

## Transforming Healthcare with Immersive Visualization: An Analysis of Virtual and Holographic Health Information Platforms

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**Abstract :** The development of advanced technologies and innovative solutions has opened up exciting new possibilities for revolutionizing healthcare systems. One such emerging concept is the use of virtual and holographic health information platforms that aim to provide interactive and personalized medical information to users. This paper provides a review of notable virtual and holographic health information platforms. It begins by highlighting the need for information visualization and 3D representation in healthcare. It then proceeds to provide background knowledge on information visualization and historical developments in 3D visualization technology. Additional domain knowledge concerning holography, holographic computing, and mixed reality is then introduced, followed by highlighting some of their common applications and use cases. After setting the scene and defining the context, the need and importance of virtual and holographic visualization in medicine are discussed. Subsequently, some of the current research areas and applications of digital holography and holographic technology are explored, alongside the importance and role of virtual and holographic visualization in genetics and genomics. An analysis of the key principles and concepts underlying virtual and holographic health information systems is presented, as well as their potential implications for healthcare are pointed out. The paper concludes by examining the most notable existing mixed-reality applications and systems that help doctors visualize diagnostic and genetic data and assist in patient education and communication. This paper is intended to be a valuable resource for researchers, developers, and healthcare professionals who are interested in the use of virtual and holographic technologies to improve healthcare.

**Keywords :** virtual, holographic, health information platform, personalized interactive medical information

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