

**MENTAL ENLIGHTENMENT SCIENTIFIC –
METHODOLOGICAL JOURNAL****MENTAL ENLIGHTENMENT SCIENTIFIC –
METHODOLOGICAL JOURNAL**<http://mentaljournal-jspu.uz/index.php/mesmj/index>**MODERN INNOVATIONS IN KINSHIP LEXIS RESEARCH: INTEGRATING
CORPUS AND NEURAL NETWORK ANALYSIS (A COMPARATIVE STUDY OF
RUSSIAN, ENGLISH, AND UZBEK)*****Gulchehra Omonovna Usmonova****Independent Researcher (PhD Candidate)**Faculty of Philology Department of Foreign Languages and Literature**Denau Institute of Entrepreneurship and Pedagogy**E-mail: guliomonovna@gmail.com**Denau, Uzbekistan***ABOUT ARTICLE**

Key words: applied linguistics, kinship terms, corpus analysis, word embeddings, artificial intelligence, literary translation, linguoculturology.

Received: 01.06.26**Accepted:** 02.06.26**Published:** 03.06.26

Abstract: This research explores contemporary methodological frameworks for examining kinship terminology within the interdisciplinary domain of applied linguistics. The study emphasizes the synergy between corpus technologies and neural network models (embeddings) to identify the linguoculturological nuances of these terms across Russian, English, and Uzbek. By analyzing the literary works of C. Dickens and U. Hoshimov, the article illustrates the pragmatic evolution of kinship designations. Furthermore, the paper argues for the critical necessity of incorporating vector semantics into the automated translation of literary prose.

Introduction. In the current linguistic paradigm, the investigation of kinship terminology transcends basic genealogical classification. Today, kinship lexis is perceived as a sophisticated nexus of sociocultural codes. The innovation of this study lies in the transition from static lexical descriptions to dynamic analysis facilitated by digital humanities tools. This approach enables the precise mathematical recording of interlinguistic lacunae and their specific functional roles within literary discourse.

Corpus analysis provides a platform to verify hypotheses regarding the latent connotations of words that are frequently overlooked by traditional lexicography.

In English linguistic culture, as evidenced by the CLiC Dickens corpus, the term "sister" often carries a functional load associated with "social guardianship." In *Great Expectations*, the usage of this word frequently appears in contexts of dominance rather than intimacy. Statistical concordance analysis reveals that the lexeme correlates with verbs of coercion, forming a distinct authorial idiolect [5, p. 118].

A contrasting example is found in Uzbek prose, specifically in Utkir Hoshimov's novel "Ikki eshik orasi" ("Between Two Doors"). Here, the terms "aka" and "uka" extend beyond biological ties to become markers of ethical responsibility.

"— Siz mening akamsiz, — dedi Muzaffar ovozi titrab. — Aka ukasini hech qachon tashlab qo'ymaydi-ku?" [3, p. 212]. (Translation: "— You are my brother (aka), — said Muzaffar with a trembling voice. — After all, an elder brother never abandons his younger one?")

In this context, the term "aka" embodies the concept of unconditional protection. In automated translation into English as "brother" or Russian as "brat," the hierarchical component of "seniority as a duty" is lost. Corpus analysis of Hoshimov's texts confirms that the frequency of "aka" as an address to a non-relative in critical situations is 65% higher than in neutral narrative, highlighting its status as "social glue" [2, p. 45].

An innovative method for evaluating the proximity of kinship terms is the application of word embeddings.

Methods. In modern AI models (such as Word2Vec or FastText), every word is represented as a point in multidimensional space. A word's meaning is determined by its environment. For example, analyzing the vectors for "Father" (Eng), "Отец" (Rus), and "Ota" (Uzb) reveals distinct geometric connections:

- In the English vector, "Father" is often associated with concepts of law and responsibility (support, legal).
- In the Russian vector, "Отец" shows strong ties to authority and tradition.
- In the Uzbek vector, "Ota" is surrounded by lexemes denoting blessing and sacredness (duo, tabarruk).

From a mathematical linguistics perspective, the cosine distance between "Father" and "Ota" in the context of literary translation is significant. This explains why AI often fails: it aligns vectors based on the most frequent "everyday" meanings, ignoring cultural "outliers" in the data [6, p. 156].

Results and discussion. To grasp the issue of equivalence, one must examine terms that lack direct counterparts in Western languages due to differences in social family structures.

Table 1. Comparative Characteristics of Specific Kinship Terms and Translation Strategies

Term (Uzb)	AI Translation (Standard)	Cultural Significant & Context	Primary Translation Challenge
Pochcha	Brother-in-law	Husband of an elder sister or senior female relative.	Loss of the "seniority" status. English uses <i>brother-in-law</i> for both elder and younger sisters' husbands [4, p. 55].
Yanga	Sister-in-law	Wife of an elder brother. Often serves as a mentor for younger siblings.	"Sister-in-law" is too generic. The role of <i>yanga</i> as a family confidante is lost in English [4, p. 58].
Qayin-ota	Father-in-law	Father-in-law (both sides).	Uzbek requires specific polite verbal forms when addressing a <i>qayin-ota</i> , which AI often ignores [1, p. 89].
Amaki	Uncle	Paternal uncle (father's brother).	The necessity of distinguishing paternal from maternal lines (unlike the neutral English <i>uncle</i>) [2, p. 48].
Tog'a	Uncle	Maternal uncle (mother's brother).	Requires descriptive translation (maternal uncle)

Term (Uzb)	AI Translation (Standard)	Cultural Significant & Context	Primary Translation Challenge
			in literature to preserve the cultural code [2, p. 48].

Translation Difficulty Analysis: When translating the term "Pochcha" in a literary text, the translator is faced with the fact that English lacks a lexeme that simultaneously expresses marital affinity and age-based respect. Innovative AI systems, operating on frequency models, often replace "Pochcha" with a proper name or a neutral "he," leading to the "stylistic flattening" of the text [6, p. 157].

The term "Yanga" presents even greater complexity. In Uzbek linguoculture, this is not just a relative but a social institution. In the works of U. Hoshimov, the yanga often acts as a mediator in romantic affairs. Translating this as "sister-in-law" makes the character's behavior inexplicable to an English-speaking reader, as the Western term carries no such social obligations [3, p. 301].

Conclusion. The integration of corpus analysis and neural network modeling facilitates the discovery of profound semantic layers within kinship terminology. The study demonstrates that literary translation within the Russian-English-Uzbek triad requires the development of hybrid models—where the mathematical precision of AI vectors is augmented by human linguoculturological expertise. The practical application of these methods will significantly enhance the quality of text localization and intercultural dialogue.

References:

1. Apresyan, Yu. D. (1974). *Leksicheskaya semantika: Sinonimicheskiye sredstva yazyka*. Moscow: Nauka. [1, p. 89].
2. Baratova, Kh. G. (2025). Linguoculturological features of kinship terms in English and Uzbek. *Biruni International Journal*, 3(2), 40–50. [2, p. 48].
3. Hoshimov, O'. (2015). *Ikki eshik orasi (Roman)*. Tashkent: Sharq. [3, p. 301].
4. Karimov, S. (2018). *Terminy rodstva v uzbekskom yazyke: sistemno-strukturnyy analiz*. Samarkand: Zarafshon. [4, p. 58].
5. Mahlberg, M. (2013). *Corpus Stylistics and Dickens's Fiction*. London: Routledge. [5, p. 118].

6. Popov, A. A. (2025). Ispol'zovaniye iskusstvennogo intellekta pri perevode khudozhestvennogo teksta. Mir Nauki, 13(3), 152–158. [6, p. 157].