



COMPUTER GRAPHICS AND ITS ROLE IN THE MODERN WORLD

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ABSTRACT

This article defines the general characteristics of computer graphics. It examines the importance of computer graphics as a means of optimizing workflows. It also examines the main types of information graphics and identifies their position in the global system.

Introduction

Digitalization as a phenomenon emerged back in the 1980s, but it reached its peak at the turn of the 2000s.

The primary goal of digitalization is to simplify individuals' lives and facilitate the performance of a number of tasks. Today, there are virtually no industries that haven't integrated IT processes into their operations: medicine, currency exchange, education, the culinary industry, and many other fields have all faced computerization. Against this backdrop, a vast number of completely new fields have emerged that didn't exist before, such as graphic design and computer graphics, the implementation of which enables every sector to increase its efficiency.

First, it's worth noting that computer graphics is a set of specific methods and techniques for converting data into a graphic image using a computer; its primary objective is visualization, which is accomplished based on a description of what needs to be depicted.

The two key types of computer graphics are raster and vector. Raster is the most widely used. All digital cameras in the world capture raster images and videos, consisting of square pixels; their structure resembles a mosaic. The essence of this type of graphics is to create a unified picture from a huge number of multicolored segments, and its main advantages include the most accurate image reproduction and ease of editing. However, the excessively large file size, along with strict limitations on its detail (high resolution is required for high-quality detail), adds complexity to this type of graphics. The most commonly used formats are JPEG, PNG, GIF, and BMP, as well as Photoshop and GIMP.

Vector graphics are fundamentally different from raster graphics—they are essentially pixel-less. These images are constructed in two-dimensional space using X and Y coordinates by linking anchor points and are best suited for creating various types of logos, advertising banners, and engineering drawings—areas where detail is essential. Vector graphics files take

up little memory and can be scaled without loss of quality. Disadvantages include difficulty editing and a lengthy creation process. The most common vector formats are SVG, AI, and COR, which are created by authors in Adobe Illustrator and CorelDRAW in most cases.

In addition to the above, it is important to note that there are also symbolic (the image is generated from letters, signs, symbols), three-dimensional (generation occurs on three coordinates) and fractal, suitable for creating patterns, types of graphics.

Therefore, there are 5 fundamental types of computer graphics, each of which is unique and necessary for programmers in its own way, and their selection occurs depending on the situation.

Undoubtedly, computerized graphics, in all its diverse forms, are used by both professionals and ordinary users in various fields. Now let's look at the areas of life in which it is most often used.

Presentation graphics, which are graphical representations of information, were discussed at the beginning of the article. Good examples include charts and graphs showing the relationships between multiple parameters.

Entertainment. Computer graphics techniques are used in the creation of videos, television shows, games, cartoons, and other products. The graphics must be as close to the real image as possible.

Computer-aided design (CAD) makes extensive use of graphics in the design process, particularly for engineering and architectural systems. It is regularly used in the design of buildings, automobiles, aircraft, computers, textiles, and many other products.

Computer graphics also play an important role in drawing and art, image processing and, of course, in the area of communication between two or more people.

As of 2023, trends in this area include minimalism, which allows for the communication of information without unnecessary details, as well as various gradients and abstract shapes. Significantly, the number of objects created by so-called artificial intelligence is increasing.

Conclusions

Thus, computer graphics occupy a vital position in the modern world and in the field of information technology as a whole. As society evolves, so too does graphics. Today, its varieties are used in a wide variety of industries, from the design of complex drawings to the creation of animated films

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