

EDUVISTA 2.0 - THE FUTURE WAY OF LEARNING

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Introduction:

Augmented reality enters the world of technology as a reality-based, interactive experience. AR improves real-time output by utilizing data supplied by a computer. Virtual reality is a computer-generated environment that creates the immersive illusion that the user is somewhere else.

In our project we're developing a Web-application which will be useful for the students for experiencing and learning the lab experiments, with the help of using AR & VR technology. Students can study through interacting with virtual objects and learning objects using Smartphones, not only in VR but also in AR.

It is not only helpful for the students who are studying Engineering but can lay a base for a new type of learning method which is helpful for not only healthy students but also for those are mentally challenged where this platform can provide a base where the students can not only visualize but even interact with the High Poly 3D models.

The reason for going to a web application instead of mobile application is because we do not need to be dependent of the hardware specifications but only need a web browser which will be powerful enough to produce the output.

Education is a basic need for everyone & everyone should be able to access it but because of certain factors some of the areas are left Untouched, AR & VR one of those areas where people have not even experienced these things because of high performance hardware devices but when all the things are transformed into a web platform the hardware requirement become so minimal that it's accessible to everybody.

In early stage of Eduvista a mobile application was used which need a specific hardware requirement such as high ram speed, multiple sensors and an immense amount of storage, and still it gave a basic low poly model without any textures and animation that too only in VR mode.

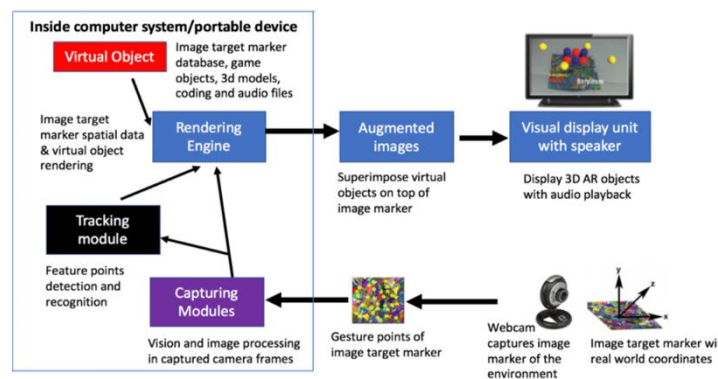
But our application includes AR as well as High Poly Models, it's a web application, on top of that no need to depend on certain type of hardware to visualize the 3D models, everything is in cloud so no need to store the data in the hardware itself.

Objectives:

To develop an application for the betterment of the students for learning virtually and effectively. To provide a cost-effective alternative for learning. Using widely enhanced concepts of Virtual Reality and Augmented Reality with the help of smart-phones which make them even more efficient and accessible to the students. This application will act as a precursor for the future of Digital Education in India, and taking it to a new Era which will be the Digital Era. Achieving both augmented reality and virtual reality environment in the education field provides better learning experience in the form of web and mobile application.

Methodology:

- Step1: Web application will be having the Web-GL which is a web-based render engine which will help to render out all the 3D assets build together inside the application itself.
- Step2: Device has a target database from where it will be downloading the assets into the application where it will be viewed inside the viewport.
- Step3: Now using the database assets which will be created by us(developers), uses the web APIs to communicate with the database to render it using the shared connection.
- Step4: Using the web-server API's we can inherit the property of viewing the 3D models in the VR & AR environment using the smartphone device.



Conclusion:

Conducting the experiments virtually results in less physical space since we need not require any physical equipment which is in turn cost efficient for the users to use our application. This application enables the users to visualize the object virtually therefore it will be more interactive. It can be used anywhere any time with repeated trails. It overcomes the difficulty of textbook learning and helps students to learn by themselves independently. It will be enriching case to understanding of content connects to fun with learning for students. It also enhances the visualization of concepts with the digital learning. It leads to the creation of new era of learning using AR. It also helps in providing of visualization increases the imagination leading to innovation.

Scope for future work:

- The accuracy of the AR needs to be even more accurate when it is showing itself on some of the Physical objects.
- Motion Tracking Enabled Headsets for the VR instead of Remote Controllers.
- Blue Screen Displays which will reduce the strain on the eyes while wearing the VR headsets.
- AR needs to produce even more realistic results which is based on present lighting situation according to the environment so the virtual object could be mixed up easily.
- The Headsets needs to be redesigned, so its lightweight and the lens having inbuilt blue screen.
- Enabling the Hologram Support with AR to enhance the experience.