

POSSIBILITIES OF THREE-DIMENSIONAL PROGRAMS IN INFORMATION TECHNOLOGIES

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Abstract. *Possibilities of three-dimensional programs in information technologies.*

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Three-dimensional programs, also known as 3D programs, have a wide range of applications in information technologies. Some possibilities include:

3D programs are commonly used in CAD software for designing and modeling objects or structures in three dimensions. This is particularly useful in architecture, engineering, and industrial design.

3D programs are essential for creating immersive virtual environments in VR and AR applications. They allow users to interact with and navigate through virtual spaces in a realistic manner.

3D programs are extensively used in the entertainment industry for creating animated movies, TV shows, video games, and visual effects. They enable artists to bring characters, objects, and environments to life in a dynamic and visually appealing way.

3D programs play a crucial role in medical imaging technologies such as MRI, CT scans, and ultrasound. They help medical professionals visualize complex anatomical structures and diagnose conditions more accurately.

Businesses use 3D programs to create realistic product renderings for marketing purposes. This allows customers to see how a product will look before it is manufactured.

3D programs are used for simulating real-world scenarios in fields such as physics, engineering, architecture, and urban planning. They help researchers analyze the behavior of complex systems and predict outcomes.

Overall, the possibilities of three-dimensional programs in information technologies are vast and continue to expand as technology advances.

Professional knowledge in the field of computer graphics and knowledge of the basics of programming in the field of computer graphics are currently the required qualities of a modern specialist

Learning about 3D graphics and 3D modeling programs is important for the following reasons: many professions require computer graphics skills, its development is rapid every year, and many human activities covers For example, cinematography, video, multimedia, various pedagogical programs, visualization of scientific experiments - all this is done with the help of computer graphics in our time. All educational institutions are transitioning to training

sessions using modern informational teaching tools, but career interest and skills need to be inculcated at an early age.

Today, 3D technologies are widely used in advertising practice and marketing system. Famous companies such as Coca-Cola, Adidas, Cavalli, Ferrero, McDonalds are widely using 3D advertising. According to experts, 3D technologies will revolutionize the production of goods. The development of this technology is ushering in a new era. Widespread use of 3D technology has led to the emergence of a new class of entrepreneurs. The number of new companies operating in this field is increasing.

Application of 3D technologies in world industry by sectors.

3ds MAX program: This program uses the technology of dragging objects with the mouse, drawing, paints, eraser, etc.

This program is developed only in English version, the interface is very simple, but without knowing English, it will not be easy to understand this program. The main features of the free program are: drag and drop with the mouse, deformation of objects, a large database of shapes, polygonal modeling, animation, import of objects, export of scenes to files. However, the Russian font is very poorly received in this program, so you need to know English to work in this program. Blender program:

Studying this program, it can be noted that there are basic tools used for professional 3D modeling. The program is available in Russian and English, freely available. Main features: various geometric primitives, built-in rendering mechanisms and integration, animation tools, task automation, file import and export, non-linear editing and video combination, interactive functions, fast modeling, so karak "hot" keys there is. However, the program also has its drawbacks: a dark interface and blender crashes from time to time, so you often have to save the project. GoogleSketchUp program: Developer Google, available in Uzbek and Russian versions, freely available. Features: basic and special modeling, working with styles, scenes, creating three-dimensional text, ready working with models, supporting 3D graphic formats. With this program, you can create and draw drawings of any complexity and do it quickly. Vector. In addition to programs that are included in the main study at school, such as Paint, i.e. Compass, there are other interesting programs designed to study a specific field of graphics separately.

What is 3ds max?

Autodesk 3ds Max (formerly 3D Studio MAX) is a full-featured professional animation and 3D graphics creation and editing program developed by Autodesk. Includes state-of-the-art tools for multimedia professionals and artists.



Features and differences between 3Ds max 2023 and 3Ds max 2024



Three-dimensional (3D) programs have revolutionized various fields within information technologies (IT). These programs allow for the creation, manipulation, and visualization of objects in three dimensions, offering numerous possibilities and applications. Here's an overview of how 3D programs are transforming IT:

1. 3D Modeling and Design

- **Computer-Aided Design (CAD):** 3D CAD programs like AutoCAD and SolidWorks are essential for engineering, architecture, and product design. They allow for precise modeling of complex structures and components.

- **Animation and Graphics:** Software such as Blender, Maya, and 3ds Max is used in film, video games, and virtual reality (VR) to create detailed and lifelike animations and graphics.

2. Virtual Reality (VR) and Augmented Reality (AR)

- **Immersive Experiences:** 3D programs enable the development of immersive VR and AR experiences, which are used in gaming, training simulations, education, and virtual tours.

- **Medical Training:** VR and AR technologies allow medical professionals to practice surgeries and procedures in a risk-free virtual environment.

3. 3D Printing

- **Prototyping and Manufacturing:** 3D printing, driven by 3D modeling software, allows for rapid prototyping and production of complex parts and products. This technology is used in industries ranging from aerospace to healthcare.

- **Customization:** 3D printing enables the creation of customized products, such as medical implants tailored to individual patients.

4. Geospatial Technologies

- Geographic Information Systems (GIS): 3D GIS programs like ArcGIS provide detailed visualizations of geographical data, aiding in urban planning, environmental monitoring, and disaster management.
- Mapping and Navigation: 3D mapping tools enhance navigation systems and location-based services, providing more accurate and detailed maps.

5. Simulation and Analysis

- Engineering Simulations: 3D simulation tools are used to model physical phenomena such as fluid dynamics, structural integrity, and thermal analysis. Software like ANSYS and COMSOL Multiphysics are widely used in engineering.
- Behavioral Simulations: In fields like robotics and autonomous systems, 3D simulations help in testing and validating the behavior of systems before deployment.

6. Education and Training

- Interactive Learning: 3D educational tools create interactive and engaging learning environments. Platforms like Unity and Unreal Engine are used to develop educational games and simulations.
- Virtual Classrooms: VR classrooms provide immersive learning experiences, allowing students to interact with 3D models and environments.

7. Healthcare and Medicine

- Medical Imaging: 3D imaging techniques such as CT scans and MRIs provide detailed views of the human body, aiding in diagnosis and treatment planning.
- Surgical Planning: Surgeons use 3D models of patient anatomy to plan and rehearse complex surgeries.

8. Architecture and Construction

- Building Information Modeling (BIM): BIM software like Revit and ArchiCAD allows for the creation of detailed 3D models of buildings, improving design accuracy and project management.
- Virtual Tours: 3D walkthroughs and virtual tours enable clients to explore architectural designs before construction begins.

9. Entertainment and Media

- Film and Animation: 3D animation software is used to create stunning visual effects and animated films. Studios like Pixar and DreamWorks rely heavily on 3D technology.
- Video Games: 3D engines like Unity and Unreal Engine power the graphics and physics of modern video games, creating realistic and immersive gaming experiences.

10. Retail and E-commerce

- Product Visualization: 3D models allow customers to view products from all angles, enhancing online shopping experiences.
- Virtual Try-Ons: AR applications enable customers to virtually try on clothing, accessories, and even home furnishings before making a purchase.

Conclusion. Three-dimensional programs are integral to modern information technologies, enhancing visualization, design, simulation, and interactivity across various fields. As technology continues to advance, the possibilities for 3D programs will expand, driving innovation and improving efficiency in numerous industries.

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