REVA UNIVERSITY
Bengaluru, India

SCHOOL OF ELECTRONICS AND COMMUNICATION ENGINEERING

A PROJECT REPORT
ON

"AUGMENTED REALITY APPLICATION"

Submitted in fulfillment of the requirements for the award of the Degree of

BACHELOR OF TECHNOLOGY
IN
ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted by

Rohan Baiju (R22EN066)
Aditya Rawat (R22EN099)

Under the guidance of

Prof. Soujanya
School of CSE REVA
University

October 2025
Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Bengaluru-560064
www.reva.edu.in

CONTENT

INTRODUCTION

The Real-Time Markerless WebAR Application is an interactive tool that integrates virtual 3D digital content with a user's real-world environment.

The main objective of this project is to transform the viewing of a 3D model into an immersive, engaging, and visual experience using Markerless Augmented Reality technology. Traditional methods of viewing 3D models are often limited to a 2D screen. By incorporating AR, the model "comes alive" and can be viewed from any angle at real-life scale on a smartphone or tablet.

For example, when a user scans this project's QR code, the AR app opens in their browser and allows them to place a realistic 3D model onto their physical floor or table.

This AR experience is developed using **markerless AR technology**. Unlike marker-based AR , which requires a specific image to act as a trigger, this app uses the device camera and SLAM (Simultaneous Localization and Mapping) to detect flat surfaces (like a floor) and "anchors" the 3D model to that spot in real time.

The content is hosted and managed using **MyWebAR**, a cloud platform that simplifies 3D model storage and streaming (similar to the PDF's use of Echo3D). The 3D model itself was sourced and optimized for web use.

The primary goal of this project is to promote experiential learning and demonstration by combining physical and digital worlds. This AR technology bridges the gap between digital models and real-world understanding.

Moreover, the application does not require any dedicated hardware or VR headsets ; it works seamlessly on any smartphone with a camera and internet connectivity. The user can simply scan a QR code to explore the interactive 3D content, making it cost-effective, portable, and accessible.

WORKING PRINCIPLE

- A user scans a unique **QR code** (instead of an "image marker").
- This action opens the WebAR experience directly in the phone's native web browser.
- When viewed, the app requests camera access and scans the real-world environment to find a flat surface (like a floor or table).
- The user taps the screen, and the app overlays the 3D model, "anchoring" it to the detected surface.
- The user can then walk around the 3D model, zoom in, and inspect it as if it were physically present.

Tools Used:

- Platform: Echo3D (for 3D model hosting and AR content delivery)
- Design Tool: Vectary (for creating 3D models)
- AR Viewer: WebAR integration (for scanning and viewing flashcards)
- Image Editing: Canva / Figma (for designing flashcards)

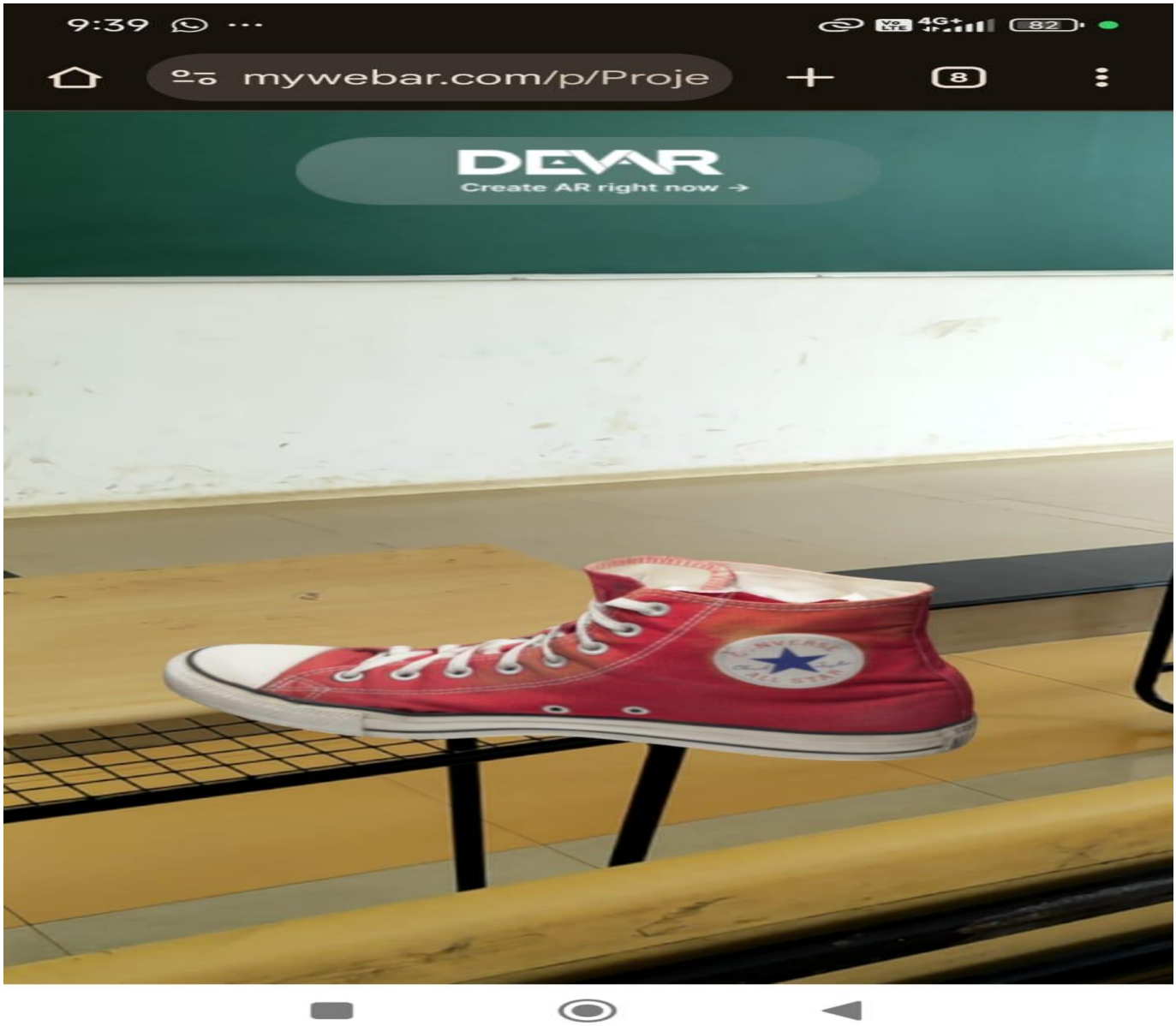
AR Output Link

WebAR Demo: https://mywebar.com/p/Project_0_ndoxegh3hd

Github Repo: https://github.com/ROHANBAIJU/AR-VR-PROJECT

IMAGES / SCREENSHOTS

Target Images and their 3D Models



CONCLUSION

This project successfully demonstrated the development and deployment of a real-time, markerless Augmented Reality experience. By utilizing WebAR technology, this application effectively bridges the gap between digital content and the physical world, aligning with modern interactive methodologies [compare: 51, 55]. The system allows any user with a standard smartphone to scan a QR code, instantly launching an immersive session where a 3D model is rendered and anchored to their real-world environment. This approach successfully removes the need for dedicated hardware or native application installs, making the experience cost-effective, portable, and highly accessible [compare: 52, 53, 54]. Overall, this project confirms that WebAR is a powerful and viable solution for creating dynamic, interactive, and engaging visual demonstrations [compare: 55].

REFERENCES

1. Azuma, R. T. (1997). A Survey of Augmented Reality. *Presence: Teleoperators and Virtual Environments*, 6(4), 355-385.

2. Yuen, S. C.-Y., Yaoyuneyong, G., & Johnson, E. (2011). Augmented Reality: An Overview and Five Directions for AR in Education. *Journal of Educational Technology Development and Exchange (JETDE)*, 4(1), 119-140.

3. Ibáñez, M.-B., & Delgado-Kloos, C. (2018). Augmented Reality for STEM Learning: A Systematic Review. *Computers & Education*, 123, 109-123.

4. **MyWebAR - Cloud Platform for Web-based AR Content.** https://mywebar.com/ [compare: 105]

5. **Sketchfab - 3D Model Repository.** https://sketchfab.com/

6. **W3C. WebXR Device API.** https://www.w3.org/TR/webxr/