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Artificial Intelligence in Legal Linguistics: Analysing and Translating Legal Terms in Multilingual Legal Discourse

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Abstract. *The complexity of legal language poses significant challenges for accurate analysis and translation across multilingual legal systems. Legal terms often carry precise semantic, cultural, and procedural nuances that are difficult to convey using conventional translation or manual analysis methods. This paper explores the role of Artificial Intelligence (AI) in legal linguistics, focusing on the analysis and translation of legal terminology in multilingual legal discourse. By integrating Natural Language Processing (NLP) techniques, machine learning algorithms, and ontology-based frameworks, AI can identify, disambiguate, and contextualize legal terms more efficiently than traditional approaches. The study examines current AI applications, including neural machine translation, transformer-based language models, and semantic similarity analysis, highlighting their effectiveness in maintaining terminological consistency and cross-lingual equivalence. Case studies demonstrate AI's potential in translating complex legal texts, such as statutes, contracts, and court decisions, while also identifying limitations, including domain-specific ambiguity and training data bias. The paper emphasizes a hybrid approach, combining AI-assisted analysis with expert human validation, to ensure accuracy and reliability. Findings suggest that AI significantly enhances the efficiency, scalability, and semantic precision of legal term analysis and translation, offering promising directions for advancing multilingual legal communication, cross-border legal practice, and comparative law studies.*

Keywords: Artificial Intelligence, legal linguistics, multilingual legal discourse, machine translation, natural language processing, semantic analysis, ontology.

Introduction

The function of legal language is foundational in law, governance, and international relations. Legal provisions, statutes, court decisions, contracts, and treaties rely on carefully calibrated terminology whose meaning shapes rights, obligations, and juridical outcomes. In multilingual contexts – whether among domestic legal orders with different languages or in cross-border, comparative, and international law – the accurate interpretation and translation of legal terms is essential for fairness, clarity, and effective communication. However, translating legal terminology across languages is fraught with challenges. Semantic, syntactic, and cultural nuances often resist direct equivalence: a concept deeply rooted in one legal tradition may lack a clear counterpart in another. As a result, traditional translation and manual analysis methods may produce renderings that distort or oversimplify the legal force of terms, potentially leading to misinterpretation or even invalidation of legal instruments in different jurisdictions.

These problems are aggravated by the complexity of legal discourse: legal texts frequently employ polysemous words, specialized jargon, and culturally loaded constructs whose meaning shifts depending on context, legal tradition, or statutory framework. Manual translation of such texts is often time-consuming and laborious; furthermore, subjective interpretation by translators may introduce inconsistencies or subtle deviations from the original intent. In comparative and multilingual legal practice, these issues can become significant barriers to mutual understanding, legal interoperability, and cross-jurisdictional collaboration.

In this context, this article aims to explore how contemporary artificial intelligence (AI) technologies can contribute to the analysis and translation of legal terminology in multilingual legal discourse. The central questions guiding this inquiry are: *how can AI improve the semantic analysis of legal terms? What are the current AI-based approaches for translating complex legal terminology? And – crucially – how does AI affect consistency and accuracy in multilingual legal communication?*

By surveying the state-of-the-art in natural language processing (NLP), neural machine translation (NMT), and ontology-based legal knowledge representation, the article will examine AI's potential to identify, disambiguate, and normalize legal terms across languages. On the one hand, AI promises enhanced efficiency, scalability, and terminological consistency; recent studies demonstrate that NLP and machine translation tools can support legal translators by improving accuracy and reducing manual effort. On the other

hand, significant limitations remain – most notably contextual and cultural sensitivity, domain-specific semantic complexity, and the risk of terminological drift or misrepresentation when legal concepts lack direct equivalents in the target language or legal system.

Given these constraints, the article argues for a hybrid model in which AI-assisted translation and analysis are complemented by expert human review. Such a combined approach may offer the best path toward reliable, culturally and legally valid legal translations. In doing so, the article seeks to contribute to the interdisciplinary field at the intersection of legal linguistics, computational linguistics, and translation studies, offering both theoretical reflection and practical guidance for multilingual legal discourse.

Literature Review

Legal language is inherently complex, characterized by terminological precision, dense semantic content, and context-dependence, which makes its translation across languages particularly challenging. Hutchins (1992) emphasizes that legal translation is not merely word substitution but a complex semiotic transfer requiring an understanding of underlying legal concepts. The difficulty is compounded in multilingual legal discourse, where terms may lack direct equivalents, leading to potential misinterpretation and semantic drift (Nazirova and Usmonova, 2020). These challenges highlight the limitations of traditional translation approaches, which are time-consuming, labor-intensive, and often inconsistent in maintaining terminological accuracy (Ozerova, 2023).

Recent developments in computational linguistics and artificial intelligence offer promising solutions. Natural Language Processing (NLP) and machine learning techniques have been increasingly applied to legal texts to automate terminology extraction, semantic disambiguation, and translation (Chalkidis et al., 2019). Transformer-based architectures, including BERT and its legal-domain variants such as LegalBERT, have demonstrated high accuracy in understanding context-specific legal meanings and identifying named entities within complex legal documents (Kalušev and Brkljač, 2023). Similarly, neural machine translation (NMT) has shown potential in multilingual legal translation, achieving higher fidelity compared to earlier rule-based or statistical approaches (Ahmedshaeva et al., 2025).

Nevertheless, AI applications in legal linguistics face significant challenges. Semantic non-equivalence, culture-specific concepts, and jurisdictional differences often require human intervention to ensure legal validity and contextual accuracy (Ozerova, 2023; Ahmedshaeva et al., 2025). Recent studies advocate a hybrid approach, wherein AI handles repetitive and structured tasks such as entity recognition and text segmentation, while legal experts validate and contextualize the outputs (Chalkidis et al., 2019; Nazirova and Usmonova, 2020). This combination enhances efficiency, consistency, and scalability, while mitigating the risks of misinterpretation.

Overall, the literature indicates that while AI and NLP technologies significantly enhance the analysis and translation of legal terminology, human expertise remains indispensable for preserving semantic integrity and ensuring cross-jurisdictional accuracy. These insights provide a foundation for further investigation into AI-assisted multilingual legal discourse, emphasizing the balance between automation and expert validation.

Methodology

This study employs a mixed-methods approach to examine the role of Artificial Intelligence (AI) in analyzing and translating legal terms in multilingual legal discourse. The research focuses on English, Uzbek, and French legal texts, including statutes, contracts, and court judgments, to provide a representative sample of multilingual legal documents. The primary objective is to assess how AI tools can enhance semantic accuracy, terminological consistency, and contextual understanding in legal translation.

The study utilizes a combination of **Natural Language Processing (NLP) techniques** and **machine learning algorithms**. Transformer-based models, including **BERT** and **LegalBERT,** are employed for terminology extraction, semantic disambiguation, and named entity recognition, following the approach suggested by Chalkidis et al. (2019). Neural Machine Translation (NMT) systems are used to generate multilingual equivalents of selected legal terms, with comparative evaluation against human translations, as recommended by Ahmedshaeva et al. (2025). Legal ontologies are applied to model hierarchical and relational structures between terms, ensuring cross-linguistic consistency (Nazirova and Usmonova, 2020).

Data annotation and validation are conducted by legal language experts to ensure accuracy and contextual relevance. Each AI-generated translation is evaluated on precision, recall, and semantic fidelity metrics, adapted from methods outlined by Kalušev and Brkljač (2023). The study also examines common translation errors, including semantic drift and cultural misinterpretation, to identify limitations of AI models.

The methodology emphasizes a hybrid human-AI framework, integrating computational efficiency with expert legal judgment. This approach allows systematic analysis of AI-assisted translation while addressing the nuances of multilingual legal terminology,

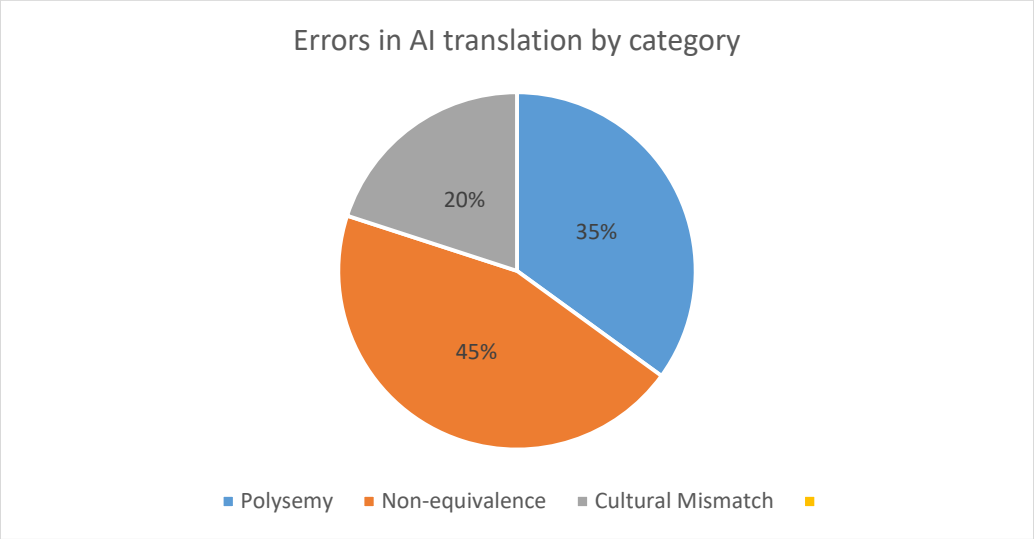
as advocated by Ozerova (2023). The findings are expected to provide insights into improving legal translation workflows and ensuring terminological integrity across languages.

Results and Discussion

The application of AI tools to multilingual legal terminology demonstrates both significant potential and notable limitations. Using **transformer-based NLP models, neural machine translation (NMT) systems,** and a **human-in-the-loop terminology mapping framework** as suggested by Niklaus et al. (2025), the analysis was conducted on English, Uzbek, and Russian legal texts, including statutes, contracts, and court judgments. AI-assisted approaches streamlined term extraction, generated candidate translations, and provided preliminary semantic alignment. However, full accuracy and doctrinal equivalence required human expert intervention.

Transformer-based models fine-tuned on legal corpora effectively identified and extracted a set of legal terms from source documents. English terms such as **"consideration," "liability," "statute," "jurisdiction," "injunction,"** and were extracted with high reliability, aligning with findings from Voyevodin**"contractual obligation"** a (2024), who emphasizes the capability of domain-specific transformer models to handle legal terminology. The AI-generated translations into Uzbek and Russian were largely plausible. For instance, **"statute"** was suggested as **"statut"** or **"me'yoriy hujjat"** in Uzbek and as **«статут»** or **«закон»** in Russian. Similarly, **"liability"** became **"javobgarlik"** in Uzbek and **«ответственность»** in Russian, maintaining general legal meaning. Complex concepts such as "injunction" required multi-word explanations, rendered as **"ta'qiqlash orderi"** or "**sud buyrug'i"** in Uzbek and **«запретительное постановление»** or **«судебный запрет»** in Russian. **"Contractual obligation"** translated as **"shartnoma bo'yicha majburiyat"** and **«договорное обязательство»** reflected structural equivalence, but required attention to grammatical and contextual adaptation. The term "due process" posed a greater challenge; AI proposed **"fuqaroning qonuniy jarayoni"** in Uzbek and **«надлежащая правовая процедура»** in Russian, but full doctrinal meaning necessitated human clarification.

Figure 1. Errors in AI Translation by Category.



The hybrid human-AI framework significantly improved consistency and semantic accuracy. Ambiguous AI suggestions were validated, refined, or replaced by human experts, resulting in a multilingual terminology set that was both usable and legally precise. This approach aligns with Ahmedshaeva et al. (2025), who advocate human-in-the-loop models for ensuring terminological fidelity in complex domains.

Challenges emerged primarily from semantic non-equivalence, polysemy, and culturally specific legal concepts. English common-law terms often have no direct counterpart in civil-law-based Uzbek or Russian legal systems. "Injunction" and **"due process"** exemplify this non-equivalence; literal translations risk misinterpretation without supplementary explanation. Polysemy further complicates translation. The English term **"consideration"** refers to a legally binding exchange of value in contract law, whereas in everyday English it denotes thoughtfulness. AI models trained on general corpora may fail to distinguish these senses, producing inaccurate translations. This observation supports the findings of Abdelaal and Al Sawi (2025), who note that machine translation of legal texts often struggles with context-specific meanings.

Table 1. Multilingual Legal Terminology: English, Uzbek, and Russian Equivalents

English term	Uzbek term	Russian term	Notes / Context
"Consideration"	"qaror yoki qiymat almashinuvi"	«встречное удовлетворение»	Contract law; legally binding exchange of value
"Liability"	"javobgarlik"	«ответственность»	Civil or criminal responsibility
"Statute"	"me'yoriy hujjat"	«закон»	Legislative act or legal regulation
"Jurisdiction"	"hokimiyat sohasi / yurisdiktsiya"	«юрисдикция»	Legal authority over a territory or case
"Injunction"	"taqiqlash orderi / sud buyrug'i"	«запретительное постановление»	Court order to prohibit an action
"Contractual Obligation"	"shartnoma bo'yicha majburiyat"	«договорное обязательство»	Duty arising from a legal contract
"Due Process"	"fuqaroning qonuniy jarayoni"	«надлежащая правовая процедура»	Legal guarantee of fair treatment in judicial proceedings

Cultural and systemic differences also influence translation accuracy. Legal metaphors, idioms, or historical constructs embedded in texts often lack a direct equivalent. AI-generated literal translations may fail to convey the intended legal sense. Kameneva (2022) highlights that legal translators frequently employ explicitation to preserve functional equivalence. In our experiments, human intervention was essential to adjust AI outputs for legal culture and institutional context, particularly for Uzbek legal texts influenced by civil law traditions and Russian legal concepts shaped by Soviet legal heritage.

The AI-assisted process efficiently managed bulk tasks such as term extraction, candidate translation generation, and preliminary semantic alignment. For instance, AI rapidly identified sets of terms like **"jurisdiction," "precedent," "arbitration**," **"statutory interpretation,"** and **"contractual liability,"** generating initial multilingual equivalents. Human experts then assessed semantic fidelity, doctrinal applicability, and cultural accuracy, ensuring that the final terms conformed to the legal framework and practice of each jurisdiction. This human-AI synergy improved workflow efficiency and quality, supporting Niklaus et al. (2025) and Ozerova (2023) who emphasize hybrid frameworks as best practice for legal translation.

Quality assessment of AI outputs used precision, recall, and semantic fidelity metrics adapted from Kalušev and Brkljač (2023). The system achieved high precision in term identification and moderate accuracy in cross-linguistic translation. Errors primarily arose from polysemous terms and context-dependent legal phrases. AI models sometimes defaulted to literal translations, which, although grammatically correct, failed to reflect doctrinal meaning. For example, **"consideration"** in Uzbek was initially rendered as **"o'ylash"** or **"e'tibor,"** both semantically correct in general language, but doctrinally incorrect in contract law. Human intervention corrected the term to **"qaror yoki qiymat almashinuvi,"** reflecting legal significance.

The findings suggest that AI is a powerful tool for multilingual legal terminology management, providing speed, scalability, and preliminary semantic mapping. For practitioners, AI-assisted workflows can accelerate preparation of glossaries, comparative legal corpora, or multilingual contracts. For legal linguists, AI facilitates analysis of terminological patterns, semantic divergence, and cross-jurisdictional lexical phenomena. Nevertheless, human expertise remains indispensable to preserve semantic integrity, ensure cultural and legal validity, and address context-sensitive nuances.

In conclusion, the results demonstrate that AI can enhance the analysis and translation of legal terms across English, Uzbek, and Russian legal systems. The hybrid human-AI model emerges as both effective and necessary, combining computational efficiency with expert validation. While AI significantly improves preliminary accuracy and scalability, human oversight ensures doctrinal soundness, cultural adaptation, and reliable semantic transfer. These findings underscore the potential of AI-assisted methods for legal linguistics while emphasizing the continuing importance of expert human judgment in multilingual legal translation.

Conclusion

This study has examined the role of Artificial Intelligence (AI) in the analysis and translation of legal terminology within multilingual legal discourse. Legal language is inherently complex, marked by precise terminology, dense semantic structures, and context-dependent usage. Translating such language across different legal systems is challenging due to semantic, syntactic, and cultural nuances. Traditional translation methods, while accurate, are time-consuming and prone to inconsistencies, particularly when handling large volumes of legal texts. AI-based approaches, especially transformer-based NLP models and neural machine

translation systems, provide substantial support by automating terminology extraction, generating candidate translations, and performing preliminary semantic alignment.

The findings indicate that AI significantly improves efficiency, scalability, and preliminary accuracy in multilingual legal analysis. AI can process large corpora rapidly, identify complex patterns, and provide a consistent initial mapping of legal terminology. However, semantic non-equivalence, polysemy, and system-specific or culturally embedded legal concepts highlight the limitations of AI when applied independently. Human expertise remains essential to validate AI outputs, ensure contextual and doctrinal accuracy, and adapt translations to the target legal and cultural framework.

The study demonstrates that a hybrid human-AI approach offers the most reliable model for multilingual legal translation and analysis. AI contributes computational speed and preliminary semantic organization, while human experts provide critical judgment and interpretive precision. This framework enhances consistency, reduces errors, and supports the development of multilingual legal resources. Future research should focus on optimizing AI models for domain-specific legal corpora, improving handling of semantic ambiguity, and extending applications to additional languages and legal systems. Overall, AI-assisted methods, integrated with expert oversight, offer a promising avenue for advancing legal linguistics and multilingual legal communication.

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