DIGITAL PAINTING, 3D MODELING AND SMART TECHNOLOGIES IN ART

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In this paper, we aim to explore emerging artistic movements and the innovative technologies utilized in their creation.

Digital paintings are produced by artists using specialized software that simulates traditional artistic tools like paints, brushes, and pencils. These artworks originate as digital files, ensuring their integrity is maintained when reproduced on physical media such as paper, canvas, or acrylic glass.

It is important to recognize that the virtual toolkit of traditional artistic elements is not exhaustive. Beyond these, computers can employ unique tools and effects that have no physical counterparts. This capability distinctly separates digital paintings from their non-digital counterparts.

Specific digital traits include: Sharp transition between color panes, transparency, symmetry, exact repetition, perfect circles, squares, and other shapes, embossing, shading, and other 3D illusion, perfectly smooth gradients, 100% monochrome color planes, slalom or flip forms, effects of automatic transformations (mirror, ripple, swirl, shear, multiply, etc.).

Considering variations in methodology and visual characteristics, five primary approaches can be identified: Computer-generated or generative painting, raster painting, vector painting, hybrid painting and vector-raster combined, new photography.

Many of these areas are heavily dependent on technology. Changes in software will be reflected in digital illustrations.

3D modeling is the process of creating three-dimensional graphics or volumetric objects using specialized software. It begins with a grid, which consists of a set of points in space. These points are connected to form polygonal shapes, creating the surface of the object by combining them into a cohesive three-dimensional structure.

3D modeling is widely used across various industries, including: Video games, animation, medicine, advertising and marketing, architecture.

During the modeling process, parameters such as shape, size, and texture can be adjusted to refine the object.

The most common method is Polygonal Modeling, the earliest technique in 3D modeling that represents the object using a grid of polygons.

Another method is Spline Modeling, which creates complex geometric surfaces using curves, such as splines and NURBS (Non-Uniform Rational B-Splines). This technique constructs a spline framework to form a three-dimensional surface, ideal for modeling intricate objects.

A newer approach, Digital Sculpting, allows users to interact with the model as if it were clay. This technique enables pushing, pulling, and shaping the virtual "clay" to create detailed objects. Despite being relatively recent, digital sculpting has gained popularity in recent years.

One of the first digital painting technologies ever created is a graphic tablet. Its ancestor was the telautograph, invented by Elisha Gray, which was used by hospitals to share information over long distances.

The first graphic tablet was created in 1957 and was used for handwriting recognition by computers.

After that invention, a new chapter in history was created. The graphic tablet became a significant part of creating modern art. Most cartoons in the 21st century were created using graphic tablet technology.

Most digital paintings are created with modern software. The list of the most popular applications includes: Photoshop, Illustrator, After Effects, InDesign.

One of the newest modern art technologies is three-dimensional printing. It is highly useful technology that has created a new wave of artists who are making amazing creations using this tool. If we consider all the opportunities provided by three-dimensional printers, over 80% of them are considered art. These range from simple plastic knick-knacks to printed bio-fabrics and components for spaceships.

A notable mention is three-dimensional cutting. Nowadays, this technique is closely connected to three-dimensional printing and is used to cut a wide range of materials, from wood to granite.

In conclusion, all modern art techniques have created new dimension of art. These innovations have significantly influenced not only the art industry but also science, opening a new universe for modern society.

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