THE IMPACT OF ARTIFICIAL INTELLIGENCE ON MODERN SOFTWARE DEVELOPMENT

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Abstract: Artificial intelligence is making radical changes in the development of modern software. Its development is creating new opportunities for programmers, companies and users, helping to make the process of creating software more efficient, fast and high-quality. The influence of artificial intelligence in the field of software is manifested in many directions, and these effects are reflected in improving the quality of software products, reducing development deadlines, as well as creating new functionality.

Keywords: artificial intelligence, software, education, programmers, tasks, testing, interfaces, products.

One of the main advantages of artificial intelligence in software development is the possibility of automation. In the process of traditional software development, there are tasks that require a lot of time and effort. For example, processes such as code writing, testing, error detection, and Correction are performed manually by programmers. With artificial intelligence, many of these processes are automated. For example, AI systems designed to write code help programmers speed up code writing, perform repetitive tasks automatically, and improve code quality. Testing processes are also performed automatically using artificial intelligence, allowing faster detection and correction of software errors. Artificial intelligence also plays an important role in creating new functions in software. For example, opportunities such as natural language comprehension, image recognition, voice command execution are being added to software products using artificial intelligence algorithms. This allows users to create more user-friendly and interactive interfaces. Artificial intelligence systems also study the behavior of users, allowing for the personalization and improvement of software. This serves to improve the user experience.[1]

Another important effect of artificial intelligence is to support decision-making in the software development process. Complex tasks such as analyzing large databases, identifying user needs, studying market trends are effectively performed using artificial intelligence. This helps to increase the market success of software products. Programmers and managers can make better and faster decisions based on analysis from artificial intelligence, which optimizes project management. Artificial intelligence has also been instrumental in ensuring software security. In cybersecurity,

artificial intelligence systems are being used to detect threats, predict risks, and take automatic response measures. This increases the reliability of the software and protects users from malicious attacks. Security test automation and threat real-time detection capabilities are setting new standards in software development. Artificial intelligence also helps to improve teamwork in the process of creating software. For example, in processes such as managing code versions, distributing project tasks, identifying and solving collaborative problems, artificial intelligence systems serve as an effective tool. This increases communication between developers and increases performance. The importance of supporting teamwork is growing even more at a time when the complexity of software projects is increasing.[2]

Another important area of artificial intelligence in the software sector is the creation of user interfaces. Instead of traditional interfaces, artificial intelligence is used to create systems that adapt to the user's needs, teach themselves and interact with the user. This makes it easier to use the software and increases user satisfaction. For example, voice assistants, chatbots, and personal support systems work on artificial intelligence and help users perform daily tasks. The influence of artificial intelligence on software development is felt not only in the technological, but also in the economic and social spheres. As the efficiency of the software development process increases, companies will be able to bring new products to the market faster. This increases competitiveness and helps create new jobs. Also, software products created using artificial intelligence serve to improve the quality of life of people, opening up new opportunities, for example, in medicine, education, transport and other areas. However, along with the development of artificial intelligence in the field of software, a number of problems also arise. One of them is information security and privacy issues. Artificial intelligence systems process large amounts of data, which increases the risk of misapplication or theft of information. Therefore, in software development, it is necessary to develop new standards and rules to ensure information security. Also, decisions of artificial intelligence systems can sometimes be unintelligible or vague, which reduces their reliability. Another problem is that automated systems using artificial intelligence reduce the human factor, which can lead to the loss of jobs by some professionals. Therefore, in the introduction of new technologies, it will be important to retrain human resources and train new skills. As the role of artificial intelligence in the software industry increases, there is a need to further develop human-machine cooperation.[3]

Artificial intelligence is increasingly widely used in the software industry, and along with new opportunities in this area, there are many difficulties and problems. Artificial intelligence is important for an in-depth analysis of the main problems in the field of software, identifying the factors that are hindering the development of this technology and looking for ways to eliminate them. First of all, one of the biggest

problems in the functioning of artificial intelligence systems is the quality of information and confidence in them. Artificial intelligence systems rely on information that is taught their activities. If the data is incorrect, sparse, or biased, the output of the system will also be fraught with errors. This reduces software reliability. For example, misidentification or mistranslations may occur due to misinformation in facial recognition systems or natural language processing systems. This problem can cause not only technical errors, but also cases of social injustice and discrimination. Therefore, the quality of data and their proper selection and cleanliness are a problem that requires constant attention in the field of artificial intelligence. Another big problem with artificial intelligence systems is the lack of understanding and transparency of their decision-making process. Many AI models, especially deep learning (deep learning) - based systems, will find it difficult to explain how a specific decision has been made. This is called the" black box " problem. [4]

When applying such systems in software, there is a great risk for users and developers not understanding how the system's decisions are based. This leads to a decrease in confidence, a refusal to use the system. Therefore, it is necessary to Transparent the decision-making processes of artificial intelligence systems, make them understandable and develop technologies for making consistent comments. Moral and legal problems are also one of the pressing issues in the field of artificial intelligence. Artificial intelligence systems are used in various aspects of a person's life, for example, in medicine when making a diagnosis, lending in the financial sphere, or making decisions in the judicial system. In such situations, incorrect decisions of the system can seriously affect the life and rights of people. For this reason, it is important for AI systems to adhere to ethical standards, respect human rights, and determine responsibility. Currently, the laws and standards governing artificial intelligence are insufficiently developed, which increases the risk of misuse and negative consequences. Another major problem of artificial intelligence in software is the complexity of systems and technical difficulties. The creation of artificial intelligence systems and their integration into software requires a lot of time, effort and skill. Technical issues such as complex algorithms, handling large amounts of data, stability and expansion of systems require a permanent solution. In addition, artificial intelligence systems often require large computational resources, which increases development and exploitation costs. Therefore, the creation of efficient and cost-effective AI systems is an important problem.[5]

Conclusion: In conclusion, artificial intelligence is making revolutionary changes in the development of modern software. It is serving as an effective tool in many areas such as automation of development processes, creation of new functions, security, improvement of user interfaces and improvement of teamwork. However, it is also necessary to take into account the security, privacy and social problems

associated with artificial intelligence. In the future, the harmonization of artificial intelligence and human resources, the responsible introduction of new technologies will serve the further development of the software industry. Through the rational use of the capabilities of artificial intelligence, it will be possible to improve the quality and efficiency of software products, as well as better meet the needs of users.

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