

ZAMONAVIY ILMIY PARADIGMA DOIRASIDA SUN'IY INTELLEKT VA KOGNITIV LINGVISTIKA O'RTASIDAGI O'ZARO BOG'LIQLIK

THE INTERRELATIONSHIP BETWEEN ARTIFICIAL INTELLIGENCE AND COGNITIVE LINGUISTICS IN THE MODERN SCIENTIFIC PARADIGM

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Annotatsiya

Ushbu maqola ingliz tilidagi idiomalarni bilish darajasi bilan til kompetensiyasi o'rtasidagi bog'liqlikni, shuningdek, uning madaniyatlararo muloqot samaradorligiga ta'sirini o'rganadi. Unda idiomalarning lingvistik kompetensiyadagi o'rni, tilni ona tili sifatida bilmaydigan kishilar ularni talqin qilishda duch keladigan qiyinchiliklar hamda bu muammolarni yengib o'tishda qo'llaniladigan strategiyalar tahlil qilinadi. Tadqiqot natijalari yuqori darajadagi ingliz tili kompetensiyasiga erishish va muvaffaqiyatli madaniyatlararo muloqotni ta'minlash uchun idiomalarni o'qitish muhim ahamiyatga ega ekanligini ko'rsatadi.

Abstract

This article explores the relationship between the knowledge of English idioms and language proficiency, as well as its impact on the effectiveness of intercultural communication. It examines the role of idioms in linguistic competence, the challenges non-native speakers face when interpreting them, and the strategies employed to overcome these difficulties. The findings highlight the importance of idiom instruction for achieving advanced English proficiency and ensuring successful intercultural communication.

Kalit so'zlar: axborot texnologiyalari, axborot, internet kommunikatsiyasi, messenjer, nutq, til.

Kalit so'zlar: sun'iy intellekt (SI), kognitiv lingvistika, inson tafakkuri, konseptual modellashtirish, kognitiv jarayonlar, multimodal qayta ishlash, kognitiv neyrofan.

Keywords: Artificial Intelligence (AI), cognitive linguistics, human cognition, conceptual modelling, cognitive processes, multimodal processing, cognitive neuroscience.

Artificial intelligence and cognitive linguistics, two distinct scientific disciplines, have recently begun to establish a sustainable partnership aimed at exploring both human and artificial intelligence, driven by their rapid development in recent years. The present article examines the relationship between artificial intelligence and cognitive linguistics, with particular emphasis on the ways in which these fields interact and mutually enrich one another. The article also highlights the role of artificial intelligence in the analysis of extensive linguistic datasets, facilitating the identification of non-obvious patterns and structures that may remain inaccessible to human analysis. Artificial intelligence has made significant advances in the fields of natural language processing, machine learning, and cognitive modeling, while cognitive linguistics has substantially enriched our understanding of the mechanisms underlying human language and cognitive processes. The synergy between these disciplines opens broad prospects for the further development of artificial intelligence technologies and for a deeper understanding of human cognition. Cognitive

linguistics provides valuable insights into the structure and processing mechanisms of human language, which have important practical implications for the development of artificial intelligence systems. By examining the mechanisms through which humans construct and convey meaning посредством linguistic means, cognitive linguistics establishes a foundation for the creation of AI models with more human-like characteristics. Furthermore, several concepts from cognitive linguistics, including Conceptual Metaphor Theory and Frame Semantics, have been successfully incorporated into artificial intelligence systems in order to enhance their capabilities in natural language understanding and generation.

Cognitive linguistics emphasizes the analysis of language through the lens of human cognition, highlighting the significance of mental processes, conceptual structures, and mechanisms of meaning construction in linguistic interaction. Cognitive linguistics performs the following functions within the field of artificial intelligence:

1. In the context of natural language processing, cognitive linguistics provides fundamental insights into the cognitive processes involved in language comprehension, generation, and acquisition. Such knowledge is essential for the development of more advanced systems capable of effectively modeling human abilities related to the perception and production of linguistic content.
2. Within the framework of conceptual modeling, cognitive linguistics offers an extensive theoretical foundation for analyzing the processes through which humans construct and interpret thoughts. These approaches enable researchers in artificial intelligence to employ conceptual models more effectively for the accurate representation and manipulation of semantic data in AI systems, thereby contributing to the improvement and contextualization of language processing.
3. Artificial intelligence models, supported by principles of cognitive linguistics, make it possible to replicate human cognitive processes, particularly those associated with language comprehension. The integration of cognitive linguistic principles into AI systems enables researchers to design artificial intelligence systems with enhanced cognitive functions, thereby improving their capacity to perceive and interpret linguistic data.

A particularly important role is assigned to artificial intelligence within cognitive linguistics, namely:

Among the key directions in this field are the following:

1. **Computational Modeling of Language and Cognitive Functions.** Increasing efforts are currently directed toward the application of artificial intelligence methods, including machine learning and deep learning, to develop models that emulate cognitive processes associated with language analysis, production, and acquisition. Such models make it possible to test hypotheses concerning the mechanisms of language processing and perception, thereby contributing to a deeper investigation of the cognitive foundations underlying linguistic phenomena.
2. **The Integration of Cognitive Neuroscience and Artificial Intelligence:** There is growing interest in combining cognitive neuroscience with AI methodologies in order to investigate the neurobiological foundations of language and cognition. Researchers actively employ artificial intelligence tools to analyze neuroimaging data and to develop computational models that help bridge the gap between the theoretical assumptions of cognitive linguistics and empirical findings in neuroscience.

Artificial intelligence possesses significant potential for deepening our understanding of linguistic and cognitive processes, thereby creating new opportunities for the advancement of cognitive

linguistics in several key areas, including cognitive grammar, cognitive phonology, and cognitive semantics. In Russia, cognitive semantics has become the most widespread branch of cognitive linguistics. According to E. V. Rakhilina¹, the cognitive approach within linguistics naturally presupposes the predominance of cognitive semantics, which determines the behavior of lexical units, their components and combinations, as well as linguistic constructions and related phenomena.

Future directions in cognitive linguistics and artificial intelligence promise to significantly expand our understanding of language, cognitive processes, and the development of intelligent systems. Among the most promising areas of research and development are the following:

1. **Embodied and Situated Cognition:** Future research may seek to integrate insights from embodied cognition with artificial intelligence methods, thereby enabling the creation of more context-sensitive and environmentally adaptive language-understanding systems. By taking into account the influence of the physical body and surrounding environment on linguistic and cognitive development, AI models may more accurately reflect the subtleties and nuances of human communication.
2. **Multimodal Language Processing:** There is increasing interest in the development of artificial intelligence systems capable of interpreting and analyzing language in its multiple forms, including verbal, non-verbal, and visual elements.
3. **Cognitive Semantics and Knowledge Representation:** In the future, the application of artificial intelligence technologies is expected to facilitate the development of advanced models for processing and managing semantic data based on the principles of cognitive linguistics. This may contribute to the creation of intelligent systems capable of reasoning about meaning and conceptual relationships at a level approaching human cognition.
4. **Language Acquisition and Learning:** Collaboration between cognitive linguistics and artificial intelligence may provide deeper insights into the mechanisms through which humans acquire and learn language, leading to the development of AI models capable of reproducing the cognitive processes underlying language learning.
5. **Cross-Cultural and Cross-Linguistic Research:** Future developments in artificial intelligence may involve the analysis of diverse linguistic and cultural datasets in order to identify universal cognitive patterns as well as variations in linguistic behavior associated with cultural specificities.

Apresyan views meaning as a systematically organized structure. Within the framework of the Meaning–Text Theory, he explains the relationship between semantic content and grammatical structure through a formal model. In his approach, lexical meaning is closely connected to human cognitive knowledge. However, Winograd² views language not as a purely formal system but as a cognitive process deeply embedded in human activity and context. In artificial intelligence and language understanding, he promotes the idea of modeling human knowledge systems as well as Kubryakova describes the emergence of cognitive linguistics as the intersection of linguistics,

¹ Rakhilina E. V. “Cognitive linguistics: history, personalities, ideas, results” / E. V. Rakhilina // 1998, No. 36, p. 274–322

² Vinograd T. “On understanding computers and cognition” / T. Winograd, F. Flores // Progress. 1955, p.185–229

psychology, and cognitive science. She considers language an essential part of human cognitive activity. In conclusion, it may be argued that the interaction between cognitive linguistics and artificial intelligence opens new and highly promising horizons for both disciplines. This collaboration not only deepens our understanding of linguistic and cognitive processes but also contributes to the development of more advanced artificial intelligence systems capable of adequately modeling human cognition. The significance of this synthesis is particularly evident in its potential to create multidimensional research programs that integrate the theoretical approaches and empirical methods of both fields in order to address complex issues related to language perception and processing.

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