ARTIFICIAL INTELLIGENCE-BASED MODELING: AUTOMATION, INTELLIGENT SYSTEMS, APPLICATIONS, AND RESEARCH.

Saidov Umedjon Yusuf o'g'li
Bukhara State University teacher.
E-mail:saidovumid7744@gmail.com
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Artificial intelligence has completely changed the way we live with innovative technologies. Artificial intelligence has entered human life very quickly and has made incredible changes, taking its toll on every area of society. The term artificial intelligence was first introduced at a conference in 1956[1]. The discussion at the conference led to the natural language generation of interdisciplinary information technology. The emergence of the internet contributed to the rapid development of technology. Artificial intelligence technology has been an independent technology for thirty years, but now this technology has become widespread in all spheres of life. Artificial intelligence is known by the acronym AI and is the process of recreating human intelligence in machines.

Many new and emerging technologies are integrated into artificial intelligence. Startups of giant organizations are participating in major races to increase productivity and artificial intelligence for the intellectual analysis of data. According to Gartner's forecasts, AI personal computer deliveries in 2024 account for 22% of total personal computer deliveries, and by the end of 2026, 100% of corporate personal computer purchases will be AI computers[2]. AI personal computers include a neural processor (NPU), which allows AI personal computers to run longer, quieter, and colder, perform AI tasks continuously in the background, and provide new opportunities for using AI in daily activities[2].

Let's discuss the nine most recent technologies of artificial intelligence in this article. Latest artificial intelligence technologies

The first place on the list of technologies of artificial intelligence, that are considered relevant in 2024, is occupied by the generation of natural language:

Natural language generation. Machines process and communicate differently from the human brain. Natural language generation is a modern technology that converts structured data into a native language. The machines are programmed with algorithms to convert the data to the format the user needs. Natural language is a subset of artificial intelligence that helps content developers automate content and deliver it in the desired format. Content developers can
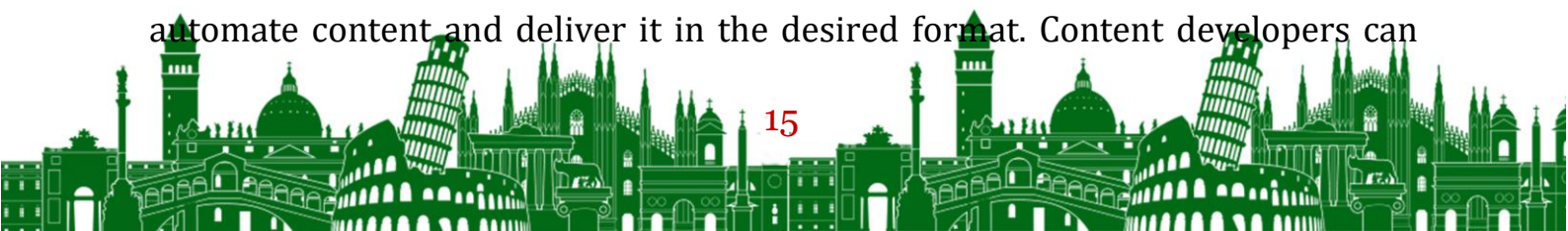
use automated content to advertise on various social media platforms and other media platforms to reach the target audience. Human interference is significantly reduced as the data is converted to the desired formats. Data can be displayed in the form of diagrams, graphs, etc. In second place is the technology of speech recognition.

Speech recognition. Speech recognition is another important set of artificial intelligence that transforms human speech into a useful and understandable format by computers. Speech recognition is a bridge between human and computer interaction. The technology recognizes and alters human speech in several languages. Alice in Yandex is a classic example of speech recognition. The third place went to Virtual agent technology, which is now important:

Virtual agent. Virtual agents have become valuable tools for training designers. A Virtual Agent is a computer application that interacts with people. Web applications and mobile applications provide chatbots to customers as service agents to collaborate with them and answer their questions. For example, Google Assistant and Chatgpt help organize meetings, while Alexia from Amazon makes it convenient for purchases to be made. The Virtual assistant also works like a language assistant that selects tips on your choice and desire. IBM Watson understands typical customer service requests requested in several ways[3]. Virtual agents also serve as applications. At the same time, decision management technology, which is currently in need, especially in large enterprises and organizations, is located in the fourth place on the list:

Decision management. Modern organizations are implementing decision management systems to transform and interpret data into predictive models. Enterprise-level applications implement decision management systems with the aim of obtaining up-to-date information in the analysis of business data to assist in organizational decision-making. Decision management helps you make quick decisions, avoid risks, and automate the process. The decision management system is widely used in the financial sector, health, trade, insurance, e-commerce, and other industries.

And the fifth step of the list is occupied by deep learning technology:

Deep learning. Another area of artificial intelligence that works based on artificial neural networks is deep learning. This technique teaches you to learn computers and machines just like people do. The term "Deep" was coined because it has hidden layers in neural networks. Deep learning is effective in large data for teaching the model and graphic processing block. Algorithms work in a hierarchy of predictive analysis automation. In-depth study is being used

with success in many fields, such as aerospace and military, to detect objects from satellites, help improve workers ' safety by detecting dangerous phenomena when approaching a working machine, help identify cancer cells, and assist in other matters.

Another of the significant technologies of this year was machine learning, which took the sixth position on the list.

Machine learning. Machine learning is an artificial intelligence unit that allows a machine to extract meaning from a dataset without being programmed. Machine learning techniques help businesses make informed decisions with data analysis performed using algorithms and statistical models[4]. Businesses are investing heavily in machine learning to benefit from its use in various industries. It needs machine learning methods to analyze patient data to predict and effectively treat diseases such as health and medicine. The banking and financial sector needs machine learning to identify and offer investment opportunities to customers and analyze customer data to prevent risk and fraud. Retailers use machine learning to predict changes in customer preferences, and consumer behavior by analyzing customer data. Another style of artificial intelligence technologies, such as process robotization automation, is in seventh place:

Automation of processes by robotization. Process robotics automation is an artificial intelligence application that configures a robot (software application) to interpret, communicate, and analyze data. This discipline of artificial intelligence helps automate repetitive and rule-based partial or complete manual operations.

Hardware tools optimized for artificial intelligence. Artificial intelligence software is in high demand in the business world. With the increased attention to software, the need for hardware that supports software also arises. The traditional chip does not support artificial intelligence models. A new generation of artificial intelligence chips is being developed for neural networks, deep learning, and computer vision. AI hardware includes processors to control extensible workloads, custom-purpose embedded silicon for neural networks, neuromorphic chips, and more[5]. Large organizations such as Nvidia, Qualcomm, and AMD are creating chips that can handle complex artificial intelligence accounts. Health and the automotive industry can be areas that benefit from these chips.

Conclusion. In conclusion, artificial intelligence will reflect computational models of intelligence. Intelligence can be defined as structures, models, and operational functions that can be programmed to solve problems, draw

conclusions, process language, etc. The benefits of using artificial intelligence have already been obtained in many areas. Organizations that apply artificial intelligence must perform tests before the release to eliminate errors and errors. The design and models should be solid. After the release of artificial systems, enterprises must constantly monitor different scenarios. Organizations must create and support standards and hire professionals from different disciplines to make better decisions. The objective and future goals of artificial intelligence are to eliminate mistakes and prejudices by automating all complex human activities.

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