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Conference “Innovative Approaches of Language Teaching:
Bridging Theory and Practice”**

**«Тілдерді оқытудың инновациялық тәсілдері: теория мен
практиканы ұштастыру» атты II көктемгі халықаралық
ғылыми-практикалық конференция**

**II весенняя международная научно-практическая
конференция «Инновационные подходы преподавания
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«Тілдерді оқытудың инновациялық тәсілдері: теория мен практиканы ұштастыру» атты ІІ көктемгі халықаралық ғылыми-практикалық конференция материалдар жинағында шетел тілдерін оқыту саласындағы озық тәжірибелермен алмасуға, мәдениетаралық қарым-қатынасты нығайтуға, цифрлық дәуір жағдайында шетел тілдерін оқытудағы инновациялық технологияларды таратуға, сондай-ақ халықаралық ғылыми-академиялық ынтымақтастықты кеңейтуге бағытталған ғылыми-практикалық зерттеулердің нәтижелері енгізілген. Материалдарда білім алушылар мен жас ғалымдардың осы бағыттағы зерттеулерге белсенді қатысуын ынталандыру мәселелері қарастырылған.

В сборник материалов ІІ весенней международной научно-практической конференции «Иновационные подходы преподавания языков: слияние теории и практики» включены результаты научно-практических исследований, направленных на обмен передовым опытом в области преподавания иностранных языков, укрепление межкультурной коммуникации, распространение инновационных технологий обучения в условиях цифровой эпохи, а также расширение международного научно-академического сотрудничества. В материалах рассматриваются вопросы стимулирования активного участия обучающихся и молодых ученых в исследованиях в данной области.

The proceedings of the ІІ Spring International Scientific and Practical ONLINE Conference “Innovative Approaches of Language Teaching: Bridging Theory and Practice” include the results of scientific and practical research aimed at sharing advanced experience in foreign language teaching, strengthening intercultural communication, disseminating innovative teaching technologies in the digital age, and expanding international scientific and academic cooperation. The materials also address issues related to encouraging the active participation of students and young researchers in this field.

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NJSC “The L.N. Gumilyov Eurasian National University”
Philological faculty
Foreign Languages Department

II Spring International Scientific and Practical ONLINE Conference “Innovative Approaches of Language Teaching: Bridging Theory and Practice”

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теории и практики»**

The Main Themes of the Conference:

1. Teaching foreign languages for professional and interdisciplinary purposes.
2. Innovative technologies in foreign language teaching methodology.
3. Language training in the context of multilingualism and lifelong learning.
4. Language education based on digital technologies and artificial intelligence.

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At the same time, most respondents perceive artificial intelligence as a supplementary tool rather than a substitute for independent work. Thus, AI plays an important role in the education of modern students; however, it is essential to use it responsibly and maintain independence in learning activities.

Recommendations

For the effective use of artificial intelligence in education, it is important to apply it as a supplementary tool rather than a substitute for independent work. It is also recommended to develop critical thinking skills and to verify information obtained through AI. In addition, universities should consider establishing clear guidelines for the use of artificial intelligence in the educational process.

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ENGLISH FOR TRANSPORTATION ENGINEERS: EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE INTEGRATION

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Abstract

This article examines the impact of the ongoing process of integration of artificial intelligence in the transportation engineering sphere. The results of the

research demonstrate the changes current AI models bring in the road infrastructure, public transportation, autonomous vehicles, road safety and other transportation spheres. Additionally, the results uncover benefits and current challenges, provided by AI models integrated into transportation spheres. The benefits and challenges of AI models provide an opportunity for the development of transportation engineering sphere in the next decade.

Keywords: Artificial intelligence, integration, transportation engineering, transportation sector, autonomous vehicles, safety, sensors, voice assistants, manufacturing.

Анатпа

Бұл мақалада жасанды интеллекттің интеграциясының көлік инженерия саласына әсерін зерттейді. Зерттеу нәтижелері жол инфрақұрылымы, қоғамдық көлік, автоматтандырылған көліктер, жол қауіпсіздігі мен басқа көлік салаларына жасанды интеллект модельдері енгізетін өзгерістерін көрсетеді. Онымен қатар, нәтижелер көлік инженериядағы жасанды интеллекттің артықшылықтары мен енгізілу қиындықтарын айқындатып тұр. ЖИ модельдерінің артықшылықтары мен қиындықтары келесі онжылдықа көлік инженерия саласының дамуына мүмкіндік ашады.

Түйін сөздер: Жасанды интеллект, интеграция, көлік инженериясы, көлік секторы, автоматтандырылған көліктер, қауіпсіздік, сенсорлар, дыбыс ассистенті, өндіріс.

Introduction

Artificial Intelligence is being integrated into various economic and social fields, including transportation and logistics. Main goals of integration of AI systems usually center around processing information in massive databases of existing systems and increasing the speed of completing certain objectives. Artificial Intelligence models are still being tested in piloting mode or experimented on by majority of companies and the government [1].

Transportation industry is currently starting to utilize artificial intelligence models to move people and products much more efficiently. USA, China, Germany, Japan, etc. are currently testing their AI models to use in transporting systems [2]. During the studies of AI in different regions, it was deemed to be a good method for transportation systems to combat the challenges of an increasing demands for travel, CO2 emissions, safety concerns and environmental degradation. It is argued that AI systems have potential application for road infrastructure, road users, which include drivers and vehicles [3].

The integration of AI models in transportation sector is currently gaining traction. AI based models are being rapidly developed and integrated into fields with large amount of data to process. Kazakhstan is also following the trend for rapid modernization. Kazakhstan is reportedly planning to integrate artificial intelligence

models into transportation sphere, including logistics, navigation, transportation infrastructure etc. [4]. With new tools and systems introduced, the transportation sector is undergoing changes that are approximated to present new and more efficient solutions. However, the Artificial Intelligence models still have issues that limit the benefits of integration.

The objective of the research is to reveal the impact of AI integration into the transportation engineering sphere, the results of the use of existing models and the future perspective of digitalization.

Methodology

While writing the article, literature review on this topic was conducted, analyzing existing projects and materials related to artificial intelligence models in transportation engineering sphere. A historical overview was provided, and projects along with proposed ideas were discussed in detail.

Results and discussion

Currently, Artificial Intelligence models are divided into Artificial narrow Intelligence and Artificial General Intelligence. Narrow AI models that exist today can solve complex problems in specialized areas. As a cognitive tool, AI is used in various fields of science: decision theory, system optimization, data processing, machine learning, logic and genetic algorithms [5].

Artificial Intelligence models allow for large efficiency savings, visualization and efficient problem solving in multiple sectors. Natural Language Processing and Image Recognition systems are AI model types tested most in the engineering field, giving an opportunity to process text-based data and images, which allows engineers to design solutions for various complex problems. For civil engineering applications specifically, AI systems can analyze following datasets: community surveys, public meeting transcripts, transportation performance data and project records. GPT models can notice complex relationships between various factors by leveraging unsupervised and supervised learning [2].

AECOM (formerly AECOM Technology Corporation) has already been testing an AI based model that allows engineers and asset owners to manage data across digital tools for efficient problem solutions, visualization and model observation.

According to AECOM’s report, the road infrastructure project that united all engineering and environmental data and designs into a single system which amounted to over 2000 layers, has reduced time necessary for accessing design information, including GIS and BIM data, photos, and survey information by 70%. Additionally, access to data allows for innovative processes. In this example, 13000 images from photogrammetry surveys were processed into a 3d model of a project site, giving engineers, stakeholders, surveyors new perspective of the site and provides a backdrop to other datasets [1].

Artificial Intelligence systems are being integrated into various transportation

sectors, with each of them providing beneficial changes. Public transportation is one of such sectors. Due to the importance of bus journeys and destinations in public transportation, many research have been conducted to enhance their safety and dependability. Bus timetables are regulated by an algorithm known as an Ant Colony Hybrid (ACAH). When it comes to maximizing the scheduling of bus drivers, both are reliable and successful. Bus riders may save time by using ANNs to anticipate when the next one will arrive.

Driverless cars are an advancement in the field of transportation for the ideal future, and AI is playing a vital part in this field. Data transmission and processing are essential functions in autonomous vehicles. AI provides the ability to regulate the collection, processing, and transmission of information. It also provides an ideal and appealing connection to make the operation of autonomous vehicles safer. In 2013, Toyota Prius offered automated vehicles in the United States. According to a report conducted in the USA, 270 billion road accidents and over 30,000 fatalities yearly are expected to be prevented after deploying autonomous vehicles. [3].

Tesla, car manufacturing company that is promoting sustainable energy, has been one of the leaders of AI integration in cars since 2003. One of the crucial projects for the passenger cars is an AI based tracking system, consisting if a camera above the rearview mirror and a software that analyses the recording. The system tracks the movement of the eyes, which allows it to detect drowsiness and prevent car accidents [6].

Artificial intelligence has benefits that can potentially increase the safety, planning and other fields in the upcoming years. Existing models are already showing positive results, that indicate the potential of AI integration in transportation. They can process large sets of data, thus ensuring quick and effective development if neural network models. Transportation sector is the sector that is expected to have most benefits.

AI has been acknowledged to manage the flight journey more effectively. AI can help in Technology (Machine Learning), software/hardware and Application (Intelligent Maintenance, Flight Route Optimization) [3].

PLADS is a system developed to extract information from highly dense aviation reports and modify it to support vector machine and SA (Simulated annealing) algorithm systems. It showed that SVM (Support vector machine) gives good results for this type of classification. The unsupervised machine learning algorithm is reliable to use to increase safety when an airplane is landing. The safety of the plane by checking the engine on board using the Probabilistic neural network (PNN) [3].

Within smart cities, daily transportation faces a critical challenge in the form of the increasing number of road accidents. According to studies, an increasing frequency of road accidents is the result of negligent driving, distracted driving, driving while intoxicated and inadequate road maintenance, which highlights the need to adhere to traffic regulations and ensure responsible driving. Alam, S., Tashin, S., Tarannum, I., Chowdhury, T., & Sarony, K. have proposed a framework that uses various sensors to

detect drowsiness, speeding and high alcohol level, mitigating the risk of road accidents. Utilizing a combination of sensors in driver’s temporary glasses it can detect drowsiness and activate alarms when necessary. Additionally, an alcohol sensor incorporated into the system provides an opportunity to reduce the number of accidents by preventing the ignition of the motor if an alcohol level exceeds the legal amount [7].

Along with security systems, AI systems can process data from multiple sensors to detect the exact issue related to maintenance. Such systems can predict the exact component that needs a replacement with high accuracy. They are also capable of locating the closest gas station in case if gas level is low.

It is necessary to mention the voice assistants, as they are becoming much more frequent and popular. In 2022, the percentage of cars with AI based voice assistants increased from 30% to 45%. It is predicted that in 2028 90% of new cars will have voice assistants implemented in them. Mercedes Benz User Experience informational and entertainment system remains a leader in the voice assistant sphere [6].

Despite the benefits that AI systems provide, it is important to mention current challenges that have yet to be resolved. A crucial challenge for integration is a requirement for high-quality and diverse datasets for efficient training. Collecting all the necessary materials and maintaining datasets is costly and time-consuming, especially for niche applications and mitigation strategies [8].

Self-driving cars currently are still in development, which means AI is not prepared for unexpected situations that can occur on the road. As mentioned before, AI algorithm training requires high-end data, collection and management if which is an expensive process. Most data recorded from self-driving cars comes from the Western states of U.S., with majority of data being collected in good weather, on unidirectional highways, that present minimum challenges besides staying in the car’s own lane. Automated cars can easily complete such tasks, however, so can human drivers. Most systems cannot solve uncertain and ambiguous situations that require quick reaction and anticipation most drivers have. Additionally, as was noticed in aviation, the introduction of new systems is usually followed with an uptick of accidents, which can be a point of concern for public, politicians, lawmakers and manufacturers [9].

With the capability to process multiple databases in a short period of time it is safe to assume that the integration of AI in the transportation sector will guarantee safety and rapid development in the upcoming future. Nonetheless, there are still issues that must be resolved before AI algorithms become part of the transportation sector.

Artificial intelligence is becoming a prominent innovation in the economy as of this decade. Multiple deep learning innovations continually uncover the mysteries behind the vast amounts of data generated in various industries. According to the market size of this technology, that was estimated at US\$272 million in 2016, and its high data storage capacity, precise computational power, and ability to handle large amounts of complexity will drive growth of data [3].

According to Lipatov (2023), robots with AI are expected to be fully integrated into manufacture in the next decade. Car manufacture is the field that will be affected

most. Furthermore, by 2030 self-driving cars are expected to be available to public. By 2032, sales of self-driving car sales are expected to reach 80 million. Expected rise in the popularity of such cars creates the best opportunity for intelligent car manufacturers.

The fully self-driving car market is predicted to take only 0,01% of the general car market worldwide. However, by 2030, it is expected to reach 19% [6].

AI integration is an integral process in the development of the sphere. It is the process that affects the economy of the entire world, including USA, China, Japan, Russia etc. Kazakhstan is one of the countries that focus on the economic development.

On November 17th, 2025, the President of the Republic of Kazakhstan has signed the law “On Artificial intelligence”, which creates a legal framework for the development, use and regulation of artificial intelligence systems in Kazakhstan, establishing security, transparency and accountability. The law clarifies the rights of the users of AI systems, prohibited practices and practical steps for businesses [10]. With this law becoming final on January 18th, 2026, most manufacturers and software developers will get an opportunity to integrate AI systems into various spheres.

Conclusion

Based on the results found during the literature research, it can be stated that AI integration brought significant changes to the transportation sector. With the development of AI voice assistants, systems that can predict the exact issue with vehicle and self-driving cars, the impact of Artificial intelligence is expected to further increase in the upcoming decade. The rise of neural network models has affected the entire globe, which has resulted in governments creating environment for safe development of AI systems, with notable example being Kazakhstan. Despite having the benefits, integration also brings issues that must be resolved before any accident happens. Artificial intelligence is currently still in development, and the integration of such systems is still in progress. During the integration process issues related to safety concerns and data management costs remain crucial, since the result of the integration and the consequences are directly tied to both of the issues.

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ЖАСАНДЫ ИНТЕЛЛЕКТ АРҚЫЛЫ АҒЫЛШЫН ТІЛІН ТИІМДІ ҮЙРЕНУ

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Аңдатпа

Бұл мақалада жасанды интеллекттің ағылшын тілін үйренудегі рөлі мен тиімділігі жан-жақты қарастырылады. Зерттеу барысында Elsa Speak, Grammarly