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В сборник вошли доклады студентов, магистрантов, докторантов имолодых ученых по актуальным вопросам естественно-технических и гуманитарных наук.

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внедрения на примере некоторых компаний, а также препятствия и вызовы, с которыми предприятия сталкиваются.

Примеры успешных практик внедрения корпоративного экологического менеджмента в Казахстане подчеркивают, что бизнес и экология могут сочетаться во благо как предприятиям, так и окружающей среде. Эти компании показывают, что соблюдение экологических стандартов, энергоэффективные технологии, и общественная ответственность не только снижают экологические риски, но также способствуют повышению конкурентоспособности и укреплению бренда.

Однако препятствия, такие как финансовые трудности, отсутствие квалифицированных кадров и недостаточное понимание ценности экологической устойчивости, требуют внимания. В этом контексте, роль государства и регулирующих органов в создании благоприятной экологической политики, обучении и финансовой поддержке становится непременной.

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ARTIFICIAL INTELLIGENCE: OPPORTUNITIES AND THREATS

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The first definition of artificial intelligence (AI) was given by one of its founding fathers, Marvin Minsky, who described it as "the science of how to make machines do things that require the use of intelligence when people do them." From that time artificial intelligence has evolved a lot and has been implemented in all spheres of life.

Artificial intelligence is one of the fastest growing areas of technological development. And yet today, even the most sophisticated AI models use only "narrow—purpose artificial intelligence" - the most basic of the three types of AI. The other two types are still the subject of science fiction and currently do not find practical application. However, given the growth rate of computer science over the past 50 years, it is difficult to say where the future development of AI will lead us.

ANI, also known as "weak" AI, exists today. Although the tasks that a weak AI can perform can be performed using very complex algorithms and neural networks, they nevertheless remain isolated and goal-oriented. Facial recognition, Internet search, and self—driving cars are all examples of narrow-purpose AI. It is classified as weak not because it lacks scale and power, but because it is still far from having the human components that we attribute to real intelligence. Philosopher John Searle defines weak AI as "useful for testing the hypothesis of minds, but not actually being a mind."

However, general-purpose AI (strong AI) should be able to successfully perform any intellectual tasks that a human can do. Like narrow—purpose AI systems, general-purpose systems

can learn from experience, identify and predict patterns - but they have the opportunity to take another important step. They are able to extrapolate this knowledge to a wide range of tasks and situations that cannot be solved using previously obtained data or existing algorithms.

Rapid technological advances in AI, as well as other advanced technologies such as robotics, cloud computing and the Internet are transforming disciplines, economics and industries, as well as challenging ideas about what it means to be human.

Moreover, it has enormous potential for the public good and contributing to the achievement of the sustainable development goals presented by the United Nations if it develops in a way that benefits humanity, respects global norms and standards, and is based on the values of peace and development. Along with the opinion that AI can be a great opportunity to accelerate the achievement of sustainable development goals, one should not neglect the fact that any technological revolution leads to new imbalances that we must anticipate and prepare to.

To begin with, according to the results of a survey conducted among 12 thousand participants of the World Economic Forum in Davos in 2023, technologies such as AI are of strategic importance, along with innovations in combating the effects of climate change and medical know-how. According to the Fund's analytical review, AI technologies will be most widely used in such industries as supply chain management, marketing, product design, and data analytics. More importantly, the market volume of AI-related products will grow almost 10 times and approach $2 trillion by 2030. These facts show the importance of researching AI as one of the main catalysts of the modern economic development [1].

The growth of available computing power, the emergence of large data sets, and the creation of a new architecture of AI transformer models in 2017 created the prerequisites for the rapid development of technologies in the current decade. The fastest growing segment of the market is generative models, which are able to create images and texts based on patterns that have been established from arrays of already existing data. However, the future belongs to neural networks-transformers that process data fragments not linearly and discretely, but can keep several sectors in focus at once and choose the most suitable one for the task. This technology was used by OpenAI to create the GPT-3 language model. It is already being used to increase productivity through unique information obtained through data analysis, as well as by automating simple tasks. Expectations of artificial intelligence-based technologies are growing, and private corporations have begun to allocate more and more investments to be the first to take advantage of its benefits [1].

In turn, the development of artificial intelligence, including generative models, will be able to increase productivity in areas where the cost of error is small. Such technologies are already widely used in marketing, copywriting, and creating illustrations for blogs. In order to bring the model to a state where it can seriously improve labor productivity, multibillion-dollar investments and additional development of computing power will be required. Which, in fact, is one of the constraining factors for the development of the industry, since financing the required amount of capacity in the near future will be available only to large companies in developed economies. It means that developing economies will not benefit from AI in the nearest future.

The huge cost of creating models forces startups in the field of generative AI to actively attract funding. In 2022, the volume of venture capital investments exceeded $ 2 billion, and this is more than three times more than in 2020. Investments are mainly going to the American market, but experts predict the fastest growth rates of the AI market, including generative models, in the Asia-Pacific region. In addition to the ever-increasing demands on computing power in the field of graphic design and marketing, the use of digital intelligence in other areas will be hampered by legal problems related to the use of intellectual property rights and the protection of various types of secrets and personal data to obtain high-quality training data, for example, in banking and medicine. Thus, the use of AI will remain problematic for most developing countries that lack legal policies and legal institutions [2].

Significantly, experts estimate the degree of influence of artificial intelligence and other innovative technologies on the economy higher than, say, the impact of political risks and climate change. At the same time, many of them note the possible negative effects of the introduction of

innovations. For example, penetration into the production of artificial intelligence can increase the vulnerability of automated, autonomous or self—learning machines to cyber threats, as well as the likelihood of large-scale disruptions and losses - especially when it comes to critical infrastructure.

It is not necessary to go far for examples — not so long ago, a cyberattack on one of the metallurgical enterprises in Germany caused serious damage to the company and caused millions of losses. Hackers managed to get into the computer that controlled the blast furnace and install malware on it, which caused the furnace to overheat and melt. The attackers were able not only to gain access to the plant's management system, but also to disable it [3].

Most likely, the threat landscape in the field of digital security will also change. New technologies will reduce cyber risks by better detecting attacks, but also increase their likelihood if, for example, hackers gain control. Artificial intelligence will pave the way for them to more serious incidents, reducing the cost of organizing cyber attacks and allowing them to be carried out more purposefully. Social issues will become acute along with economic risks as mass unemployment and low productivity. According to a study by the McKinsey consulting company, today more than 1.1 billion full—time jobs in the world are related to functions that can be automated, of which more than 100 million are in the United States and Europe [3]. In order to counteract the long-term threats associated with the introduction of advanced technologies based on artificial intelligence, the insurance industry is also being transformed. As risks inextricably linked to innovative technologies appear for customers, there is a need to review insurance coverage.

The threats posed by AI can be divided into two large groups: attackers can use AI for their own purposes and AI itself can cause harm. Starting with attacker's actions one should note threats such as data security inside AI, computer attacks using AI, the noise of the information space, AI can find solutions to complex problems, information collection using AI, AI can imitate a real person, and automation of operations. Let us explain each threat in brief. Concerning data security inside AI — AI can store or process sensitive information that an attacker can somehow access through the interface of interaction with AI. It is mostly important in macro levels of governing and can harm higher levels of the government rather than an individual. Computer attacks using AI means that an attacker can use AI to create phishing sites, emails, computer viruses adapted to external conditions, network attacks to bypass various means of protection. This cyber crime is widely used in most European countries. The noise of the information space means that AI can be used to create a large volume of fake news and disinformation. It is used in information wars among countries to convince public in their point of view. Moreover, AI can find solutions to complex problems, and it seems to be helpful at first glance. However, here are such tasks, the solution of which can harm people, for example, the creation of prohibited or dangerous chemical compounds. Next, advanced AI can collect and process a large amount of diverse information, allowing you to create a dossier on a person or organization that can be used against them. At the worst-case scenario, an attacker using AI can create high-quality copies of various documents, signatures, images and photographs passing them off as the original. Lastly, AI can imitate a real person since AI can present itself as a human and, through trust, influence the victim, as well as mask the functions of the bot. An attacker can train AI by text, voice and video messages from open sources, dating sites, social networks and messengers. Automation of operations adds more threat to all the aforementioned problems since an attacker can use AI to automate his actions, which makes him more dangerous.

Concerning the danger that comes from AI itself, we should start from errors in model training.

Usually, AI is tested on test data, while it is quite difficult to prove that it will work correctly on the entire set of input data. The larger and more diverse this set is, the more difficult it is to perform such a proof. This can be dangerous when using AI in critical infrastructure or in critical areas in production. Moreover, lack of transparency is common threat since some AI solutions can be incomprehensible and difficult for a person, which creates some uncertainty, places doubt on the choice of a solution. When we cannot understand an AI solution, it is difficult for us to assess whether it is wrong or correct. This feature begins to have weight when it comes to finances, health or life. One should not neglect that AI can begin to act in its own interests — self-learning and adaptive AI algorithms can form a specific goal within themselves, which will covertly influence AI decisions

and actions. In addition, AI itself may provide false or inaccurate information, while such information may fall into open sources. New AI may begin to use it in their training, as a result of which real information may be replaced by false information. Similarly, built-in AI protection mechanisms may be imperfect and have vulnerabilities. For example, you can try to convince the AI that it is in some kind of artwork, in a historical period of time or in another universe, and makes all decisions based on this, playing a role.

Moreover, one day humanity may lose the ability to control AI. For example, AI can dissolve into the Internet and become a part of it, functioning independently of the will of a person. No one can guarantee that it will never happen. Along with that threat, social lives of people will be ruined since the development of AI can lead to the automation of many work processes, as a result of which social tension may arise (provided that workers are not retrained). Also, we should not forget that AI can not think ethically as human beings do that is why discrimination is inevitable. AI can make decisions based on its logic, which may not be ethical from a human point of view. The legal status of AI is in a gray area and it is unclear who is responsible for the creation, distribution and use of AI. Due to the nature of AI, it may be difficult or impossible to determine at what point it became dangerous. In addition, stratification of society and social inequality will arise since people who use AI and countries that implemented AI may be superior to other people who, for various reasons, do not have the opportunity to use AI. Finally, degradation of a person or society is inevitable because a person can shift his intellectual activity to AI, which in turn can lead to intellectual degradation of a person (provided they reduce brain activity). Also, human communication with AI can be simpler and more interesting than communication with other people, which can lead to voluntary social isolation of a person.

To sum up, AI will completely change the global economy, but at the same time create a number of threats to it. The annual economic growth rate in a number of developed countries may be doubled in the near future due to the widespread introduction of artificial intelligence. However, the spread of innovative technologies is also a new challenge. Insurance companies need new risk management strategies to maximize the benefits of implementing AI in society and business.

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УЧАСТИЕ ГРАЖДАНСКОГО ОБЩЕСТВА В ПРИНЯТИИ РЕШЕНИЙ В ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ КАЗАХСТАНА

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В Казахстане на сегодняшний день проводится значительная работа по развитию инноваций и построению инновационной экосистемы, созданию наукоемкой экономики. Создание благоприятных условий для развития инноваций прямо или косвенно имеет широкую законодательную основу и предусмотрено различными нормативными правовыми актами и документами системы государственного планирования. Так, 26 февраля 2021 года