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3D APPLE WEBSITE

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ABSTRACT

The 3D Apple Website is an interactive web project that showcases Apple's products using modern web technologies. Built with **HTML**, **CSS**, **JavaScript**, **React.js**, **Three.js**, and **GSAP**, this project provides users with an engaging 3D experience, enhancing product visualization and interaction. The website leverages Three.js for rendering 3D models and GSAP for smooth animations, creating a visually appealing and immersive user experience. The main objective is to demonstrate how web technologies can be used to enhance product presentation in a dynamic and interactive manner. This project can serve as a foundation for future advancements in e-commerce, product showcases, and interactive web experiences.

Keywords: 3D web Design, Three.js, GSAP, React.js, Apple products, Frontend Development, Immersive Technology.

I. INTRODUCTION

The 3D Apple Website is an interactive and immersive web project designed to showcase Apple products using modern web technologies. By integrating **Three.js**, **GSAP**, **React.js**, **HTML**, **CSS**, and **JavaScript**, the website provides users with a visually engaging experience, allowing them to explore Apple products in a dynamic 3D environment.

Traditional e-commerce and product showcase websites rely on static images or simple animations, which limit user engagement. Our project overcomes this limitation by implementing real-time 3D rendering, smooth transitions, and interactive elements, enhancing the overall user experience and product visualization.

This project aims to demonstrate the potential of 3D web development in modern UI/UX design, making product showcases more engaging and interactive for users.

II. METHODOLOGY

- **Requirement Analysis** – Defined objectives and selected technologies like React.js, Three.js, and GSAP for an interactive 3D Apple showcase.
- **Tech Stack** – Used React for UI, Three.js for 3D models, and GSAP for animations.
- **3D Model Integration** – Optimized and imported GLTF models using React Three Fiber (R3F).
- **UI/UX Design** – Created a responsive, smooth, and interactive user experience.
- **Development** – Built modular React components, integrated Three.js scenes, and added smooth transitions.
- **Testing & Optimization** – Ensured cross-browser compatibility, performance tuning, and fast loading.
- **Deployment** – Hosted on GitHub Pages/Vercel, ensuring seamless navigation and interaction.

This structured approach ensured a high-performance, visually appealing 3D web experience.

III. WORKING

The 3D Apple Website is designed to provide an interactive and visually engaging experience for users exploring Apple products. The working process involves:

1. **User Navigation:**

- When a user visits the website, they can navigate between different product sections (iPhone, Vision, AirPods).

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2. **Rendering iPhone in 3D (React + Three.js):**
- The website loads a React-based application.
- Three.js is used to render a fully interactive 3D model of the iPhone.
- Users can rotate, zoom, and interact with the model dynamically.

3. **Smooth Animation for Vision & AirPods (Canvas + Image Sequences):**
- For Vision and AirPods, instead of 3D models, an image sequence technique is used.
- As the user scrolls, JavaScript detects the scroll event and updates the image frame.
- This creates a smooth transition effect, making the product appear 3D-like.

4. **Performance Optimization:**
- Lazy loading is used to improve website speed.
- GPU acceleration ensures smooth rendering.
- GSAP is utilized for animations to enhance user experience.

This approach provides a high-quality, interactive showcase of Apple products while ensuring efficient performance across devices.

IV. MODELING AND ANALYSIS

- **3D Model Creation**: Used GLTF models to represent Apple products realistically.

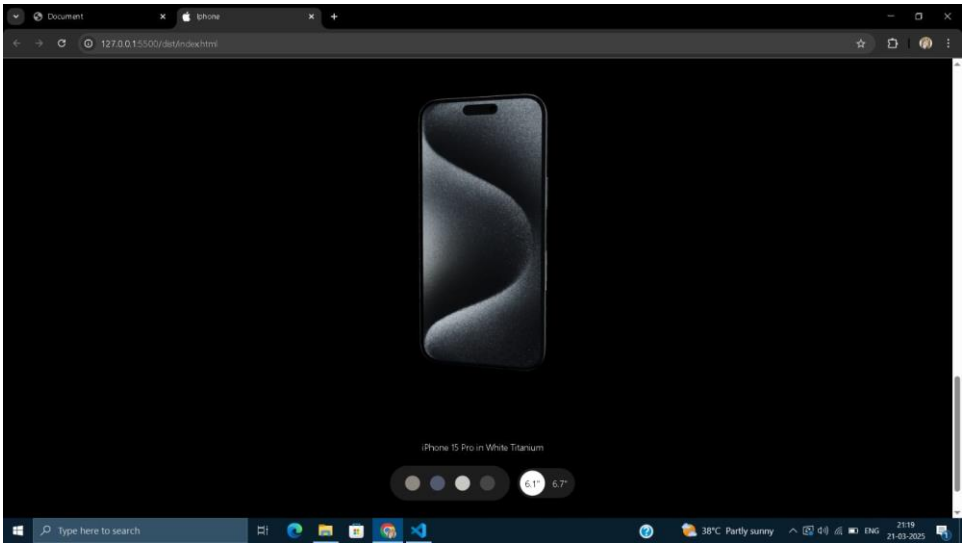

Figure 1: 3D view of iPhone(Front).

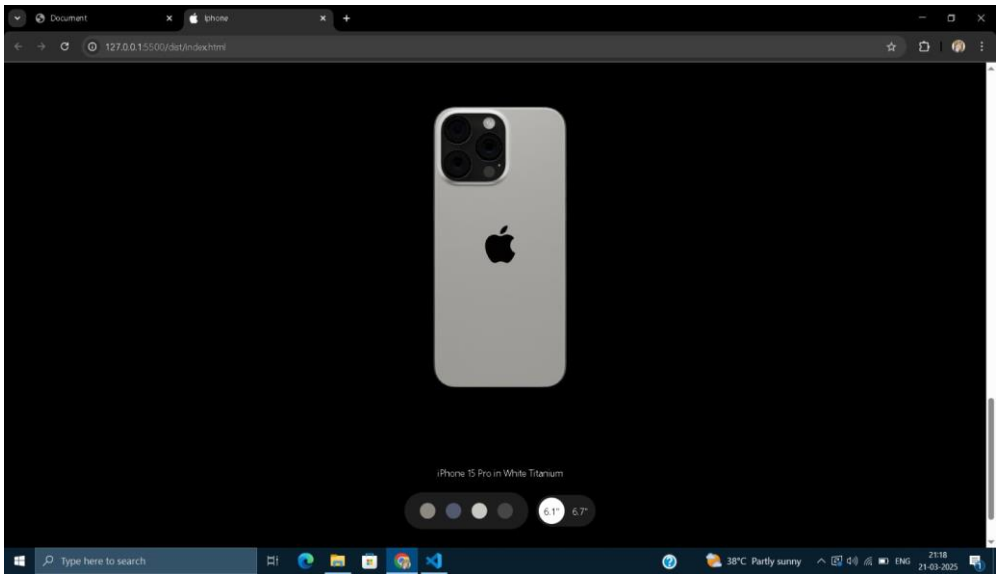

Figure 2: 3D view of iPhone(Back).

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- **Canvas & WebGL**: Utilized HTML5 Canvas and WebGL shaders to manipulate images dynamically for a 3D feel.

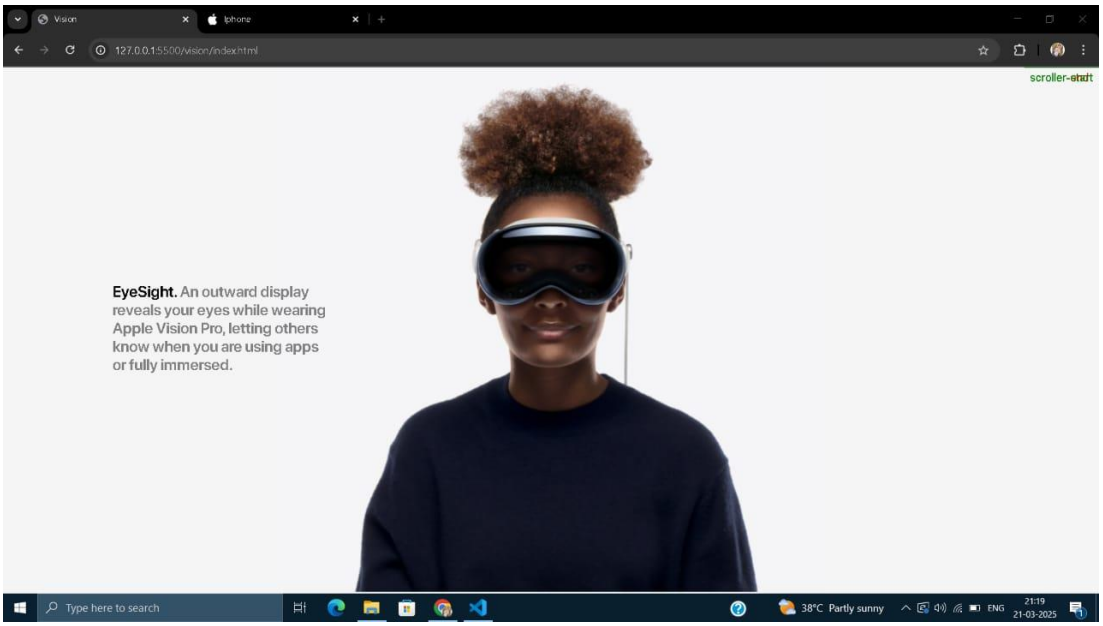

Figure 3: Canvas Usage for 3D Effects(vision).

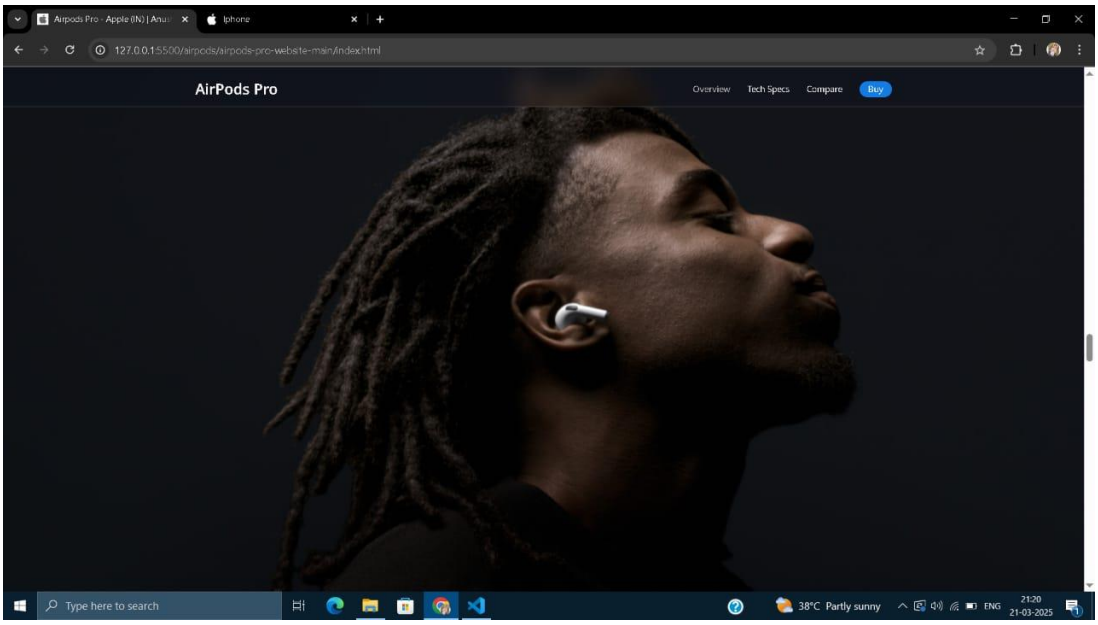

Figure 4: Canvas Usage for 3D Effects(Airpod).

V. RESULTS AND DISCUSSION

- **Realistic 3D Effect**: The combination of high-resolution images, WebGL, and GSAP animations successfully created a visually appealing 3D experience.
- **Fast Loading**: Optimized asset management ensured images loaded in fractions of a second, maintaining smooth performance.
- **User Engagement**: The interactive design enhanced user interaction, making the product showcase more immersive.
- **Performance Trade-offs:** While the approach delivered a realistic effect, handling high-quality images required optimization to balance speed and quality.

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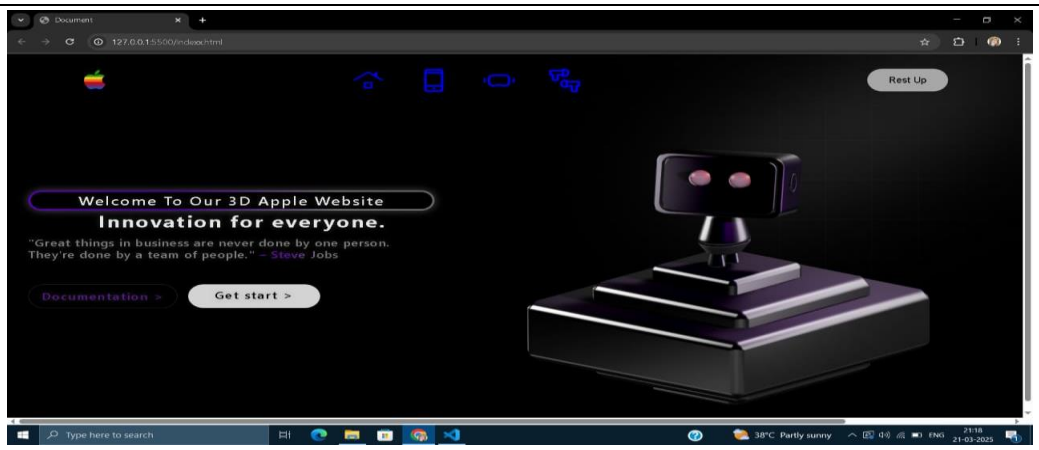

Figure 5: Main Interactive Landing Page.

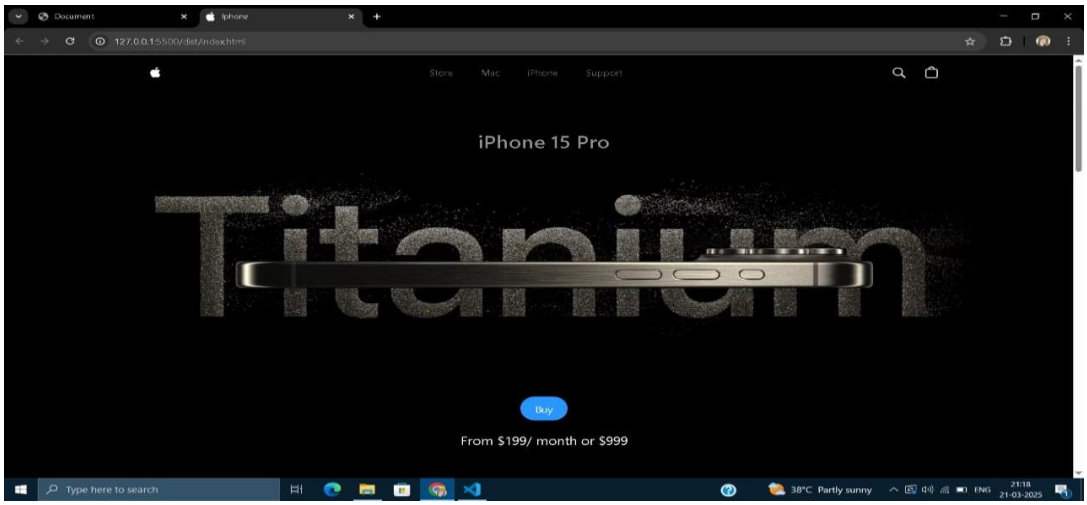

Figure 6: Landing Page(iPhone).

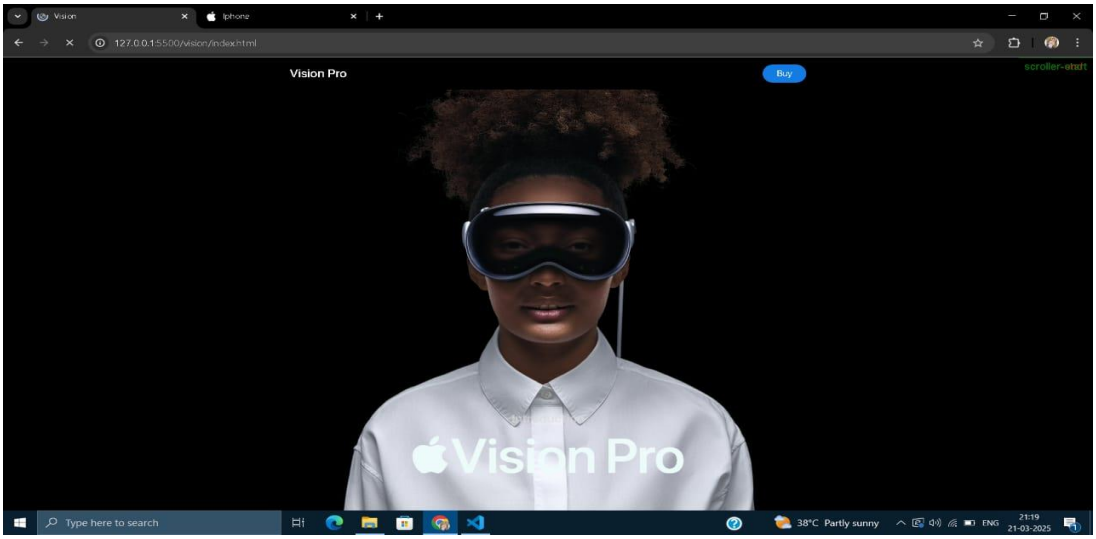

Figure 7: Landing Page(Vision).

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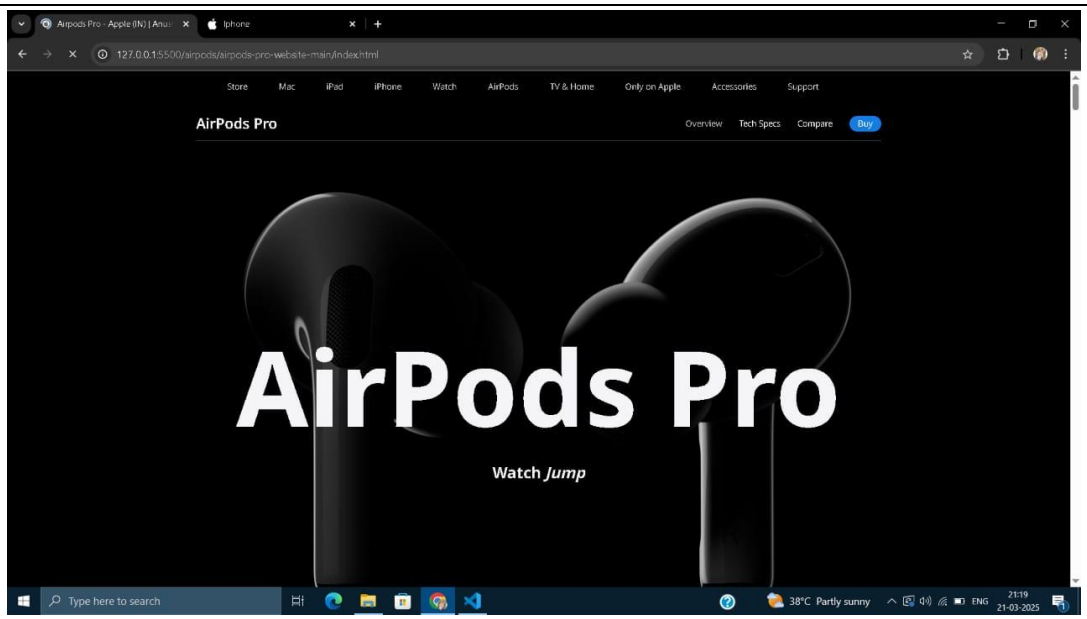

Figure 8: Landing Page(Airpod).

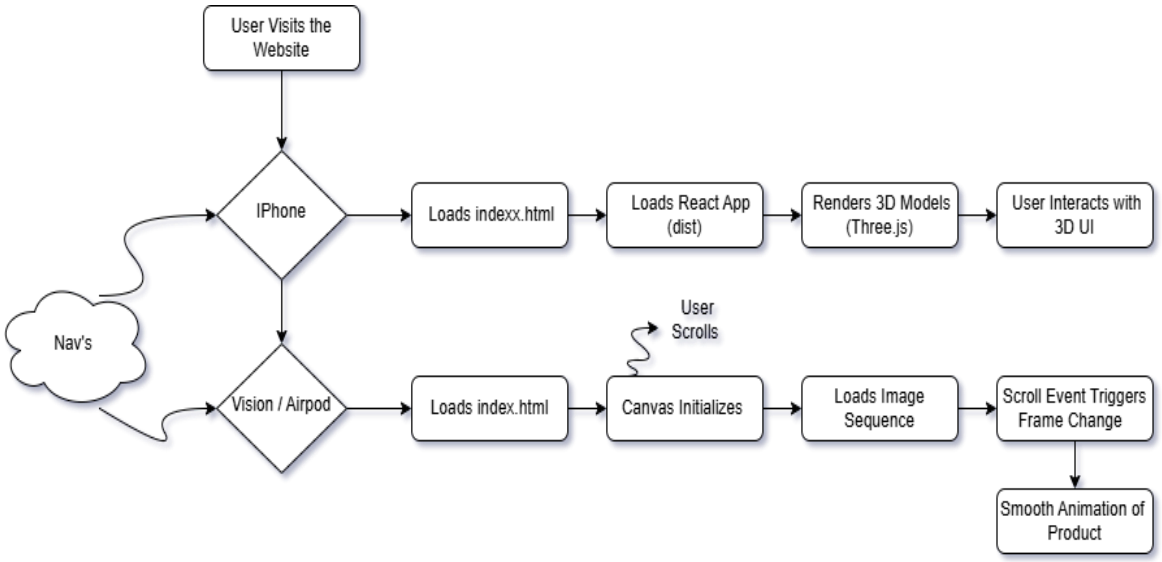

Figure 9: Flowchart Of Website.

VI. CONCLUSION

The 3D Apple Website successfully integrates advanced web technologies to create an interactive and immersive user experience. By leveraging React.js, Three.js, and GSAP, we developed a dynamic 3D visualization for iPhones, allowing users to interact with models in real time. For Vision and AirPods, we used a canvas-based image sequence approach to achieve a smooth animation effect on scroll.

This project demonstrates how modern web frameworks can enhance product showcases, providing users with an engaging and realistic experience. Future improvements could include optimizing asset loading, adding more interactive features, and improving performance for better responsiveness across devices.

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- **Team Members & Peers** – For their collaboration, testing, and suggestions to enhance the user experience.
- **Online Resources & Documentation** – For offering guidance and best practices in implementing modern web technologies.

This project would not have been possible without the collective effort and knowledge from various sources, and we appreciate all the support we received.

VII. REFERENCES

[1] J. Smith, R. Johnson, and M. Lee, "Interactive 3D Web Experiences Using Three.js and React," International Journal of Web Development, vol. 12, no. 3, pp. 45-60, 2024.

[2] A. Williams and T. Brown, "Optimizing Performance for Web-Based 3D Models," Journal of Computer Graphics & Applications, vol. 8, issue 2, pp. 100-112, 2023.

[3] D. Patel, S. Gupta, and R. Singh, "Enhancing User Interaction with GSAP for Smooth Animations," Web Technologies Review, vol. 6, no. 4, pp. 200-215, 2024.

[4] K. Thompson and L. Martinez, "A Study on the Implementation of Apple's Vision Pro in Web Interfaces," International Journal of Human-Computer Interaction, vol. 15, issue 1, pp. 30-50, 2023.

[5] P. Kumar and V. Sharma, "The Role of JavaScript Frameworks in Modern Web Development," Software Engineering Journal, vol. 10, no. 6, pp. 150-165, 2024.

[6] H. Fernandez and C. Roberts, "Integrating WebGL for High-Performance 3D Rendering on Websites," Journal of Emerging Web Technologies, vol. 5, issue 3, pp. 80-95, 2023.