Given the large volume of work on migrating legacy systems and improvement of their understanding, approaches are divided into two groups: modernization and replacement ones. Modernization, in turn, is classified based on two common strategies. On the one hand, there is the strategy of encapsulating inherited logic using a modern software layer, which is called wrapping, black boxing, or direct migration. On the other hand, there are «white box» strategies or indirect migrations that completely redefine the outdated system using reengineering principles.

In [1], the authors offer a «black box» method based on encapsulation, allowing interactive features of outdated systems to be made available as web services.

Thus, the migration approach should combine the properties of the Reverse and Iterative methods, using pilot deployment, as well as can work on the old database, create replicas, and connect new services to them (after implementing the pilots).

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ADVANTAGES AND DISADVANTAGES OF ARTIFICIAL INTELLIGENCE

In recent years, artificial intelligence has been on everyone's lips, especially after the launch of such services as ChatGPT and Midjourney. Some admire the possibilities that this technology provides, while others, on the contrary, see neural networks as dangerous. So what are the advantages and disadvantages of artificial intelligence [2]?

Artificial intelligence (AI) is the intelligence of machines or software, as opposed to the intelligence of other living beings, primarily of humans. It is a field of study in computer science that develops and studies intelligent machines. Such machines may be called AIs.

AI technology is widely used throughout industry, government, and science. Some high-profile applications are: advanced web search engines (e.g., Google Search), recommendation systems (used by YouTube, Amazon, and Netflix), interacting via human speech (such as Google Assistant, Siri, and Alexa), self-driving cars, generative and creative tools (ChatGPT and AI art), and superhuman play and analysis in strategy games (such as chess and Go) [3].

Alan Turing was the first person to conduct substantial research in the field that he called machine intelligence. Artificial intelligence was founded as an academic discipline in 1956. The field went through multiple cycles of optimism followed by disappointment and loss of funding. Funding and interest vastly increased after 2012 when deep learning surpassed all previous AI techniques, and after 2017 with the transformer architecture. This led to the AI spring of the early 2020s, with companies, universities, and laboratories overwhelmingly based in the United States significant advances in artificial intelligence.

In essence, artificial intelligence can be considered any program or device capable of performing tasks instead of a person. Although artificial intelligence has many advantages, it also has disadvantages [2].

Machines enhanced by Artificial Intelligence will not replace humans altogether but will work side by side with them as assistive analytical tools, performance enhancers and cost reducers.

Artificial Intelligence will eventually reduce the cost of living and will serve as a tool for creativity, meaning it will enable artists, scientists, musicians, writers, CEOs and M&A experts to be even more creative and more effective [4].

Both deep learning and machine learning are sub-fields of artificial intelligence, and deep learning is a sub-field of machine learning.

Deep learning is comprised of neural networks. The “deep” in deep learning refers to a neural network comprised of more than three layers – which would be inclusive of the inputs and the output – which can be considered a deep learning algorithm. The way in which deep learning and machine learning differ is in how each algorithm learns. Deep learning automates much of the feature extraction piece of the process, eliminating some of the manual human intervention required and enabling the use of larger data sets. Enterprise-grade GPUs will help power through the mathematically intensive workloads required for deep learning and machine learning.

"Deep" machine learning can leverage labeled datasets, also known as supervised learning, to inform its algorithm – but it can also conduct unsupervised learning using raw content – and it can automatically determine the hierarchy of features which distinguish different categories of data from one another. Unlike machine learning, it doesn't require human intervention to process data, enabling us to scale machine learning in more interesting ways [5].

Deep learning uses several layers of neurons between the network's inputs and outputs. The multiple layers can progressively extract higher-level features from the raw input. For example, in image processing, lower layers may identify edges, while higher layers may identify the concepts relevant.

Deep learning has profoundly improved the performance of programs in many important subfields of artificial intelligence, including computer vision, speech recognition, natural language processing, image classification and others. The reason that deep learning performs so well in so many applications is not known as of 2023. The sudden success of deep learning in 2012-2015 did not occur because of some new discovery or theoretical breakthrough but because of two factors: the incredible increase in computer power (including the hundred-fold increase in speed by switching to GPUs) and the availability of vast amounts of training data, especially the giant curated datasets used for benchmark testing, such as ImageNet [3].

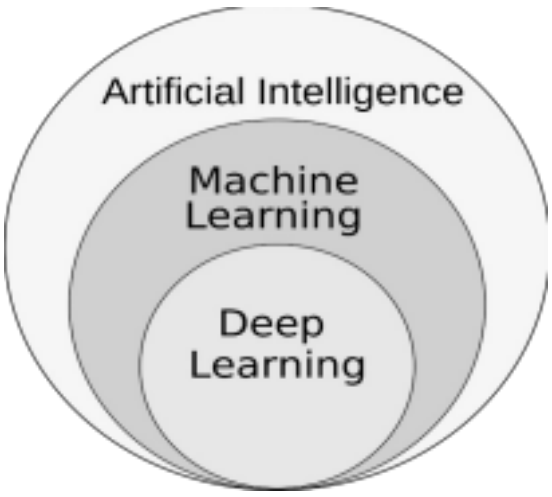

Fig. 1. Machine learning as a subset of Artificial Intelligence [3]

- Advantages of AI:

1. Reduction of errors due to the human factor. One of the main advantages of artificial intelligence is that it can significantly reduce the number of errors and

increase the accuracy of the result when performing various tasks. Decisions made by AI at each stage are determined by previously collected information and a certain set of algorithms.

2. Reducing the level of risk. Another advantage of AI is that it can be used to minimize risk, allowing robots and artificial intelligence to perform dangerous tasks for humans, be it defuse a bomb, travel into space, or explore the deepest parts of the oceans.

3. Digital assistants. Some technologically advanced companies already today interact with their customers with the help of digital assistants based on artificial intelligence, reducing their staff [2].

4. 24/7 availability. People are maximally productive only 3-4 hours a day. Also, everyone needs breaks, weekends, and vacations to maintain work-life balance. But artificial intelligence, unlike a person, is able to work endlessly without interruptions.

5. New inventions. AI has given a powerful impetus to numerous innovations, many of which will help people solve complex problems.

6. Use in medicine. AI has also made a significant contribution to the development of modern medicine – from increasing the efficiency and accuracy of diagnosis and treatment to creating new drugs and conducting clinical trials.

7. Unbiased decisions. Whether we like it or not, we have to admit that people are driven by emotions to one degree or another.

Disadvantages of AI:

1. High costs. Creating a machine capable of imitating human intelligence requires a lot of work and multimillion-dollar investments. The development of such technologies requires a lot of time and resources.

2. Lack of creativity. Another big disadvantage of AI is that it is impossible to teach the system to think outside the box. Yes, artificial intelligence is capable of self learning based on previously received data and past experience, but it is completely devoid of creative thinking.

3. Risk of rising unemployment. One of the main dangers of artificial intelligence is the reduction of jobs. Robots have already begun to replace people in various positions.

4. **AI can make people lazier.** As we said earlier, AI-based systems are

capable of automating most tedious and monotonous tasks. Because with the advent of modern technology, we don't need to memorize a lot of information.

5. Cyber attacks. Increasing use of AI in educational institutions may increase threats from cyberattacks and leaks of students' personal information. Protecting confidential data is becoming an important issue [1].

Artificial intelligence is an important part of our lives. It is used in science, education, medicine, remote control of robots, remote sensing of the Earth, and electronic commerce. However, AI was created by humans, and they must bear great responsibility for their work. These intelligent machines will perform "human actions" now and in the future.

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RELEVANCE OF UPGRADING THE TACTICAL AND TECHNICAL CHARACTERISTICS OF THE MEANS OF DEFEAT

The creation of modern and competitive means of defeat forces us to look for new approaches and develop new design solutions using modern special materials. These should include titanium, aluminum, aluminum and titanium alloys, special steels, as well as non-metals in the form of binding materials, reinforcing fillers, composite materials, rubber, rubber engineering products, thin-layer thermal insulation coatings, sealants, adhesives, ozone-safe degreasers, thin-layer thermal insulation coatings, etc. [1, p.3]. A special place in this list is occupied by rubber and products based on them – rubber engineering products.