

Novel graphic editor Images Generator.

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30.05.2010

The program Images Generator is characterized by the small sizes and convenience of using and at that has ample opportunities, some of which are unique. It is achieved by using of new ideas, which can be used in other programs too. In this work the description of solutions, on the basis of which the Images Generator is executed, is given. The program belong to raster graphic editors though has a number of properties of vector graphic editors. The important component of vector graphic editors is use of complex curves. Usually vector graphic editors have a plenty tools for obtaining such curves. The Images Generator has no large amount of tools for this purpose. In program other approach is applied. The program has a plenty of the built - in shape templates as a rhombus or parallelogram and mathematical curves such as a sinusoid or a parabola. For obtaining of a complex curve the method, allowing building a curve by a combination of shapes, mathematical curves, splines and the lines, obtained by dragging the mouse, is used. The essence of a method consists in selection of a part of the raster image with use of its color properties. The border of Selection determines a required curve. Such method is characterized by simplicity and efficiency.

Border of Selection is the closed not crossed line consisting of points which color belongs to the given range. We shall call such points as points of range (PR). There are two variants of obtaining Selection. At the first variant points of border of Selection belong to Selection and does not exist such PR which are adjacent with points of border and do not belong to Selection. At the second variant points of border of Selection do not belong to Selection and does not exist such PR, which are adjacent with points of border and belong to Selection. Hence, Selection can consist only from PR, consist of such points in part or do not have such points in general. For each of two variants there is a set of modes, which allow you to determine measure of closeness of points of image depending of their color. In these modes such measures of closeness are used - size of one of components of RGB or HSL color models, their any combination and the sum of components of RGB color model. To select a part of the image it is necessary to choose a mode, to set the tolerance value and to click the mouse in a point of the image. Image point, in which you click the mouse, belongs to Selection. Type of Selection depends of this point. The obtained complex curve can be used for an opposite task - selection of a part of the image. For that the curve position can be determined by dragging the mouse. Its scale and proportions can be preliminary changed.

To the selected image area graphic filters and converters can be applied. The selected area can be saved in memory

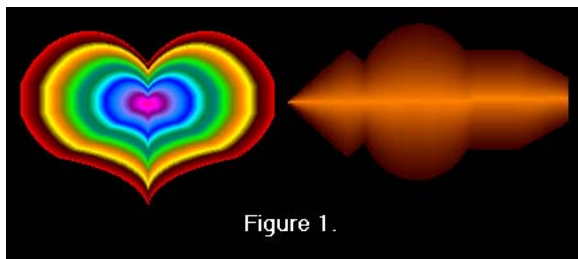


Figure 1.

and can be displaced by the mouse to required position. It allows creating collages and the complex combined figures. The selected area of the image can be painted over with one of numerous ways. Used fill methods include such methods, which take into account a configuration of border of the Selection. Some of these methods are based on using of lines, which configuration is determined by the shape of border of Selection. The selected area is painted over by realization of lines that are uniform located with high density. For each of line color from specified color sequence and a

level of a transparency are set. It provides a number of graphic effects, including volumetric effect. Color of a line is set with the help of the color panel of program dialog window. The color panel allows using a number of functions for specifying the length of a color sequence and order of colors in it.



Figure 2.

Complex curves can be used for realization of multi-color lines and lines of variable width. For obtaining of a multi-color line the complex curve is segmented and for each segment with the help of the color panel color or a sequence of colors is set. Similarly for a line of variable width for each segment of a line the law of change of width, for example exponent or the sine wave law, is set. Multicolor lines of variable width may be used for example for drawing of symbols.

The important tool of graphic editors is the tool brush. The typical tool brush provides drawing of raster image at moving of the mouse. In the Images Generator two versions of the tool brush are used. It is a Raster brush and a

Vector brush. Raster brush tip is raster image. Vector brush tip is vector image. Both raster and vector images are created by the user. As raster image selected area of source image is used. As the vector image the multi-color lines are used.

The drawing of images is carried out at moving of the mouse. Besides in the program trajectories are used. As a trajectory the complex curves are used. To obtain vector image and trajectory the same described above methods are used. Use of trajectories enables to change frequency of drawing of images and to specify angle of turn of the images in points of trajectory.

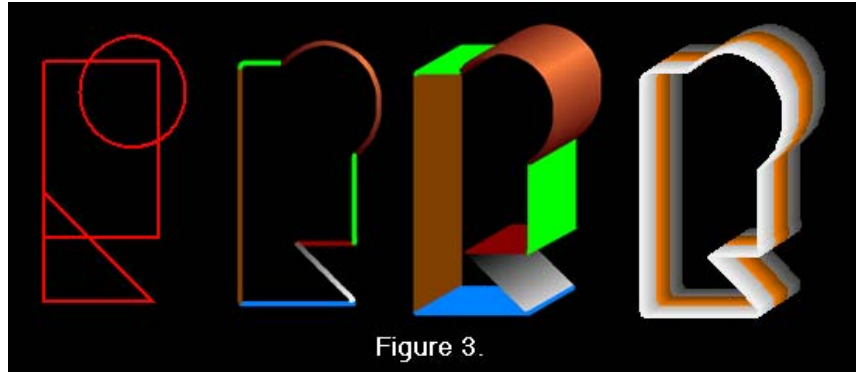


Figure 3.

If Vector brush is used together with trajectories complex functional dependences of change of the sizes of the image in a vertical and horizontal direction along a trajectory can be specifying. There are two variants of creation of images. At the first variant in a points of a trajectory drawing of multi-color lines, from which vector image consists, is realized. At the second variant drawing of lines by the only one color from a color sequence is realized. Obtaining of a color sequence is carried out with the help of the color panel. The amount of colors in a color sequence can be specifying equal to amount of points of a trajectory in which drawing of lines is realized. Using of Vector brushes provides ample opportunities for creation of images, in particular, for creation of volumetric images. The volumetric images created in such way it is difficult create other ways.

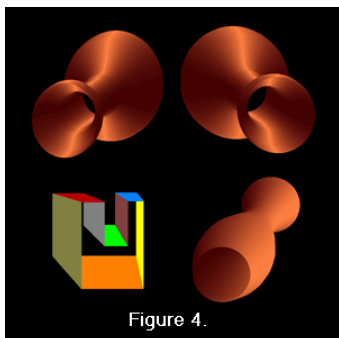


Figure 4.

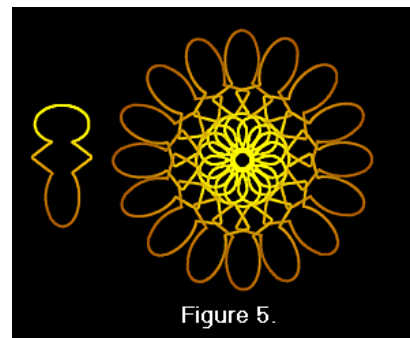


Figure 5.

In the Images Generator the novel method of transformation of raster images is used. Type of transformation is determined by obtained by the user complex curve and by choosing one of modes of transformation. Modes of transformation are divided on two parts. One part of modes provides compression of the image in a vertical and horizontal direction or to the center of the image. Other part of modes of transformation provides enlargement of the image in a vertical and horizontal direction or to the center of the image too. These methods allow obtaining realistic high-quality images. One of the important areas of their use is processing of photos.



Figure 6.

The Images Generator, as well as any modern graphic editor, has a plenty of filters and converters. The full set of the basic tools of two-dimensional graphics is included in the program. Adjustment of color characteristics of the selected

image area is carried out simultaneously on 13 parameters. The program allows opening files of 37 formats and provides saving files of 24 various formats.

The scope of the Images Generator covers all basic directions of use of graphic editors, including Web graphics. Most effectively the program is used for creation of textures, for creating 3D images and for processing photos.

The program is accessible to users of an initial level and is of interest for professional artists and designers.

Images Generator Links:

Site: <http://www.imagesgenerator.com>

Download: <http://www.imagesgenerator.com/ImagesGeneratorSetup.exe>

Abstract

The program Images Generator is characterized by the small sizes and convenience of using and at that has ample opportunities, some of which are unique. It is achieved by using of new ideas, which can be used in other programs too. The program allows creating complex volumetric images, which are difficult for creating by other ways. In the program the unique raster image transformation technology is used. It makes easy not only to create high-resolution images but also generate cartoons, shapes, and other effects. Using of multi-color lines of variable width provides a number of original graphic effects.

In this work the description of solutions, on the basis of which the Images Generator is executed, is given.

Figure captions.

Figure 1. Fill in view of the shape of border of the selected image area.

Figure 2. Multicolor line of variable width.

Figure 3. Using Vector brush and trajectory for creation of volumetric images.

Figure 4. Creating images with using change of the sizes of vector image along a trajectory.

Figure 5. Result of rotation of vector image shown left of the figure around of the center.

Figure 6. Right part of figure is result of application raster image transformation method to left part of figure.

Keywords.

Shapes, shape templates, multicolor lines, creating images, 3D graphic, volumetric images, Vector brush, Raster brush, graphic editors, graphic tools

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