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ARTIFICIAL INTELLIGENCE AND TERMINOLOGICAL UNITS IN LINGUISTICSTO CHATGPT

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Abstract
This paper explores the relationship between AI and terminological units in linguistics, analyzing how AI tools contribute to the identification, management, and evolution of specialized terms. The paper discusses the characteristics of terminological units, AI-driven extraction techniques, challenges in computational terminology, and implications for linguistic theory and practice. By integrating insights from terminology science, linguistics, and AI, the study highlights the importance of interdisciplinary collaboration to advance understanding and application of terminological units in the digital age.

Keywords: Artificial intelligence, Terminological units, linguistics, Natural language processing, Terminology extraction, Computational linguistics, Terminology management

Introduction

Language is not only a means of everyday communication but also a repository of specialized knowledge that requires precise terminology to describe concepts accurately within disciplines. Within linguistics, terminological units function as lexical-signs that carry defined, domain-specific meanings. The advent of Artificial Intelligence (AI) and its burgeoning role in natural language processing (NLP) technologies has transformed how these units are extracted, analyzed, and utilized in computational contexts.

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Terminological units, encompassing single-word terms and multi-word expressions, serve as building blocks for scientific and technical knowledge representation. Their precise identification is critical in areas such as machine translation, information retrieval, ontology development, and automatic summarization. AI technologies, driven by machine learning and neural network architectures, offer powerful mechanisms to automate terminology handling, yet several linguistic and computational challenges persist.

This exploration delves into the nexus of AI and terminological units in linguistics. It elaborates on the linguistic characteristics that define terminological units, surveys AI-enabled techniques in terminology extraction and management, and discusses theoretical and practical considerations emerging from this interaction. By synthesizing perspectives from terminology science and computational linguistics, the paper illustrates how AI reshapes terminological practices and highlights future research directions.

Terminological Units: Definitions and Characteristics

Terminology refers to the study and systematization of terms—words or phrases with precise, context-specific meanings within specialized fields. Terminological units are therefore understood as lexical items systematically used to label concepts, often displaying distinctive features like specialization, stability, and conceptual clarity (Sager, 1990). Differences between general vocabulary and terminological units stem largely from domain specificity and the role these units play in expert communication.

Typically, terminological units manifest as either single words (e.g., "syntax," "morpheme") or multi-word expressions ("natural language processing," "machine learning"). The internal structure of these units often follows domain-dependent morphosyntactic patterns, such as noun-noun compounds or adjective-noun phrases (Klyueva & Arefiev, 2017). Semantic properties include univocity—aiming for one meaning per term—and inclusion in terminological systems or ontologies where relations like hierarchy and association are defined (Cabré, 1999).

While terminological units serve vital roles in communication, their emergence and formalization are influenced by linguistic creativity, domain evolution, and

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community consensus. The dynamic nature of specialized vocabularies necessitates tools to monitor, standardize, and disseminate terminology effectively.

Artificial Intelligence and Terminology: Techniques and Contributions

AI has increasingly taken a central role in operationalizing terminological unit extraction and management. Among various NLP techniques, statistical approaches were the earliest to support term identification, employing measures such as term frequency-inverse document frequency (TF-IDF), C-value/NC-value (Frantzi, Ananiadou, & Mima, 2000), and mutual information to pinpoint candidate terms in corpora.

More recently, machine learning and especially deep learning models have revolutionized terminology extraction, offering contextual and semantic sensitivity that statistical models lack. Transformer-based language models such as BERT (Devlin et al., 2019) or GPT (Brown et al., 2020) demonstrate superior performance in recognizing ambiguous or polysemous terms, and in handling multi-word expressions with complex syntactic patterns.

Beyond extraction, AI models facilitate terminology disambiguation, normalization, and mapping across languages and domains. This expands their applicability in multilingual environments and ontology building. Furthermore, AI-driven knowledge graphs integrate terminological units into structured semantic networks, enriching data interoperability and reasoning capabilities (Navigli & Ponzetto, 2012).

Challenges in AI-Driven Terminology Processing

Despite these advances, AI's application to terminology encounters several obstacles. Terminological units frequently involve polysemy, nominal compounds, and newly coined terms (neologisms), complicating automated identification (Temmerman, 2000). Some niche domains lack sizable annotated corpora, leading to data scarcity issues that hinder supervised learning approaches (Bowker, 2003).

Interpretability and explainability also remain concerns. While transformer models excel in performance, their "black-box" nature complicates validation of

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term candidates, thereby underscoring the need for human-in-the-loop systems where terminologists remain integral to the process (Penas & Järvelin, 2006).

Domain adaptation is challenging due to linguistic variation and contextual shifts. Moreover, terminologies evolve rapidly, necessitating continual monitoring and updating of term databases. Interdisciplinary collaboration between linguists, domain experts, and AI developers is crucial to overcome these challenges and develop robust terminological infrastructures.

The Interplay of Linguistics and AI: Impact and Perspectives

The synergy between linguistic expertise and AI technologies cultivates a fertile environment for breakthroughs in terminology management. Linguistic theories inform algorithms regarding syntactic and semantic constraints, enabling more precise term boundary identification and semantic relation extraction. Conversely, AI tools provide linguists with scalable means to analyze vast corpora, supporting terminology standardization and cross-domain term harmonization (Ludwig & Bouillon, 2019).

The impact of AI extends beyond extraction into terminological resource creation, maintenance, and dissemination. Dynamic, AI-supported terminological databases can reflect real-time changes in language use and conceptual frameworks, thereby fostering up-to-date knowledge bases that support education, research, and industry.

Ethical and social dimensions emerge in ensuring AI systems respect inclusive and unbiased terminology representation, avoiding perpetuation of stereotypes present in training data (Bender & Friedman, 2018). Transparency in AI-assisted terminological decisions remains essential for trust and acceptance.

Conclusion

Artificial Intelligence has catalyzed substantial progress in the processing and understanding of terminological units in linguistics. Its strength lies in automating complex, large-scale tasks such as term extraction, semantic disambiguation, and multilingual mapping. However, language's inherent complexity necessitates continuing integration of linguistic acumen with AI capabilities, emphasizing hybrid human–machine workflows.

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The evolving landscape calls for further research into adaptive AI models that can keep pace with terminology changes, multilingual and cross-domain terminology alignment, and increasing interpretability of AI decisions. By fostering the collaboration of linguists, AI researchers, and domain experts, the field can anticipate a future where terminological units are managed with unprecedented precision and accessibility, benefiting academic inquiry and practical applications alike.

References

1. Bender, E. M., & Friedman, B. (2018). Data Statements for Natural Language Processing: Toward Mitigating System Bias and Enabling Better Science. Transactions of the Association for Computational Linguistics, 6, 587–604.
2.Bowker, L. (2003). Terminology and Language Technologies: Where Do We Go From Here? International Journal of Lexicography, 16(4), 433–442. https://doi.org/10.1093/ijl/16.4.433
3.Bowker, L., & Pearson, J. (2002). Working with Specialized Language: A Practical Guide to Using Corpora. Routledge.
4.Brown, T., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., ... & Amodei, D. (2020). Language Models are Few-Shot Learners. Advances in Neural Information Processing Systems, 33, 1877–1901. https://arxiv.org/abs/2005.14165
5.Cabré, M. T. (1999). Terminology: Theory, Methods and Applications. John Benjamins Publishing.
6.Devlin, J., Chang, M.-W., Lee, K., & Toutanova, K. (2019). BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding. Proceedings of NAACL-HLT, 4171–4186. https://doi.org/10.18653/v1/N19-1423
7.Frantzi, K., Ananiadou, S., & Mima, H. (2000). Automatic Recognition of Multi-word Terms: The C-value/NC-value Method. International Journal on Digital Libraries, 3(2), 115–130. https://doi.org/10.1007/s007999900019
8.Klyueva, N., & Arefiev, A. (2017). Terminology as a Linguistic Discipline: Theoretical Problems and Concepts. Journal of Language and Education, 3(1), 50–68. https://doi.org/10.17323/jle.2017.6314

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9.Ludwig, C., & Bouillon, P. (2019). Combining Linguistic Expertise and Machine Learning for Terminology Extraction: A Multilingual Approach. Terminology, 25(1), 28–54. https://doi.org/10.1075/term.18005.lud

10.Navigli, R., & Ponzetto, S. P. (2012). BabelNet: The Automatic Construction, Evaluation and Application of a Wide-Coverage Multilingual Semantic Network. Artificial Intelligence, 193, 217–250. https://doi.org/10.1016/j.artint.2012.07.001