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The Artificial Intelligence-related Superordinate Concepts and Terminological Variation in the English and Ukrainian Languages

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Summary. This research is aimed at analyzing the artificial intelligence-related superordinate concepts in the English and Ukrainian languages and explaining the relevance of using terminological variations from the field of artificial intelligence (AI) in a particular context on the example of translation from English (EN) into Ukrainian (UK). The essence of terminological variation (TV) as a linguistic phenomenon, and possible reasons for its emergence are described. Terminological variants in the newly established field of artificial intelligence appear either in both EN and UK, or in one of those due to a specific understanding of objects and ideas in a particular language. The main concepts in EN and UK, which may include both terms and variants, in the field of AI are identified. On the example of building a basic concept model with the respect to the core concept of AI, the differences in understanding similar concepts in the EN and UK are explained. Considering these differences, the contextually motivated ways of using the artificial intelligence-related terms or TVs are provided in the examples of translation from EN into UK.
Keywords: artificial intelligence-related concept model, superordinate concept, artificial intelligence-related terms, terminological variations, translation

Суперординатні поняття та термінологічна варіація у сфері штучного інтелекту в англійській та українській мовах

Анотація. Це дослідження спрямоване на аналіз суперординатних концептів зі сфери штучного інтелекту в англійській та українській мовах, а також пояснення актуальності використання термінологічних варіацій в галузі штучного інтелекту (ШІ) в конкретному контексті на прикладі перекладу з англійської на українську мову. Схарактеризовано сутність термінологічної

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варіативності як лінгвістичного явища та можливі причини її виникнення. Термінологічні варіанти у новоствореному полі штучного інтелекту з'являються або в обох мовах – англійській і українській, або в одній із них через специфічне розуміння об'єктів та ідей у конкретній мові. Визначено основні концепти в англійській та українській, які можуть включати як терміни, так і варіанти у сфері ШІ. На прикладі побудови базової концептуальної моделі щодо основного концепту ШІ пояснюються відмінності у розумінні схожих концептів в англійській та українській мовах. Враховуючи ці відмінності, подано контекстуально вмотивовані способи використання пов'язаних зі штучним інтелектом термінів чи термінологічних варіантів на прикладах перекладу з англійської на українську. Актуальність використання цих термінологічних одиниць у конкретних прикладах обґрунтовується контекстуальними особливостями, вираженими в аналізованих перекладах.
Ключові слова: концептуальна модель поля штучного інтелекту, суперординатний концепт, терміни галузі штучного інтелекту, термінологічні варіації, переклад

Dirbtinio intelekto superordinacinės sąvokos ir terminų variantai anglų ir ukrainiečių kalbose

Santrauka. Šio tyrimo tikslas – remiantis pagrindiniais į vertimą orientuoto terminologinio darbo ir su dirbtiniu intelektu (DI) susijusių superordinacinių (platesnių) sąvokų modelių bruožais išanalizuoti konteksto įtaką terminų variantams vertimo iš anglų į ukrainiečių kalbą pavyzdžiuose. Aprašoma termino varianto, kaip kalbinio reiškinio, esmė ir galimos atsiradimo priežastys. Nustatyta, kad variantų dirbtinio intelekto terminijoje atsiranda tiek anglų, tiek ukrainiečių kalbose arba vienoje iš jų dėl specifinio objektų ir idėjų tam tikra kalba supratimo. Išskiriamos pagrindinės DI sąvokos anglų ir ukrainiečių kalbomis, kurios gali būti perteikiamos ir terminais, ir jų variantais. Panašių sąvokų supratimo skirtumas anglų ir ukrainiečių kalbose paaiškinamas DI sąvokos konceptualaus modelio kūrimo pavyzdžiu. Atsižvelgiant į šiuos skirtumus, pateikiami DI terminų ar jų kontekstinių variantų vartojimo būdai vertimo iš anglų į ukrainiečių kalbą pavyzdžiuose.
Reikšminiai žodžiai: konceptualusis dirbtinio intelekto modelis, superordinacinė sąvoka, dirbtinio intelekto srities terminija, terminų variantai, vertimas

Introduction

The field of artificial intelligence (AI) is one of the most powerful generators of world technology development, however, it often finds itself in need of linguistic support due to a rapid tempo of new product developments. Also, considering such a high speed of development, it is quite difficult to introduce static definitions of certain concepts. This is why the AI-related terminological guides do not always reflect all the context and aspects in which a term is used. Therefore terminological variations may emerge when variable features of concepts are traced, such as a communicative situation, the context, purposes, experience and culture. There is a high demand on verifying the context-dependent variants in the field of AI and selecting the most relevant equivalents in a certain context [Massion 2021, 90–104].

Ukrainian terminology of AI is undergoing the process of development. The importance of translating terms in the field of AI is the consequence of a live dialogue between experts in various countries, and, due to these contacts, the UK has to include new terms into its system. The problem of searching for

national equivalents and correct translations appears at all times [Tatsenko, Orol 2021]. In the process of interdisciplinary communication, term borrowing from the neighboring concept systems takes place, creating terminological variations. Step by step the borrowed terms are translated from EN into UK, creating the situation when there is a foreign and a national term at the same time [Коновалова, Мирошниченко 2017, 134–135].

From the perspective of context, the emergence of TVs may be the case demanding justification of use. Such cases as *synonymy* and *polysemy*, *borrowed terms* and *neologisms* in LSP can be the potential sources of terminological variation [Кочан 2008], however, to trace these phenomena, it is necessary to build the concept models and to identify the relationships among the concepts which would show new gaps and other contexts in which a variant can be used.

This paper aim **to analyze the artificial intelligence-related superordinate concepts i**n the EN and UK languages and to **explain the relevance** of using terminological variations from the field of AI in a particular context on the example of translation from EN into UK. A challenge of this research is that AI-related content in Ukraine is introduced in English, as a rule, and it is quite hard to find the examples of parallel translation from EN into UK, which does not allow one to compile a database of terms on the basis of comparison and frequency of use. However, by means of creating the concept model of AI features in EN and UK, it is possible to match, compare, analyze particular terms and find out the cases of terminological variation.

1. Theoretical background of research

1.1. Terms as the concept system representators

A term is a linguistic sign that correlates with the concept and subject of a certain professional field and on the basis of this relationship is part of a certain concept system as its integral element. This relationship should be understood as the "relationship" between a sign, a concept, and an object [Cabré 1999, 81; Fernández-Silva et al. 2009, 1–2; Щерба 2006, 239]. A concept represents a totality of acts "firmly limited" by mental operations: thoughts or judgements [Sager 1998, 42; Cabré Castellví et al. 1999, 42; Valeontis, Mantzari 2006, 1].

A term is an element of a particular terminology [Щерба 2006, 237]. Since a term is a word of a special function, in each concept system it has its own, clearly defined meaning, although it can be created according to one model [Кочан 2013, 205–206; Krizhko 2018]. Nuopponen [1994] mentions:

> *The concept of concept system, which is one of the most central theoretical notions in the theory of terminology, is usually defined in terminological literature as a system of related concepts which form a coherent whole. Starting from the idea of system, concept systems could be regarded as systems consisting of several components (concepts)*

and their relations (concept relations). <…> They are static because they represent the conceptual apparatus reflecting the knowledge which exists at a particular time. New data result in new concepts, and the emergence of new concepts changes existing concept systems.

Hierarchical concepts are organized into levels where the superordinate concept is subdivided into at least one subordinate concept (this particular type will be presented in the analysis section) which can have more than one dimension, in which case the concept system is said to be multidimensional [Онуфрієнко 2010].

The concept systems in specialized fields are the basis for the multilingual terminological resources, which should also include the use of terms in context [Melby 2015, 427]. Madsen and Thomsen [2015, 250] mention that concept systems include the description of the concepts mostly in the form of characteristics represented by, for example, attribute–value pairs and relationships within the subject field. A concept system may be built by compiling a satellite model, which is a graphical mind map-like presentation based on concept analysis in mind with a core concept surrounded by other hierarchically connected concepts, and a concept relation model comprising concept relations and the information about the types of concepts [Nuopponen 2011, 5–10]. This model contemplates the presence of a core concept related to other concepts by the relations of generic subordination, generic coordination, generic superordination, and the characteristics of the object of reference.

Rogers [2004, 217–218] is emphasizing on the importance of modeling linguistic-conceptual mapping and identifying concept–concept relations within a system by translators when dealing with texts. The reason for it is a need of linguistic, semantic and conceptual contextualization of terms, especially technical, which is "a crosslinguistic lexical substitution exercise". The objects of the world can be reflected in the text so that only a full-fledged terminological analysis should be completed, because neither translation straightforwardly, nor even just concept identification can be enough for distinguishing those.

According to Kageura [1997, 119–120], the fundamental elements of a terminology-oriented concept systems are: "(1) a static organization of stable concepts represented by established terms and their inter-relationships and (2) dynamic potential for accommodating new concepts in the system, manifested by the rules governing the formation of new terms". Consequently, there is a certain set of basic concepts, which are supplemented by new ones in the process of expansion and remodeling.

Thus, modeling a concept system requires an in-depth analysis of terms that represent certain concepts via identifying their types, characteristics, and definitions.

1.2. Terminological variation and translation-oriented terminology

Galinski and Budin [1993, 211] explain that some concepts may disappear, change over time or become generative for certain new concept systems with or without change of meaning: "These concept dynamics are not reflected and represented by the terms, which – as linguistic symbols – show much more stability than the concepts for which they stand." This creates a problem when slightly different concepts are associated with one and the same term. Then again, depending on the communication context of terms, one concept may be expressed by multiple specialized terms. Those may differ from each other semantically. This difference should only be well-motivated and reflect the scientific vision of using a particular term. This phenomenon when the terms denoting one and the same concept differ among each other is called **terminological variation (TV)**.

TV is defined as "the use of alternative denominations to refer to the same concept…" [Fernández-Silva et al. 2009, 22]. It is emphasized that not only the formal side of the term can be affected, but the transformation of meaning may occur as a result of a particular concept perception by the recipient.

TV is especially frequent in reader-oriented texts, where the "author–reader" relationships play a key role. When a translator aims at disclosing all possible relationships between a source and a target text segment, very, from the first view, specific concepts might be translated in multiple ways [Gambier 2010, 412].

The selection of TVs depends on the context, which determines a semantic value and a pragmatic meaning. If a certain concept has specifications of a particular environment, it creates the use of contextualized lexical units. Such a concept is known as multidimensional, and this multidimensionality reveals TV as a dynamic and a situated phenomenon [Tercedor 2011, 183–184]. According to Fernández-Silva and Karremans [2011, 319], TV in specialized texts may occur when:

1. it is necessary to avoid using one and the same expression many times in order to follow an appropriate style of the target text;
2. the levels of expertise among the communication participants are different;
3. an idea usually expressed by an established term is a little bit different from the idea meant by the speaker;
4. linguistic and sociocultural factors influence the formation of terms.

"It is logical to assume that the less homogeneous professional fields are, the more terminology variation may be observed, both at the intra-linguistic and inter-linguistic levels" [Vozny, Antonyuk 2021, 5]. In this regard, one more reason for a TV is the text coherence, which explains the deviations of

terms in specialized texts from the traditional view when one term is referred to one concept.

In general, contextual factors causing terminological variation can be expressed through different levels: cognitive, communicative, discoursive, and diachronic [Fernández-Silva, Karremans 2011, 321; Temmerman 2011, 108]. However, the most relevant for technical language, where the terminology is highly standardized, are the contextual factors at cognitive and discourse levels.

The analysis of artificial intelligence-related terminological variations in translation from English into Ukrainian

This section is dedicated to identifying variable terminology in the field of AI on the basis of the English and Ukrainian language systems. The idea of the basic satellite concept model by Nuopponen [2011] is being used as the sample for introducing the main information about the main notions of AI.

1.3. Concept model

Before conducting the analysis of terminological variations, it is decided to build a **satellite concept model** for identifying the fundamental superordinate concepts in EN and UK. The latest have been extracted from multiple definitions of the concept "AI," since there is no commonly established one definition, and contrasted within the systems of the EN and UK.

Totally 5 concepts are analyzed and compared againsts each other (each of the EN concepts linked to the core concept of AI by generic subordination relationships, implicitly matches the UK concepts, linked to the same core concept (see Fig. 1).

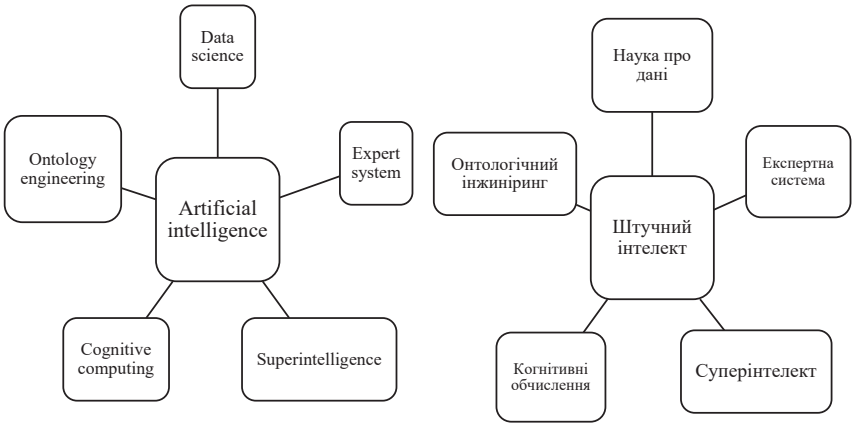

Fig. 1. Generic subordination relationships of the superordinate concepts and the core concept "Artificial Intelligence – "Штучний інтелект"

A **comparative analysis** of concepts within the same thematic field in EN and UK made it possible to find out a new portion of terms related to the field (see Table 1). The method of grouping the EN and UK concepts in pairs has been utilized to reveal the field of related terms for research. There is no goal to build a full-fledged concept system of AI in two languages, instead the effort is paid to define the concepts which may be a potential source of terminological variations in both languages.

Table 1. Superordinate concepts related to AI concept, corresponding definitions and terms

English		**Ukrainian**	
Concept	**Definition**	**Concept**	**Definition**
Data science	*An inter-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data* [Data science]	**Наука про дані**	*Міждисциплінарна галузь про наукові методи, процеси і системи, які стосуються добування знань із даних у різних формах, як структурованих так і неструктурованих* [Наука про дані].
data mining/ добування даних, *глибинний аналіз даних*; *big data/ великі дані, big data*; *dimensionality reduction/ зменшення розмірності*; *knowledge representation and reasoning/ подання знань, представлення знань*; *semantic network, frame network/ семантична мережа*			
Expert systems	*Systems using rules to provide advice and guidance* [Torres et al. 2019, 11]	**Експертна система**	*Система обробки даних і знань, яка забезпечує експертне рішення проблем в заданій області застосування шляхом побудови виведень на основі бази знань, в якій формалізовано людський досвід*[1] [Палагін, Петренко 2017, 101]
forward chaining/ прямий вивід; *backward chaining/ зворотній вивід*; *automated theorem proving/ автоматичне доведення теорем*			
Superintelligence	*Any intellect that greatly exceeds the cognitive performance of humans in virtually all domains of interest* [Bostrom 2014, 22]	**Суперінтелект**	*Інтелект, розумові можливості якого в більшості важливих для людини сфер діяльності перевирщують людські можливості* [Бостром 2020, 37]

[1] eng. *An intelligent system focused on replicating the experience of highly qualified specialists in areas where the quality of decision-making traditionally depends on the level of expertise.*

technological singularity/ технологічна сингулярність; *explainable AI/ пояснимий штучний інтелект*			
Cognitive computing	*The concept is applying knowledge from cognitive science to build systems that simulate human thought processes* [Jones 2018, 11]	**Когнітивні обчислення**	*Когнітивні обчислення використовуються для імітації процесів* [Погореленко 2018, 24]
speech recognition/ розпізнавання мовлення; *speech to text (STT)/ мовлення-у-текст;* *speaker recognition/ розпізнавання мовця*, *ідентифікація мовця*; *mainframe computer, mainframe, big iron/ мейнфрейм*			
Ontology engineering	*Is a field which studies the methods and methodologies for building ontologies, which encompasses a representation, formal naming and definition of the categories, properties and relations between the concepts, data and entities* [Ontology engineering]	**Онтологіч-ний інжиніринг**	*Розділ інженерії знань, новий напрямок в методології розробки систем обробки знань, заснований на формалізованих методах побудови онтологічних описів предметних областей та їх використанні*[2] [Палагін, Петренко 2017, 106]
domain of discourse, a universe of discourse, universal set, *a universe / універсальна множина, універсум*; *ontology language, frame language / онтологічні мови*			

Totally, 44 terminological units are collected. However due to limitations of this paper lenght only terms and their variants of two superordinate concept pairs "Data science" – "Наука про дані" and "Cognitive computing" – "Когнітивні обчислення" are examined.

1.4. Terminological variation within the concept model

On the basis of the introduced concept model, specialized terms in the field of AI and means of their expression in languages along with the variations used in a particular context are analyzed and followed by the examples in translation. In those cases when translation examples have not been found, separate sentences in EN and in UK containing one and the same term or a TV are introduced and compared in the sense of terminology use. Selecting this particular resource for the analysis of terms in translation and in context is justified by the availability of two versions for the articles in *Wikipedia*: English and Ukrainian.

[2] eng. *Denotig the section of knowledge engineering, a new direction in the methodology of developing knowledge processing systems, based on formalized methods of constructing ontological descriptions of subject areas and their use.*

1.4.1. "Data science" – "Наука про дані"

While analyzing the terms ***data mining***, ***big data***, ***dimensionality reduction***, ***knowledge representation and reasoning***, and ***semantic network*** have been selected, reviewed on the matter of TV emergence, and the translation specifics is explained:

> EN: *The actual data mining task is the semi-automatic or automatic analysis of large quantities of data to extract previously unknown, interesting patterns* [Data mining];
>
> UK: *Добування даних <…> – процес напівавтоматичного аналізу великих баз даних з метою пошуку корисних фактів* [Добування даних].

As it can be observed, the commonly established term is used in both versions, although, ***добування даних*** is a kind of loan translation since as it will be illustrated below, the term is a buzzword, since the process concerns not actual extraction of data but the information from data. At the same time, the TV for ***data mining*** takes place in UK. In the following example ***data mining*** is already translated as ***глибинний аналіз даних***: *Глибинний аналіз даних здійснюється автоматично шляхом застосування методів математичної статистики, штучних нейронних мереж, теорії нечітких множин або генетичних алгоритмів* [Добування даних]. The terminological variation in the EN is caused by cognitive factors when the level of expertise among participants of communication excludes using the marketing term ***data mining***, and instead, the idea conveys a large-scale information processing, not just *data extraction*. The emergence of UK variation is motivated by the necessity to explain a loan translation of ***добування даних***, mostly used in nonexpert communication, and its actual meaning. So, the variation is expressed on a discourse level, showing a transformation of this term in the expert environment where it is important to formally and accurately name the process.

Reviewing the term ***big data***, the EN sentence has been translated exactly as in the previous example – the UK term ***великі дані*** is a loan translation:

> EN: *Big data refers to data sets that are too large or complex to be dealt with by traditional data-processing application software* [Big data];
>
> UK: *Великі дані – <...> набори інформації настільки великих розмірів, що традиційні способи та підходи не можуть бути застосовані до них* [Великі дані].

Sometimes the EN lexical infiltration is used in the UK text to retain the accuracy of translation, as in the following example: *Медичні big data допомагають запобігти розвитку хвороби на ранній стадії завдяки аналізу серцево-судинного тиску* [Великі дані]. The variation here is expressed on a communicative level due to the impossibility to use the term ***великі дані*** in the UK because of possible misinterpretation.

The term ***dimensionality reduction*** has an equivalent ***зменшення розмірності*** which successfully describes the process without addressing any borrowings or neologisms.

> EN: *The main linear technique for dimensionality reduction, principal component analysis, performs a linear mapping of the data to a lower-dimensional space …* [Dimensionality reduction];
>
> UK: *У статистиці, машинному навчанні та теорії інформації зниження розмірності є процесом скорочення кількості випадкових змінних шляхом отримання множини головних змінних* [Зниження розмірності].

This translation from EN into UK is done competently considering the context and the discourse of expert communication.

The term ***knowledge representation and reasoning*** also has two variations in the UK: ***представлення знань*** and ***подання знань***. The first one is a more commonly used standard term corresponding to "knowledge representation and reasoning" when it concerns the AI systems without any references to other sciences:

> EN: *Knowledge representation and reasoning is the field of artificial intelligence (AI) dedicated to representing information about the world in a form that a computer system can use to solve complex tasks* [Knowledge representation and reasoning];
>
> UK: *У штучному інтелекті основна мета представлення знань – навчитися зберігати знання так, щоб програми могли опрацьовувати їх і досягати подібності з людським інтелектом* [Представлення знань].

However, the diachronic analysis shows that the term came into UK from "Теорія подання знань" (eng. *Theory of knowledge representation*) in cognitive theory, so when it's necessary to make a reference to knowledge taken from the cognitive field, the term ***подання знань*** is used. Therefore, the UK sentence *Дослідники штучного інтелекту використовують теорії подання знань з когнітології* [Представлення знань] can be compared to the EN sentence: *These efforts led to the cognitive revolution in psychology and to the phase of AI focused on knowledge representation* [Knowledge representation and reasoning]. The part of the term "reasoning" is omitted in the EN sentence, illustrating the reference to cognitive science from which the term was borrowed. So, the TVs are expressed at the diachronic level when in the EN "knowledge representation" from the cognitive science became "knowledge representation and reasoning" in the AI, and "подання знань" from the cognitive science became "представлення знань" in the AI.

The EN term ***semantic network*** has a TV ***frame network*** the use of which should be carefully considered since technically frames may contain extra computing information for a system to process while semantic networks don't have such capacity.

EN: *A semantic network, or frame network is a knowledge base that represents semantic relations between concepts in a network. This is often used as a form of knowledge representation.* [Semantic network];

UK: *Семантична мережа — інформаційна модель предметної області, що має вигляд орієнтованого графу, вершини якого відповідають об'єктам предметної області, а ребра задають відносини між ними* [Семантична мережа].

Therefore, the commonly established terms are mostly used in the AI texts instead of variations.

1.4.2. "Cognitive computing" – "Когнітивні обчислення"

While analyzing the superordinate concept pair "Cognitive computing" – "Когнітивні обчислення", the terms ***speech recognition***, ***speaker recognition***, and ***mainframe computer*** have been selected, reviewed on the matter of TV emergence, and the translation specifics is explained. Generally, the term ***speech recognition*** is translated into UK as ***розпізнавання мовлення***:

EN: *In the search box on the taskbar, type Windows Speech Recognition, and then select Windows Speech Recognition in the list of results* [Microsoft, n.d.];

UK: *У поле пошуку на панелі завдань введіть Розпізнавання мовлення у Windows, а потім виберіть Розпізнавання мовлення у Windows зі списку результатів* [Microsoft, n.d.].

However, there are multiple variations for this term in the EN, since it was borrowed from cognitive science to other fields of knowledge. Thus, the term ***automatic speech recognition, автоматичне розпізнавання мови*** is used as a general term in the computer science. In other fields, where the use of computers is not obvious from the context and it is necessary to specify the use of speech recognition, the term is ***computer speech recognition***, ***комп'ютерне розпізнавання мови***. Also, when speech recognition is used as a part of a particular software application, then it is mostly referred to as ***speech to text (STT)*** [Speech recognition], ***мовлення-у-текст*** [Розпізнавання мовлення]. The variations are expressed at the discourse level, considering the use of terms in different areas of knowledge and application.

The term ***speaker recognition*** has an equivalent ***розпізнавання мовця:***

EN: *Speaker recognition is the identification of a person from characteristics of voices* [Speaker recognition];

UK: *Розпізнавання мовця — це ідентифікація людини залежно від характеристик її голосу* [Розпізнавання мовця].

The term can be easily confused with some of its variations, including ***speaker recognition*** in EN and respectively ***перевірка мовця*** in UK, as well as ***speaker identification*** and respectively ***ідентифікація мовця***. The difference is that both TVs are some kinds of stages in the process of speaker recognition. The terminological variations in both languages are expressed at the cognitive level since the ideas expressed in the mentioned terms are slightly different.

The term ***mainframe computer*** in the EN has been translated into UK with the use of transcription strategy as ***мейнфрейм***. Noticeably, the second part of the EN term *computer* is not used in the UK. This may be due to the presence of terminological variations in EN, such as less official ***mainframe***:

EN: *The term mainframe was derived from the large cabinet, called a main frame* [Mainframe computer];

UK: *Сам термін «мейнфрейм» походить від назви типових процесорних стійок цієї системи.* [Мейнфрейм].

Another EN variation is ***big iron*** which mostly appears in professional slang, as in the following example: *Originally, the phrase 'big iron' probably originates from early mainframes, which were very large computers with superior capabilities enclosed in room-sized metal frames* [Rouse 2021].

The TVs both in EN and UK are expressed mostly at the discourse and communicative levels since they refer to various levels of expert communication: official, less official, and nonofficial. It need to be pointed out, that TVs do not add clarity to the texts, however, as new concepts emerge and terminological system of particular field is developing, variations are inevitable.

Conclusions

The empirical analysis of terminological material confirmed the theoretical insides about a importance of construction and understanding of the concept system for the further selection of terminological units from a particular field to analyze their composition, semantic structure, and possible contexts. The research revealed that a properly chosen concept may be used to extract the terms equivalent in multiple languages, but it is always necessary to verify the context of usage in each case.

On the basis of term analysis within the AI-related concepts model, similarities and differences may be identified: 1) similar concepts used in different fields of science and expressed by the same denominations; 2) different denominations in two languages within one field of science referring to one and the same or two very similar concepts; 3) slightly different concepts expressed by the same denominations in various fields of science; 4) slightly different concepts expressed by very different denominations within one field of science.

The analytical framework proposed in this research may help to avoid confusing concepts and terms used in a particular thematic field. Also, investing one's time in building a satellite concept model is a good method to determine the concepts which may be attributed by mistake to a general thematic field when in reality they may refer to a specific field, having different meanings in this discourse.

In the future, considering a fast tempo of development of certain fields like AI where new terminological variations may appear, translation-oriented terminology, as an integral part of all translation projects, includes the search, collection of terms, their documentation, and updating the database, must be developed and computer-based. The research can be expanded by including the concept models form the other hierarchical levels, constantly updating and filling information with newly emerging concept models.

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