Materiallar to'plami · Conference Proceedings
"ZAMONAVIY TADQIQOTLAR VA BARQAROR RIVOJLANISH" respublika ilmiy-amaliy konferensiyasi
04 August 2026
UDK 811.111
FILOLOGIYA

CONCEPTUAL FUNCTIONS OF COMPUTER LINGUISTICS TERMINOLOGY IN ENGLISH AND UZBEK

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ABSTRACT

This study examines the conceptual function of computer linguistics terminology in English and Uzbek. It analyzes how domain-specific terms perform both nominative and conceptual functions in representing scientific knowledge. The findings show that English terms generally encode conceptual meaning within the term itself, whereas Uzbek terminology often conveys it through explanatory definitions. The study emphasizes the need to standardize and enrich Uzbek computer linguistics terminology and concludes that terminology serves as a conceptual framework for the computational representation of language.

Keywords

computer linguistics, terminology, conceptual function, natural language processing, term, concept.

DOI: 10.5281/zenodo.21743381

INTRODUCTION

It should be noted that in the recent decades of the 21st century, as a result of the rapid development of digital technologies, artificial intelligence, and automated information processing systems, computational linguistics has emerged as an independent and interdisciplinary field of science and has become integrated with the traditional branches of linguistics. This process is primarily driven by the emergence, systematization, and active functional use of specialized terminology. In particular, the study of the penetration of computational linguistics terms originating in English into the Uzbek language, their adaptation to the national linguistic system, and their functional transformation has become highly relevant and requires comprehensive scientific analysis.

LITERATURE REVIEW

According to the eminent linguist Ferdinand de Saussure, who recognized that linguistic units perform multiple functions and developed his theory of the linguistic sign and the concept, "the linguistic sign is associated not with a thing, but with a concept."[1]. The conceptual function reflected in linguistic units, as noted by the scholar, makes it even clearer that a term represents a linguistic sign of a concept, while a domain-specific term constitutes a model of specialized knowledge. In contrast, E. Wüster interprets a term as a linguistic unit that serves as the carrier of a concept. According to him, "A term is not merely a word, but the designation of a precisely defined concept within a specialized field."[2]. According to E. Wüster, the conceptual function of a term does not designate an object itself; rather, it names a conceptual unit represented in language. This view led to the conclusion that the primary function of a term is to denote a concept rather than a physical entity. Subsequently, this idea became one of the fundamental principles underlying numerous theories of terminology. With regard to this issue, R. Langacker expresses his views as follows: "*In the formation of a discipline's conceptual framework, terminology reveals that meaning is not objective, instead, conceptual systems take precedence.*"[3].

An analysis of the works of the linguists discussed above demonstrates that domain-specific terms perform not only a nominative function but also, more importantly, a conceptual function. As these scholars em-

phasize, terms do not merely represent scientific knowledge; they also shape, structure, and, to a certain extent, delimit it. In our view, these theoretical perspectives are particularly significant in the field of computer linguistics, where a conceptual model grounded in computational approaches to language is increasingly replacing the traditional philological understanding of language.

DISCUSSION AND RESULTS

It is important to note that, in addition to their nominative function, the terminological units used in the lexicon of computer linguistics in the languages under comparison also perform a conceptual function. The conceptual function of terminological units refers to their role in shaping and organizing specific concepts, processes, or models within the system of scientific knowledge using domain-specific terms. In both spoken and written discourse, computer linguistics terms perform the following conceptual functions:

A) Modeling scientific knowledge

B) Abstraction and formalization

C) Facilitating interdisciplinary integration

The analysis of the research materials demonstrates that computer linguistics terms in both English and Uzbek possess not only a nominative function but also a strong conceptual function. In English, terms tend to express concepts concisely and independently, whereas in Uzbek the conceptual function is often realized through explanations, definitions, and metalanguage. This finding highlights the need to systematize, standardize, and conceptually enrich the terminology of computer linguistics in the Uzbek language. For example, the English term **parser** denotes a software model that automatically analyzes syntactic structures. In Uzbek, the term **parser** has been borrowed directly from English, while its conceptual meaning is typically conveyed through an explanatory definition rather than through the term itself. It may be explained as follows: that is, a **parser** is a software tool that automatically identifies and analyzes the syntactic structure of a sentence or text. This example demonstrates that, in Uzbek, the conceptual function is realized not directly through the linguistic form of the term itself but through metalinguistic explanation. English: **Tokenization** is the first step in NLP pipelines. Uzbek: **Tokenization (tokenlash)** is considered the first stage of natural language processing (NLP) pipelines. The example above demonstrates that the term performs the same conceptual function in both languages, despite differences in its linguistic realization.

The foregoing discussion demonstrates that computer linguistics terms in English are semantically concise while remaining conceptually comprehensive. Their conceptual function extends beyond merely naming an object; it also serves to shape specific scientific concepts and models, establish a particular conceptual framework, and systematically transform domain-specific knowledge into conceptual representations. For example, the English term **embedding** refers to the concept of representing contextual meaning through vector representations. In Uzbek, the borrowed term **embedding** is most often accompanied by an explanatory definition, referring to a method of representing words as vectors. This illustrates that, in English, the concept is encapsulated within the term itself, whereas in Uzbek the **concept + explanation** model is more prevalent. Similarly, the English lexical unit **machine learning**, translated into Uzbek through a calque as **mashinali (kompyuter orqali) o‘rganish**, has given rise to a new conceptual domain. As a result, the meaning of the verb **o‘rganish** (“to learn”) has expanded from its traditional anthropocentric sense to an algorithmic one. This semantic shift reflects the conceptual function of the term in shaping new scientific knowledge. Additional examples illustrating the conceptual functions of domain-specific terminological units are presented below. For example, the expression **Language as Data (til ma’lumot sifatida)** replaces the traditional philological conception of language with a computational one. Within this conceptual framework, language is interpreted not as a system of meaning but as a structured body of formalized, professionally encoded data that can be processed and analyzed by computational algorithms. Consequently, the study of language shifts from qualitative analysis to quantitative and computational approaches. The following example illustrates this point. **Uzbek**: *Kompyuter lingvistikasida til ma’nolar tizimi emas, balki strukturallashgan ma’lumot sifatida qaraladi – in computational linguistics, language is treated as structured data rather than abstract meaning.*

Similarly, the conceptual function of the term **context window – ma’noning lokallashuvi (localiza-**

tion of meaning) - can be explained as follows. The term **context window** conceptualizes meaning not as an unlimited phenomenon but as one that can be computationally bounded and processed. Thus, the term represents more than a technical parameter; it embodies a fundamental scientific conception of language within the field of computational linguistics. In computer linguistics, the term **context window** performs a conceptual function by framing meaning not as an unlimited, global phenomenon but as one that is computationally bounded, processable, and localized. The term contributes to understanding language not solely within the framework of human cognition but also in terms of algorithmic constraints and computational resources. As such, it constitutes one of the fundamental theoretical concepts underlying modern neural language models. **English example**: *transformers expand the effective context window using self-attention – transformer modellari o‘z-o‘ziga e’tibor mexanizmi orqali samarali kontekst oynasini kengaytiradi.* **Uzbek example**: *o‘qitish jarayonida ma’no ma’lum kontekst oynasi doirasida shakllanadi – meaning emerges within a fixed context window during training.* Another widely used term in both the spoken and written discourse of the languages under comparison is **model**. The conceptual function of this term and its underlying meaning are particularly significant in the context of computer linguistics and natural language processing (NLP). A **model** is an abstract representation that formalizes knowledge about language and enables the prediction, generalization, and simulation of linguistic phenomena. The conceptual function of this term can be explained as follows.

Within the terminology of computer linguistics, the term **model** serves not only a nominative function by designating linguistic entities but also a conceptual function by providing their abstract and formal representations. Furthermore, it functions as a cognitive linguistic tool that facilitates the formation of scientific understanding, enabling researchers to conceptualize, analyze, and interpret linguistic phenomena within a computational framework. Moreover, the term **model** functions not only as a research tool but also as a conceptual core within the field of computer linguistics. It can therefore be concluded that the term **model** enables language to be conceptualized not merely as a semantic object but also as a computational one. Through its conceptual function, the term transforms knowledge about language into formalized, computationally interpretable concepts, representing meaning, context, and syntax within an abstract computational framework. It also serves as a means of structuring scientific knowledge and supporting the prediction of linguistic phenomena. Consequently, in natural language processing (NLP), the term **model** conceptualizes language as both data and a computational object.

The analysis of the examples presented above demonstrates that the terms used in computer linguistics serve not only to designate objects and phenomena but also to shape the concepts that underpin scientific thought. In this respect, computer linguistics terminology contributes to the development of a new computational conceptualization of language. The conceptual functions of the most widely used domain-specific terms examined in this study are summarized in the table below.

Conceptual functions of domain-specific terms

№	English	Uzbek	Conceptual function	Illustrative examples
1	attention	e’tibor	The concept of identifying semantic relevance and establishing contextual relationships.	Transformer models identify the most relevant tokens in long texts using the self-attention mechanism.
2	parsing	parsing	Represents syntactic structure and grammatical relations as a formal model.	The sentence “The cat sat on the mat” can be represented as a dependency tree to illustrate the grammatical relationships among its components.
3	embedding	embedding	Conceptualizes semantic relationships and the semantic vector space.	Vector arithmetic demonstrates semantic relationships, e.g., **king - man + woman ≈ queen**.

№	English	Uzbek	Conceptual function	Illustrative examples
4	context window	kontekst oynasi	Represents the concept of meaning localization within a bounded context.	In the sentence “The bank raised interest rates,” the meaning of **bank** is determined by the preceding contextual tokens.
5	corpus	korpus	Conceptualizes a structured linguistic database for scientific analysis.	Large text collections are stored together with linguistic annotations and standardized formats for computational analysis.
6	model	модел	Serves as a means of predicting, generalizing, and simulating linguistic phenomena.	A neural network model predicts the next word in a sequence based on the preceding context.

The examples presented in the table above demonstrate that the nominative function of each domain-specific term lies in its ability to designate a specific object or phenomenon within the field of computer linguistics and to serve as a linguistic marker of a particular concept. By contrast, the conceptual function extends beyond naming, highlighting the role of terminology in organizing linguistic knowledge—including grammar, semantics, and context—into formalized, computationally interpretable concepts. The illustrative examples further demonstrate that the conceptual function of these terms is manifested not only at the theoretical level but also in practical applications within computer linguistics. Furthermore, the table demonstrates the scientific significance of the conceptual scope established through semantic localization and generalized models in computer linguistics terminology. It can therefore be concluded that the terminological system of this field not only provides the technical foundation for natural language processing (NLP) but also serves as a conceptual core that structures and advances scientific thinking about language.

CONCLUSION

The findings demonstrate that computational linguistics terminology in English and Uzbek performs both nominative and conceptual functions. While English terms generally express scientific concepts in concise lexical forms, Uzbek often relies on borrowed terms supported by explanatory definitions. The study confirms that computational linguistics terminology not only names linguistic phenomena but also structures scientific knowledge and reflects the computational conceptualization of language. These findings contribute to comparative terminology studies and provide a basis for the further development and standardization of computational linguistics terminology in Uzbek.

LITERATURE:

1. Saussure F. de. Course in General Linguistics (R. Harris, Trans.). London: Duckworth.1983. P.-92.
2. Wüster E. Einführung in die allgemeine Terminologielehre und terminologische Lexikographie. Wien: Springer. 1982. P.- 163.
3. Langacker R.W. Foundations of Cognitive Grammar. Stanford: Stanford University Press. 1992. P.-136.