

## **TRANSLATION OF ENGLISH IT/AI TERMINOLOGY INTO UKRAINIAN: STRATEGIES AND CHALLENGES**

### **Abstract**

The rapid expansion of artificial intelligence and information technology has generated a largely unstandardised influx of new English terminology that requires systematic translation into Ukrainian. This paper examines the principal strategies employed in rendering twelve purposively selected English IT/AI terms into Ukrainian, drawing on 55 attested Ukrainian equivalents collected from Ukrainian-language IT media, Wikipedia, technical documentation, and professional forums (2020–2025). Applying a four-category classification framework — transliteration, semantic calque, descriptive translation, and hybridisation — the study suggests that, within the analysed sample, semantic calquing appears to be the dominant strategy (43.6%), followed by transliteration (30.9%), descriptive translation (18.2%), and hybridisation (7.3%). A notable finding is the high degree of terminological instability: within the analysed sample, the majority of terms yield two or more competing Ukrainian equivalents documented within the same collection period. The paper argues that this variation reflects the absence of a unified terminological standard and discusses implications for translation pedagogy and Ukrainian language policy in the digital sphere.

**Keywords:** IT/AI terminology, Ukrainian translation, translation strategies, terminological variation, language policy.

### **1. Introduction**

The past decade has witnessed rapid growth in English-origin IT and AI terminology penetrating Ukrainian scientific, professional, and everyday discourse. Terms such as prompt, fine-tuning, large language model, and embedding have no established pre-existing equivalents in Ukrainian and require ad hoc translation solutions. This creates a complex linguistic situation in which multiple competing variants coexist without institutional resolution.

The present paper addresses the following research question: what translation strategies are predominantly applied when rendering English IT/AI terms into Ukrainian, and what linguistic and institutional challenges does this process involve? The relevance of this inquiry is underscored by recent Ukrainian language legislation [1], which mandates the broader use of Ukrainian in professional and digital contexts, thereby increasing the urgency of systematic terminological development.

The paper is structured as follows: Section 2 reviews relevant literature; Section 3 describes the corpus and methodology; Section 4 presents and analyses the findings; Section 5 outlines implications; Section 6 concludes with directions for further research.

### **2. Literature Review**

Research on anglicisms in Ukrainian has grown considerably since independence, with particular attention to IT vocabulary. Pavelkiv [3, p. 125] identifies four principal types of adaptation of English borrowings into Ukrainian — phonetic, graphic, morphological, and semantic — and documents their active penetration into the IT sphere. This taxonomy aligns with the broader framework proposed by Verhun [5, p. 45], whose study of digital education

terminology demonstrates that transcoding accounts for approximately 49% of new terms, loan translation for 39%, and descriptive translation for 10% — a distribution that provides a comparative baseline for the present AI-focused analysis.

At the level of IT project management vocabulary, Lysychenko [2, p. 42] identifies two overarching translation orientations: a formal-lexical approach (encompassing transliteration, calquing, and modulation) and a functional approach prioritising audience accessibility. Lysychenko further notes that the absence of unified Ukrainian equivalents for many IT terms generates ambiguity in professional communication — a finding directly relevant to the AI terminology examined here.

From a broader translation studies perspective, Rudoman et al. [4] observe that contemporary Ukrainian terminology is undergoing active reformulation, partly driven by the departure from Soviet-era Russian-influenced standards and partly by the need to integrate into international scientific discourse. The choice between transcoding, calquing, and analogical methods depends on context, register, and the degree to which a term has established itself in professional practice.

The methodological framework for classifying translation procedures adopted in this paper follows Newmark's typology (as cited in Verhun [5, p. 45]), which distinguishes transliteration, calque, functional equivalent, and descriptive equivalent. This framework is supplemented by the category of hybridisation — the combination of a borrowed root or stem with native Ukrainian derivational morphology — a pattern attested across multiple Slavic borrowing contexts. For terminological consistency, the terms calque and loan translation are used interchangeably throughout this paper, as are transliteration and transcoding, following the usage established in the cited sources.

### **3. Data and Methodology**

The corpus for this study comprises 55 Ukrainian equivalents of 12 purposively selected English IT/AI terms. The source terms were selected on two criteria: (a) they represent core vocabulary of the current AI paradigm, introduced or significantly popularised after 2018; and (b) they lack established, unified equivalents in major Ukrainian terminological dictionaries. The selection does not claim statistical representativeness of the broader IT/AI lexicon; rather, it aims at typological coverage of the principal structural and semantic patterns found in contemporary AI vocabulary, spanning simple nouns, compounds, verbal nouns, and multi-word terms across several semantic domains (model architecture, training processes, human-computer interaction, and software deployment). The terms examined are: prompt, fine-tuning, large language model, tokenisation, overfitting, neural network, chatbot, deployment, benchmark, open source, framework, and embedding.

Ukrainian equivalents were collected from four source types, encompassing both professional and semi-professional discourse: Ukrainian-language Wikipedia articles on AI and machine learning; professional IT forums (dou.ua); Ukrainian IT and technology media (ain.ua, theinweb.media, goit.global); and slovotvir.org.ua, a crowdsourced Ukrainian terminological platform. All sources were published between 2020 and 2025. Each attested equivalent was recorded verbatim, including orthographic variants (e.g., ембедінг vs. ембедінг). The resulting 55 variants were classified by the present author according to the four-category framework described above: (T) transliteration/transcoding; (C) semantic calque / loan translation; (D) descriptive translation; and (H) hybridisation. A fifth category, (B) abbreviation borrowing, was applied to cases where an English-origin abbreviation is adopted

unchanged or transliterated letter-for-letter into Ukrainian (e.g., LLM, ШИММ), as these differ structurally from phonographic transliteration of full lexical forms. As the classification was performed by a single coder, inter-rater reliability was not established; this constitutes a limitation of the present study. It should also be noted that some equivalents occupy borderline positions between categories — most notably between calque and hybridisation — and their assignment reflects the author's interpretation based on morphological analysis.

#### 4. Analysis and Findings

Within the analysed corpus, 55 Ukrainian equivalents for 12 source terms are distributed as follows: semantic calque — 24 variants (43.6%); transliteration — 17 variants (30.9%); descriptive translation — 10 variants (18.2%); hybridisation — 4 variants (7.3%). Abbreviation borrowings (LLM, ШИММ) are subsumed under the transliteration count for reporting purposes, as they constitute a minor subset. The following discussion examines each strategy in turn.

Semantic calquing appears to be the dominant strategy, accounting for 43.6% of all attested variants (24/55). This is consistent with Verhun's [5, p. 45] observation that loan translation is the second most productive strategy in Ukrainian digital education terminology (39%), and with Rudoman et al.'s [4] general claim that calquing is preferred when terminological accuracy and morphological transparency are priorities. Widely attested calque formations include велика мовна модель (large language model), перенавчання (overfitting), розгортання (deployment), and підказка (prompt), all of which integrate naturally into Ukrainian syntax. Notably, fine-tuning alone generates four competing calques — тонке налаштування, донавчання, дотренування, адаптація — illustrating both the productivity of the strategy and the distance from consensus.

Transliteration accounts for 30.9% of variants (17/55). This pattern reflects the practical urgency of rapid term adoption, as documented by Pavelkiv [3, p. 125] for the broader IT sphere. A characteristic feature of transliterated AI terms is orthographic instability: three distinct spellings compete for embedding (ембедінг, ембедінг, ембендінг), while prompt yields both промпт and промт. Such variation reflects the absence of an authoritative Ukrainian standard for phonographic rendering of English AI vocabulary.

Descriptive translation accounts for 18.2% of variants (10/55) and is characterised by greater length and semantic transparency. Examples include векторне представлення (embedding), тест продуктивності (benchmark), and відкрите програмне забезпечення (open source). As Lysychenko [2, p. 42] notes, descriptive equivalents are particularly common in educational and official contexts where comprehensibility is prioritised over conciseness. Their lower frequency relative to calques suggests that brevity remains a strong practical constraint in professional Ukrainian IT discourse.

Hybridisation is the least frequent strategy in this sample (7.3%, 4/55), yet it generates highly naturalised forms. Токенізація combines the internationally borrowed root токен- with the productive Ukrainian suffix -ізація, while нейромережа fuses the international prefix нейро- with the native noun мережа. These forms are morphologically transparent to Ukrainian speakers. The colloquial нейронка illustrates derivational creativity at the periphery of professional discourse. Given the small number of hybrid variants in this corpus, broader generalisations about the productivity of this strategy are not warranted.

A cross-cutting finding is the high degree of terminological instability: within the analysed sample, ten of the twelve terms have two or more competing Ukrainian equivalents

documented within the same collection period (2020–2025). The most unstable term is large language model, with five competing variants spanning multiple strategies. This fragmentation confirms that the Ukrainian AI terminological system is currently in a phase of active, largely unstandardised formation.

### **5. Implications**

The findings carry direct implications for translation pedagogy, particularly in ELT contexts where instructors teach technical English to Ukrainian-speaking professionals. The documented co-existence of multiple competing equivalents suggests that learners benefit from explicit exposure to terminological variation and the contextual factors that favour one strategy over another, rather than from instruction oriented towards a single canonical equivalent. This aligns with Lysychenko's [2, p. 42] argument for functionally oriented translation training in IT domains.

From a language policy perspective, the study points to the practical need for clearer institutional guidance on AI and IT terminology in Ukrainian. The Law of Ukraine No. 2704-VIII [1] mandates broader use of Ukrainian in professional and digital contexts; systematic terminological work would support the effective implementation of this mandate. The present corpus is too small to yield prescriptive recommendations, but it illustrates the type of empirical evidence that could inform such work.

### **6. Conclusions**

This paper has analysed 55 Ukrainian equivalents of 12 purposively selected English IT/AI terms, identifying four translation strategies and documenting the following distribution within the sample: semantic calquing (43.6%), transliteration (30.9%), descriptive translation (18.2%), and hybridisation (7.3%). The dominant challenge is not a lack of linguistic resources — Ukrainian morphology and word-formation patterns are demonstrably productive for all four strategies — but an absence of institutional coordination, which results in terminological fragmentation across registers and user communities.

The study has several limitations: the corpus is small and purposively rather than randomly sampled; classification was performed by a single coder without inter-rater verification; some category boundaries — particularly between calque and hybridisation — remain interpretative; and the data do not permit diachronic analysis of variant stabilisation. Future research could extend the corpus, incorporate frequency data to distinguish dominant from marginal variants, and complement text-based analysis with user-attitude surveys to assess which equivalents Ukrainian-speaking professionals perceive as most natural and authoritative.

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