ARCHITECTURAL VISUALIZATION

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Visualization is any technique for creating images, diagrams, or animations to simplify data understanding. In architectural design visualization is the creation of building or landscape image enough close to reality. The image is built according to general layouts, fronts and profiles of a structure, topographical maps and other drawings.

Visualization helps to visually represent shapes and sizes of designed building, materials of which it is composed and helps to imagine it in the existing environment. This, in turn, permits to optimally satisfy requests to structure appearance taking into account architectural standards.

Now visualization is used in many architectural and engineering design firms. It is made with the help of computers and special CAD and three-dimensional modeling software. It becomes very effective in cases of complex structures. So studying the principles and methods of visualization is an enough actual problem. The process of visualization includes three main steps. The first one supposes the digitization of necessary parts of structure drawings if they were made on paper. The next step is building of the 3d structure model. In our work the Autodesk AutoCAD software was chosen for these two steps as enough universal and functional. All parts of building can be obtained using a set of simple operations such as contour extruding, subtraction, union, rotation, translation, mirroring etc.

The third step includes material design and its assignment to the corresponding group of building parts. Each material in graphical software is an analog of a real material and has the same properties as color, transparency, reflectivity, refractivity, roughness etc. It can be represented with a texture which then particularly covers the whole surface of building parts. Then virtual light sources, cameras and environmental elements are added to the scene with building, shooting foreshortening and background are selected. For the purposes of this step the Autodesk 3ds max software was used. It permits to reach enough reality of building images after appropriate settings.

The last step of visualization is scene rendering which goes without manual intervention. It is a process of surface brightness computation called ray tracing and final image preparation.

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