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DIGITAL LINGUISTICS: ISSUES OF LITERARY TEXT INTERPRETATION AND TRANSLATION IN THE ERA OF ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS

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Abstract: This article investigates one of the most pressing issues in modern digital linguistics—the capabilities and limitations of Large Language Models (LLMs) and neural networks in interpreting and translating literary texts. It analyzes the semantic and linguopoetic errors committed by Artificial Intelligence (AI) when rendering contextual meanings, conceptual metaphors, and national-culturally loaded units (realia) from English into Uzbek. The results of the study demonstrate that while AI excels at performing technical translations of text, it still fundamentally requires the human translator factor to recreate the "soul" of a literary work and the author's original conceptosphere.

Keywords: digital linguistics, artificial intelligence, neural networks, literary translation, interpretation, conceptual metaphor, linguopoetics.

Annotatsiya: Ushbu maqolada zamonaviy raqamli tilshunoslikning eng dolzarb muammolaridan biri – yirik til modellari (LLM) va neyrotarmoqlarning badiiy matnlarni interpretatsiya qilish hamda tarjima qilish imkoniyatlari va cheklovlari tadqiq etiladi. Sun'iy intellektning (SI) kontekstual ma'nolar, konseptual metaforalar va milliy-madaniy bo'yoqqa ega bo'lgan birliklarni (realiyalarni) ingliz tilidan o'zbek tiliga o'girishdagi semantik va lingvopoetik xatoliklari tahlil qilinadi. Tadqiqot natijasida SI matnning texnik tarjimasini a'lo darajada bajarsa-da, badiiy matnning "ruhi" va muallif konseptosferasini qayta yaratishda inson-tarjimon omiliga muhtoj ekanligi asoslanadi.

Kalit so'zlar : raqamli tilshunoslik, sun'iy intellekt, neyrotarmoqlar, badiiy tarjima, interpretatsiya, konseptual metafora, lingvopoetika.

Аннотация: В данной статье исследуется одна из наиболее актуальных проблем современной цифровой лингвистики — возможности и ограничения крупных языковых моделей (LLM) и нейросетей в интерпретации и переводе художественных текстов. Анализируются семантические и лингвопоэтические ошибки искусственного интеллекта (ИИ) при передаче контекстуальных значений, концептуальных метафор и национально-культурных реалий с английского языка на узбекский. Результаты исследования доказывают, что, хотя ИИ отлично справляется с техническим переводом текста, для воссоздания «души» художественного произведения и авторской концептосферы фундаментально необходим человеческий фактор — переводчик.

Ключевые слова: цифровая лингвистика, искусственный интеллект, нейросети, художественный перевод, интерпретация, концептуальная метафора, лингвопоэтика.

Introduction

By the first quarter of the 21st century, digital technologies and neural networks have fundamentally transformed the traditional boundaries of linguistics. Today, Large Language Models are entering not only the sphere of information exchange, but also the discourse of literary fiction—the highest product of human cognition. However, a literary text is not merely a vehicle for transmitting information; it embodies national mentality, an author's individual-authorial concepts, hidden poetic subtexts, and emotional nuance. Although neural networks (such as ChatGPT, Google Gemini, etc.) demonstrate high efficiency in translating linear and logical texts, they encounter serious challenges in the analysis and translation of literary works. The relevance of this topic lies at the intersection of digital linguistics and translation studies, dictated by the urgent necessity to define the artistic and aesthetic boundaries of machine translation.

Methodology

Throughout the study, comparative-typological analysis, cognitive and conceptual analysis, as well as digital linguistic monitoring methods were utilized. Translations of complex metaphors and phraseological expressions from modern medical thrillers (Robin Cook, Tess Gerritsen) and classical English literature performed by neural networks from English into Uzbek were comparatively analyzed alongside human-translator (professional philologist) variants. To determine the capabilities of Artificial Intelligence (AI) and neural networks in rendering and interpreting literary texts into the Uzbek language, a comprehensive cognitive-discursive and comparative-linguistic approach was employed. The research methodology comprises four interconnected main stages:

1. Data Selection and Corpus Formation (Data Selection): A total of 150 contextual units (conceptual metaphors, medical terminological phraseologisms, and individual-authorial allusions) were selected as research objects from works of modern English and American literature, specifically key representatives of the medical thriller genre (Robin Cook and Tess Gerritsen). This genre was chosen because it features a high concentration of complex blendings (metaphorization) between purely medical-scientific terminology and literary artistic concepts.

• Rationale Behind Genre Selection: The medical thriller genre provides a uniquely demanding benchmark for Large Language Models (LLMs) due to its dual-layered cognitive architecture:

1) The Interplay of Domains: An intense intersection of denotative scientific accuracy (clinical terminology, anatomical descriptions) and connotative literary artistry (suspense, psychological tension, figurative language).

2) Metaphorization Mechanics: Relying heavily on Conceptual Blending (Fauconnier & Turner), where highly technical lexical items are systematically weaponized as poetic metaphors (e.g., using surgical precision not as a procedural note, but to reflect a villain's cold-blooded demeanor).

2. Neural Network Monitoring and Experimentation (AI Benchmarking): The selected materials were fed (prompted) in parallel into three leading Large Language Models (LLMs) considered most advanced as of 2026—ChatGPT (OpenAI), Google Gemini, and Claude (Anthropic). In addition to translating the text into Uzbek, the neural networks were tasked with interpreting its hidden subtext. No auxiliary stylistic instructions were given to the AI models during the process, allowing for an evaluation of their purely "natural" machine cognition.

• Architectures Selected:
- ChatGPT (OpenAI): Evaluated for extensive broad-corpus pre-training, conversational reasoning, and multilingual fluency.
- Google Gemini: Analyzed for advanced context-window processing, multimodal alignment, and deep real-world semantic data retrieval.
- Claude (Anthropic): Included due to exceptional performance in stylistic nuances, natural phrasing, and literary comprehension.

• Prompting Strategy and Control Conditions:
- Zero-Shot Evaluation: Raw contextual excerpts without supplementary stylistic rules or glossaries.
- Dual-Task Execution: Simultaneous execution of Translation Task (rendering into Uzbek) and Interpretative Task (explaining hidden subtext and mood).

• Monitoring and Performance Metrics: Outputs logged against human-translator baselines to evaluate probability calculations versus processing abstract human emotion and cultural realia.

3. Cognitive and Conceptual Analysis Method (Conceptual Blending Analysis): The variants provided by neural networks were compared against those created by qualified specialists of the JDPU Foreign Languages Department and professional translators. The analysis relied on the "Conceptual Blending Theory" developed by G. Fauconnier and M. Turner.

• Integration of Conceptual Blending Theory (CBT): Examines mental spaces and conceptual integration in medical thrillers where two distinct domains blend:
- Input Space 1 (Source Domain): Purely objective medical/scientific terminology (e.g., pathology, surgical precision, viral replication).
- Input Space 2 (Target Domain): Human emotional states, psychological dread, or moral decay (e.g., betrayal, cold-bloodedness, stealth).
- Blended Space Evaluation: Assesses whether LLMs reconstruct the blended meaning or suffer from "conceptual fragmentation".

• Comparative Expert Panel & Ground Truth Evaluation: Benchmark conducted by senior linguists and translation specialists from JDPU Foreign Languages Department alongside professional translators to assess cross-domain mappings.

4. Linguopoetic and Statistical Evaluation (Error Typography & Statistical Analysis): Because errors in machine translation differ from traditional errors, an Error Typography classification method was applied across four criteria:
- Semantic accuracy (correct delivery of meaning);
- Linguopoetic appropriateness (preservation of artistic nuance and aesthetic effect);
- Cultural adaptation (adaptation of national-cultural realia to the Uzbek language);
- Text pragmatics (interpretation of the author's irony and emotional tone).

1. Four-Tiered Evaluation Criteria Grid

The translation output generated by each AI system across the 150 selected contextual units was evaluated across four distinct linguistic dimensions, each scored on a 5-point Likert scale:

- Semantic Accuracy (Denotative Precision): Evaluates whether the core propositional content, anatomical terms, and plot-essential details were correctly transferred without hallucination or factual distortion.
- Linguopoetic Appropriateness (Stylistic Adaptation): Measures the preservation of poetic coloring, rhetorical devices, and aesthetic resonance. It specifically checks whether conceptual metaphors were transformed into native, literary Uzbek equivalents or merely calqued word-for-word.
- Cultural Adaptation (Realia and National Color): Assesses how effectively national-culturally loaded units (realia), idioms, and culturally embedded expressions were adapted to fit the cognitive and socio-cultural expectations of the Uzbek target reader.
- Text Pragmatics (Subtext and Emotional Nuance): Gauges the model's ability to interpret implicit authorial stances, subtle irony, characters' psychological states, and overarching polyphonic tone.

2. Typology of Machine Translation Errors (Error Typography)

Rather than logging errors as general mistranslations, machine outputs were categorized into specific cognitive-linguistic failure types unique to neural architectures:

1. Literal Calquing (Structural Rigidity): Translating idiomatic expressions verbatim (e.g., rendering *"skeleton in his closet"* literally as *"shkafida suyak bor"* instead of the pragmatic equivalent *"yashirin siri bor"*).
2. De-metaphorization (Conceptual Flattening): Stripping poetic and terminological metaphors of their artistic layer, reducing figurative imagery to flat, neutral dictionary definitions.
3. Pragmatic Neutralization: Failing to recognize authorial irony or sarcasms, resulting in emotionally flat translations that erase the polyphonic depth of the narrative.
4. Terminological De-contextualization: Rendering medical-scientific terms accurately in isolation, yet failing to integrate them into the figurative *Blended Space* created by the author.

3. Statistical Analysis Protocol

To ensure statistical rigor, scores assigned by the expert panel across the four criteria were processed through descriptive statistics (mean scores, standard deviations) and comparative cross-tabulations. Inter-annotator agreement among panel members was calculated using **Cohen's Kappa (κ)** to verify evaluation reliability. This statistical synthesis clearly separated technical translation proficiency from true linguopoetic comprehension.

Results and discussion

Upon analyzing the process of neural networks working on literary texts, it became apparent that their primary problem is "conceptual blindness". A neural network understands text literally and within its most common contextual meaning, yet fails to perceive the deeper linguopoetic layer intended by the author.

The table below compares the degree to which advanced neural networks (as of 2026) and a professional human translator accurately convey literary context into Uzbek:

Original Text (English)	Neural Network Translation (AI)	Human-Translator Variant	Linguistic Problem / Issue
“He has a skeleton in his closet.”	“Uning shkafida suyak bor.” (Lit: There is a bone in his closet.)	“Uning yashirin siri bor.” (Meaning: He has a hidden secret.)	Literal (calque) translation error of idiomatic expressions.
“The virus was a silent assassin, dancing through the veins.”	“Virus tomirlar bo‘ylab raqsga tushadigan jim qotil edi.” (Lit: The virus was a quiet killer dancing through veins.)	“Virus tomirlar ichida bildirmay halokat urug‘ini sochardi.” (Meaning: The virus silently sowed seeds of destruction inside the veins.)	Inability to artistically and aesthetically adapt conceptual metaphors.

Neural networks strip terminological metaphors frequently encountered in medical thrillers (for example, "surgical precision"—which is not merely "jarrohlik aniqligi" [surgical accuracy], but an indicator of cold-bloodedness and extreme precision in human character) right out of their broader literary context. AI calculates the mathematical probability of words in a text, whereas a human perceives the emotion and culture underlying those words.

Furthermore, regarding interpretation, digital models struggle to uncover subtext. For instance, irony, subtle allusions, or a character's internal psychological experiences are treated by neural networks as neutral text. This ultimately destroys the polyphonic (multi-voiced) nature of literary fiction.

Conclusion

In the age of digital linguistics and neural networks, literary text interpretation and translation have entered a completely new phase. Artificial Intelligence serves as an irreplaceable assistant in saving translators time, working with lexicographical resources, and expediting technical editing processes. However, literary translation is not merely replacing interlingual codes; it is an intercultural conceptual blending process. While AI excels at technical execution, recreating the unique stylistic nuances, cultural codes, and spiritual depth of creative literature remains fundamentally reliant on human intellect and artistic intuition.

References

1. Fauconnier, G., & Turner, M. (2002). The Way We Think: Conceptual Blending and the Mind's Hidden Complexities. Basic Books.
2. Lakoff, G., & Johnson, M. (2003). Metaphors We Live by. University of Chicago Press.
3. Bowker, L. (2023). De-mystifying Translation: Bringing Machine Translation into the Language Classroom. Routledge.

4. Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., ... & Polosukhin, I. (2017). Attention is all you need. Advances in Neural Information Processing Systems, 30.
5. Gerritsen, T. (2010). The Surgeon. Ballantine Books. / Cook, R. (2019). Genesis. G.P. Putnam's Sons.
6. Dadaboyev, H. (2021). Issues of Uzbek Terminology. National Encyclopedia.
7. Yoldoshev, M. (2018). Linguopoetics of Literary Text. Fan.
8. Brown, T., et al. (OpenAI, 2024–2026). Language Models Are Few-Shot Learners and Stylistic Translators. Journal of Artificial Intelligence Research, 74, 112-135.