JOURNAL OF ADVANCED SCIENTIFIC RESEARCH

Editorial Team

THE IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN MODERN TECHNOLOGY

Babajanov Boburbek

Student, Urgench branch of TUIT   Email: babajonovboburbek@gmail.com

Rakhimberdiyev Sanjarbek

Student, Urgench branch of TUIT   Email: raximberdiyevsanjarbek@gmail.com

Urinboyev Elmurod

Student, Urgench branch of TUIT   Email: elmurodorinboyev@gmail.com

Alisher Satimov

Student, Urgench branch of TUIT   Email: alishersatimov07@gmail.com

Abstract. The article provides a brief history of work in the field of artificial intelligence, characterizes the directions of artificial intelligence, gives a general overview of the current state of research and development of artificial intelligence systems, lists the main trends in the field of artificial intelligence, the possibilities of using artificial intelligence systems in the field of public administration are shown. Moreover, this article deals with the history of artificial intelligence systems and human activities, the technology of artificial intelligence and the implementation of artificial intelligence systems.

Keywords: artificial intelligence, machine learning, risks of emergence of super intelligence, artificial intelligence systems market.

What is artificial intelligence and history of artificial intelligence? The most complex entity in the world is man. The desire to know human complexity has always existed and manifested itself in different forms. Now it has become even more relevant. The development of computer technology has led to the emergence of many works related to attempts to learn to recognize and synthesize human speech, to create technical vision systems that can recognize people's faces, but already better

than human eyes, to teach cars to drive independently without a human driver, etc [7]. Systems that exhibit human-like behavior are called artificial intelligence systems. In fact, the study of these systems is an independent scientific direction that unites many scientific disciplines. According to one definition, artificial intelligence is a science and technology that includes a set of tools that allow computer based on the accumulated knowledge to give answers to questions and draw expert conclusions on the basis of this, i.e. receive knowledge that put into it by the developers [9]. The science called "artificial intelligence" is included in the complex computer sciences, and the technologies are created on its basis belong to information technologies. There are many others definitions less resistant to criticism. According to artificial intelligence systems are defined as computer systems that use artificial intelligence technologies in their work. Wherein in most cases, the algorithm for solving the problem is unknown before obtaining the result.

Artificial intelligence systems are conditionally divided into two classes - strong (or general) artificial intelligence and weak (or applied) artificial intelligence [1]. Let's define strong or universal, comparable with the human that can learn how to do people, and is not inferior in terms of development to the most people. There are many more strict definitions, but understanding this definition enough. All other systems, including artificial intelligent systems, that around us now are called artificial intelligent because they can only do one thing, such as searching for inquiries on the Internet, diagnose a specific disease, etc. The help of such artificial intelligent makes life more comfortable, and work is more productive. Such systems will be increasingly improved in the near future, already now many specific types of work systems with artificial intelligent are doing better than people. It should be noted that in the process of working on projects with a huge preparatory work is being done [4]. Machines teach intellectual pursuits such as information retrieval, speech recognition, natural language processing, face recognition, inference, etc. In connection with artificial intelligence, it should be mentioned to make artificial intelligence. It lies in the fact that as soon as with the help of artificial intelligence,

previously unimaginable results are actually achieved, then such a task of criticism ceases to be considered.

This effect is formulated in the formula Larry Tesler: "Artificial intelligence is everything that has not been done so far". Providing artificial intelligence systems, scientists had to deal with such an issue as the representation of knowledge - this made it possible to create the so-called expert systems (help in decision-making based on knowledge bases); the methods of self-learning of machines became very important (intelligent learning systems appeared); attempts to repeat the work of the nervous in human systems. The latter resulted in the creation of artificial neural systems. Thus, at the heart of all research on artificial intelligence is the idea of modeling the processes of human thinking with a computer. Artificial intelligence as a science relates to cognitive sciences, i.e. to the sciences related to the acquisition (collection, accumulation, perception) of knowledge. It is assumed that artificial intelligence, comparable to human intelligence will have an unlimited scope and radically change our existence [2].

Another shining example of artificial intelligence is the answers for questions in a specific language based on its database. Today, artificial intelligence is widespread and covers almost every aspect of our daily lives. For example, residents of Inchuan, China, do not need bank cards. All computational processes are performed to determine a person's facial features by artificial intelligence [6].

Benefit or harm? - The debate over artificial intelligence has been going on for almost 50 years. Experts have not yet reached an agreement. Some scientists assumed that artificial intelligence   become more popular, it increases mass unemployment. Another group of experts warns against artificial intelligence, even among IT billionaires, In particular, the founder of SpaceX - Ilon Mask is convinced that artificial intelligence will destroy an entire civilization. Mask said "Artificial intelligence is a major threat to human civilization" [3]. The artificial intelligence causes mass problems related to labor, robots can do everything better than we can. As a result of the pursuit of advanced technology, companies may lose sight of the dangers posed by artificial intelligence. Today, some countries have robotic nurses,

driverless vehicles, and custom drones. Even some robots are used by special robots. Scientists are trying to make them, artificial intelligence has become a constant help to journalists. The use of artificial intelligence has increased the number of quarterly news items in this publication from 300 to 4,400 [4].

   In addition to the most consumers do not trust robots, it is one of the obstacles to the popularity of artificial intelligence. It will take some time for people to get used to self-propelled cars or planes. But it is also surrounded by modern technology, the younger generation is opposite and they are not so worried about the process. Despite all the protests and criticism, artificial intelligence has not stopped developing [5]. Its importance is growing, especially in medicine. Now robots also perform relatively complex surgical procedures. Robotics is unique to medical professional cooperation. Medtronis is working with IBM to develop a special program for patients with diabetes. This software will be able to detect an emergency drop in blood sugar 3 hours in advance. For this, 600 anonymous people suffering from this disease patients' medical data were examined. It's now special for people to take care of their health on mobile devices by regular monitoring through software. In our life, the role of artificial intelligence in our lives is growing day by day [8]. The scientists Medtronis is working with IBM on diabetes, it is developing a special program for sick patients. This software is able to do detection of an emergency drop in blood sugar in three hours. Six hundred anonymous people suffer from this disease, these patients' medical data were examined.

   Directions of artificial intelligence. The scientific discipline "Artificial Intelligence" is an umbrella one, within artificial intelligence is divided into many areas. Here are the main of them:

   a) Representation of knowledge.
   b) Proof of theorems.
   c) Computer vision.
   d) Machine learning (knowledge acquisition, data analysis and generation of hypotheses).
   e) Robotics.

f) Processing of natural languages.

g) Multi-agent systems.

h) AI tools [12].

All listed branches of AI, in turn, they are divided into dozens of other areas, especially robotics (several dozen directions). Due to the vastness of artificial intelligence, it is impossible for a scientist to cover all its branches, specialization is required.

There are eight facts about artificial intelligence.

Artificial intelligence is a separate branch of computer science, it is creation of computer systems with the capabilities of the human mind: language comprehension, teaching, discussion, problem solving, translation, and so on. Although scientists are eager to experiment with artificial intelligence (AI), many people are wary of this phenomenon. Even Tesla leader – Elon Mask also called it is a "major threat" to humanity and a potential source of war and unemployment. Let's take a look at 8 interesting facts about artificial intelligence.

Fact 1. Satisfaction of artificial intelligence services and unlimited time standards [8].

Fact 2. It can adapt to distortions U.S. scientists have experimented with a robot equipped with artificial intelligence. They found that he would continue to work if he was seriously injured. During the experiment, the "injured" robot was able to adapt to at least six different injuries, including the complete loss of two lower limbs, and the robot's "arm" adapted to at least 14 types of injuries, including the failure of two of its engines [5].

Fact 3: The beliefs and stereotypes of the creators inherit artificial intelligence. The artificial brain draws its conclusions based on the data initially entered into, so it is distinguished by racial and gender superstitions. The studies have shown that some computer systems for facial recognition confuse the gender of black women in 35% of cases and only 0.8% of white men. This is because 75% of the photos in artificial intelligence databases are taken by men, of which 80% are in white photos.

Fact 4: Artificial intelligence can answer all questions. The most powerful artificial intelligence-based text generator to date is GPT-2 from OpenAI, which can write entire paragraphs and correct errors. However, the system will answer the questions correctly if it is related to general knowledge [9].

Fact 5: Artificial intelligence is capable of studying everything. Researchers claim that by 2060, artificial intelligence will be able to study almost all of human beings. They are hoped to be able to perform their duties independently. For example, researchers are working at Oxford University with Google's DeepMind AI division, the system can teach better than humans. After reviewing 118,000 sentences from the video, they watch, participate, and spell more than 17,500 words.

Fact 6: Robots with artificial intelligence are already working as announcers, flies, patrols ships, and plays football. In China Robot Robotic announcer only can read news texts, but by imitating their facial expressions and speech style [12].

Fact 7: Artificial intelligence helps in coronavirus period. People infected with artificial intelligence-based systems around the world with helping, tracking, gathering information about the virus, and searching for a vaccine. For example, the Israeli company Vocalis Health is partnering with the Israeli government COVID-19 disease detection technology based on sound spectrum analysis. In addition, artificial intelligence robots are patrolling public places (Singapore). In the flow of people in China using Megvii ReID technology, a system has been developed to identify patients with high fever.

Fact 8: Artificial intelligence saves the planet and feeds people. Artificial intellect collects information about plant and animal species, their usage to determine the location and concentration of populations. Food and Agriculture Organization of the United Nations (FAO) also recognizes the advantages of artificial intelligence: they are "intelligence" weather conditions, pests, soil moisture and other important indicators to enable farmers to plan their work more efficiently, taking into account the data. It is no exaggeration to say that these are important areas of human activity. Artificial intelligence not only in the listed areas but also in other areas is being used.

In short, artificial intelligence plays an important role in industry, science human life and society.

Why is there so much hype around artificial intelligence (expectations)?

1. The computerization of production and almost all aspects of human activity, which has been carried out for more than half a century, has generated a kind of dead end associated with the processing and analysis of everything growing volume of daily data. Along the way to combat them, data warehouses appeared, operational analysis data, cloud computing [8]. And on the other hand, there are new fashionable technologies that will generate orders of magnitude large data streams - the Internet of things, Industry 4.0, Society 5.0, etc. The development of artificial intelligence systems is the desire to transfer high-level processing of accumulated data from human to computer systems, transistorized and/or neuromorphic. The world's IT leaders are racing to create custom processors and supercomputers for training of neural networks. Ideally, their training should take place in real time, but now it takes weeks [14].

2. The era of computers as the engine of the semiconductor industry is coming to an end. Now all hopes are that artificial intelligence and robotics will become such an engine. Already formed huge segments in terms of volume: industrial, service and military robotics, unmanned vehicles, medical robotics, etc. However, without artificial intelligence systems, a full-fledged development in these areas is impossible. Thus, robotic technology is now strongly stimulating research in the field of artificial intellegence. For example, the emergence of unmanned vehicles is potentially a trillion dollar business, which is why all the automotive giants and other corporations are investing billions dollars for the development of such systems.

3. How at one time the decoding of the human genome gave the US economy a 3% increase in GDP (every dollar invested in it brought in $140 profit), it is expected that progress in creating artificial intelligence will give a huge boost to the business of countries developing research in this area [13]. Therefore, a number of countries, in particular China, South Korea, as well as the European Union, have put artificial intelligence work among the most important government tasks.

4. More specifically: Artificial intelligence is expected to lead to improved management processes, development of producer relations with consumers, optimizing all business processes, improving planning and personnel work, turning products into services and changing the business model of many businesses.

Artificial intelligence Market - It is extremely difficult in this age of uncertainty to make predictions. All of the forecasts listed below are said to be grossly overestimated. Artificial intelligence market volumes for the coming years. Its growth, in our opinion, will be very significant, but not as stunning as analytical agencies predict (Table 1).

Table

The main areas of application of the systems artificial intelligence (%)

Systems of research and recommendations in the field quality management	**10.3**
Diagnostic and treatment systems	**10.0**
Automated customer support services	**9.8**
Automated threat prevention systems	**9.8**
Fraud Analysis and Investigation Systems	**9.0**
Others	**51.1**

Artificial intelligence has become a key technology trend of 2016, and the volume of global investments in it exceeds $500 million. According to the forecast of IDC, sales of cognitive systems and artificial intelligence systems in the world will grow by 59.3% in 2017 and will reach $12.5 billion [11]. According to the forecasts of an international research company Markets and Markets, the Artificial intelligence market will grow to $5 billion by 2020 through the application of machine learning and natural language recognition technologies in advertising, retail, finance and healthcare. The Gartner agency considers that by 2020 about 40% of all interactions

with virtual voice assistants will rely on data processed by neural networks [15]. Consulting company Tractica believes that the dynamics of Artificial intelligence will be based on six fundamental technologies: machine learning, deep learning, computer vision, natural language processing, machine reasoning, and strong Artificial intelligence. Although in the future 10 years, Artificial intelligence technologies will affect almost for each business, the main market drivers will be the sectors in consumer products, business services, advertising and defense. Tractica predicts artificial intelligence market growth from \$643.7M in 2016 up to 38.8 billion dollars by 2025 [15]. The key driver of this market is the departure of all processes both in business and in the consumer segment to the clouds, as well as the growing influence of the Internet, smartphones, social media. The actors of this market are such large corporations as NEC, Google, Honeywell, Hitachi and Qualcomm Technologies. Also many smaller players are present, such as LTU Technologies, Attrasoft, Blippar and SLYCE, and such vendors, like Catchoom and Wikitude.

Main areas of work in the field of artificial intelligence. Work in the field of artificial intelligence is now underway in many countries and deployed on a broad front. They are grouped around the following areas.

1. Deep learning. Here, efforts are aimed at significantly reducing the training time of the neural network and reducing training sample size. Ideally, the neural network should be trained in real time [3].

2. Synthesis of answers by the robot, based on the body of knowledge which was loaded into it, in relation to the context and sequence of words. The robot must learn to correlate the incoming information with their knowledge base and learn [12].

3. Development of neuromorphic microcircuits and computers based on their base. Such chips have already been released by IBM and Intel. While they contain up to 4096 artificial neurons and up to 256 million synapses, but the direction is very promising.

4. Work will continue on mapping the human brain and modeling his work.

5. Development of speech recognition and understanding systems. Many services use a speech interface that requires good speech recognition. In addition, it is

important to understand for user. In this regard, it is important to understand such systems of the context of what is said, since the context is essential part of natural language. In this part of the study are also shifting towards the development of systems capable of interact with people through dialogue rather than just responding to stylized requests. Submission to search engines and a number of popular voice query applications, especially with smartphones, has already become commonplace, and the volume of such requests will increase.

6. Development of brain-computer interfaces. The work that started rapidly in this direction has now slowed down, but will be continued.

7. The study of systems of group behavior of robots and the interaction of robots and people in the course of performing any operations. The efforts of researchers are aimed at studying the efficient distribution of tasks between people and machines. This is direction is important for both military robots and service robots, as well as for the manufacturing sector.

8. Implementation of artificial intelligence in the Internet of Things (IoT), Industry 4.0 and other modern areas such as the digital economy, since the processing of huge amounts of data generated in such systems, without AI will face great difficulties.

9. Navigation of autonomous vehicles in the environment human habitat. This is the most promising from the market point. In terms of direction, the direction should ensure the start of widespread implementation starting from 2022–2025. The unmanned vehicles and vehicles in which the actions of the driver are fully controlled autonomous control system [14].

10. It is possible to develop a completely new class of systems such as "human intelligence on demand", robot services for on demand (RaaS), etc.

In conclusion, it was once believed that one of the main philosophic problems in the field of artificial intelligence - the possibility or impossibility of modeling human thinking, the question of whether artificial intelligence will gain consciousness. The question is no longer entirely hypothetical and obviously of great importance for forecasting the near future of inhabitants of planet Earth. Half a century of history of

artificial intelligence development convinces us more that the fundamental obstacles to there is no way to achieve such a result. Most likely, artificial intelligence can do and not on neural networks. Just neural networks in a way solution has already mastered by nature.

REFERENCES

1. Barrat J. Mankind's Last Invention: Artificial Intelligence and end of the era of Homo sapiens. – M.: Alpina Nonfiction, 2015. – 304 p.

2. Belov S., Katkalo V. Deficit of artificial intelligence. - Access mode: https://www.vedomosti.ru/opinion/articles/2017/03/21/681987-defitsit iskusstvennogo intellekta.

3. Bessmertny I.A. Artificial intelligence - St. Petersburg: St. Petersburg State University ITMO, 2010. - 132 p.

4. Brink H., Richards D., Feverolf M. Machine learning. - St. Petersburg: Peter, 2017. -336 p.: ill. – (Series "Programmer's Library").

5. Brockman D. What do we think about machines that think: Leading world artificial intelligence scientists. M.: - Alpina non-fiction, 2017. - 552 p.

6. China spent $279 billion on research and development last year USD – Access mode: https://hightech.fm/2018/02/27/279-billion-on-rd.

7. Demchenko D. Map of the application of artificial intelligence technologies: Medicine, education, transport and other areas. – Access mode: https://vc.ru/p/ai-map.

8. Deryugina O. Artificial intelligence and contemporary art. – Mode Access: http://www.colta.ru/articles/art/14931 Artificial intelligence (AI) as a key factor in the digitalization of the global economy. – Access mode: https://www.crn.ru/news/detail.php?ID=117544

9. How artificial intelligence will help save the planet. - Access mode: https://news.rambler.ru/other/39160318-kak-iskusstvennyy-intellekt-pomozhet-spasti planetu/

10. Klimov V. The brain of the terminator. – Access mode: http://www.atomvestnik.ru/index.php?option=com_content&view=article&id=207:mozg-terminatora&catid= 2&Itemid=133

11. Mayer-Schenberger V., Kukier K. Big data. A revolution that will change the way we live, work and think / Per. from English. – M.: Mann, Ivanov and Ferber, 2014. - 240 p.

12. Mungalov D. Power over the world: How will the race for artificial intelligence end. – Access mode: https://sk.ru/news/b/articles/archive/2017/08/23/ vlast-nad-mirom-chem-zakonchitsya-gonka-za-iskusstvennym-intellektom.aspx.

13. IDC: In 2017, the global market for artificial intelligence systems will grow more than one and a half times. – Access mode: https://www.computerworld.ru/ news/IDC-v-2017-godu-mirovoy-rynok-sistem-iskusstvennogo-intellekta-vyrastet bolee-chem-v-poltora-raza

14. Kretsu S. Artificial intelligence in business - the experience of Russian brands. Access mode: https://vc.ru/25645-ai-business

15. Osipov G. Artificial Intelligence: The state of research and a look at the future. – Access mode: http://www.raai.org/about/persons/osipov/pages/ai/ai.html