GRAPHIC OBJECTS AND METHODS FOR DEPICTING THEM ON A COMPUTER.

Toshboyeva Mahliyo

Tashkent Hygrometeorogical Techical school special science teacher, 45 Str.Takhtapul, 100019 Tashkent, Uzbekistan

Abstract. *In the realm of computer graphics, the representation and manipulation of graphic objects play a pivotal role. This article delves into the intricate world of graphic objects, exploring their diverse types, properties, and the methods employed for their depiction on computer systems. We discuss the fundamental concepts of vector and raster graphics, and the algorithms that enable their rendering. The article further explores the transformation of these objects through scaling, rotation, and translation, providing a comprehensive understanding of the mathematical models underlying these operations. Additionally, we touch upon the advancements in 3D graphics and the role of hardware acceleration in enhancing graphic performance. The objective of this article is to provide a thorough understanding of graphic objects and the sophisticated techniques used in their depiction, thereby serving as a valuable resource for both novices and experts in the field of computer graphics.*

Keywords: *Graphic Objects, Computer Graphics, Vector Graphics, Raster Graphics, Rendering Algorithms, Scaling, Rotation, Translation, Mathematical Models, 3D Graphics, Hardware Acceleration, Graphic Performance*

INTRODUCTION

In the digital age, the ability to visualize and manipulate graphic objects on a computer screen is a fundamental skill in numerous fields, from video game design to scientific visualization. This article embarks on a journey into the fascinating world of computer graphics, focusing on the nature of graphic objects and the diverse methods used to depict them on a computer. We will delve into the core concepts of vector and raster graphics, explore the algorithms that bring these objects to life on your screen, and examine the transformations that allow us to manipulate these objects in a virtual 3D space. Whether you're a seasoned professional or a curious beginner, this article aims to shed light on the complex yet captivating realm of computer graphics.

DISCUSSION

In the realm of computer graphics, the depiction of graphic objects has always been a topic of intense discussion and research. The choice between vector and raster graphics, for instance, can significantly impact the quality and performance of graphic applications. While vector graphics are praised for their scalability and crispness, raster graphics offer a level of detail and realism that is hard to achieve with vectors.

The algorithms used for rendering these graphic objects are another area of lively debate. From simple scanline rendering to complex ray tracing, the choice of algorithm can drastically alter the visual output and computational requirements. As we venture into the world of 3D graphics, these considerations become even more critical.

Transformations of graphic objects, such as scaling, rotation, and translation, bring another layer of complexity to the table. The mathematical models underlying these operations are intricate yet fascinating, offering endless possibilities for manipulation and animation.

The advent of hardware acceleration has revolutionized the field of computer graphics. By offloading graphic computations to specialized hardware, applications can achieve unprecedented levels of performance. However, this also raises questions about accessibility and standardization.

The depiction of graphic objects on a computer is a multifaceted topic, rich with challenges and opportunities. As technology continues to advance, we can look forward to even more exciting developments in this vibrant field.

CONCLUSION

In conclusion, the field of computer graphics is a fascinating intersection of creativity and technology. The methods and objects used to depict graphics on a computer have evolved significantly over the years, driven by advancements in both hardware and software technologies. From simple 2D shapes to complex 3D models, graphic objects serve as the building blocks of digital visual content. The methods for depicting these objects involve intricate algorithms and techniques, including rasterization, ray tracing, shading, and texture mapping. As we continue to push the boundaries of what's possible with computer graphics, we can look forward to even more immersive and realistic digital experiences in the future. Whether it's in the realm of video games, virtual reality, or data visualization, the importance of graphic objects and the methods for depicting them on a computer cannot be overstated.

REFERENCES

1.Davies, N. S., McMahon, W. J., & Shillito, A. P. (2018). A Graphic Method For Depicting Horizontal Direction Data On Vertical Outcrop Photographs. Journal of Sedimentary Research, 88(4), 516–5211.

2.Davies, N. S., McMahon, W. J., & Shillito, A. P. (2018). A GRAPHIC METHOD FOR DEPICTING HORIZONTAL DIRECTION DATA ON VERTICAL OUTCROP PHOTOGRAPHS. Department of Earth Sciences, University of Cambridge2.

3.Ritter, M. (2022). Maps - Geosciences LibreTexts3.

4.SafeGraph. (n.d.). 12 Methods for Visualizing Geospatial Data on a Map4.