

PHILOLOGY AND LINGUISTICS

Intelligent technologies for modern sociolinguistics

Goncharenko Svitlana¹

¹ Senior Lecturer;
Department of philology and translation,
Kyiv National University of Technologies and Design; Ukraine

Introduction. Modern philology, which is at the intersection of traditional humanities and innovative technologies, is experiencing a real renaissance. If for centuries the analysis of language and literature was based on close reading, which required exceptional erudition and intuition of the researcher, today it is possible to study linguistic phenomena on an unprecedented scale. This became possible thanks to the development of intelligent technologies, which are divided into two key categories: knowledge-based [1], [2] and data-driven [3], [4]. They provide philologists with fundamentally new tools for working with text, allowing not only to analyze what is already known, but also to reveal previously invisible patterns and connections. These technologies help transform philology from a purely interpretive science into a discipline that combines qualitative and quantitative analysis, opening the way to new, interdisciplinary research in modern realities, when the volume of information is growing exponentially and social and cultural processes are becoming increasingly dynamic.

Main Part. Modern sociolinguistics faces new challenges caused by globalization, digitalization of communications and the rapid development of information technologies. Language practices and social interactions are undergoing significant transformations under the influence of online platforms, social networks and multimedia content. In such conditions, traditional approaches to the analysis of linguistic phenomena and social communications often turn out to be insufficiently flexible and effective for a comprehensive understanding of the dynamics of modern society.

Intelligent technologies, including knowledge-based and

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data-driven methods [5–8], are becoming key tools for research in sociolinguistics. Knowledge-based technologies allow the use of formalized models of language and sociocultural knowledge to analyze communication structures, identify patterns and interpret complex linguistic phenomena. Data-driven approaches, relying on large arrays of text, audio and video data, allow to reveal hidden patterns [9–12], to analyze language behavior on a societal scale and to predict the development of language practices.

The combination of these technologies opens up new opportunities for sociolinguistics: automated data collection and processing, identification of language trends and patterns, analysis of the influence of social factors on language and communication, as well as modeling of language changes in real time. This approach provides a more comprehensive and accurate understanding of the dynamics of language in society, improves the quality of research and allows for the creation of adaptive analysis methods in the conditions of a rapidly changing information environment.

Conclusions.

1. The use of intelligent technologies in modern sociolinguistics makes it possible to combine formalized knowledge about language and society with the analysis of large amounts of data, providing a comprehensive and multidimensional understanding of language processes. Knowledge-based methods allow formalizing social and cultural aspects of communication, and data-driven approaches reveal hidden patterns and trends in language behavior. Modern conditions require the integration of these approaches for the operational analysis of changes in language, forecasting language trends and developing adaptive research strategies. Such technologies contribute to increasing the accuracy and reliability of sociolinguistic research, expand the capabilities of analyzing large amounts of information and allow for a rapid response to transformations in the communication environment, providing a deeper understanding of the relationship between language and society.

2. The synergy of intelligent technologies based on knowledge and data is a key direction for modern science [13] (including philology). This combination allows researchers to move from close reading of individual works to distant reading of entire literary eras and linguistic phenomena. Data-driven AI enables the detection of quantitative patterns, while knowledge-based AI helps to systematize and interpret these

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patterns based on existing expert knowledge [14].

In short, intelligent technologies do not replace the philologist, but rather expand his capabilities, transforming him from a simple interpreter into a researcher-analyst capable of operating with colossal amounts of information. This opens up new opportunities for understanding culture through its linguistic and textual expressions, allowing not only to answer existing questions, but also to ask new, previously impossible questions, which is the key to the development of any science.

References:

- [1] Sytnyk V.F., Krasnyuk M.T. (2002). Polityka upravlinia znanniamy naftohazovoi kompanii yak kliuchovyi faktor pidvyshchennia yii efektyvnosti [Oil and gas company's knowledge management policy as a key factor in increasing its efficiency]. *Problemy formuvannia rynkovoi ekonomiky – Problems of market economy formation*, Kyiv.: KNEU, vol. 10, 2002 [In Ukrainian].
- [2] Tuhaienko V., Krasniuk S. Effective application of knowledge management in current crisis conditions. *International scientific journal "Grail of Science"*. 2022. № 16. pp. 348-358.
- [3] Naumenko, M. (2024). Models of business knowledge in artificial intelligence systems for an effective competitive enterprise. *International scientific journal "Internauka". Series: "Economic Sciences"*. № 6. DOI: <https://doi.org/10.25313/2520-2294-2024-6-10010> [In Ukrainian].
- [4] Naumenko, M., & Hrashchenko, I. (2024). Modern artificial intelligence in anti-crisis management of competitive enterprises and companies. *Grail of Science*, (42), 120-137. DOI: <https://doi.org/10.36074/grail-of-science.02.08.2024.015> [In Ukrainian].
- [5] Лявинець, Г., Люлька, О., & Ткачук, Ю. (2024). Неглибокі штучні нейронні мережі у менеджменті готельно-ресторанного бізнесу. *Економіка та суспільство*, (68). <https://doi.org/10.32782/2524-0072/2024-68-46>
- [6] Naumenko, M. (2024). Effective application of classic machine learning algorithms when making adaptive management decisions. *Scientific perspectives*, 2024, 5 (47). [https://doi.org/10.52058/2708-7530-2024-5\(47\)-855-875](https://doi.org/10.52058/2708-7530-2024-5(47)-855-875)
- [7] Krasnyuk M., Krasniuk S. (2020) Application of artificial neural networks for reducing dimensions of geological-geophysical data set's for the identification of perspective oil and gas deposits. *ЛОГОС*. – 2020. 18-19.
- [8] Науменко, М. (2024). Оптимальне використання алгоритмів глибокого машинного навчання в ефективному управлінні підприємством. *Успіхи і досягнення у науці*, 2024, #4 (4). [https://doi.org/10.52058/3041-1254-2024-4\(4\)-776-794](https://doi.org/10.52058/3041-1254-2024-4(4)-776-794)
- [9] Науменко, М. (2024). Аналіз та аналітика великих даних в маркетингу та торгівлі конкурентного підприємства. *Grail of Science*, (40), 117-128. <https://doi.org/10.36074/grail-of-science.07.06.2024.013>

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- [10] Krasnyuk M., Krasnuik Illia (2024). Big data analysis and analytics for marketing and retail. *Штучний інтелект у науці та освіті: збірник тез Міжнародної наукової конференції (AISE) (1-2.03.2024 р.)*, Київ, 2024.
- [11] Maxim Krasnyuk, Svitlana Nevmerzhytska, Tetiana Tsalko. (2024). Processing, analysis & analytics of big data for the innovative management. *Grail of Science*, #38, April 2024. pp. 75-83. <https://www.journal-grail.science/issue38.pdf>
- [12] Maxim Krasnyuk, Dmytro Elishys (2024). Perspectives and problems of big data analysis & analytics for effective marketing of tourism industry. *Science and technology today*, #4 (32) 2024. pp. 833-857.
- [13] Derbentsev, V. D., Serdiuk, O. A., Soloviov, V. M., & Sharapov, O. D. (2010). *Synergistic and econophysical methods of studying dynamic and structural characteristics of economic systems*. Cherkasy: Brama-Ukraine. – 2010 [in Ukrainian].
- [14] Матвійчук А. Можливості та перспективи створення штучного інтелекту. *Вісник Національної академії наук України*. 2011. № 12. С. 36-51. URL: http://nbuv.gov.ua/UJRN/vnanu_2011_12_9 (дата звернення: 01.02.2025).