

## VISUALIZATION OF THREE-DIMENSIONAL OBJECTS WITH THE USE OF OPENGL

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Today, computer technology permeates all areas of human activity. An important place is occupied by computer graphics, which are used almost everywhere - photo processing, automatic design systems, virtual reality systems, cinema, etc.

The aim of this work is to develop algorithms for describing three-dimensional objects using the capabilities of OpenGL.

The paper considers various methods of constructing three-dimensional objects:

- polygonal models;
- voxel models;
- spline models using interpolation polynomials, Bézier splines, B-splines.

The developed algorithms were tested when modeling more or less complex objects - see

Fig.1

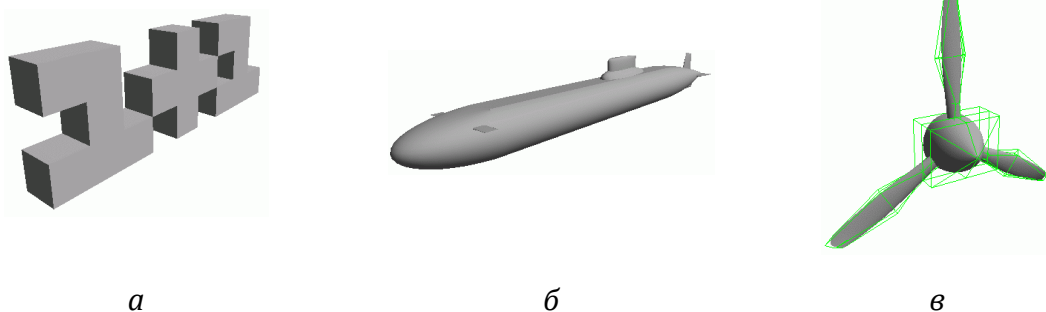


Fig. 1 – Examples of implementation of models: *a* – example of a polygonal model:

*b* – model of a submarine assembled from several Bezier surfaces;

*c* – the model of the aviation screw set by cubic surfaces of Bezier with display of a grid of reference points

The methods of construction of three - dimensional images using polygonal and spline models are considered in the work. The use of the above models to represent test scenes confirmed the sufficient effectiveness of the considered methods.

### Reference list:

1. *Veselovskaya G.V. Computer graphics: textbook. pos. / G.V. Veselovskaya, V.E. Khodakova. Kyiv: Condor, 2015. 584 p.*
2. *By M. OpenGL. Official programmer's guide / M. By, N. Nader, T. Davis, D. Schreider. St. Petersburg: Peter, 2006. 642 p.*