist, scientist, web editor, etc., but it is also often used by translators and interpreters. Knowledge of the main

foundations of translation techniques and the primary terminological systems of the source language and the target language are the major prerequisites for successful translation.

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ANNEX

1	<p><i>Some of these tools are so precise they can be controlled to within half a <u>nanometer</u>, the width of two silicon atoms.</i></p>	<p>Деякі з цих пристроїв настільки точні що можуть контролюватись з точністю до половини <u>нанометра</u>, шириною двох атомів кремнію.</p>
2	<p><i>But PC sales have fallen over the past five years with the rise of smartphones, and Intel was slow to develop lower-power <u>chips</u> suited for those devices.</i></p>	<p>Але за останні 5 років з початком розвитку смартфонів, продажі ПК впали, й Intel дещо забарились з розробкою <u>низько-потужних чіпів</u> що підходять для цих девайсів.</p>
3	<p><i>A home office computer should fulfill all of the needs you have for your work. If you work with spreadsheets and multiple <u>programs</u>, you will want a good processor.</i></p>	<p>Комп'ютер для домашнього офісу повинен задовольняти всі ваші робочі потреби. Якщо ви працюєте з електронними таблицями та кількома <u>програмами</u>, вам знадобиться хороший процесор.</p>
4	<p><i>It's impossible to say for certain when <u>the internet</u> began, mainly because nobody can agree on what, precisely, the internet is.</i></p>	<p>Неможливо сказати напевне коли почалась ера <u>Інтернету</u>, в основному через відсутність одностайної думки того що саме являє собою Інтернет.</p>
5	<p><i>If you've ever needed a <u>website</u>, you might have used a drag-and-drop website builder.</i></p>	<p>Якщо вам коли-небудь потрібен був <u>веб-сайт</u>, можливо, ви</p>

		використовували конструктор веб-сайтів із функцією перетягування.
6	<i>A <u>honeypot</u> is either a real computer or a virtual one within a larger computer designed to snare malware.</i>	« <u>Пастка</u> » це водночас реальний комп'ютер й віртуальний у більшому комп'ютері, призначений для виявлення зловмисного програмного забезпечення.
7	<i>Many are also uninteresting, as the <u>emoji</u> examples show.</i>	Й багато іншого нудного, ось як на прикладі <u>смайликів</u> .
8	<i>That could help automate work, but it's just as likely to create new demands for <u>Office-suite</u> integration, just as previous add-ons such as SharePoint and Teams did.</i>	Це може допомогти автоматизувати роботу, але це лиш настільки ж ймовірно як створення нових вимог щодо інтеграції <u>пакету офісних програм</u> , як у минулих доповненнях таких як SharePoint та Teams.
9	<i>Deliberately or not, they helped encourage a vibrant culture of hobbyists on the fringes of academia – students and rank amateurs who built their electronic <u>bulletin-board</u> systems and eventually FidoNet, a network to connect them.</i>	Свідомо чи ні, вони допомогли заохотити яскравою культурою любителів на периферії академічних кіл – учні та дилетанти які збудували їхні власні <u>електронні дошки оголошень</u> , що вилилось в FidoNet, мережа що підключає їх один до одного.

10	<i>If you plan to store a lot of games on your computer, then you will most likely want a 1TB or larger <u>drive</u>.</i>	Якщо ви плануєте зберігати багато ігор на своєму комп'ютері, то, швидше за все, вам знадобиться <u>накопичувач</u> об'ємом 1 ТБ або більше.
11	<i>The <u>worm</u>, once nestled inside a computer, began automatically scanning for new computers to invade, so it spread exponentially.</i>	Як тільки <u>вірусний черв'як</u> осядеться у вашому комп'ютері, він почне автоматично сканувати наявність нових комп'ютерів для їх захоплення, що показує його експоненціальне поширення.
12	<i>It packs good performance with a Core i7 and plenty of <u>storage</u>, but the 1440p touch display at this price range makes it a steal.</i>	Він має хорошу продуктивність із Core i7 і достатньою <u>пам'яттю</u> , але сенсорний дисплей 1440p у цьому ціновому діапазоні є не виправданою.
13	<i>You <u>boot</u> the PC for the first time, and Windows asks you to create an account and set up a password.</i>	Ви <u>завантажуєте</u> ПК вперше, і Windows просить створити обліковий запис і встановити пароль.
14	<i>New <u>hardware</u> sometimes makes an appearance at WWDC as well, and it's usually the stuff that developers want, namely "Pro" model Macs.</i>	Нове <u>апаратне забезпечення</u> іноді з'являється на WWDC, і зазвичай це те, чого хочуть розробники, а саме моделі Mac «Pro».

15	<i>It may be that what's slowing your PC down isn't Windows 11, but bloatware and <u>adware</u> that takes up CPU and system resources.</i>	Іноді вашу систему не сповільнює Windows 11, ваші системні ресурси та потужність процесора можуть забирати вірусні та <u>рекламні ПЗ</u> .
16	<i>It makes Quest <u>virtual reality headsets</u> for Meta Platforms Inc. and Sony Group Corp.'s PSVR devices.</i>	Для таких компаній як Meta Platforms Inc. та пристроїв PSVR для Sony Group Corp., вони розробляють <u>гарнітуру віртуальної реальності Quest</u> .
17	<i>A user calls in a panic; he accidentally deleted an important file and then emptied the <u>recycle bin</u>.</i>	Користувач кричить в паніці; він випадково видалив важливі файли й спорожнив <u>корзину</u> .
18	<i>From operating systems to <u>antivirus software</u>, to cloud services, to hardware devices, virtually none of the technology we use is static.</i>	Від операційних систем до <u>антивірусів</u> , хмарних сховищ і апаратних пристроїв – практично жодна з технологій які ми використовуємо не є статичною.
19	<i>The carefully sequestered, rock-solid-reliable PC I use to test graphics cards became <u>completely and utterly hosed</u> this week.</i>	Гарно ізольований, потужний ПК я використовую щоб тестувати графічні карти, цього тижня <u>остаточно зачухнув</u> .
20	<i>Although it could stand to improve in photo quality and especially scan quality, it might offer enough <u>bells</u></i>	Хоча це могло б покращити якість фото і особливо сканування фото, це може запропонувати достатньо

	<i>and whistles for many small offices to overlook the shortcomings.</i>	<u>примочок</u> для багатьох невеликих офісів затемнюючи недоліки.
21	<i>Additional <u>AI-powered services</u> will be added to Opera's sidebar, the company said.</i>	Додаткові <u>сервіси на основі ШІ</u> будуть додані до бокової панелі Орега – заявила компанія.
22	<i>The deal marks the latest alliance between a tech giant and an <u>AI startup</u> as the field of generative AI — technology that can generate text and art in seconds — heats up.</i>	Ця угода знаменує собою останній альянс між технологічним гігантом і <u>стартапом</u> зі штучним інтелектом, оскільки сфера генеративного штучного інтелекту – технологія, яка може генерувати текст і зображення за лічені секунди – набирає оберти.
23	<i>Not only is the company offering a <u>processor</u> with less expensive alternatives, but the new Ryzens are outperforming the Ryzen 5xxx generation by a substantive amount, both in terms of content creation as well as gaming.</i>	Компанія не тільки пропонує <u>процесор</u> із менш дорогими альтернативами, але й нові Ryzen значно перевершують покоління Ryzen 5xxx як у створенні контенту, так і в іграх.
24	<i>In recent months, Netflix has started preventing subscribers from sharing an <u>account</u> across multiple physical locations without paying extra.</i>	За останні місяці, Netflix розпочав обмеження щодо поширення <u>акаунту</u> на кілька різних пристроїв,

		для своїх підписників, без додаткової плати.
25	<i>Phone calls would be replaced with <u>holograms</u>, we'd allow computers to drive our cars, AI programs would do our shopping for us, and robots would deliver packages to our front door.</i>	Телефоні дзвінки будуть замінені <u>голограмами</u> , ми дамо змогу комп'ютерам керувати авто, програми штучного інтелекту будуть робити покупки замість нас а роботи доставлятимуть посилки до дверей нашого будинку.
26	<i>Following the pandemic, Apple doesn't tend to invite people to events, but it makes no less of an impact by inviting everyone to join it in an <u>online</u> broadcast.</i>	У зв'язку з пандемією, Apple не має наміру запрошувати людей на їх події, але вони справляють не менший вплив, запрошуючи всіх приєднатися до них в <u>онлайн</u> трансляції.
27	<i>I <u>blog</u> about real life; I talk about the internet.</i>	Я веду <u>блог</u> про справжнє життя; я говорю про Інтернет.
28	<i>Some of these models end up on commercial sites, which either roll their <u>algorithms</u> or adapt others that have been published as open source.</i>	Деякі з цих моделей фактично потрапляють на комерційні сайти, які або розгортають власні <u>алгоритми</u> , або адаптують інші, опубліковані як відкриті.
29	<i>If you are limited on space, you might want to consider an all-in-one</i>	Якщо у вас обмежений простір, ви можете розглянути варіант все-в-

	<i>that combines the computer component and <u>monitor</u> into one compact unit.</i>	одному, яке об'єднує комп'ютерний компонент і <u>монітор</u> в один компактний пристрій.
30	<i>Apparently, judging by what he found, his invader was in the business of selling <u>pirated software</u>, movies, and music.</i>	Вочевидь, осуджувати по тому що він знайшов, його агресор мав бізнес з продажу <u>піратського софту</u> , фільмів та музики.
31	<i>You'll be able to use Find My Device to try to locate your PC, and on compatible systems, your data will also be automatically <u>encrypted</u>.</i>	Ви зможете використовувати функцію «Знайти мій пристрій», щоб спробувати знайти свій ПК, а на сумісних системах ваші дані також автоматично <u>шифруватимуться</u> .
32	<i>This segmentation likely also helps sell <u>ads</u> for the cheaper tier of its service.</i>	Така сегментація здається непогано допомагає продавати <u>рекламу</u> для нижчого рангу цього сервісу.
33	<i>Not only is the company offering a <u>processor</u> with less expensive alternatives, but the new Ryzens are outperforming the Ryzen 5xxx generation by a substantive amount, both in terms of content creation as well as gaming.</i>	Компанія не тільки пропонує <u>процесор</u> із менш дорогими альтернативами, але й нові Ryzen значно перевершують покоління Ryzen 5xxx як у створенні контенту, так і в іграх.
34	<i>Chips are made by creating tiny patterns on a polished 12-inch</i>	Чіпи створені з допомогою крихітних схем на полірованому 12

	<i>silicon disk, in part by using a process called photolithography and depositing super thin layers of materials on top.</i>	дюймовому <u>кремнієвий диск</u> , частково з допомогою процесу під назвою фотолітографія та нанесення надтонких шарів матеріалу поверх.
35	<i>Next, Internet detectives discovered a new <u>taskbar</u> feature that could render the most common reason to open the Task Manager obsolete.</i>	Наступне, інтернет провів дослідження щодо нової особливості <u>панелі завдань</u> що може зробити найпоширеніше причину застосування Task Manger застарілою.
36	<i>In part, that's because email and <u>groupware</u> and laptops and smartphones have made taking work home much easier—you can work around the clock if nobody stops you.</i>	Частково це через емейл, <u>колективне програмне забезпечення</u> , ноутбуки та смартфони зробили роботу з дому в рази легше – ти можеш цілодобово якщо ніхто тебе не зупинить..
37	<i>When Netflix decided that this practice amounted to <u>freeloading</u>, it should have known that its customers would object viscerally.</i>	Коли Нетфлікс вирішив що така практика дозволяє <u>безкоштовне завантаження</u> , вони повинні були усвідомлювати непогодженість клієнтів щодо цього.
38	<i>AMD announced three affordable new 65W <u>desktop</u> Ryzen processors at CES 2023, continuing to bundle</i>	AMD анонсували три нових й доступних <u>настільних</u> процесорів Ryzen 65W на CES 2023, продовжуючи поєднувати їх із

	<i>them with a stock cooler to save buyers money.</i>	запасним охолоджувачем, щоб заощадити гроші покупців.
39	<i>It uses an encryption <u>code</u> so sophisticated that only a very few people could have deployed it.</i>	Тут використовується шифрувальний <u>код</u> , як ускладнений так що лише декілька осіб можуть відкрити його.
40	<i>On the upside, you can score still-decent PCs at a steep discount. When looking at a computer's CPU, you should pay attention to the <u>processor core count</u> which usually ranges from two to 16 cores.</i>	З іншого боку, ви можете отримати пристойні ПК з великою знижкою. Дивлячись на процесор комп'ютера, слід звернути увагу на кількість <u>ядер процесора</u> , яка зазвичай коливається від двох до 16 ядер.
41	<i>Apple calls these "Special Events," and <u>streams</u> them online to its millions of fans.</i>	Apple називає їх «Спеціальними заходами» й <u>транлює</u> їх онлайн мільйонам своїх фанів.
42	<i>Some <u>malware</u> is designed to damage or destroy your computer, so once you get the infection, you quickly know it.</i>	Деякі <u>зловмисні програмні забезпечення</u> розроблені для пошкодження чи знищення вашого комп'ютера, тому як тільки ви його отримаєте, ви одразу знатимете це.
43	<i>Bugs occur all the time. And not all of them are a result of <u>poor patching</u> by Microsoft.</i>	Помилки з'являються постійно і не всі з них є результатом поганого <u>внесення правок</u> від Microsoft.

44	<i>There's a lot you can use <u>Task Manager</u> for, but here we're focusing only on killing unnecessary programs that run at startup.</i>	<u>Менеджер завдань</u> має безліч функцій які ви можете використовувати, але тут ми фокусуємось лише в припиненні непотрібних програм які запускаються при запуску.
45	<i>To stop a program or service from launching at startup, <u>right-click</u> it and select Disable.</i>	Натисніть <u>правою</u> клавішу мишки і оберіть пункт Відімкнути, щоб зупинити запуск програми чи сервісу.
46	<i>Click the search icon on the taskbar, type control in the search box, and select Control Panel from the results to run the <u>Control Panel</u> app.</i>	Для того щоб запустити програму <u>Панель керування</u> , клікніть на іконку пошуку та введіть контроль й серед результатів оберіть цю програму.
47	<i>Recent reports have suggested demand for desktops remains strong and has increased, while <u>laptop</u> demand has plunged.</i>	Останні звіти свідчать що попит на настільні комп'ютери залишився високим та зріс, в той час як <u>ноутбуки</u> впав.
48	<i>Twenty years ago, computers were bedeviled by <u>hackers</u>.</i>	Двадцять років тому, <u>хакери</u> тероризували комп'ютери.
49	<i>Brave <u>provides its search tools</u>, and it is using AI summation to replace</i>	Brave сам <u>виконує пошук</u> і використовує ШІ сумування щоб

	<i>the page-generated description with its own.</i>	замінити опис сторінки своїм власним.
50	<i>“As we learn and fine-tune this amazing new capability, we envision bringing it to other communications apps, like Teams, in the future,” Microsoft said in a <u>blog post</u>.</i>	«Оскільки ми вивчаємо та налаштовуємо такий потенціал, ми вбачаємо у тому щоб додати її до інших месенджерів по типу Teams у майбутньому» - заявили Microsoft у своїй <u>блог статті</u> .

РЕЗЮМЕ

Курсову роботу присвячено дослідженню способів перекладу термінології в наукових та технічних текстах комп'ютерного дискурсу. У ході проведення дослідження було виявлено та продемонстровано основні етапи наукової думки в сфері термінології, описано існуючі способи перекладу комп'ютерної термінології на матеріалі інтернет статей, інструкцій, мануалів, здійснено аналіз зразку тексту з комп'ютерного дискурсу і здійснено перекладацький аналіз фактичного матеріалу дослідження (комп'ютерна термінологія, усього 50 одиниць). Більш того, у курсовій роботі складено таблицю що містить можливі способи перекладу комп'ютерних термінів.

Ключові слова: переклад, комп'ютерна термінологія, перекладацький аналіз, комп'ютерний дискурс, термін.