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ENHANCING UNIVERSITY REMOTE LANGUAGE LEARNING THROUGH INNOVATIVE APPLICATIONS OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES AMIDST GLOBAL CHALLENGES

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In recent years, the integration of artificial intelligence (AI) technologies has revolutionised various industries, and education is no exception. One area where AI is making significant strides is in distance learning of foreign languages at the university level. The purpose of the article is to examine the many ways in which AI technologies can be used to improve the efficiency and effectiveness of foreign language learning in virtual classrooms based on a personalised approach to learning and to outline an algorithm for utilizing artificial intelligence in foreign language learning, which aims to provide a structured approach for integrating AI tools and technologies into language learning processes. The scientific novelty of the study lies in its comprehensive

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exploration and integration of cutting-edge AI technologies within the context of university remote learning for foreign languages. The emphasis on personalized learning paths and adaptive learning approaches is a novel aspect. The study delves into how AI algorithms analyse individual learner data to tailor educational content, providing a customized and adaptive learning experience. This focus on individualized instruction represents a departure from traditional one-size-fits-all language education methods. Research Methods. To conduct a comprehensive study on the use of artificial intelligence technologies in university remote learning of foreign languages, a mixed-methods research approach is employed. This involves both quantitative and qualitative research methods to gather a holistic understanding of the impact and effectiveness of AI technologies in language education. Conclusions. Integrating AI technologies into university remote learning for foreign languages represents a transformative shift in how languages are taught and acquired. By personalizing learning paths, providing intelligent tutoring, incorporating conversational practice, utilizing gamification, automating assessment, and leveraging virtual reality, AI is reshaping language education to be more engaging, effective, and tailored to individual student needs. As these technologies continue to evolve, the future of language learning promises to be dynamic, interactive, and increasingly accessible to learners worldwide.

Keywords: Artificial Intelligence (AI), foreign language, innovative applications personalised education, remote education.

Problem statement. Due to the compounded effects of the pandemic and the full-scale invasion of Ukraine by Russia, most of Ukrainian students find themselves compelled to pursue their education remotely. This abrupt shift to remote learning exacerbates pre-existing challenges within the educational landscape, particularly in the domain of language acquisition. With traditional face-to-face instruction disrupted, students encounter heightened difficulties in accessing quality language education and resources. Moreover, the socio-political turmoil and displacement caused by the conflict further compound the stressors faced by students, impacting their ability to engage effectively with remote learning platforms.

In this volatile context, the necessity to enhance remote language learning through innovative applications of Artificial Intelligence (AI) technologies becomes imperative. AI-driven solutions have the potential to transcend the limitations of traditional remote learning approaches by offering personalized, adaptive, and interactive language learning experiences tailored to the unique needs and circumstances of Ukrainian students. There are pros and cons to using artificial intelligence [7]. But by using the power of AI, universities can mitigate the problems associated with distance learning, ensuring the continuity and quality of language education despite the current socio-political upheaval.

In the realm of higher education, particularly in the context of remote language learning, several challenges persist, hindering the efficacy and engagement of learners. These challenges include but are not limited to:

Limited Personalization: Traditional remote language learning platforms cannot often provide personalized learning experiences tailored to individual students' needs, preferences, and learning styles.[6]

Lack of Real-time Feedback: Conventional methods of remote language learning struggle to offer timely and constructive feedback to students, inhibiting their ability to address mistakes and improve proficiency efficiently.

Engagement and Motivation: Remote learning environments frequently face difficulties in maintaining student engagement and motivation, leading to decreased participation and suboptimal learning outcomes.

Resource Accessibility: Access to diverse language learning resources, such as authentic materials and interactive exercises, is often limited in remote settings, restricting students' exposure to immersive learning experiences.

Teacher-Student Interaction: Remote language learning platforms may not adequately facilitate meaningful interactions between students and instructors, impeding the opportunity for personalised guidance and support.

Adaptability to Diverse Learners: Current methodologies often struggle to accommodate the diverse needs of learners, including those with different proficiency levels, learning paces, and cultural backgrounds.

Assessment and Progress Tracking: The assessment of student's language proficiency and progress-tracking mechanisms in remote environments may lack accuracy, granularity, and alignment with learning objectives.

Addressing these multifaceted challenges is crucial for universities aiming to optimize the effectiveness, accessibility, and inclusivity of remote language learning programs. By leveraging innovative applications of AI technologies, universities can develop solutions that not only mitigate existing hurdles but also foster a dynamic and interactive learning environment conducive to linguistic proficiency and cultural fluency. "While AI offers promising avenues for enhancing educational experiences and outcomes, there are significant ethical, methodological, and pedagogical challenges that need to be addressed to harness its full potential effectively" [1].

The purpose of the article is to explore the challenges faced by universities, particularly in the context of remote language learning, exacerbated by global crises such as the COVID-19 pandemic and geopolitical conflicts like the invasion of Ukraine by Russia. The article aims to highlight the pressing need for innovative solutions to address these challenges and proposes the integration of Artificial Intelligence (AI) technologies as a promising avenue for enhancing the efficacy, accessibility, and engagement of remote language learning programs. By examining the potential of AI-driven approaches to personalize learning experiences, provide real-time feedback, foster student engagement, and adapt to diverse learner needs, the article advocates for the strategic adoption of AI technologies to transform remote language learning into a dynamic, effective, and inclusive educational endeavour despite the prevailing adversities.

Recent Research and Publications Analysis. Recent publications in the field of remote language learning and artificial intelligence demonstrate a burgeoning interest in leveraging AI technologies to address the challenges posed by the COVID-19 pandemic and geopolitical disruptions, particularly evident in the context of the Ukraine crisis. Researchers are increasingly exploring novel AIdriven approaches to personalize language learning experiences, foster engagement, and mitigate the limitations of traditional remote learning methods, signalling a paradigm shift towards more adaptive and inclusive educational practices. Scholars are exploring diverse applications of AI, ranging from personalized learning systems and intelligent tutoring systems to automated assessment tools and predictive analytics: Hwang G.J., Xie H., Wah B.W., & Gasevic D. (2020), Crompton H., & Burke D., (2023), Pacheco-Mendoza, Silvia, Cesar Guevara, Amalín Mayorga-Albán, and Juan Fernández-Escobar (2023), Pisica, Alina Iorga, Tudor Edu, Rodica Milena Zaharia, and Razvan Zaharia. (2023), Bond M., Khosravi H., De Laat, M. et al. (2024).

Special attention is devoted to the utilization of artificial intelligence (AI) in the domain of foreign language learning. This focus stems from the recognition of the complexities inherent in language acquisition and the potential for AI technologies to address longstanding challenges faced by language learners. Researchers are exploring AI-powered language learning platforms equipped with natural language processing (NLP), machine learning algorithms, and speech recognition capabilities to facilitate immersive and interactive language learning experiences. (Huertas-Abril, Cristina A., and Francisco Javier Palacios-Hidalgo (2023), Qiao H, Zhao A. (2023), Sun W. (2023), Lee J.H., Shin D., & Noh W. (2023).

Presentation of the main research material. The imperative to harness the potential of artificial intelligence (AI) in distance learning is underscored by several overarching factors, particularly in light of recent socio-political upheavals such as the military actions in Ukraine over the past two years. Firstly, the exigencies imposed by conflicts and crises, like those experienced in Ukraine, necessitate innovative solutions to ensure the continuity of education, especially in remote or disrupted environments [10]. AI technologies offer promising avenues to mitigate the disruptions caused by such events, providing adaptive and accessible learning platforms that can transcend geographical barriers and cater to the diverse needs of learners, including those affected by conflict-induced displacement.

Secondly, the personal experiences of individuals affected by military actions highlight the psychological dimensions inherent in distance learning during times of crisis. The trauma, stress, and uncertainty engendered by conflict situations underscore the importance of fostering supportive and responsive educational environments. AI-powered systems can play a pivotal role in this regard, offering personalized learning experiences tailored to the emotional and cognitive needs of learners, providing avenues for selfpaced learning, and offering avenues for social interaction and support, thus contributing to the psychological well-being and resilience of individuals navigating through tumultuous times [8].

In essence, the confluence of global events, such as the military actions in Ukraine, underscores the critical importance of leveraging AI in distance learning, not only to mitigate the disruptions caused by crises but also to address the psychological dimensions of learning and promote resilience in the face of adversity. By recognizing and addressing these multifaceted challenges, educators and policymakers can harness the transformative potential of AI to foster inclusive, adaptive, and psychologically supportive learning environments, thereby empowering individuals to navigate through turbulent times and continue their educational journey towards a brighter future [8].

The demand for personalized language learning experiences has become increasingly evident, driven by the recognition that individuals have unique learning styles, preferences, and proficiency levels. This need is particularly pronounced in the context of foreign language acquisition, where traditional one-size-fits-all approaches often fall short in catering to the diverse needs of learners. Artificial Intelligence (AI) offers a promising solution to this challenge by enabling the development of personalized language learning platforms tailored to the individualized requirements of learners.

"One of the crucial objectives of AI in education is the provision of personalized learning guidance or support to individual students based on their learning status, preferences, or personal characteristics" [4]. AI technologies can analyse vast amounts of learner data, including language proficiency assessments, learning behaviours, and preferences, to create customized learning pathways. By leveraging machine learning algorithms, AI-powered language learning platforms can adapt content, pacing, and instructional strategies in real time, ensuring that each learner receives targeted support and challenges tailored to their unique abilities and learning objectives. This personalized approach not only enhances the effectiveness of language instruction but also fosters greater engagement, motivation, and satisfaction among learners [5].

Personalized and adaptive learning experiences powered by AI algorithms typically involve several steps. AI algorithms gather data on individual learners through various means, such as assessments, interactions with learning materials, performance in activities, browsing history, and sometimes even biometric data from wearable devices. This data collection can be active (e.g., quizzes) or passive (e.g., tracking time spent on different topics).

Once data is collected, AI algorithms process and analyse it to extract meaningful insights about each learner. This may involve techniques such as machine learning, natural language processing, and data mining to identify patterns, preferences, strengths, weaknesses, and learning styles.

Based on the analysis of the collected data, AI algorithms create profiles for each learner. These profiles typically include information about the learner's knowledge level, learning pace, preferred learning styles, interests, and areas for improvement.

AI algorithms use learner profiles to recommend personalized learning content. This could involve suggesting specific topics, resources, activities, or courses that are most relevant to the learner's needs and preferences. Recommendations may also consider factors such as difficulty level, format (e.g., videos, interactive simulations, text), and alignment with learning goals.

As learners engage with the recommended content, AI algorithms continuously monitor their progress and adjust the learning pathway accordingly. For example, if a learner demonstrates mastery of a topic quickly, the algorithm may skip ahead to more advanced material. Conversely, if a learner struggles with a concept, the algorithm may provide additional explanations, practice opportunities, or remedial resources.

AI algorithms provide ongoing feedback to learners based on their performance and progress. This feedback may include insights into strengths and weaknesses, suggestions for improvement, and encouragement to keep learners motivated.

AI algorithms continuously learn and improve over time based on feedback from learners and the effectiveness of their recommendations. This iterative process helps fine-tune the personalization and adaptability of the learning experience.

Overall, AI-powered algorithms enable personalized and adaptive learning experiences by leveraging data-driven insights to tailor content, pace, and support to meet the unique needs of each learner.

Moreover, AI-driven language learning platforms can provide individualized feedback and assessment mechanisms, allowing learners to track their progress, identify areas for improvement, and receive targeted interventions accordingly. Additionally, AI-enabled features such as natural language processing (NLP) and speech recognition technology enable immersive language practice and interaction, simulating real-life communication scenarios and facilitating authentic language acquisition experiences [3].

In essence, the integration of AI in language learning holds immense potential to revolutionize the way foreign languages are taught and acquired by offering personalized, adaptive, and engaging learning experiences. By harnessing the power of AI to tailor instruction to the unique needs and preferences of learners, educators can unlock new possibilities for language learning that are both effective and enjoyable, ultimately empowering individuals to achieve proficiency and fluency in a foreign language more efficiently than ever before. AI-powered language learning platforms can analyse individual students' strengths, weaknesses, learning styles, and preferences. By tailoring lessons and assignments based on this analysis, these platforms create personalized learning paths for each student. This approach ensures that learners receive targeted content, allowing them to progress at their own pace and focus on areas that need improvement. AI is used in student learning management, including learning analytics, curriculum sequencing, instructional design, and student grouping [2].

Intelligent tutoring systems utilize AI algorithms to provide realtime feedback and guidance to students. These systems can identify errors in pronunciation, grammar, and vocabulary usage, offering instant corrections and suggestions. This immediate feedback helps students reinforce correct language patterns and address mistakes promptly, promoting faster language acquisition.

NLP algorithms enable the development of chatbots and virtual conversation partners that engage students in realistic dialogues. These AI-driven conversational agents can simulate various language scenarios, providing students with opportunities to practice and improve their speaking and comprehension skills. This interactive approach enhances language fluency in a controlled and supportive environment.

AI-driven gamification elements can turn language learning into an engaging and enjoyable experience. Adaptive learning algorithms within educational games adjust difficulty levels based on individual performance, ensuring an optimal balance between challenge and attainability. This not only motivates students but also facilitates sustained interest in language learning.

AI technologies streamline the assessment process by automating the grading of assignments, quizzes, and exams. This not only reduces the burden on instructors but also provides instant feedback to students. Additionally, AI-powered analytics track students' progress over time, enabling educators to identify trends, individual challenges, and areas of improvement.

Virtual reality enhances language learning by immersing students in virtual environments where they can practice language skills in real-world scenarios. AI algorithms can adapt these environments based on the learners' proficiency levels and learning objectives, creating a more authentic and immersive language-learning experience.

Several AI-powered language learning platforms can be effectively utilized in university settings to enhance language instruction and address the challenges associated with remote learning. Here are some examples:

Rosetta Stone's AI-driven speech recognition technology can facilitate pronunciation practice and communication skills development. Universities can integrate Rosetta Stone into their language courses to provide students with interactive speaking exercises and real-time feedback on their pronunciation, helping to bridge the gap created by the absence of face-to-face communication.

Duolingo offers a dedicated platform for educational institutions called Duolingo for Schools. With its AI-based adaptive learning system, Duolingo can personalize language learning experiences for students based on their proficiency levels and learning styles. Universities can incorporate Duolingo for Schools into their language curriculum to provide students with engaging practice activities and progress-tracking features, fostering independent language learning outside the classroom [9].

Babbel for Universities offers a program specifically designed for universities, allowing institutions to customize language courses tailored to their curriculum and student needs. Babbel's AI-driven review system helps students reinforce their learning and improve retention through personalized practice exercises. Universities can integrate Babbel into their language programs to supplement classroom instruction and provide students with additional opportunities for language practice and skill development.

FluentU offers an educational platform that utilizes AI to curate authentic language content from videos across the web. Universities can leverage FluentU to create immersive language learning

experiences for students, exposing them to real-world language usage in context. FluentU's interactive video lessons and personalized quizzes can help students improve their listening comprehension and vocabulary acquisition skills, enhancing their communicative competence in the target language.

Lingvist for Universities offers a platform designed to accelerate vocabulary acquisition through AI-driven adaptive learning algorithms. Universities can incorporate Lingvist into their language courses to help students expand their vocabulary and improve their language proficiency. Lingvist's personalized learning decks and spaced repetition system enable students to optimize their study time and effectively memorize new words, supporting their overall language learning goals.

By integrating these AI-powered language learning platforms into university programs, institutions can provide students with interactive and engaging language learning experiences that simulate real communication scenarios. AI technologies can help facilitate personalized feedback, adaptive learning paths, and immersive language practice, enabling students to develop their language skills effectively in remote or hybrid learning environments.

In the scientific domain, empirical investigations have increasingly underscored the efficacy of AI-enhanced language learning methodologies in fostering enhanced learning outcomes and learner engagement.

Conclusions. In conclusion, the integration of AI-powered language learning platforms in university settings represents a transformative step towards overcoming the challenges posed by remote learning and fostering enhanced communication skills among students. By leveraging innovative technologies such as speech recognition, adaptive learning algorithms, and authentic content curation, universities can create dynamic and engaging language learning experiences that bridge the gap between traditional classroom instruction and real-world communication. As we navigate the complexities of remote education, AI serves as a powerful ally in equipping students with the linguistic proficiency and cultural fluency needed to thrive in an increasingly interconnected global society. Embracing these advancements not only enhances language education but also cultivates a generation of digitally literate and culturally competent individuals poised to

navigate the complexities of our diverse world with confidence and proficiency.

In the face of the current situation in Ukraine, where traditional modes of instruction are compromised by conflict-induced displacement and logistical complexities, AI-driven language learning platforms offer a viable solution to mitigate educational disruptions. By harnessing advanced algorithms and machine learning techniques, these platforms can adaptively tailor learning experiences to accommodate the diverse needs and circumstances of learners, irrespective of geographical location or socio-political context. Moreover, the immersive and interactive nature of AIpowered language instruction serves to engender a sense of continuity and engagement amidst upheaval, thereby fostering resilience and academic continuity among affected populations.

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УДОСКОНАЛЕННЯ ДИСТАНЦІЙНОГО ВИВЧЕННЯ ІНОЗЕМНИХ МОВ В УНІВЕРСИТЕТАХ ШЛЯХОМ ІННОВАЦІЙНОГО ЗАСТОСУВАННЯ ТЕХНОЛОГІЙ ШТУЧНОГО ІНТЕЛЕКТУ В УМОВАХ ГЛОБАЛЬНИХ ВИКЛИКІВ

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Останнім часом інтеграція технологій штучного інтелекту (ШІ) викликала революційні зміни в різних галузях, і освіта не є винятком. Однією зі сфер, де ШІ досягає значних результатів, є дистанційне викладання іноземних мов на університетському рівні. Мета статті розглянути численні можливості використання технологій штучного інтелекту для підвищення ефективності та результативності вивчення іноземних мов у віртуальних класах на основі персоналізованого підходу до навчання та окреслити алгоритм використання штучного інтелекту, який має на меті забезпечити структурований підхід до інтеграції методів та засобів штучного інтелекту у процес вивчення мови. Наукова новизна дослідження полягає в комплексному вивченні та інтеграції передових технологій ШІ в контексті університетського дистанційного навчання іноземних мов. Новим аспектом є акцент на персоналізації навчальних планів та адаптивних підходах до навчання. Дослідження заглиблюється в те, як алгоритм штучного інтелекту аналізує індивідуальні дані учнів, щоб адаптувати навчальний контент, забезпечуючи індивідуальний та адаптивний досвід навчання. Для проведення комплексного дослідження університетському дистанційному використання технологій ШІ в вивченні іноземних мов було застосовано змішаний дослідницький підхід. Він включає як кількісні, так і якісні методи дослідження для отримання цілісного розуміння впливу та ефективності технологій штучного інтелекту в мовній освіті. Інтеграція технологій штучного інтелекту в університетське дистанційне навчання іноземних мов значний крок у зміні підходів до викладання та вивчення мов. Завдяки персоналізації навчальних програм, інтелектуальному репетиторству, гейміфікації, автоматизації розмовній практиці, оцінювання використанню віртуальної реальності штучний інтелект змінює мовну освіту, роблячи її більш захопливою, ефективною та адаптованою до індивідуальних потреб студентів. Оскільки ці технології продовжують розвиватися, майбутнє вивчення обіцяє бути линамічним. MOB інтерактивним і все більш доступним для учнів у всьому світі.

Ключові слова: дистанційна освіта, інноваційні додатки, іноземна мова, персоналізована освіта, штучний інтелект (ШІ).

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