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THE IMPACT AND PROSPECTS OF USING…

RT&A, Special Issue No 5 (75)
Volume 18, November 2023

THE IMPACT AND PROSPECTS OF USING ARTIFICIAL INTELLIGENCE IN THE ECONOMY

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Abstract

This paper discusses issues related to the development of technologies and the relationship of this process with economic processes. Due to the rapid digitalization, the importance and role of artificial intelligence are growing. At the same time there are many problems and they are considered in this paper: unemployment of technical workers, a security problem that is associated with the confidentiality, the existing neural networks cannot be suitable for use in all industries etc. When using the generalization method, the authors have made relevant conclusions and recommendations for using Artificial Intellect: to solve the following universal tasks: automatic translation; getting business intelligence; recognition of visual signs; character recognition; information extraction; understanding and analyzing texts; image analysis; ensuring information security and protection against cyber-attacks; speech recognition; robotic tools for the implementation of tasks at different levels and in different fields.

Keywords: economics, artificial intelligence, neural networks, machine learning, digital economy.

I. Introduction

The human community has entered an era of serious changes related to computerization and digitalization. There is a turning point in the development of society, the usual way of life is changing and new standards of organization of various activities are being established. One of the main directions of digitalization, as the main driving force of the ongoing changes, is the development of artificial intelligence.

Recently, everyone talks about such concepts as artificial intelligence, machine learning, neural networks, automation and computerization. It has become obvious that in recent decades there has been a serious leap in the development of science and technology, which, with no doubt, causes multiple changes in all spheres of society: modern electronic tools and software have become firmly entrenched in the social, economic, political and even spiritual spheres.

This paper focuses on the impact of computerization on the economic component of public life, and the introduction of artificial intelligence into the economy in particular.

II. Methods

The following methods were used to develop the study design: Method of structuring; Method of analysis; Method of synthesis.

Nevertheless, the authors selected the system-complex holistic approach as the key method of the research. The choice is justified by the fact that the approach is to generalize scientific knowledge obtained as a result of the study, remaining within the framework of one analyzed

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subject (the topic of research is connected to some adjacent spheres as medicine, education, programming etc.)

III. Results

The importance and role of artificial intelligence in the economy

The initial narrow focus of the use of artificial intelligence, its limited use in laboratory conditions and in individual projects have been replaced by widespread utility – artificial intelligence based on neural networks, BigData, machine learning and cloud computing [1], is used in production, analytics, forecasting, accounting, etc.

So, at this stage of its development, artificial intelligence can be considered almost a universal tool and technology, potentially contributing to significant changes in the economic sphere.

Nevertheless, the impact of artificial intelligence on the economy in general remains minimal despite the introduction of AI tools into private economic activity to achieve the goals set by entrepreneurs and optimize the processes taking place in business. The attitude to this state of affairs in society is ambiguous, since the widespread introduction of artificial intelligence into economic processes of different levels presupposes the presence of both pros and cons.

Of course, the digitalization of the economy and the use of artificial intelligence in various economic sectors implies wider opportunities both for certain economies and for humanity in general. So, the advantages of introducing artificial intelligence into the economy are:

• Increased efficiency: Artificial intelligence is a tool that greatly facilitates the work of employees in various structures, AI can automate routine and repetitive tasks such as filling out tables, accounting, documentation, regulating taxation which allows you to increase productivity and reduce labor costs [2]. This is especially useful in areas where large amounts of data processing are required, such as finance, healthcare, manufacturing, and logistics.

• Improving the accuracy and quality of the work performed: neural networks can process large amounts of data, are capable of analyzing serious information flows, while not losing speed and accuracy. Artificial intelligence allows a person to make decisions based on the results of an AI analysis of the situation. Also, artificial intelligence can carry out activities to independently search for solutions based on the available research result. At the same time, the performance of this work by a person implies the presence of, at least, mechanical errors and large time costs.

So, over time, the influence of the human factor on the processes associated with data analytics and decision-making on the material already processed by AI decreases and the optimality of the final result increases. For example, in the field of medicine, neural networks can help in assessing the condition of patients, in determining diagnoses and building the most appropriate treatment plans based on the symptoms noticed by AI and the patient's medical history. So, again, this proves that artificial intelligence helps to reduce labor costs. Nevertheless, this fact is accompanied by negative consequences both for one particular individual and for the entire economy. These consequences will be described further.

• Creation and development of new goods and services: the use of neural networks opens up new opportunities for creating innovative products and services that were previously unavailable. We are talking about the creation of "independent" robot assistants, which are already used in most cities of Russia and the world: delivery robots, vacuum cleaner robots, robot manipulators, etc.

There are also more interesting and more independent machines with artificial intelligence: robot assistants (For example: Asus Zenbo, which combines a number of functions that facilitate the life of housewives – helps with cleaning around the house, entertains the family when needed, takes care of babies and the elderly, and can also do a lot of things that a person is capable of), robots-interlocutors, robots-doctors (For example: Smart Doctor Assistant, which, at the moment,

is the first and only licensed doctor among AI), there are also independent vehicles controlled by AI (Tesla, an unmanned Odyssey truck from KAMAZ) [3]

• AI can also improve existing products and services by adding machine learning and data analysis features [4]. For example, many banks are implementing neural networks into their mobile applications: chatbots no longer direct customers to operators and do not respond with basic phrases recorded by people - now bots will help solve the client's problem independently, based on the experience gained, through machine learning. (Sber bank makes 100% of retail credit decisions using AI, and 95% of them are formed automatically, without human participation. Sber bank also uses neural networks for document recognition and automatic scheduling of employees) [5].

• Solving complicated problems: AI is able to efficiently and safely solve tasks which are difficult or dangerous for humans to go along with. For example, artificial intelligence can deal with tasks connected to detecting and preventing cyber-attacks, can analyze images and help diagnose difficult-to-detect diseases; robots with AI can go on search missions deep into the oceans or into outer space [6]. This will lead to a reduction in labor costs and reduce the risks in carrying out the necessary work.

Thus, AI has great potential for solving complex and dangerous tasks that can save people time and resources, as well as increase the efficiency and accuracy of solutions.

• Creation of new jobs: The introduction of AI can lead to the creation of new jobs related to the development, maintenance and management of AI systems. While some traditional jobs may be replaced by robots or automated, there will be new opportunities for people with AI and technology skills. For example, AI developers and engineers are to be demanded to create and improve machine learning algorithms and models. Data scientists and analysts will be able to use AI to examine large amounts of information and identify new trends and patterns. Companies will also need cybersecurity specialists to protect AI systems from attacks and vulnerabilities.

There will also be new jobs associated with the implementation and support of AI systems. These can be specialists in the implementation of AI in various industries, administrators of AI systems, training data for training machine learning models, and much more.

However, in order to be competitive in the labor market, people should develop skills related to AI and analytical thinking. This may include learning programming, mathematics, statistics, and machine learning. Communication skills and the ability to work in a team are also important, since many AI projects require the collaboration of various specialists.

• Improving the quality of customer interaction: AI can foster increasing the personalization of the services provided by putting forward recommended products and services that are most suitable for a particular client. For example, personalized advertising in social networks helps manufacturers to find their consumers, and consumers – the desired product. This contributes to improving customer satisfaction and the competitiveness of companies.

In general, the introduction of artificial intelligence into the economy offers a wide range of advantages. Professional evaluation shows that the use of AI can significantly improve the efficiency of business processes and increase labor productivity. More accurate and faster analytical data allows you to better predict the needs of the market and optimize the company's development strategies. In addition, automation of routine frees employees from monotonous tasks and gives them the opportunity to concentrate on more creative work.

However, it is necessary to keep in mind the risks associated with data privacy and ethical issues when using AI [7]. In general, the intelligent use of artificial intelligence can become a key factor in the development of the modern economy and the achievement of new heights in business.

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IV. Discussion

Problems related to the introduction of artificial intelligence in various sectors of the economy

The introduction of artificial intelligence is not as simple as it may seem at first glance; for the effective and successful integration of artificial intelligence into various sectors of the economy, a number of problems need to be solved:

• When using artificial intelligence, one of the problems becomes understanding the principles of its work, or rather the opacity of the decisions made by AI. Since AI is used in performing completely different tasks – from driving a car to managing insurance payments, the decisions made by neural networks may conflict with the logic of the user or entrepreneur who implemented this AI.

For example, on May 8, 2019, in Miami, a driver who lost control of the car died at the wheel of a Tesla Model S, as a result of which the car collided with several palm trees. The internal systems controlled by AI could not cope with this situation, the driver who was in the car could not get out of the cabin on his own and died as a result of the resulting fire [8].

• There are various options for applying AI into practice, and, nevertheless, the issues of regulating the work of neural networks in a particular industry are a serious difficulty – they are not universal and each of the existing neural networks cannot be suitable for use in all industries. Accordingly, there is a problem of choosing and evaluating an acceptable AI option for a specific purpose.

So, if the use of neural networks to analyze the semantic content of a text can be useful to professional writers, then in most other situations such technology may be superfluous.

• Determining the most suitable neural network for further work does not yet solve all the issues of its application – this is followed by the search for specialists capable of working with a particular AI system. As artificial intelligence becomes more widespread in the industry, many skilled professionals have become much more difficult to find due to high demand. In addition, the salary of such specialists is usually higher than that of less technical specialists, which can lead to prohibitively high costs for doing business "according to the rules of the future"

• In addition to the above-mentioned problems related to the recruitment and distribution of personnel, another one arises: a security problem that is associated with the confidentiality and inviolability of data when using artificial intelligence systems in production environments.

When working with AI, there is no complete guarantee of data security, at this point in time there is a serious possibility of information leakage. Privacy issues also go beyond data protection. Many questions merge from integration of AI: what information does an artificial intelligence system collect about its users? Is it used for marketing purposes? And how is it to be regulated by the relevant authorities [9].

Also, that is why it is extremely important for those who work with confidential customer information through digital channels to ensure compliance with best practices when implementing machine learning solutions and not to forget about attracting specialists who are able to regulate these issues.

• Another problem of using AI in various sectors of the economy is the management of requests and expectations when working with advanced technologies. We are talking about the ability of specialists to correctly make requests, specify all the requirements for the neural network so that there are no discrepancies with expectations.

It is very important to clearly understand what problems can really be solved and how much time it will take – technical specialists should set specific tasks for themselves, without allowing too many assumptions and options.

So, for example, in the field of architecture, in order to reflect the final sketches in the form necessary for a particular company, it is important to carefully study existing frameworks, such as

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TensorFlow and PyTorch, and choose one of them based on the current requirements for the project, since even small differences in the work of machine learning can lead to serious changes in the result activities. So, a comparative characteristic of these frameworks [10]:

	PyTorch	TensorFlow
Advantages	The framework is based on Python programming language, which makes it flexible and easier to use. An active community and forums help developers to work quickly and exchange information.	Unlike Pitch, TensorFlow is compatible with many programming languages. TensorFlow can easily process large datasets. That's why TensorFlow's market share was 36.92% in 2022. TensorFlow has extensive visual capabilities. Open source code, available for free use.
Disadvantages	Sometimes you need to convert the code to develop a real app. Visualization methods in PyTorch are not so good, and one may have to use other tools.	Frequent updates and occasional uninstallations and reinstallations have become a challenge for users. TensorFlow displays lower computing speed and is lags in usability compared to many deep learning frameworks on the market

Of course, these differences will seriously change the final result, which, in turn, determines the profitability of the company and its position in the market.
• And the most serious problem that arises in the process of introducing AI into the economy remains ethical and legal aspects. Ethical issues are related to questions about how the use of AI can affect people and society. Increasingly, there are concerns about the automation of workplaces and the threat of unemployment in the very near future [11].
There are disputes about the correctness and expediency of using AI, while people who do not have the opportunity to use it or prefer doing business exclusively with human hands and mind, equal working conditions and doing business in this case are impossible. Legal problems are related to the definition of liability in case of errors caused by AI. Who is responsible for the actions of AI if they lead to negative consequences? In addition, there are questions about the protection of intellectual property and copyrights in relation to the AI systems being created and their results.
Solving these problems requires the development and adoption of new laws and regulations that take into account the specific features of the use of AI in the economy. It is necessary to develop international standards and agreements to regulate the use of AI and protect the rights and interests of people. This will cause the need for the active participation of ethics, law, economics and technology specialists in the development of solutions, which is a complex task that requires attention from all stakeholders.

IV. Conclusion

Thus, the importance of artificial intelligence in the economy is increasing every day. AI offers many prospects for use in various sectors of the economy. Technologies related to machine learning and neural networks help in performing routine and complex tasks, as well as increase the efficiency of non-technological employees. Thus, artificial intelligence is used to solve the following universal tasks:
• automatic translation;
• getting business intelligence;
• recognition of visual signs;

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• character recognition;

• information extraction;

• understanding and analyzing texts;

• image analysis;

• ensuring information security and protection against cyber-attacks;

• speech recognition;

• robotic tools for the implementation of tasks at different levels and in different fields, etc. [12];

So, the potential of using artificial intelligence in the economy is extremely high – the use of neural networks in manufacturing and in the service sector can contribute to the integration of humans and AI, which is equal to the optimization of economic activity.

Nevertheless, the introduction of tools endowed with artificial intelligence into the economy can also cause negative consequences, such as an increase in the unemployment rate due to the transfer of some responsibilities to machines.

In accordance with the improvement of artificial intelligence, economic organizations should control and regulate the division of labor between people and machines, as well as provide people with new jobs related to, in fact, the adjustment of AI activities [13].

Such changes can provide for the transition from the information "cult" to the neural networks "cult" and the widespread use of robotic systems, along with many new products and services based on the AI use. According to a recent PwC report, artificial intelligence technologies and apps are to increase global GDP by up to 14% in the period up to 2030 [14].

Obviously, there is no clear answer to questions about the future of the world's economies and the impact of AI on all fields of public life. However, one should admit the significance and possible benefits of using the AI, which does not replace a person, but helps them. Fear of the unknown and problems within the economy can curb development and lead society to stagnation.

Artificial intelligence is rapidly making an already complex world even more complex, and it is not bad, it is a new reality that society need to put up with and work with.

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