

**IMPORTANCE OF TYPES OF MACHINE LEARNING.**

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***Annotation.*** This article analyzes the main types of machine learning and their importance in society. Machine learning technology, as an important part of artificial intelligence, is being effectively used in various fields. Types of machine learning, such as supervised learning, unsupervised learning, iterative learning, and reinforcement learning, play an important role in creating innovations in self-driving systems, healthcare, finance, education, and other areas.

***Key words:*** Machine learning, society, analytics, technology, artificial intelligence, learning, supervision, iterative learning, reinforcement, machine learning, self-management, healthcare, finance, education, innovation.

***Аннотация.*** В статье анализируются основные типы машинного обучения и их значение в обществе. Технология машинного обучения, как важная часть искусственного интеллекта, эффективно применяется в различных областях. Такие типы машинного обучения, как контролируемое обучение, неконтролируемое обучение, итеративное обучение и обучение с подкреплением, играют важную роль в создании инноваций в системах беспилотного вождения, здравоохранении, финансах, образовании и других областях.

***Ключевые слова:*** Машинное обучение, общество, аналитика, технологии, искусственный интеллект, обучение, надзор, итеративное обучение, подкрепление, машинное обучение, самоуправление, здравоохранение, финансы, образование, инновации.

Machine Learning is a core part of artificial intelligence and allows systems to learn from their own experiences. Types of machine learning are important in various areas of society, with the help of which systems make decisions based on data,



learn and develop. This article will cover in detail the main types of machine learning, their characteristics and importance in various fields.

**Main types of machine learning.** There are different types of machine learning, each with its own characteristics and is widely used in data analysis and problem solving.

**Supervised Learning.** Supervised learning is the most common type of machine learning. In this method, systems are trained on data provided with correct answers (or "good" or "bad" results) to learn. The machine analyzes the input data and then learns to predict the correct results based on new data.

Classifying emails as spam or non-spam. Analyzing medical data to detect cancer. Supervised learning technology is effective in obtaining accurate and measurable results and is used in many fields for classifying and predicting data.

**Unsupervised Learning.** In unsupervised learning, the machine is not provided with predetermined answers or correct results. Here, the system itself analyzes the data and groups it based on some similarities or structures.

Studying customer purchasing behavior and grouping them.

Segmenting users on social networks based on their interests.

This method reveals hidden structures in data and allows you to find new, previously unseen relationships and patterns. Typically, unsupervised learning is used to analyze large amounts of uncertain data.

**Reinforcement Learning.** In reinforcement learning, a system performs actions in a given environment and learns by rewarding or punishing each action. In this method, the machine analyzes the results of its actions and learns to make better decisions in the future.

Self-driving cars. The learning process of artificial intelligence agents in computer games. Importance: This method allows machines to independently solve problems and adapt to new situations. It is widely used in areas such as robotics and self-driving systems.

**Reinforcement Learning (Semi-supervised Learning).** In reinforcement learning, some of the data is provided with correct answers (supervised learning), and



some is provided with incorrect answers (unsupervised learning). This method provides a highly efficient combination of the two types of learning.

In large data sets, only some of the examples may be labeled, with this method the system learns only from a short period of labeled data and then analyzes the unlabeled data.

This method allows for efficient learning from large amounts of data, especially in cases where it is difficult to fully label the data.

The importance of machine learning. Machine learning is bringing about major changes in various areas of society. The importance of machine learning can be seen in the following areas. Healthcare. Machine learning technologies are of great help in the development of diagnostics, early detection of diseases and individualized treatment methods in medicine. Effective solutions are being developed for the detection of diseases, for example, cancer, using artificial intelligence.

Finance. Machine learning is used in many practices in the financial sector, such as risk assessment, fraud detection, and optimization of investment strategies. Machine learning is also used in predicting credit scores and personalizing banking services.

Transportation and automotive. Machine learning plays a major role in creating self-driving cars, as well as in optimizing transportation systems. Cars learn the environment and automatically adjust their behavior based on this.

Education. Machine learning in education helps to create personalized learning systems, adapt to the individual needs of students, and effectively manage the learning process.

Social networks and media. Machine learning is very important in classifying users in social networks, personalizing advertising and content, and detecting fake news. These systems analyze the audience and offer users materials that are of interest to them.

Various types of machine learning have proven their importance in every sphere of society. Methods such as supervised learning, unsupervised learning, iterative learning, and reinforced learning are creating new opportunities and



accelerating innovation in society. The application of these technologies will increase efficiency in various spheres of society and help solve many complex problems. In the future, the role of machine learning will increase further and play an important role in the development of society.

Diagram of types of machine learning:

Supervised learning

Unsupervised learning

Reinforcement learning

This diagram shows the main differences between types of machine learning, describes how they work, and how each type can be used effectively.

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