Idea/Approach Details

Ministry/ Organization name:  AICTE-MIC
PS Number: IC474
Problem Statement :  Student Innovation
Team Name : webIV
Team Leader’s Name :  Syed Irfan Ahmed
College Code : U-0733

# Idea / Approach details

**Idea/Solution/Prototype:**

Existing educational videos, on YouTube, Byju's, Khan Academy and other such educational platforms enable students to learn from top-quality teachers over large distances. This allows students to learn, but it doesn't help in visualization, which is an essential aspect for complete, comprehensive, application-oriented learning.
We aim to create a web-based system, that allows people to fully interact with videos, through a custom video+3d model format. It consists of two major parts.
- A video player, that plays videos where the students can interact with the video, manipulate the components while the video plays. We have a normal video on the left, as it would be unwise to ignore current videos which already explain almost every single concept available. having a video on the left, and an interactive model on the right, will allow students to learn and grasp concepts from existing videos.

- A web-suite to allow creators/ teachers to create videos of this format in an easy, non-programmatic way, which they can then upload/ share for others to view.

**Tech Stack:**

1. WebRTC
2. Three.js
3. Godot Engine
4. Babylon.js
5. OpenGL
6. React.js
7. Vue.js
8. Firebase
9. Tinker CAD

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**Use Cases**

1. All STEM courses, from schools to Universities, as they require visualizations for a concrete understanding of subjects ranging from math, to Processor design
2. Any subject/concept that needs visualization.
3. Deeper understanding of concepts.

**Dependencies / Show stoppers**

1. Fully interactive components, which follow a pre-programmed format that is made by the creator using an easy, simple to use, and intuitive interface. Currently, creating models which are animated require extensive knowledge of programming, which we aim to eliminate.
2. Allow users to use the vast catalogue of existing videos from all video streaming websites to accompany their 3d interactive model.
3. A complete platform to create and display such videos.
4. 3D models can be really heavy to load on web browsers and servers, hence we are offloading all rendering to the local system, increasing performance, and responsiveness.
5. Allowing viewers to fully interact with content, modifying it, experimenting with it, along with the conceptual video, which lets them grasp concepts at a fundamental level.