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Artificial Intelligence and Psychology: the Future of Consciousness and Emotions

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Abstract: This article discusses the relationship between artificial intelligence (AI) and psychology, the role of AI systems in understanding human consciousness and emotions, and the possibility of creating conscious and emotional AI in the future. The possibilities of applying cognitive models of human consciousness in artificial systems and creating AI with emotional intelligence are analyzed. The article also discusses the interaction between AI and human psychology from the perspective of neurobiology and computational psychology.

Keywords: Artificial Intelligence, Psychology, Consciousness, Emotion, Emotional Intelligence, Neurobiology, Cognitive Models.

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Introduction

Time is moving forward rapidly. 20 years ago, a person carrying a brick-like push-button phone on the street attracted everyone's attention, but today, thanks to that phone, they have become smartphones - it has become a common thing for us to watch movies, do housework, follow our child's school life, read, communicate and do many other things.

The field of information technology has undergone tremendous transformations in recent decades and has changed our entire lives. Cloud technologies, 5G and the Internet, social networks that have reached billions, the incredible development of media... These unprecedented discoveries can be continued. Undoubtedly, artificial intelligence, which has managed to make a splash all over the world, and completely new directions that have emerged in connection with it, have become the pinnacle of these technological innovations.

This device you are looking at is controlled by artificial intelligence. The main task of this device is to create new drugs, it works with chemicals such as proteins, nucleotides, acids at the molecular level (you can also read as "granular"). As artificial intelligence continues its research, it analyzes data in real time. It tries out millions of different scenarios until the desired result is achieved [1].

Creating a new drug is a very labor-intensive, time-consuming and expensive task. For example, the success rate of experiments using proteins is less than 10 percent. Each unsuccessful result costs an average of 30-200 million dollars. However, the advent of artificial intelligence technologies is also revolutionizing the pharmaceutical industry. Research that previously took decades is being imitated using machine thinking, implemented incredibly quickly and, most importantly, without huge costs. Atomwize, the company that developed the device in the photo, has become one of the world's leaders in biopharma in 10 years. Last year, drug giant Sanofi signed a deal worth $1.2 billion with it.

This is just one example of the opportunities created by artificial intelligence technologies. Today, people are already using this discovery to write texts (articles, dissertations, and even poems), process images/videos/audio and create new ones, diagnose complex diseases, write computer programs, manage businesses, market, communicate, and create websites.

In simple terms, artificial intelligence is the ability of computer systems to perform creative and intellectual activities that have been characteristic of humans until now. It combines extremely complex new areas of science, such as neural networks, machine learning, natural language processing, cognitive computing, and computer vision.

For example, machine learning technology is computer systems that can deeply learn . knowledge for data processing. These systems, based on the algorithm written by the programmer who created them, independently analyze huge amounts of data and experiments, find commonalities and patterns, and enrich their knowledge . on this basis. For example, 570 GB of data was used to train ChatGPT, which is now famous all over the world. This is an indicator that far exceeds the limits of human thinking [2]. ChatGPT, in which Microsoft invested $ 10 billion at the beginning of the year, can easily chat with you in many languages, write articles or poems. In 2021, the adoption of a separate presidential decree made it possible to systematize and organize work in this area. In particular, the Program of measures to improve the position of the Republic of Uzbekistan in the Artificial Intelligence Readiness Index. was approved. It focuses on the development and use of artificial intelligence technologies in the economic and social sectors, in the public administration system, and the introduction of these technologies in the fields of agriculture, energy, healthcare, and e-government.

Neural networks, big data, and artificial intelligence capabilities have also begun to be gradually introduced into public systems. Among them, the MyID system, which covers the entire country in terms of scope, can be mentioned. According to the Ministry of Digital Technologies, today 23 banks and 5 large state organizations are constantly using this system, and the number of registered users has reached 2.5 million. MyID primarily allows for biometric identification of a person, which, as a result, reduces the time spent on the process to 1 second, and document verification is completely automated.

Another unique project is the monitoring of agricultural lands and crops, where fields were monitored using artificial intelligence based on images taken from space and drones, and data collected in real time, and their geoinformation system was created.

However, the personnel problem is still the most important issue in this area. From the 2022/2023 academic year, a total of 245 quotas have been allocated in 6 higher educational institutions for training personnel in the direction of Artificial Intelligence .. It should also be noted that a separate doctoral direction Digital Technologies and Artificial Intelligence . has been opened. Based on the presidential decree, the Research Institute for the Development of Digital Technologies and Artificial Intelligence was established under the Ministry of Digital Technologies. The institution, which brings together doctors of science in the field and leading specialists in various fields, has great scientific potential and is already using it. Within two years, the institute developed a software product for monitoring the environmental and ecological state of the Aral Sea region and for personal recognition based on speech signal processing [3].

Currently, using the capabilities of artificial intelligence, work is underway on projects such as transcribing meetings in Uzbek, processing images of the earth's surface, and studying energy system data based on renewable energy sources. Of course, these works have begun to show their results. As we witness serious changes in the functioning of state information systems that we encounter every day in our lives, Uzbekistan's performance in this area is also improving in international rankings.

According to the statistics presented in the Government Artificial Intelligence Readiness Index . developed by the British organization Oxford Insights ., the Republic of Uzbekistan ranked 158th in 2019, 95th in 2020, 93rd in 2021, and 79th in 2022.

Problems and risks

Along with the positive changes, there is still a lot of work to be done. Including:

There is still no program that checks the text in the Uzbek language (not only for the correct spelling of words, but also for stylistic reasons) [4]. Today, such a program using artificial intelligence has been created for many languages. It is necessary to develop a perfectly working technology for converting audio into text (Speech-to-Text) in the Uzbek language. Such a tool can be very effective in education, medicine, government agencies, court hearings and many other areas. It should be noted that Google, Microsoft, Mozilla have been working on the idea of converting audio into text in Uzbek for several years.

We are lagging behind in the implementation of GPT technologies in the Uzbek language. The main reason is the very small number of artistic and scientific materials in the Uzbek language on the Internet compared to other languages. As for the dangers of artificial intelligence, such disputes have been raging for a long time, and they mainly concern security, human rights and freedoms. The following can be singled out as serious dangers: Automated attacks. This implies the possibility of carrying out various cyberattacks and information attacks using AI [5].

Data falsification and fraud. That is, the dissemination of false information that can influence public opinion, decision-making and the electoral process, using the unlimited possibilities of this technology (remember the recently leaked video of Vladimir Putin speaking in Arabic. This is the work of DeepFake technologies that can speak . to any person in any language and on any text). Harm to the education system. In the era of ChatGPT, the emergence of computer systems that can write scientific texts as perfect as humans and their popularity among millions of students and researchers in a short time threatens the concept of academic integrity in the global education system. It has become impossible to distinguish whether a coursework was written by ChatGPT and not by a student, and this generally defeats the purpose of the educational process.

The problem of personal data privacy. There is a risk of collecting, processing and transferring personal data on a large scale using SI. In particular, it can be used to analyze people's behavior, desires, emotions, and health. The problem of unemployment [6]. AI can perform a huge number of repetitive tasks. Many advanced companies are using artificial intelligence to reduce positions such as data entry or customer service. According to McKinsey studies, by 2030, robots will replace at least 30 percent of human labor, that is, from 400 to 800 million. Yes, this is a huge and alarming number. But we know from the history of human civilization that from the invention of the wheel to electricity, steel casting, the typewriter, the internal combustion engine - any innovation that destroyed many professions of its time, but created many times more new jobs. The question of responsibility. Who should be held accountable if an autonomous AI system harms people or the environment? This is about the legal and ethical consequences of AI behavior. For example, who is accountable if a driverless taxi causes an accident?

These technologies have redrawn the boundary between machine and human, radically changing the process of creativity and innovation. However, the majority of AI proponents, who perceive this not as a threat, but as an endless opportunity, are still in the majority.

The risk that worries the global scientific community, politicians, and the general public the most is the hypothesis that artificial intelligence will one day develop itself, gain the ability to influence human consciousness, and take control of the entire world .

Literature Review and Research Methodology

The relationship between artificial intelligence and psychology is becoming an increasingly relevant issue in the scientific community. Although modern AI systems can partially model the functioning of the human brain, the question of having real consciousness and emotions remains open. This article examines the relationship between artificial intelligence and psychology and analyzes future opportunities.

The article analyzes scientific research conducted in the fields of cognitive science, neurobiology and computational psychology, as well as the current level of development of AI technologies. The study is based on scientific work focused on the ability of AI systems to understand and process human emotions. Artificial intelligence systems are currently able to detect human emotions, understand them and respond to them accordingly. However, the existence of real consciousness and emotions remains impossible for artificial systems. Through cognitive models and deep learning methods, AI systems are showing results close to the functioning of the human brain, but creating AI with full consciousness and subjective experience remains a major scientific challenge.

The issue of creating artificial intelligence gives rise to philosophical and scientific discussions. Some researchers believe that artificial systems can simulate consciousness and emotions, while others argue that true consciousness is inherent only to biological systems. Neurobiological studies play an important role in revealing the differences between human consciousness and AI. In the future, there is a need for new computational paradigms to create artificial systems that are close to human consciousness and emotions.

The connection between artificial intelligence and psychology is of great importance in understanding the nature of human consciousness and creating intelligent systems of the future. So far, AI systems can only partially model human emotional and cognitive processes, but more advanced systems are expected to emerge as a result of technological development.

Analysis and Results

One of the most subtle and important areas of change in the world of technology is artificial intelligence. The activities carried out are now aimed at studying and managing the real thoughts or emotions of people.

We have begun to observe the development of technology, especially with the widespread use of social networks. Today, it has become commonplace for our most confidential aspects to be stored in data banks [7].

We only have our thoughts and feelings, but now they are not in a safe environment. Because all of this is about to be discovered. So, how does artificial intelligence intend to do this? Body language, facial muscles, eye pupil movements, sound vibrations and even hormone secretion.

Companies operating in the field of artificial intelligence are studying all of this in micro detail and trying to achieve projections of thoughts and emotions.

Senior Research Fellow Ilke Demir, speaking about the work carried out in the field of emotion analysis in artificial intelligence, draws attention to the fact that many different techniques have been used to understand emotions. The most common of these is the Facial Action Units . technique [8].

Emotions are being identified by studying another method Another method used in analyzing emotions is by studying a different method called deep networks.

Deep networks take images of emotions such as happiness, anger, sadness, and fear and label them. Once they are fed into the deep network, the aforementioned network starts learning about them. Humans are not affected by this.

These deep artificial networks can identify emotions by examining the connections between emotions in images. What risks might the system pose in the future? These systems are currently being used by some research companies and human resources departments of international companies.

There is talk of goals that benefit society, such as finding the right employee in recruitment, revealing the truth or identifying criminals. But big questions also arise [9].

First of all, one can think about the areas of use, because it includes scary scenarios. A system that has reached emotions can easily persuade you to buy a product or service.

3- Politically, we are even more easily controlled by our emotions. In communities or countries where the users of the system are targeted, it is much easier to create major social events.

In addition, emotions or thoughts can be misidentified. As a result, there is a possibility of human rights violations. Will new psychologists be born from artificial intelligence? Artificial intelligence, on the one hand, is a candidate to study our emotions, on the other hand, to correct them, that is, to become our new psychologist.

Scientists working in the fields of psychiatry and bioengineering have begun to study patients using a system called digital phenotyping.

In this study, it is claimed that information such as how we use personal devices such as mobile phones and how fast we scroll through pages can help diagnose and treat depression. It is expected that the secrets of the human mind will be revealed by artificial intelligence, but what consequences it will bring is still unknown and only the future will tell [10].

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Conclusion

In short, the concepts of artificial intelligence or AI are probably familiar to people living in almost every corner of the world today. But what are the similarities between artificial intelligence and the human brain? This article seeks to answer this pressing question! A new study conducted by the School of Psychology and Neuroscience at the University of Glasgow has conducted a scientific study into whether the human brain and artificial neural networks can recognize objects in the same way. Artificial neural networks are increasingly becoming part of our lives in everyday real-world applications such as automated facial recognition systems and driverless cars. Researchers have used artificial neural networks to model data processing and test how well this process matches that of humans.

Artificial neural networks have become an increasingly popular tool for performing calculations that the human brain performs, in particular for visually recognizing things . in the real world. But the ways in which networks carry out such practices may be quite different from the human mind.

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