Research and Application of Virtual Reality Technology in Product Promotion on the Web

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***Abstract*—This thesis explores the application of virtual reality (VR) technology in product promotion on the web, focusing on the development and implementation of 3D product modeling. The research covers the history and characteristics of VR technology, its application in various fields, and the use of the OpenSceneGraph library for web-based product promotion. The study demonstrates the potential of VR in enhancing the online shopping experience by providing interactive 3D product models. The thesis also highlights the challenges in implementing VR technology, such as the need for faster 3D modeling techniques and broader browser compatibility. The implementation involved creating 3D models of products, integrating them into web pages using the Firefox browser, and implementing interactive features such as click events to enable users to interact with the 3D models. The results show that VR technology can effectively enhance the online shopping experience, but further research is needed to improve the technology's performance and usability.**

***Index Terms*—Virtual Reality, Web Promotion, 3D Modeling, OpenSceneGraph, Interactive Product Experience**

I. Introduction

The thesis provides an overview of virtual reality technology and its integration into e-commerce, particularly in product promotion on the web. It traces the development of VR technology from the 1990s and highlights its increasing importance in various sectors such as education, entertainment, and commerce. The study emphasizes the role of VR in enhancing the online shopping experience through interactive 3D product models. The research focuses on the application of VR technology in the context of web-based product promotion, using the OpenSceneGraph library to create and display 3D models of products on web pages [1].

II. Methods

The research utilizes the OpenSceneGraph library for 3D modeling and rendering of products. The methodology involves creating 3D models of products, integrating them into web pages using the Firefox browser, and implementing interactive features such as click events to enable users to interact with the 3D models. The implementation process includes loading 3D models, setting up a clear background, applying effects like specular highlights, and adding interactivity through event handlers. The study also discusses the challenges in implementing VR technology, such as the need for faster 3D modeling techniques and broader browser compatibility [1].

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III. Results

The results of the study demonstrate that VR technology can effectively enhance the online shopping experience by providing interactive 3D product models. The implementation involved creating 3D models of a Genesis-Couple car, integrating them into web pages, and adding interactive features such as click events. However, the study notes that further research is needed to improve the speed of 3D modeling and expand its compatibility with different web browsers. The implemented functions include loading 3D models, setting up a clear background, applying effects like specular highlights, and adding interactivity through event handlers. The actual findings include the successful creation and display of 3D models of the Genesis-Couple car on web pages, but the study also highlights the need for optimization techniques to improve performance [1].

IV. Discussion

The thesis discusses the potential of VR technology in e-commerce, particularly in product promotion. It highlights the benefits of using VR for creating immersive and interactive product experiences. However, it also identifies challenges such as the need for faster 3D modeling techniques and broader browser compatibility. The study emphasizes the importance of optimizing VR technology for web-based applications to ensure a seamless user experience. The discussion also addresses the limitations of the current implementation, such as the need for more advanced optimization techniques to improve the speed and performance of 3D models [1].

V. Conclusion

The application of VR technology in product promotion on the web is a significant development in e-commerce. The study provides a detailed methodology for integrating 3D product models into web pages and highlights the need for further research to improve the technology's performance and usability. The implementation involved creating 3D models of a Genesis-Couple car, integrating them into web pages, and adding interactive features such as click events. The results show that VR technology can effectively enhance the online shopping experience, but further research is needed to address the challenges of faster 3D modeling and broader browser compatibility [1].

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