VISUALIZATION OF SPATIAL ENVIRONMENT BY MEANS OF 3D MODELING

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Keywords: 3D modeling, computer graphics, spatial environment, texture overlay, rendering.

Nowadays 3D modeling is actively used in a wide variety of spheres, from industry to entertainment. Interior visualization is one of the fields of three-dimensional computer graphics.

The aim of this work is to visualize spatial environment for 3D tour application by using the capabilities of the Blender 3D editor.

**Materials and methods.** Consider the modelling phases of spatial environment.

At the first stage a technical requirement based on photographs of the rendered room, drawings and room plans is prepared.

Next, the environment is modeled in the Blender 3D editor by connecting vertices and edges in three-dimensional space, polygons are created. That makes up environment objects: furniture, equipment etc.

At the next phase textures are applied to the 3D model. Physical properties of materials like relief, surface transparency, reflectivity and others are considered in more detail. All these properties are configured in the Blender Shader Editor.

Rendering is the final stage of spatial visualization. During rendering, the lighting is selected and the last changes are made to the scene.

Findings and their discussion. As a result of the 3D visualization process 3D interior environment was developed for later using in VR application of the 3D excursion. In the picture number 1 you can see the image of one of the scenes of the 3D tour application.
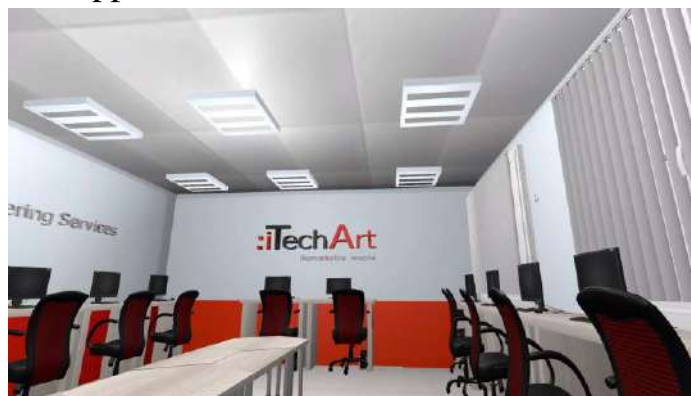
Picture 1 – Scenes of the 3D tour application

Conclusion. 3D graphics allows you to convey accurately the volume and the depth of space, and the materials attached to the objects add realism to the environment, which allows you to recreate accurately the subject-spatial environment.

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APPLICATION OF AUGMENTED REALITY FOR IMPROVING EDUCATION EFFECTIVITY

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Keywords: augmented reality, AR, mobile application, web application.

The article discusses the advantages of using augmented reality in the process of teaching students and schoolchildren. The description of a mobile application and a web application for visualization of educational materials on the pages of textbooks is presented.

The relevance of the work. To date, augmented reality technologies are actively developing and are being used in various spheres of activity-news. As for the field of education, augmented reality technologies are a fundamentally new approach to accompany educational materials with visual images.

The aim of the work is to develop a mobile application that complements any textbook with digital materials using augmented reality technology, as well as a web application for the management of augmented reality objects.

Material and methods. The research material is the creation of a qualitatively new level of information and subject environment for students due to their "immersion" in three-dimensional augmented reality, which gives the student the opportunity to simulate the feeling of direct contact with objects, contactless control of them, simulate reality by actualizing the effect of personal presence and participation in processes occurring on the screen of a smartphone or tablet, interaction with objects or processes that are reflected on the screen, the implementation of which is impossible in reality[3].

The paper uses experimental-theoretical research methods: analysis and synthesis, abstraction, formalization, modeling.

Findings and their discussion. The information saturation of the modern world requires special preparation of educational material before its presentation to students. One of the effective technologies for activating learning is the method of visualization of educational information, which has firmly taken its place in the educational process. The use of visual forms of assimilation of educational information allows you to change the nature of learning: accelerate percep-