Sri Eshwar College of Engineering
Coimbatore | Tamilnadu
An Autonomous Institution
Affiliated to Anna University, Chennai

Department of Information Technology

Course name : Project with Design Thinking

Title of the project :EduViz - Interactive 3D Learning Platform

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Class / Section / Semester	:	II IT/ A / IV
Batch	:	2023-2027
Project Review	:	Third Review
Date	:	6.05.2025
Project Guide with Designation	:	Mrs.Minu Balakrishanan
Name of the Industry (if applicable)	:	NIL
Team Members	:	Arjun S (23IT005) Dhusyanth S (23IT011) Joyandrew S (23IT023) Praveenkumar S (23IT035)

CHALLENGE STATEMENT

Problem:

- Traditional e-learning methods rely heavily on video-based content, leading to limited interactivity and engagement.
- 3D content creators lack a centralized platform to showcase and monetize their educational models.
- Existing platforms do not provide real-time, interactive, and multilingual learning experiences.

Challenge:

- Developing a user-friendly, scalable 3D learning platform that meets diverse learning needs.
- Integrating AI-driven multilingual support for accessible global learning.
- Creating a sustainable monetization system for 3D model creators.

EMPATHY MAPPING

What a user sees :

"Students see learning come to life in interactive 3D."

What a user hears :

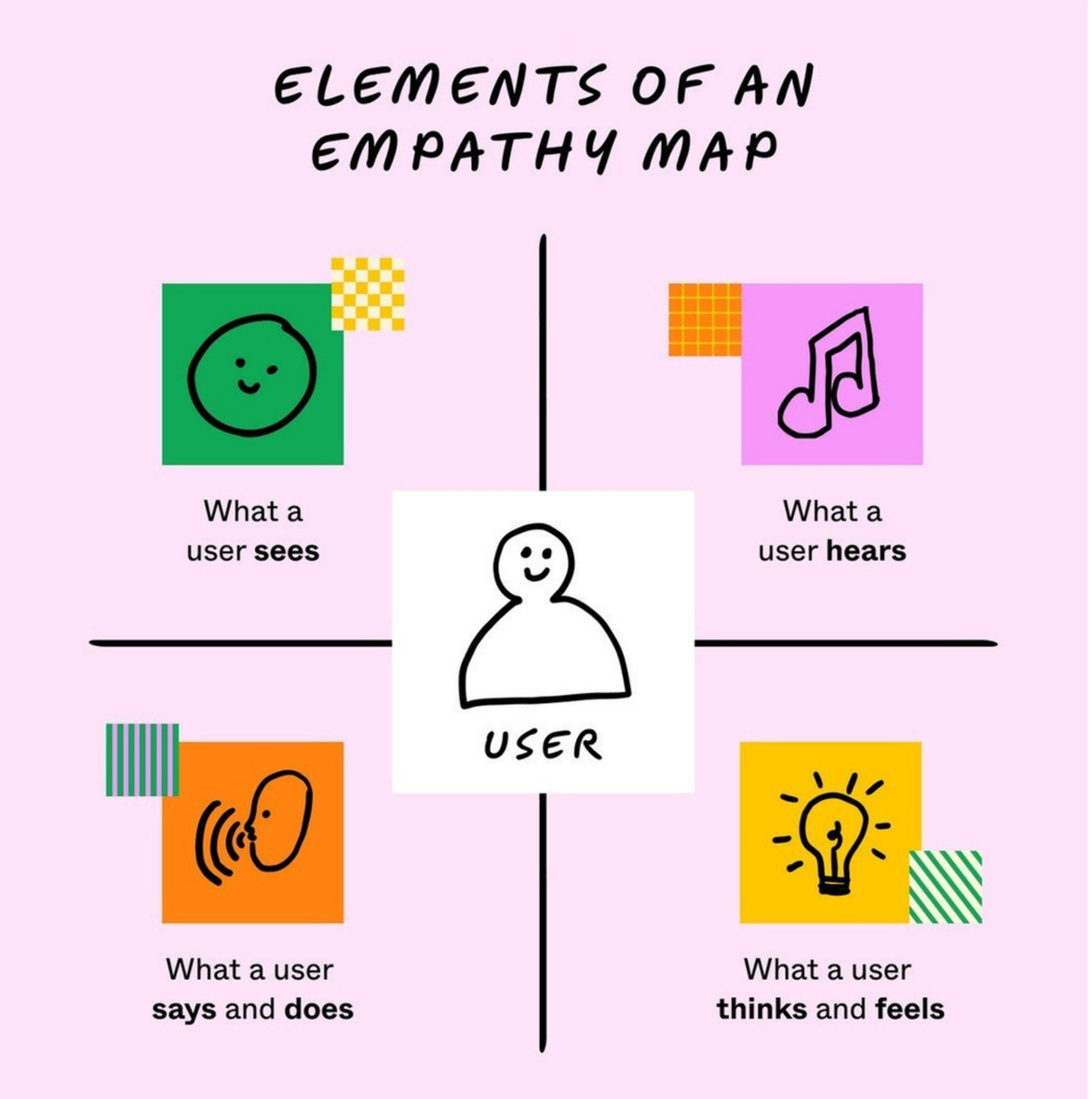
"Students hear clear, visual explanations and excitement."

What a user says and does :

c"Sotnufdideennttsl y explore and explain complex ideas."

***What a user thinks and feels*:**

"Students feel empowered and excited about learning."



CONCEPT / SCOPE OF SOLUTION

- ***Interactive 3D Learning Platform:*** EduViz provides a web-based environment where users can engage with and learn from interactive 3D models and simulations.
- ***Accessible Browser-Based Solution:*** The platform leverages WebGL technology to deliver immersive 3D experiences directly within standard web browsers, eliminating the need for expensive hardware.
- ***Content Creator Empowerment:*** EduViz offers a marketplace for 3D model creators to upload, share, and monetize their educational content.
- ***Enhanced Learning Outcomes:*** By providing hands-on, visual learning experiences, EduViz aims to improve knowledge retention and comprehension of complex concepts.

LITERATURE SURVEY / BACKGROUND STUDY

PAPER	APPROACH	REMARKS
1. "3D Learning Environments in Education"	Discusses the impact of 3D visualization on student engagement and understanding.	Supports the need for interactive 3D models in EduViz.
2. "Web-Based 3D Model Platforms for E-Learning"	Evaluates existing platforms that allow students to interact with 3D content.	Highlights the gap in current learning tools that lack an integrated marketplace.
3. "Monetization Strategies for Digital Content Creators"	Analyzes business models used in online educational platforms.	Helps in designing an effective revenue system for EduViz.
4. "The Role of AI in Personalized Learning"	Explores AI-driven recommendation systems for personalized education.	Guides implementation of AI features in EduViz.
5. "WebGL and Three.js for 3D Content on the Web"	Technical study on rendering 3D models in web browsers.	Helps in selecting the right technology stack for EduViz.

EXISTING METHOD

- Traditional e-learning platforms (Udemy, Coursera, Khan Academy) rely on video-based learning, which lacks interactivity.
- Limited support for 3D interactive content, making learning less engaging.
- 3D content creators have no centralized platform to monetize their work efficiently.
- Current platforms do not offer real-time collaboration for learners and instructors.
- AR/VR headsets are expensive, so not everyone can use them for learning.

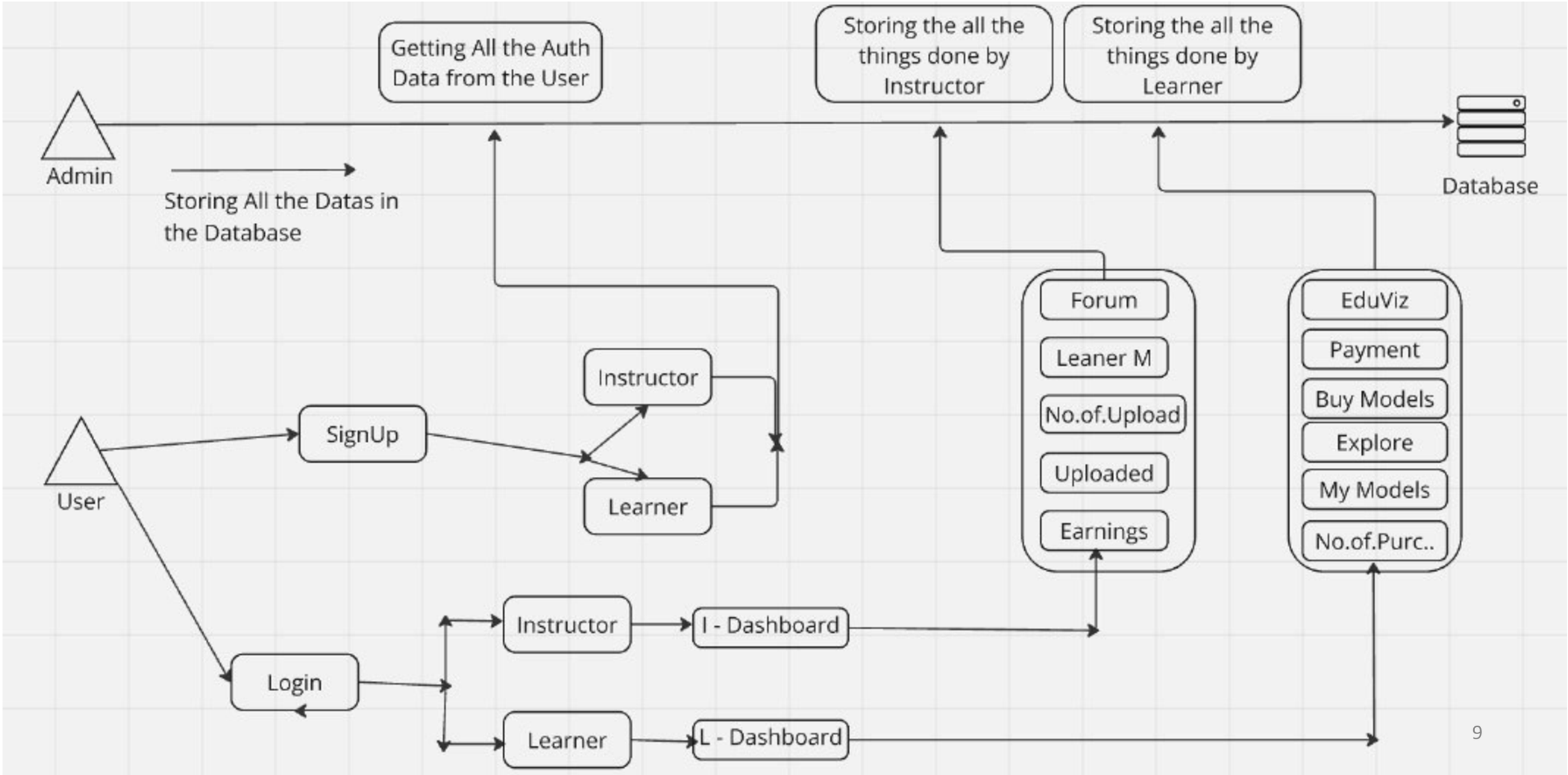
PROPOSED / INNOVATIVE METHOD

- Interactive 3D learning, beyond passive video.
- Enhanced engagement through hands-on 3D exploration, accessible via browser.
- Centralized platform for 3D creators to efficiently monetize their work.
- Real-time collaboration for dynamic learning.
- Affordable access through browser-based technology, eliminating expensive hardware costs.

TECHNOLOGY USED

- **React.js:** Builds the user interface, making the platform interactive and responsive.
- **Model Viewer:** Displays and allows interaction with 3D models directly in the browser.
- **Node.js:** Powers the server, handling user data and application logic.
- **Express.js:** Creates the web API, enabling communication between the frontend and backend.
- **MongoDB:** Stores all application data, from user profiles to 3D model information.
- **GLTF:** Standard format for 3D models, ensuring efficient display in the browser.
- **WebGL:** Renders 3D graphics in the browser, providing the interactive 3D experience.

BLOCK / SCHEMATIC DIAGRAM



SPECIFICATION & BUDGET

S.No	SOFTWARE SPECIFICATIONS
1.	Frontend Framework - React,ModelViewer,WebGL ‘Backend – Node.js Express ,GridFS Database-Mongodb
2.	APIs – Razorpay,Gemini,Google O Auth Programming Language-Java Script

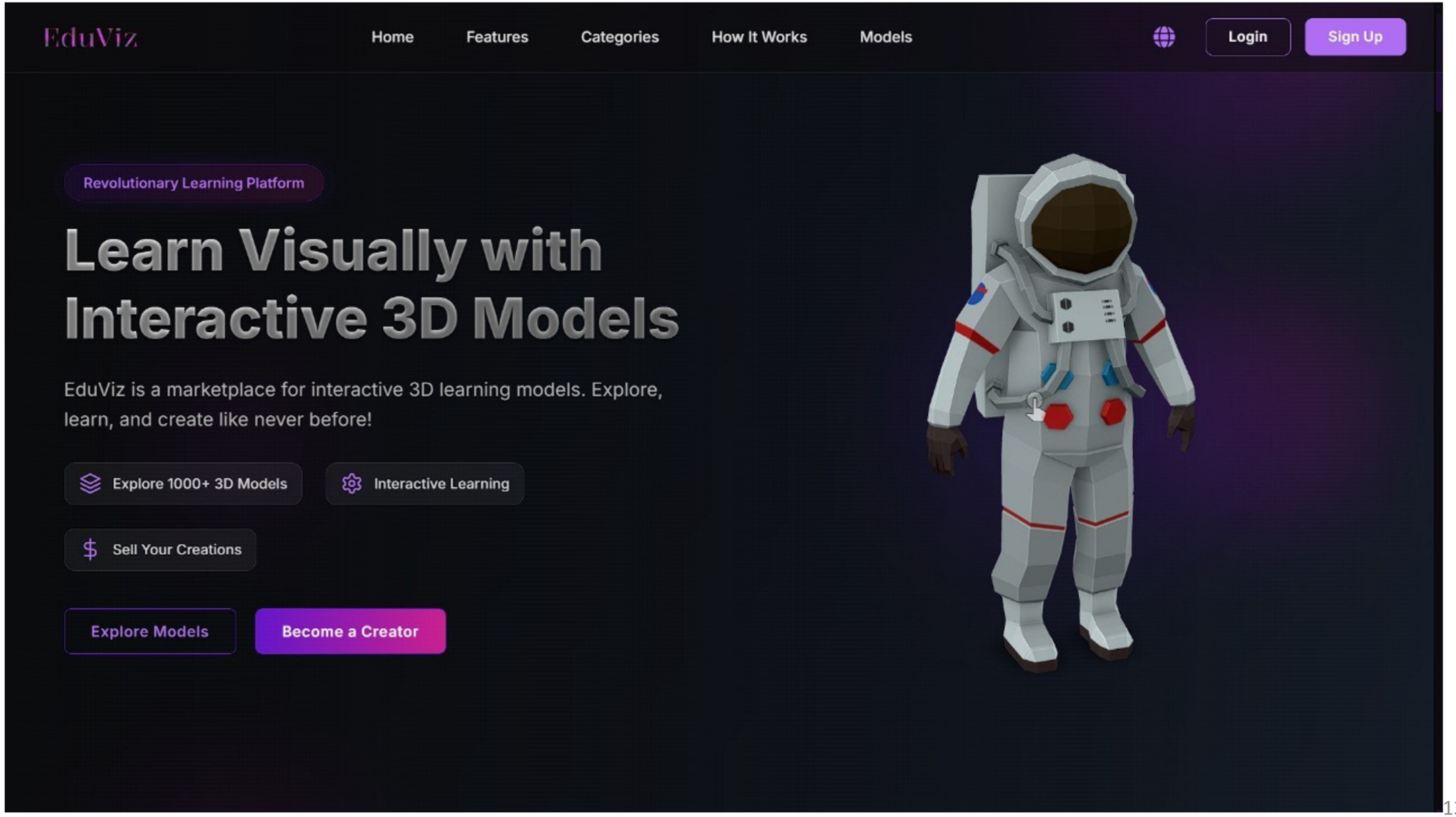
COMPLETED WORKS UPTO THIS REVIEW

https://drive.google.com/drive/folders/1cJIlMCcmC5uZQDTmBnARwH8%20QsivbAVa_?usp=drive_link

OUTPUT VIDEO

- https://drive.google.com/drive/folders/1DPXWm__Ty41jrKQPKDXCsV_bldkWO2fS

EXPERIMENTAL RESULTS



EDUVIZ

- Welcome
- My Models
- Cart Model
- Marketplace
- Forum
- Settings

My Models

Explore more

My 3D Models

ENROLLED

Interactive Bicycle Mechanics in 3D

Status: Ready to Learn | Category: Physics

₹497 Start Learning

ENROLLED

Micro Chip 3D visualization

Status: Ready to Learn | Category: Physics

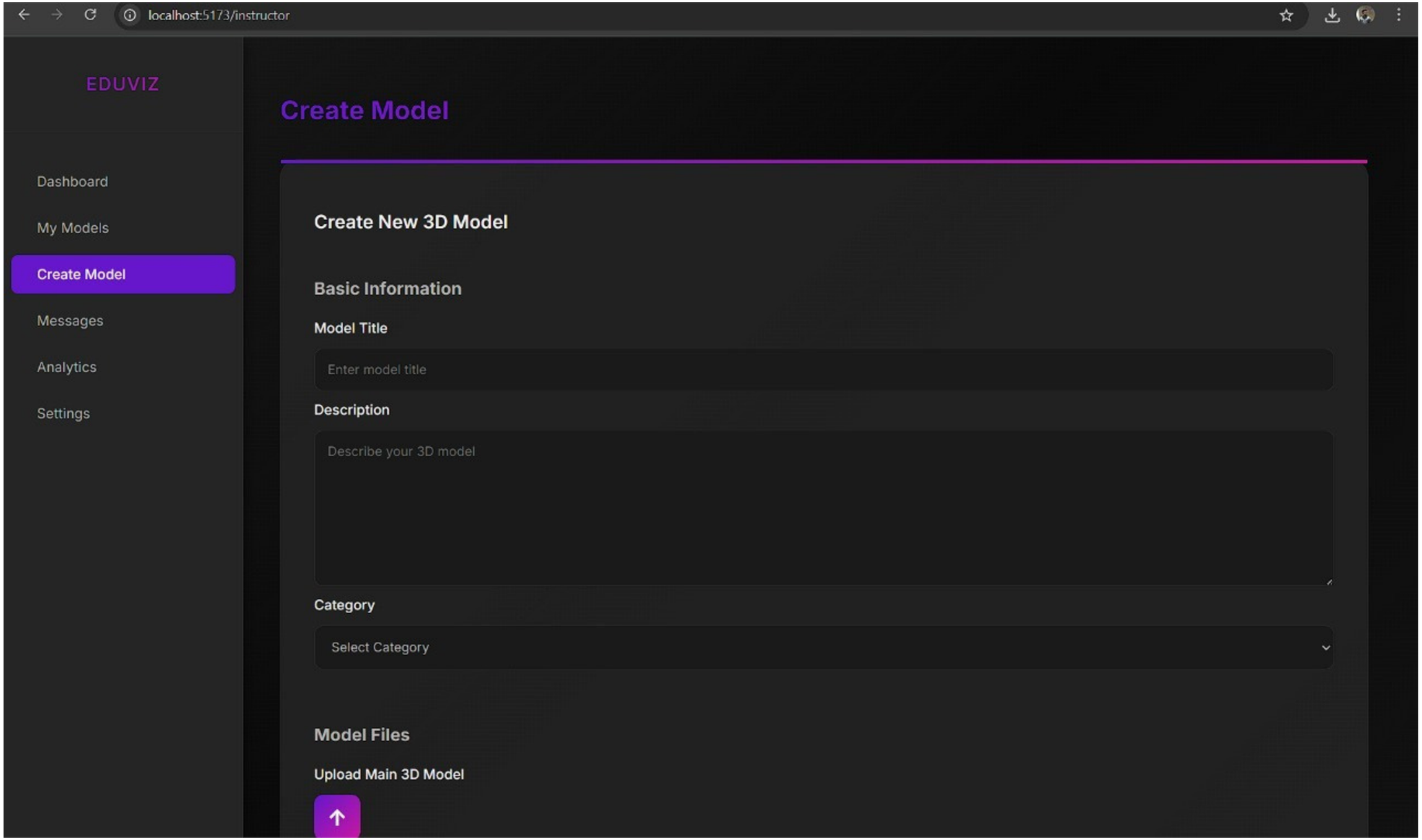
₹899 Start Learning

ENROLLED

Mechanics of DSLR Camera

Status: Ready to Learn | Category: Physics

₹899 Start Learning


localhost:5173/instructor
EDUVIZ
Dashboard
My Models
Create Model
Messages
Analytics
Settings
Create Model
Create New 3D Model
Basic Information
Model Title
Enter model title
Description
Describe your 3D model
Category
Select Category
Model Files
Upload Main 3D Model

Eduviz-Viewer

Parts

Dismantle

Eduviz-Viewer

Parts

Assemble

CONCLUSION

- ***EduViz is a next-generation 3D learning platform*** that enhances online education by making learning more interactive, engaging, and accessible. It bridges the gap between learners and 3D content creators, offering a marketplace for educational 3D models.
- By leveraging technologies such as **Model Viewer, NLP Editor in Blender, and AI-powered learning tools**, EduViz provides an immersive learning experience. The platform enables monetization for creators, supports multilingual learning, and ensures real-time interaction.

PENDING WORK

DESCRIPTION	EXPECTED DUE DATE	REASON FOR PENDING
Assesment Feature Integration	17/4/25	Testing Both frontend and backend for multiple users
Analytics of learner in instructor page	18/4/25	instructor can manage which learner should enrolled the model and manage the progress
AI Chatbot integration on learning page	18/4/25	design to make the chatbot more accurate

CONTEST PARTICIPATION

- **ViHANSA -2K25 , Project Expo ,Sri Ramakrishna College Of Engineering, Coimbature .**

REFERENCES

- Parisi, T. (2015). Learning WebGL: A Beginner's Guide to 3D Web Graphics. O'Reilly Media.
- Covers fundamental concepts of WebGL for rendering 3D graphics in web browsers.
- Khronos Group. (2020). glTF 2.0 Specification: The JPEG of 3D Graphics.
- Defines the glTF 2.0 format, a standard for efficient 3D model transmission and rendering.
- Google Developers. (2022). Model Viewer Documentation: Rendering Interactive 3D Models.
- Covers AI-driven features like machine learning and NLP, essential for EduViz.
- Blender Foundation. (2023). Blender NLP Editor: Enhancing 3D Workflows with AI.

THANK YOU