

фильмы - позволяет, при необходимости, демонстрировать изучаемые процессы в динамике.

Достигнуть упомянутых целей образования помогает использование мультимедийных визуальных средств обучения и ресурсов Интернета, которые обладают некоторыми возможностями повышения эффективности процесса обучения [3]:

- в процессе обучения активизировать не один канал восприятия, а несколько, что делает возможной интеграцию информации, которая доставляется разными органами чувств;

- визуально представлять динамические процессы и абстрактную информацию;
- формировать у обучающегося системность построения изучаемого материала.

Значимое преимущество мультимедийных визуальных средств в образовательном процессе – это возможность его индивидуализации. При использовании мультимедийных визуальных средств обучаемые могут принимать решения, работать самостоятельно над учебными материалами с использованием интерактивных возможностей мультимедийных программ и решать, в какой последовательности их изучать. Другими словами, студенты принимают активное участие в образовательном процессе. То есть на процесс обучения студенты имеют возможность выбирать материал, который они хотят изучать, и могут повторять его несколько раз, чтобы лучше усвоить информацию. Эффективность применения мультимедийных визуальных технологий в учебном процессе зависит от многих факторов, в том числе и от уровня самой техники, и от качества используемых обучающих программ, и от методики обучения, применяемой преподавателем.

Применение традиционных форм, средств, методов обучения с использованием мультимедийных визуальных технологий могут существенно повысить эффективность и интенсификацию образовательного процесса, решить стоящие перед образовательным учреждением задачи обучения и воспитания активно и творчески мыслящего обучающегося. Студент должен быть ориентирован на постоянное освоение мультимедийных визуальных технологий, готов к условиям быстро меняющейся среды и постоянного увеличения информационного потока, т.е. мультимедийные визуальные технологии позволяют добиться решения основной задачи: развития познавательных навыков студентов, умений самостоятельно конструировать свои знания, ориентироваться в информационном пространстве, развития критического и творческого мышления.

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## **ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN INCREASING DATA RELIABILITY**

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**Abstract.** *Mind perception is the intellectual ability of humanity, intellectual abilities include such parameters as human perception, memory, scope of thinking. Artificial intelligence refers to the mind that uses machines to perform on the basis of the functioning of the human mind. Mankind's intellect may not be limited, but machines can run much faster than humans when it comes to solving a problem over time. Tasks like doing a lot of calculations in a short period of time are the strengths of digital computers. In this respect, they are superior to humans in many ways. But in many other areas, humans are far superior to machine systems. For example, in an unfamiliar environment, a person can make a decision much faster than a car. In recent times, scientists have used games to prove the superiority of machines over humans, and have managed to do so with a vengeance, but now the creation of such machines and astonishing people with it has lost its relevance.*

**Keywords:** *Control systems, artificial intelligence, mathematical models, data flow, deep learning.*

Recent research by researchers has shown that intelligent systems cannot be built without a deep understanding of human intelligence and intelligent movement in general, so neural networks are important in artificial intelligence. The inherent strength of the human mind is its ability to be flexible. We are able to adapt to different environmental conditions and change our behavior through learning. Because our learning ability is so much higher than that of computers, machine learning is a central sub-field of artificial intelligence.

The word "intellect" is derived from the Latin word "intellectus", which means to know (determine), understand or comprehend (mind) [1]. If we look at the history of artificial intelligence, it is only in the second half of the twentieth century that humans created the first prototypes of artificial intelligence, but long before that they began to talk about "thinking machines". For example, in the nineteenth century, Mary Shelley 's Frankenstein and Samuel Butler 's Darwin developed the idea of artificial humans and machines of thought in fiction. Artificial intelligence has become a constant subject of science fiction to this day. In the 1940s and 1950s, researchers in various fields (mathematics, psychology, engineering, economics, and political science) began to discuss the possibility of creating artificial intelligence [2]. Artificial intelligence as a practical science of mechanizing thinking could, of course, only begin when programmable computers were available. In the early 1950s, Herbert Simon, Allen Newell, and Cliff Shaw experimented with writing programs to mimic human thought processes. As a result of the experiments, a program called Logic Theorist emerged, consisting of rules of axioms that had already been proven. When he is given a new logical expression, he seeks out all possible operations to find proof of the new expression using heuristics. This process was an important step in the development of artificial intelligence . Although the work of Simon et al. And Shenon demonstrated the concept of intelligent computer software, 1956 is the beginning of the subject of artificial intelligence. This is because the first artificial intelligence conference, organized by John McCarthy, Marvin Minsky, Nathaniel Rochester and Claude Shannon at Dartmouth College in New Hampshire , was held in 1956. It was at that conference that John McCarthy, the creator of the LISP programming language, proposed the term artificial intelligence. The Dartmouth Conference paved the way for the use of computers to process symbols, the need for new languages, and the role of computers to prove the theorem instead of focusing on hardware that simulates the mind [2]. To this day, the benefits and harms of artificial intelligence to humanity are being discussed among people working in the field of science. On May 23, 2017, Google's Alpha Go artificial intelligence program defeated then-world number one Ke Jin in a three-game game. In strategic strategy games, computers have been beating people, but in Alpha Go, they have not been able to do so because the game was innumerable for mathematical algorithms, the number of combinations in the game board cells was estimated to be greater than the number of atoms in the universe. [1,2]. This victory has put an end to many controversies, showing that the possibilities of artificial intelligence are not limited. The types of artificial intelligence technologies can be illustrated by Figure 1 below.

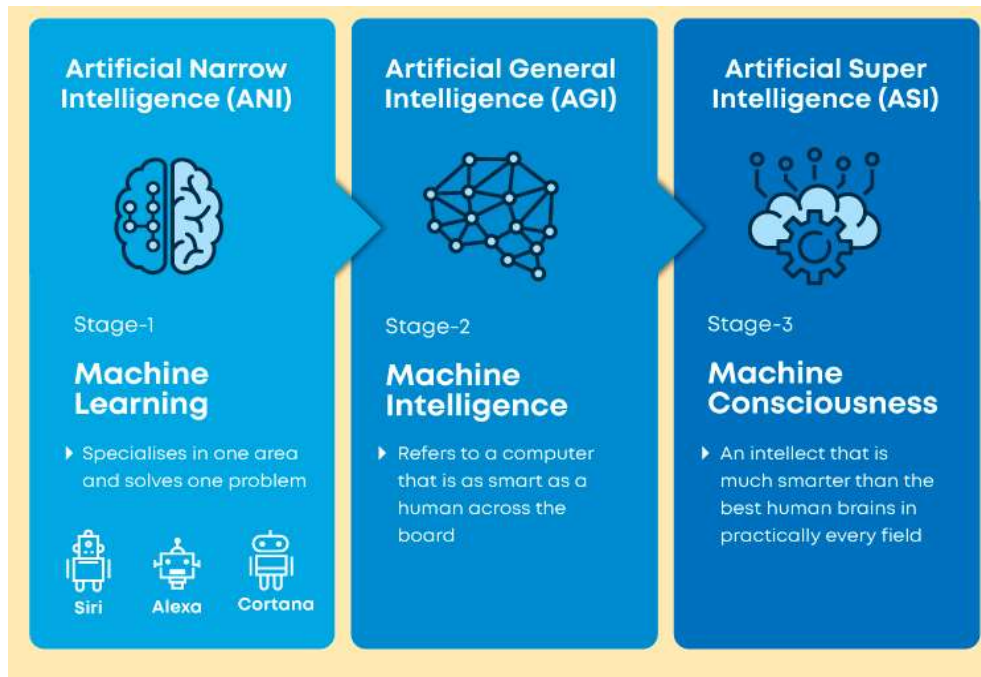


Figure 1. Types of artificial intelligence technology.

The basis of artificial intelligence is neural networks, on the basis of neural networks can be organized machine learning and in-depth learning technologies.

## 2. Mathematical models of artificial intelligence technologies

Artificial intelligence and machine learning offer businesses ample opportunities to improve their operations and increase their profits. Artificial intelligence models include methods and algorithms used to teach computers to process and analyze data, just like humans. All models of machine learning are aimed at teaching a specific function ( $f$ ) that provides the most accurate correlation between input values ( $x$ ) and output values ( $y$ ) [2,3].

$$Y = f(X) \quad (1)$$

Basically the most common case is when we have data on the  $X$  and  $Y$  parameters and we can build an artificial intelligence model to ensure the best correlation between these values [6,7]. In these processes, the result may not be 100% accurate, otherwise it will be a simple mathematical calculation without requiring machine learning. Instead, the function  $f$  we teach can be used to predict a new ( $y$ ) using a new ( $x$ ), which allows for a predictive analysis. The composition of artificial intelligence can be illustrated by Figure 2 [1,3].

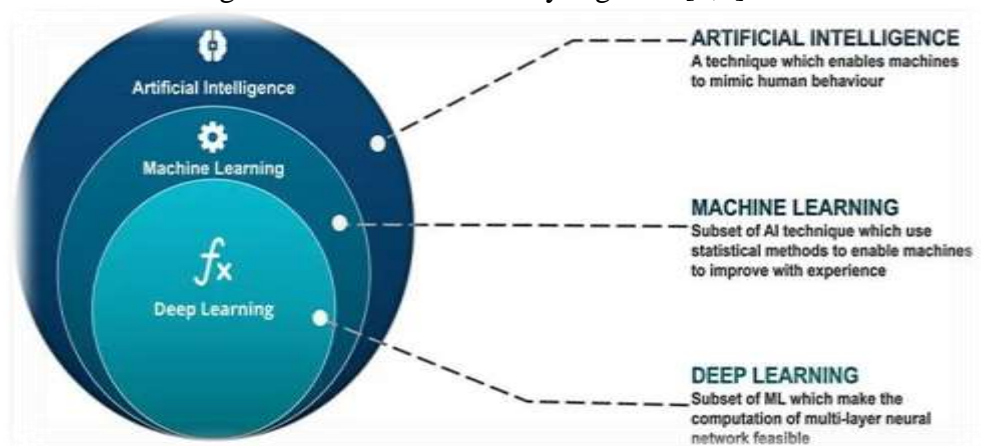


Figure 2. The structure of artificial intelligence technology

Different artificial intelligence models achieve this result by applying different approaches. There are many types of artificial intelligence models and we will look at the most

popular of them, but before that we need to look at different types of machine learning. There are three main types of machine learning:

- Controlled
- Uncontrolled
- Semi-controlled

Study of controlled machines. In the controlled learning model, the person teaches the algorithm or what to look for [1,2] .

Artificial intelligence models created with controlled learning are often used to perform predictive analysis. These models use past decisions made by experts on the subject to predict future decisions that an expert can make [3].

In the uncontrolled learning model, the software teaches algorithms. In some cases, the teaching method used by the curriculum mimics that of humanity, but they do not always require the same teaching method.

Artificial intelligence models based on uncontrolled learning are often used to perform descriptive analysis. These tasks include summarizing content, classifying content, and sorting content.

Semi-controlled learning models combine some of the previous two models we discussed. In a semi-controlled learning environment, a person performs part of the training and the software is designed to manage the rest based on the initial training performed by the person. Because artificial intelligence models created with semi-controlled learning are somewhat generalized to both teaching methods, they are able to perform both predictive and descriptive analysis tasks depending on the intended purpose [1].

There are currently a variety of artificial intelligence models available, and they all differ somewhat from each other, these models are listed below.

- Linear regression
- Logistic regression
- Decision trees
- Random forest
- Neural networks
- Deep learning

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### TALABALARGA ZAMONAVIY TA'LIMNI RAQAMLI TEXNOLOGIYALAR YORDAMIDA BERISHNING PEDAGOGIK ZARURATI

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**Annotatsiya:** *Ushbu maqolani yozishda ta'lim-tarbiya jarayonining rivojlanish bosqichlarini o'rganish orqali zamonaviy ta'limning farqini va ahamiyatini tadqiq etish va bu tadqiqot natijalariga asosan xulosa chiqarishni maqsad qilganmiz.*

**Kalit so'zlar:** *raqamli texnologiyalar, axborot-kommunikatsiya texnologiyalari, oliy ta'lim tizimi, zamonaviy ta'lim.*