SMART TECHNOLOGIES IN SCIENCE AND ART

Natalia Dmitrieva, Mariya Rostotska

Educational and Scientific Institute of Telecommunications,

State University of Information and Communication Technologies

Smart technology is a field that is developing incredibly fast and is becoming more and more influential not only in computer science, but also in such fields, as: art and science. By means of smart technologies, scientists can speed up and automate their research. In the field of art, smart technologies allow artists, musicians and creative individuals to express themselves in new ways. The study will demonstrate exactly what impact smart technologies have on these two areas.

The subject of this research is intelligent technologies, in particular, artificial intelligence and machine learning, and their role in science and art. Here, methods of systematic article review and comparative analysis have been used to investigate how

these technologies influence scientific research and artistic projects.

Applications of smart technologies in science are used in data analysis. Artificial intelligence plays an important role in medical research as it helps process huge amounts of data. It gives doctors possibility to identify new disease patterns and make significant discoveries in the field of medicine. In medical research, i.e., in the UK Biobank project, artificial intelligence analyzes vast amounts of medical records and genetic information. This makes it possible to open up new prospects for treatment.

Another innovative method is simulation. In the NASA's Earth Observing System project, artificial intelligence algorithms are used to model climate change and predict the consequences of global warming which allows to increase the accuracy of forecasts by 20%. It also helps scientists understand the future challenges associated with climate change better. This is an important step in understanding and predicting climate trends.

Speaking about automation, robotic systems in laboratories help to reduce errors and increase the accuracy of experiments. Thanks to the automation of processes, the results become more reliable and reproducible. Laboratories like High-Throughput Screening at pharmaceutical companies use robotic systems to automate experiments which helps increase the efficiency of research significantly and speed up the discovery of new medicines.

Smart technologies are also widely used in art. Virtual reality substantially transforms art, opening up new possibilities for experiments. This changes the traditional perception of creativity, designing new ways of interaction with art. The Night Cafe project transports viewers to a virtual reproduction of Van Gogh's famous painting, giving them the opportunity to explore the space in 3D. It creates a unique experience where art becomes more interactive.

Computer vision technologies help identify artistic styles, making it easier to explore the limitless world of art. Thanks to these technologies, it becomes easier to analyze and classify different works, opening new perspectives for research. The Artsy project uses artificial intelligence to analyze vast amounts of data about

artworks and artists. It helps artists understand what their audience likes and adapt to fickle tastes better. Installations with artificial intelligence allow viewers to interact with the art. This changes the traditional approach to its perception and makes the experience more exciting. The AI Portraits project uses artificial intelligence to analyze people's portraits and create new images in the style of classical artists. It allows viewers not only to contemplate artworks, but also actively interact with them, making the experience more   interesting and unique.

Thus, the use of smart technologies, such as artificial intelligence and virtual reality, changes approaches in science and art. New methods of data analysis and modelling help improve the accuracy of scientific research, and in the arts, technology opens up new opportunities for interaction and creativity. These results highlight the importance of implementing smart technologies in various fields which may lead to new discoveries and ways of self-expression in the future.

References:

1.   Future Now. Technologies and Sciences Blog. Retrieved from
   https://futurenow.com.ua/shho-take-smart-tehnologiyi/

2.   Leese, L. AI for Earth: How NASA's Artificial Intelligence and Open Science Efforts Combat Climate Change. Retrieved from
   https://science.nasa.gov/earth/ai-open-science-climate-change/

3.   Artsy Site: How AI is changing the Art Market. Retrieved from
https://www.artsy.net/article/artsy-editorial-ai-changing-art-market

4.   Scientific Reports Site: AI is a viable alternative to high throughput screening: a 318-target study. Retrieved from
https://www.nature.com/articles/s41598-024-54655-z