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BASED ON DATA FROM ENGLISH CORPORA (COCA, BNC, ARXIV, GOOGLE SCHOLAR) AND UZBEK CORPORA (UZKORPUS, TILKORPUS), THE FREQUENCY OF USAGE OF THE TERMS IS ANALYZED

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Abstract: This study analyzes the frequency of artificial intelligence (AI) terminology based on data from major English corpora (COCA, BNC, arXiv, Google Scholar) and Uzbek corpora (UZKorpus, TILKorpus). The research examines the distribution of terms in real discourse, domain-based variation, collocational patterns, and semantic functions. Corpus-driven comparison highlights differences in frequency, stylistic usage, and translation adaptation strategies across English and Uzbek. The findings provide insights into the current development of AI terminology, its linguistic characteristics, and processes of integration into the Uzbek language.
Keywords: artificial intelligence, corpus linguistics, term frequency, COCA, BNC, UZKorpus, TILKorpus, collocations, semantics, translation

INGLIZ TILI KORPUSI (COCA, BNC, ARXIV, GOOGLE SCHOLAR) VA O'ZBEK TILI KORPUSI (UZKORPUS, TILKORPUS) MA'LUMOTLARI ASOSIDA TERMINLARNING QO'LLANISH CHASTOTASI

Annotatsiya: Ushbu maqolada ingliz tili korpuslari (COCA, BNC, arXiv, Google Scholar) va o'zbek tili korpuslari (UZKorpus, TILKorpus) asosida sun'iy intellekt terminlarining qo'llanish chastotasi tahlil qilinadi. Tadqiqot jarayonida terminlarning real nutqdagi taqsimoti, domenlar bo'yicha farqlanishi, kollokatsion birikmalari va semantik faoliyati aniqlanadi. Korpus ma'lumotlari asosida ingliz va o'zbek tillarida terminlarning qo'llanish tezligi, uslublararo o'zgarishi hamda tarjima jarayonidagi moslashuv me'yorlari ko'rsatilib, ikki til o'rtasidagi funksional-semantik farqlar yoritiladi. Tadqiqot natijalari SI terminologiyasining hozirgi rivoji, uning lingvistik xususiyatlari va milliy tilga moslashuv jarayonlarini ilmiy asosda tahlil qilishga xizmat qiladi.
Kalit so'zlar: sun'iy intellekt, korpus lingvistika, termin chastotasi, COCA, BNC, UZKorpus, TILKorpus, kollokatsiya, semantika, tarjima.

ЧАСТОТНОСТЬ УПОТРЕБЛЕНИЯ ТЕРМИНОВ ИССЛЕДУЕТСЯ НА ОСНОВЕ ДАННЫХ АНГЛИЙСКИХ КОРПУСОВ (COCA, BNC, ARXIV, GOOGLE SCHOLAR) И УЗБЕКСКИХ КОРПУСОВ (UZKORPUS, TILKORPUS)

Аннотация: В данной статье проводится анализ частотности употребления терминов искусственного интеллекта на основе данных английских корпусов (COCA, BNC, arXiv, Google Scholar) и узбекских корпусов (UZKorpus, TILKorpus). Исследование охватывает распределение терминов в реальном дискурсе, доменные различия, коллокационные модели и семантические функции. Сопоставление корпусных данных выявляет различия в частотности, стилистическом употреблении и стратегиях адаптации при переводе между английским и узбекским языками. Результаты исследования способствуют более глубокому пониманию современного развития ИИ-терминологии, её лингвистических характеристик и процессов интеграции в узбекский язык.
Ключевые слова: искусственный интеллект, корпусная лингвистика, частотность терминов, COCA, BNC, UZKorpus, TILKorpus, коллокации, семантика, перевод.

INTRODUCTION

The rapid development of artificial intelligence (AI) technologies has stimulated the emergence of a rich and dynamic layer of terminology across many world languages. As AI becomes increasingly integrated into scientific research, industry, education, and everyday communication, its key terms undergo constant lexical, semantic, and functional transformation. Understanding how these terms are used across languages is essential for ensuring effective scientific communication, accurate translation, and the development of standardized terminological systems. In recent years, corpus linguistics has provided powerful methodological tools for examining the real usage, frequency, and contextual behavior of AI terminology. Large-scale English corpora such as COCA, BNC, arXiv, and Google Scholar contain millions of tokens representing academic, technical, and general discourse, offering a reliable basis for investigating the distribution of terms like machine learning, neural network, data processing, and large language model. In parallel, national corpora such as UZKorpus and TILKorpus play a significant role in tracking the usage patterns and adaptation processes of these terms within the Uzbek language. Despite the growing number of studies on AI terminology, comparative corpus-based research involving English and Uzbek remains limited. This gap highlights the importance of analyzing terminological frequency, collocational behavior, morphological features, and functional-semantic characteristics in both languages. Examining how frequently terms appear, in which contexts they are used, and how they interact with surrounding lexical items helps to reveal deeper linguistic tendencies and translation strategies. This study aims to investigate the frequency and contextual features of AI-related terminology based on data extracted from major English and Uzbek corpora. By comparing cross-linguistic patterns, the research provides insights into terminological convergence and divergence, borrowing and adaptation processes, and the development of domain-specific vocabulary in the Uzbek linguistic landscape. The findings contribute to the broader understanding of AI terminology formation, its linguistic behavior, and its integration into academic and professional communication.

LITERATURE REVIEW AND METHODOLOGY

Studies on artificial intelligence (AI) terminology have significantly expanded over the last decade, reflecting rapid technological advancement and the increasing integration of AI into various domains. International scholars such as Jurafsky & Martin (2021), Bender (2022), Marcus (2020), and LeCun (2019) emphasize that AI terminology evolves through scientific innovation, disciplinary convergence, and changes in computational practices. Research within English linguistics indicates that AI-related terms undergo dynamic semantic development, exhibiting polysemy, metaphorization, and functional diversification, especially in academic and technological discourse. Corpus-based investigations (Baker, 2006; McEnery & Hardie, 2012) show that the frequency and collocational patterns of terms provide a reliable measure of their linguistic stability and conceptual maturity. Large English corpora—COCA, BNC, arXiv, and Google Scholar—are widely used to trace terminological distribution, domain-specific usage, and semantic shifts. These studies demonstrate that terms like machine learning, neural network, and deep learning function as high-frequency lexical units with strong collocational networks. In Uzbek linguistics, research on AI terminology remains comparatively limited. However, recent works by local scholars (e.g., Hayitov, 2020; Yo‘ldoshev, 2019; Juraeva, 2021) explore issues of scientific terminology formation, borrowing mechanisms, corpus-based linguistic analysis, and terminological standardization. Studies highlight that Uzbek technical terminology often relies on direct borrowings and calques from English, resulting in varying levels of lexical adaptation

and semantic consistency. Uzbek corpora such as UZKorpus and TILKorpus have recently enabled more systematic investigations of term frequency, usage dynamics, and translation patterns.

Overall, existing research underscores the need for comparative corpus studies that examine AI terminology across English and Uzbek, focusing on frequency, collocation, morphology, and semantic roles. This study employs a corpus-based, descriptive, and comparative methodological approach. The research is grounded in both quantitative and qualitative analysis, drawing on authentic language data from major English and Uzbek corpora.

2.1. Corpus selection

- **English corpora:** COCA, BNC, arXiv, Google Scholar
- **Uzbek corpora:** UZKorpus, TILKorpus

These corpora were selected due to their representativeness, large token counts, domain diversity, and suitability for analyzing academic, technical, and general discourse.

2.2. Data extraction and frequency analysis

AI-related terms such as machine learning, neural network, deep learning, large language model, data processing, and their Uzbek counterparts were queried using corpus search engines. For each term, the following data were collected:

- Raw frequency (token counts)
- Normalized frequency (per million words)
- Distribution across genres and domains
- Frequency trends over time (where corpora allow diachronic analysis)

Quantitative results were used to compare terminological productivity and diffusion across the two languages.

2.3. Collocational and semantic analysis

To identify semantic and functional patterns, collocational profiles were analyzed using:

- Mutual Information (MI) scores
- Log-likelihood measures
- Frequency-based collocation charts

This enabled the identification of frequently co-occurring lexical items and semantic roles of terms in both languages.

2.4. Comparative framework

Following the principles of contrastive terminology studies, the analysis focused on:

- Cross-linguistic differences in term frequency
- Borrowing and adaptation patterns

- Semantic convergence/divergence
- Translation strategies and contextual shifts

This framework facilitated a balanced comparison between English (as a donor language) and Uzbek (as a receiving/adapting language).

2.5. Reliability and validity

To ensure methodological rigor:

- Multiple corpora were triangulated
- Frequency data were normalized
- Manual verification was performed to avoid noise and incorrect tagging
- AI-related contexts were filtered to ensure relevance

RESULTS AND DISCUSSION

The corpus-based analysis revealed several significant patterns in the frequency and contextual distribution of AI-related terminology across English and Uzbek corpora. Data obtained from COCA, BNC, arXiv, and Google Scholar show that English AI terms demonstrate extremely high frequency in academic and technical domains, particularly in scientific articles, conference proceedings, and technology-oriented media texts. Terms such as machine learning, neural network, deep learning, and large language model occur consistently across academic subcorpora, indicating their established status in professional discourse. In contrast, Uzbek corpora (UZKorpus, TILKorpus) display lower absolute frequency values, yet show a steady upward trend in the usage of AI terminology. Most terms appear in transliterated or partially adapted forms (e.g., mashinali o‘qitish, neyron tarmoq, chuqur o‘rganish, katta til modeli), reflecting ongoing processes of lexical borrowing and semantic integration. The analysis also indicates that certain terms are used inconsistently across domains, highlighting the lack of unified standardization in Uzbek technical vocabulary. Collocational patterns reveal further differences between the two languages. In English corpora, AI terms form strong, stable collocations (machine learning algorithm, neural network architecture, data-driven model), demonstrating advanced conceptual development. Uzbek corpora, however, show emerging but less stable collocational networks, with a tendency toward direct calques or literal translations from English. This suggests that the conceptual system of AI terminology in Uzbek is still developing and heavily influenced by English linguistic structures. Another important finding concerns stylistic variation. English corpora exhibit broad stylistic flexibility, with AI terms appearing in both high-level academic texts and general media discourse. Uzbek corpora, however, show concentration primarily in academic, educational, and official documents, with limited representation in mass media or everyday communication. This difference indicates that AI terminology has not yet fully penetrated general public discourse in Uzbek. Overall, the results demonstrate significant cross-linguistic asymmetry: English AI terminology is more frequent, semantically stable, and stylistically widespread, while Uzbek AI terminology is undergoing active formation and standardization. These findings underscore the importance of corpus-based monitoring, terminological harmonization, and the development of unified translation strategies to ensure accurate and consistent usage across academic and professional contexts.

CONCLUSION

The comparative corpus-based analysis of AI terminology in English and Uzbek reveals a clear asymmetry in frequency, semantic development, and functional distribution across the two languages. English, as the global source of AI innovation, demonstrates high-frequency usage of core terms such as machine learning, neural network, deep learning, and large language model, with well-developed collocational networks and stable semantic structures. These terms occur extensively across academic, technological, and general media discourse, reflecting their mature integration into English linguistic and conceptual frameworks. In contrast, Uzbek corpora show a growing but still developing terminological landscape. AI-related terms appear with noticeably lower frequency and exhibit variation in morphological adaptation, transliteration practices, and semantic consistency. Many Uzbek equivalents—such as mashinali o‘qitish, neyron tarmoq, and katta til modeli—are emerging units influenced heavily by English patterns. The relative instability of collocations and domain usage suggests that the Uzbek AI terminology system is in an active process of formation and standardization. The study also highlights important cross-linguistic tendencies. English corpora demonstrate broader stylistic flexibility, while Uzbek usage remains concentrated in academic and official registers. This indicates that AI terminology has not yet fully penetrated general public discourse in Uzbek, emphasizing the need for terminological harmonization, pedagogical dissemination, and consistent translation practices. Overall, the findings underscore the value of corpus linguistics as a methodological tool for tracking terminological evolution, identifying semantic shifts, and evaluating cross-linguistic adaptability. The research contributes to a deeper understanding of how global technological concepts are localized within the Uzbek language and offers insights that may support lexicographers, translators, educators, and policymakers in developing more unified and accurate AI terminology.

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