

### **Development of virtual reality and its application**

Virtual reality is an illusion of reality created with the help of computer systems. With its help, a person can instantly transfer to another environment, get vivid impressions and acquire an unusual experience. And although virtual reality technology has only recently entered our lives, in fact, VR has been known to mankind for a long time. For the first time, the very concept of virtual reality (VR) flashed in the work of the American science fiction writer Stanley Weibaum "Pygmalion's Glasses" back in 1935. There, the main character meets a professor who invented glasses that create the illusion of reality. But before that, back in 1838, Charles Wheatstone's Stereoscope demonstrated that our brain processes 2D images from each eye and can compose them into a single 3D object. This is the main premise of what makes virtual reality look like the real world.

The first real practical experiments of the reality simulation system date back to 1956. During that period, cinematographer Morton Haylitt created his machine for VR – Sensorama, which integrated movie projectors to reproduce the image on a stereoscopic display. However, this bulky machine bore little resemblance to modern VR helmets. In 1968, Ivan Sutherland and his student and colleague, Bob Sproul, created the "Sword of Damocles" - it was the first VR headset that had the ability to track the user's head movements and change the perspective displayed on the screen accordingly. However, such a device was difficult to operate. The very term "virtual reality" was coined by the American computer scientist Yaron Lanier in the mid-1980s. In 1993, the first major example of a gaming company showing interest in virtual reality was Sega's introduction of the Sega VR virtual reality headset. It was supposed to be released alongside the first four games in 1994, but it remained a prototype, turning into a fiasco for Sega. Nintendo followed Sega VR closely by announcing its own game console, the Nintendo Virtual Boy, in 1995, which could display stereoscopic 3D graphics. However, Virtual Boy also failed as a project due to the lack of color images. Another reason was the difficulty of use.

Nowadays, virtual reality is used not only in the gaming industry, but also in many other professional fields. The most popular are: medicine, art, science, culture, design, and the military sphere. In the military field, virtual reality technologies are used to train soldiers, simulating various armed conflicts, training pilots without unnecessary risk, and drivers.

In medicine, VR is most often used to train young surgeons. However, virtual reality helps not only in learning, but is also used to treat or diagnose mental disorders or addictions. In science, thanks to virtual reality, scientists are able

to visualize various molecular and atomic structures, model complex processes and better explore the conditions of human perception. Thanks to VR, the field of design has also taken a step forward. Creation and editing of 3D models of structures and mechanisms, as well as research and simulation of various possible impacts. It is clear that when a person hears the term "virtual reality", the field of entertainment immediately comes to mind. Due to virtual reality, there is the possibility of virtual tours, excursions and, of course, the most popular entertainment is video games with the effect of full immersion.

Today virtual reality is widely used, but what are the prospects for this technology in the future? VR will be used in even more diverse industries besides those already mentioned. Perhaps with the help of virtual reality, interactive lessons will begin to be held in schools, where students will be able to interact with various subjects or even visit historical places without leaving the classroom. There is also an opportunity to use VR in business. An example can be virtual conferences due to which people will be able to save time and money, it will be possible to hold joint conferences at which employees from different parts of the world can be present. Visiting world museums, cultural events of different countries without leaving home, rehabilitation after operations - all this can become a reality in the future.

*Scientific supervisor: Nataliia Denysenko,*

*Senior Lecturer*