

TYPES OF COMPUTER GRAPHICS AND THEIR PRACTICAL IMPORTANCE IN HUMAN LIFE

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Abstract: This article provides an overview of the types, characteristics of computer graphics and its practical significance in human life.

Keywords: computer graphics, raster graphics, vector graphics, fractal graphics, engineering computer graphics, slide show.

Computer graphics are divided into three types: raster graphics, vector graphics and Fractal graphics. They differ from each other in that they can be depicted on the monitor screen and printed on paper.

Raster graphics. On a raster graph, the image is formed using dots (on paper), pixels (on the screen). Naturally, the greater the number of points (the denser they are placed), the more clearly the figure, shape, graphics, etc based on it. In this regard, the concept of the screen resolution capability is introduced, in which the number of points in the horizontal and vertical directions is important, and it is called the screen resolution capability¹.

As a rule, such an indicator is given at a peak of 640x480, 800x600, 1024x768 or higher than this. This parameter is measured in dpi (dots per inch - the density of the number of points). Screen diagonal 15 inch (1 inch = 2,54 CM) monitor image size is 28x21 CM. Taking this into account, the display capacity of the 800x600 Pixel monitor screen will be equal to 72 dpi. So it is not difficult to understand that the Color Image in the computer memory takes up a lot of space. For example, a picture of 10x15 CM will consist of approximately 1000x1500 pixels. If we take into account that 3 bytes of memory is used to describe each color point, then one medium-sized image itself occupies about 4 million bytes of space in memory. Such information should be taken into account, in particular, when creating internet pages. Therefore, for the creation of good multimedia programs, videos at the moment, it is worthwhile to use computers whose RAM is not less than 128 Mb and, accordingly, the speed is greater.

¹ Тураев Х. А. АЙЛАНИШ СИРТЛАРИНИНГ СОЯЛАРИНИ ЯСАШ ОРҚАЛИ ТАЛАБАЛАРНИНГ ФАЗОВИЙ ТАСАВВУРИ ВА ТАФАККУРИНИ РИВОЖЛАНТИРИШГА ОИД МЕТОДИК ТАВСИЯЛАР //Science and Education. – 2020. – Т. 1. – №. 8.

This means that a high-performance computer is required to work with raster graphics. As a drawback of raster graphics, we can say that as a result of the process of image manipulation (magnification, reduction), the accuracy of the image can become blurry with the measurement of points, and even, the image can be changed to an unrecognizable extent.

Raster graphics is widely used in electronic (multimedia) and printing publications. When creating various illustrations in publications, usually a digital photo or video camera obtained through a scanner (now such a camera and video cameras are widely used) or from images made by an artist, a designer. Therefore, in raster graphics editing software tools are widely used. These programs usually ensure that the images are more clearly visible.

Vector graphics. In vector graphics, a line is considered as the main element of the image. As a line, a straight line or a curved line can be obtained. In a raster graph, such lines are created with the help of dots (pixels), while in a vector graph, when creating images, lines that are more general than points are used, and therefore, on the account of which, the images will have a clearer appearance. The advantage of vector graphics is that the image takes up less space in memory, since in this case the space in memory is not dependent on the line size. The reason for this is not in the memory itself of the line itself, but in the storage of the formula or parameters that represent it. An optional image of a vector graphic consists of lines and is formed from simple lines of ink. Most often, vector graphics can be called an object-oriented graphics. Because in such, for example, to form a triangle, it is possible to form it only by using a triangle to form it in the pyramid, if 3 lines (cross-section) are used. A vector graph can also be called a calculated graph, since before displaying the image (object), its coordinates are calculated and corresponding points are formed. The mathematical basis of vector graphics is the study of the properties of geometric figures. As you know, the point is represented by 2 (x, y) coordinates in the plane, $y=kx+b$ in the canonical form of a straight line, and the intersection is described by giving the corresponding starting and ending point. Curved lines also have their own equations, respectively. Vector graphics are mainly oriented to create illustrations. Vector graphics are widely used in advertising agencies, design agencies, publishing houses and other places. As an example of programs that work with vector graphics, Adobe Illustrator, Macromedia Freehand and Corel Draw graphics programs can be cited.

Fractal graphics both are calculated graphs, and its difference from vector graphics is that in this no objects are stored in the computer memory. Because the images are formed in equations or their systems. Therefore, in memory, equations are stored only. As a result of changing parameters related to equations, different images

are formed². Fractal graphics are used for automatic creation of images based on mathematical calculations. Therefore, as its basis, the programming method for creating images, shapes, images was chosen. These charts are usually widely used in modeling, analyzing various processes, creating various interesting programs. It is possible to distinguish the following categories of computer graphics:

- commercial graphics;
- demonstration graphics;
- engineering graphics;
- scientific graphics;
- visual graphics;
- animated graphics;
- machine graphics;
- interactive graphics.

Trading charts it serves to display information in spreadsheets or in a given database. This information can be displayed on the exposure screen in graphics, histogram, diagram and any other views you want. Such graphics are provided with text annotations and conditional annotations in certain places.

The package of applications related to commercial graphics is aimed at quickly and conveniently representing the image on the screen, since the main purpose of the trader is to quickly discuss the changes in the process of information processing and to give an indication of the appropriate decision-making. Role to further enhance your imagination, these packages include the ability to visualize the image in the form of a variety of graphics. This, in turn, increases the possibility of viewing and analyzing all types of images together on the screen. The most important aspect of these packages is that they not only give the images a different shape, but also give the opportunity to analyze the reflected graphics. For this reason, these packages include various methods of mathematical analysis, including statistical analysis, probability theory, economic process prediction, which makes it possible to analyze a given set of information.

Graphics for the show - it serves to create a machine image of documents such as text, scheme, sketch and prepare it for display. The main task here is to create high-quality and beautiful looking images. The most preferred aspect of this type of chart is that it can quickly change the set and appearance of the images in it.

Engineering graphics - such graphics are widely used in the automation of drawing, design and construction work. Engineering graphics includes all stages of

² Mamatkulov S. N., Ibragimova K. National and Universal Content of Fine Arts. Ancient History and Development of Fine Arts of Uzbekistan //The American Journal of Social Science and Education Innovations. – 2020. – T. 2. – №. 08. – C. 195-198.

automation of the work of analysis, synthesis, modeling, drawing, management and the like design.

Scientific graphics - it serves for scientific research and is used in the research of geographic, physical, biological and other processes. The main purpose of the scientific graph is the visualization of the information generated in scientific research - the expression in a conspicuous form. Especially this direction is widely used in the research of atomic energy sources, in Cosmonautics, in aircraft, in geography and Oceanology - in the study of rapid processes, in which the coverage is large. It can also be used to describe the results of scientific research in the desired form in the form of diagrams, maps, tables and various mathematical formulas.

Visual charts - it is the projection of the demo and commercial charts, which constitute the sum of both chart opportunities. This graph makes some of the graphs as a slide show consisting of a sequence of slides and then displays it on the screen over a certain period of time in the form of a series of views. The image of each slide on the screen can be taken with the addition of sound and visual effects. There is also an option to edit the finished chart.

In animated graphics - the success in working with color has been combined with the advances in modeling three-dimensional objects in engineering graphics (for example, the inclusion of advertising ads and the inclusion of the latter into one image in the broadcast).

Machine graphics - this is a unit of computer graphics that serves to create and store the object forms, its model with the help of a computer. It is possible to create different graphic images on the computer, but they differ from each other, since modern computers have the ability to accurately depict shapes and interact with special programs in relation to systems of the 90-ies of the last century³.

Interactive graphics - it is one of the most basic sections of computer graphics, in which the user will be able to control the image dynamically, that is, it will control the shape, dimensions and colors of the image on the monitor surface with the help of an interacting device (keyboard or mouse).

It is possible to create clear and abstract objects image in computer graphics and to depict these images in two ways:

- the Observer is non-excitable and can observe the subject in front of him her as much as he she - this is the panorama effect;
- the object is fixed so that the observer can turn around and watch - this is the camera effect.

³ Toshpulatov F. U., Mominov B. K., Mamatkulov I. C. Determination of Sections of General Surfaces of the Second Order on Predetermined Circles //The American Journal of Interdisciplinary Innovations and Research. – 2020. – T. 2. – №. 11. – C. 21-26.

After the creation of interactive graphics, it became one of the most basic technical objects in the creation and preparation of images in television and photography. One of its achievements is the formation of synthesized abstract objects, images with the help of exposure. The man got rid of a lot of tedious and various trifles (from reviewing a large number of text sheets and finite materials) during the use of machine graphics. Although static images are good at delivering data, in many cases dynamic variable images prevail over them. In life, images that change mainly during the process-dynamically changing images (bending of the wing of a fast flying aircraft at the speed of sound or changing during the life of a person's image). Dynamic images help to see the silences and motions of the objects on the fullness without excitation.

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