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LANGUAGE ACQUISITION THROUGH ARTIFICIAL INTELLIGENCE

Annotation

This article provides a comprehensive review of the current state of research in language acquisition through artificial intelligence. It explores various AI techniques, including new technology, natural language processing, and neural networks, and their applications in language learning systems. Additionally, this paper discusses the challenges and opportunities associated with using AI for language acquisition and outlines future directions for research in this burgeoning field.

Key words: Language acquisition, Artificial intelligence, Machine learning, Natural language processing, Neural networks, Language learning systems.

ОВЛАДЕНИЕ ЯЗЫКОМ С ПОМОЩЬЮ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

Аннотация

В этой статье представлен всесторонний обзор текущего состояния исследований в области овладения языком с помощью искусственного интеллекта. В ней рассматриваются различные методы искусственного интеллекта, включая новые технологии, обработку естественного языка и нейронные сети, и их применение в системах изучения языка. Кроме того, в этой статье обсуждаются проблемы и возможности, связанные с использованием искусственного интеллекта для овладения языком, и намечаются будущие направления исследований в этой растущей области.

Ключевые слова: Овладение языком, искусственный интеллект, машинное обучение, обработка естественного языка, нейронные сети, системы изучения языка.

SUN'IY INTELLEKT ORQALI TILNI O'RGANISH

Annotatsiya

Ushbu maqolada sun'iy intellekt orqali tilni o'rganish bo'yicha tadqiqotlarning hozirgi holati har tomonlama ko'rib chiqilgan. U sun'iy intellektning turli usullarini, jumladan, yangi texnologiyani o'rganish, tabiiy tilni qayta ishlash va neyron tarmoqlarni hamda ularning til o'rganish tizimlarida qo'llanilishini ko'rib chiqqan. Bundan tashqari, ushbu maqola tilni o'rganish uchun sun'iy intellektidan foydalanish bilan bog'liq muammolar va imkoniyatlarni muhokama qiladi va ushbu o'sib borayotgan sohada kelajakdagi tadqiqot yo'nalishlarini belgilaydi.

Kalit so'zlar: Tilni o'rganish, sun'iy intellekt, yangi texnologiyani o'rganish, tabiiy tilni qayta ishlash, neyron tarmoqlar, til o'rganish tizimlari.

Introduction. Human communication and engagement are based on the amazing cognitive process of language learning. From birth to maturity, people go through a difficult process of learning and developing a language, which gives them the ability to successfully communicate ideas, feelings, and thoughts. The main focus of traditional research in this area has been on explaining the mechanics and developmental milestones of human language, frequently using observations of children's language development and adult language learners' experiences.

However, the introduction of artificial intelligence (AI) technology has significantly changed the field of language acquisition research. Artificial Intelligence (AI), namely in the form of machine learning algorithms and natural language processing techniques, has created new opportunities to study and support language development. These developments not only give fresh perspectives on the fundamental mechanisms of language learning, but they also offer workable answers for improving language learning in a variety of settings.

Literature review. The use of Artificial Intelligence in the course of the lesson in the world pedagogical direction has been a constant focus of scientists. He conducted research on this new method and direction on the basis of English materials J. Park, N. Salam, M. Hafidi, G. Tang, X. Li, Y. Chen, A. Juffs, C. Liu, S. Brainerds, E. Shafieva, E. Kostyukovich and V. Kotenko [1, 2, 3, 4, 5] the research of educators such as is noteworthy. We can observe that there are different approaches to the study of artificial intelligence. In particular, some scientists, among whom it is independently connected to the future in the course of the lesson, are the subject of various discussions.

Research methodology. The essay was written using both theoretical and empirical research techniques. The review of methodological and scientific literature focused on the potential benefits and potential drawbacks of using artificial intelligence in education was done. The functioning and potential of artificial intelligence services for use in the process of learning a foreign language were examined.

The development of innovative ideas and unusual thinking is one of the goals of a university education. Artificial intelligence (AI) technologies that are intended to enhance human capacities and improve learning, teaching, and research efficacy can help with this [6]. The development of the student's personality and the meeting of his varied educational demands are two of the primary objectives of interactive educational tools.

Certain digital, informational, and communication technologies are included into the virtual learning environment to enable students to work autonomously with knowledge sources, so assisting them in becoming more self-aware and self-realized. Intelligent expert systems may provide and explain rational answers to students by combining information on a specific, limited topic area of expertise. These systems are composed of a knowledge base, a logical inference mechanism, and an explanation subsystem.

Analysis and results. Artificial intelligence technologies are useful for enhancing interactive learning formats, customizing learning tasks to students' knowledge levels, identifying errors in student speech, applying gaming technologies (gamification of education), and much more. One of the undeniable benefits of adopting artificial intelligence technology is the ability to receive fast feedback since activities are automatically evaluated based on their completion. Instructors can demonstrate

their skills in data processing and analysis. Because artificial intelligence (AI) can guarantee that a teacher's regular responsibilities are completed, he has more time to oversee instruction and provide assistance to pupils.

A variety of techniques and approaches are taken into consideration in the artificial intelligence technology-based foreign language teaching methodology, including:

The lifelong learning method assumes continuity and diversity of learning using artificial intelligence technologies; the open education approach implies the availability of digital technologies and resources in the process of independent learning, as well as the possibility of virtual academic mobility of students; the student-centered approach aims to take into account the personal characteristics, abilities, interests, and needs of each individual student, as well as the use of tutor support in the process of teaching a foreign language and the culture of the language being studied; the “work-based learning” approach is a collaborative effort between academic institutions and businesses to develop a range of learning opportunities in the workplace by incorporating artificial intelligence technologies and educational resources for the development of linguistic, cultural, and other competencies. [7].

Certain artificial intelligence systems that are widely utilized in language instruction can be recognized. For instance, this can be done by using chatbots or language bots (ChatGPT, Gradescope, Beautiful AI, Tutor.ai, etc.), which are intelligent assistants that can respond to requests from the other person, assess their language skills, and even offer tips on how to get better at them.

Machine translation is one resource for learning a foreign language. Language programs benefit from the use of intelligent systems (see the Interpreter Mode in the Google Assistant app, for instance). Although instant translators substantially speed up conversation, it should be highlighted that they are still unable to resolve issues with communication that require human intervention.

Teachers can employ artificial intelligence-based innovative network technologies, including [teachmateai.com](https://www.teachmateai.com) and [magicschool.ai](https://www.magicschool.ai), to teach foreign languages. Numerous methodological activities, including modifying texts based on style, originality, and complexity, editing essays, coming up with questions and subjects, developing a range of exercises and assignments, etc., may be completed by these systems.

The following are some examples of the promising applications of AI technologies: Big Data Analysis (Big Data); Computer Lexicography (smart dictionary compilation, adaptation of advances in technology, electronic book dictionary compilation); Modeling of linguistic phenomena at the discourse level; Compilation of adapted authentic texts for the development of students' lexical and grammatical competence; Improvement of Recognition Technologies; Creation and Application of Intellectual Capital (Knowledge Management) [8, p. 233].

The development and personalization of customized textbooks is another exciting use of AI technology. After assessing the student's proficiency and level, the AI modifies the textbooks to fit their requirements and skills. Teachers may then upload their own instructional programs into the AI system and utilize it to produce textbooks tailored to particular student groups.

The creation of chatbots and virtual language instructors is one of the most exciting uses of AI in language learning. These AI-powered solutions combine machine learning and natural language processing methods to give consumers individualized language learning experiences. Virtual tutors are able to evaluate students' levels of competency, pinpoint areas of weakness, and provide focused exercises and feedback based on each student's requirements.

Additionally, chatbots provide learners with possibilities for real-time, interactive language practice in the target language. Learners may enhance their speaking, listening, and understanding abilities in a safe and enjoyable setting by conversing with chatbots. A paradigm change in language learning methodology is represented by chatbots and virtual language tutors, which provide scalable and easily accessible solutions for students all over the world.

A type of artificial intelligence called machine learning allows computers to learn from data and make predictions or judgments without the need for explicit programming, which is crucial for language acquisition. Algorithms for supervised learning, such as deep neural networks and support vector machines, have been used for tasks like syntactic parsing, language modeling, and speech recognition. From annotated linguistic data, these algorithms extract patterns and structures that enable them to detect and produce human language with accuracy.

Unsupervised and semi-supervised learning strategies, such as self-training techniques and clustering algorithms, provide chances to learn from partially or not at all labeled data. These methods are very helpful for identifying linguistic structures and patterns that are concealed inside big text corpora. This information can help us design unsupervised language learning algorithms and improve our knowledge of language acquisition processes.

AI quickly and intelligently assesses and delivers feedback. Language learning systems can now automatically evaluate students' speaking, listening, reading, and writing abilities thanks to artificial intelligence (AI) technology. Algorithms for speech recognition can reliably record and assess the intonation and pronunciation of students, giving them immediate feedback on their mistakes and potential development areas. In a similar vein, natural language processing methods may evaluate students' written replies, pointing out grammatical mistakes, vocabulary usage, and coherence while also offering helpful criticism to assist them improve their writing. Learners may monitor their progress, pinpoint areas of weakness, and make focused changes with the help of intelligent evaluation and feedback systems, which promotes a more successful and efficient language learning process.

When teaching a new language, artificial intelligence arranges gamified learning activities. Gamification components are frequently included into AI-powered language learning systems to improve motivation, engagement, and retention. Gamified learning experiences use elements of game design, including leaderboards, badges, levels, and points, to encourage students to actively engage in language learning activities and meet their learning objectives. Gamified language learning platforms offer a dynamic and immersive learning environment that captures learners' attention and encourages a sense of success by including aspects of competition, cooperation, and advancement. Additionally, gamified activities' complexity and difficulty may be adjusted by AI algorithms in response to learners' performance and preferences, guaranteeing the ideal ratio of fun to challenge.

The use of AI technology to provide individualized adaptive learning cannot be overlooked. Future language learning systems will prioritize personalization, with AI algorithms able to customize lessons to each student's particular requirements, preferences, and learning style. Learning material, tempo, and feedback may be adaptively adjusted by systems using advanced machine learning techniques like reinforcement learning and meta-learning, which are dependent on learners' real-time performance data. Furthermore, the use of affective computing technologies—such as sentiment analysis and emotion recognition—can improve personalization by identifying the emotional states of students and modifying the learning environment to offer the right kind of support and encouragement.

Conclusion. Therefore, as a technological tool for education, artificial intelligence may be viewed as a cognitive and educational resource that aids in the formation and development of certain knowledge, skills, and capacities. While there is no denying that artificial intelligence technologies have a lot of potential for teaching foreign languages, it is important to carefully weigh the benefits and drawbacks of each technology as well as the hazards associated with this new phase of societal evolution.

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