

ACCUTE PROBLEMS OF ARTIFICIAL INTELLIGENCE

Modern artificial intelligence includes many different methods of expanding the computer's capability, such as machine learning, deep learning, big data, neural networks, cognitive computing and others.

Most of the research, however, is carried out with neural networks. Neural networks simulate the human nervous system's work, with the possibility of self-learning which is based on the previous experience being its typical feature. Thus, neural networks can beat the world's strongest chess players, write novels, create music, and much more. Despite the increasing adoption of this technology, its developers face real challenges. Here are some of the most acute ones.

First of all, it should be noted that artificial intelligence requires a lot of human resources as training it involves analyzing huge manually generated databases. Moreover, the more complex the learning goal is, the more high-quality information is required. In addition, training requires computational resources, which results in expanding the carbon footprint. Thus, the most advanced neural network GPT-3 - an algorithm equipped with deep learning and able to use texts from thousands of different books, as well as freely use information from the Internet to connect words into sentences - produces the equivalent of 552 metric tons of carbon dioxide per regular exercise [1].

The next problem is rather obvious. Texts on the Internet often contain distortions, manipulations, fakes. Artificial intelligence is directly influenced by the assumptions, representations and values reflected in the databases it learns. So, artificial intelligence will never be neutral and objective. The neural network absorbs the misinformation and biases freely found online and reproduces them easily. Artificial intelligence cannot make unambiguous

conclusions about objective reality. Instead, it creates its own reality, serving as the basis for limited inferences [2].

Another problem worth considering is the “black box” problem. Even for computer experts it's hard to identify if the algorithm is biased or fair. One of the reasons is that the details of the algorithm's creation are often considered proprietary information, so they are carefully guarded by the owners. In far more complicated cases the algorithms are so complex that the way they work is unknown even to the creators. This is the problem of the so-called "black box" of AI - our inability to see the inside of the algorithm and understand how it comes to a solution. Historical discrimination that we have fought for many years, from slavery and serfdom to discrimination against women, is taking place in the digital environment.

While some problems are unlikely to be resolved, others can be minimized by moving systems to renewable energies, broadening the learning base, and fighting for transparency in AI algorithms.

References

1. Information overload or a search for meaning [Electronic resource] : Inform. System. - Mode of access: <https://www.the-american-interest.com/2015/12/17/information-overload-or-a-search-for-meaning/>. - Date of access: 24.12.2021.
2. Tyshko, Y., Brych, V. Computer security and new ways of improving it / V. Brych, Y. Tyshko // Проблемы лингвообразования в неязыковом вузе : материалы V Респ. науч.-практ. конф. (с междунар. участием), Минск, 27 января 2021 г. / Белорус. гос. ун-т ; редкол. : А. Э. Черенда (гл. ред.) [и др.]. — Минск, 2021. — С. 201 — 202.