

Learn through AR (Augmented Reality)

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Abstract: AR technology is basically a development on VR technology that harnesses the power of computers to be able to read the surroundings and create projections of digital models into the real world for the purpose of visualization, demonstration and education. It has been applied to education, fields of prototyping in product design, development of medical models, battle strategy in military and many other fields.

Our EDAI project focuses on the usage of augmented reality, visual mapping, 3d visualization along with animation and text boxes to help students in fields of education get a rough idea of the concepts such as flow and mechanical movements that may be hard to visualize at first glance.

INTRODUCTION

The project is based on usage of augmented reality technology in the field of education. The main aim of the project is to visualize hard topics such as flow of blood vessels and movement in mechanical diagrams that might be hard to comprehend. We have mapped an entire textbook to 3d models in order to provide a better understanding of the concepts explained in the textbook as well as to gain insight into the various diagrams that are provided. The technology is based on the vuforia and unity. Vuforia is the database and unity is the workspace where we create 3d models. The 3d models are mapped to the targeted image using unity and thorough research was done in order to find and apply the appropriate models to the diagrams.

For interactive purposes, and for deeper understanding of the concepts, we have added text boxes and a description of the images described. Audio clips have been provided to the user to ensure that there is no confusion based on the concepts and topics being covered by the technology. For some models, animations have been added to help understand the working of the concepts as well as get an idea of the motion in the diagram.

METHODOLOGY/EXPERIMENTAL

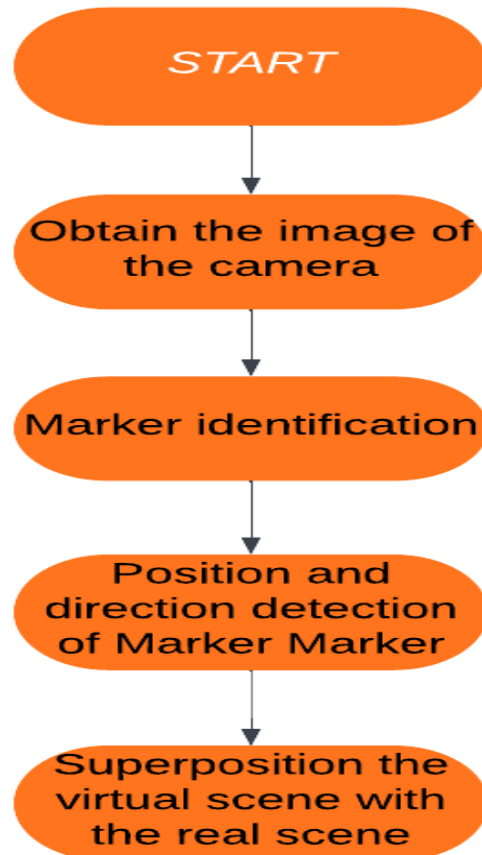
Usage of unity3d:

Unity is basically a physics engine that is used in many fields for the purpose of simulation or rendering. It is developed by the company based in Denmark known as

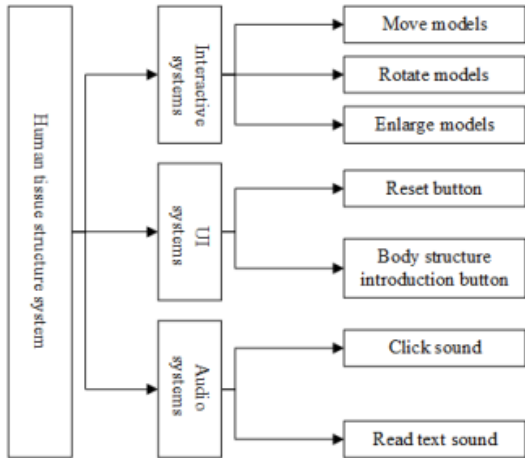
Unity. We can apply features like cross platform development, scripting languages like JavaScript, asset storage, physics simulation, animation systems, real time rendering and performance optimization.

Usage of Vuforia:

Vuforia is developed by the conglomerate Qualcomm. They are adept at mobile software and hardware development and are one of the biggest designers and producers of SOC systems in the world. Vuforia is mainly developed for the creation of software mobile applications for AR. It captures images based on the camera and allows us to bind those to specific 3d renders and animations to visualize and map the diagrams to their respective models.



Flowchart of App



Block diagram of System framework

RESULTS AND DISCUSSIONS

The research on our project has created a positive impact in the field of teaching . When the project was implemented , students' motivation to study and interest in the material both increased. AR's dynamic and engaging environment helped students learn difficult material better. It encouraged cooperation and problem-solving skills as students worked together with virtual objects and environments. The application of our project in the classroom has the potential to increase student engagement and make learning more fun.



Fig.1 3D model of forces acting on a wooden block

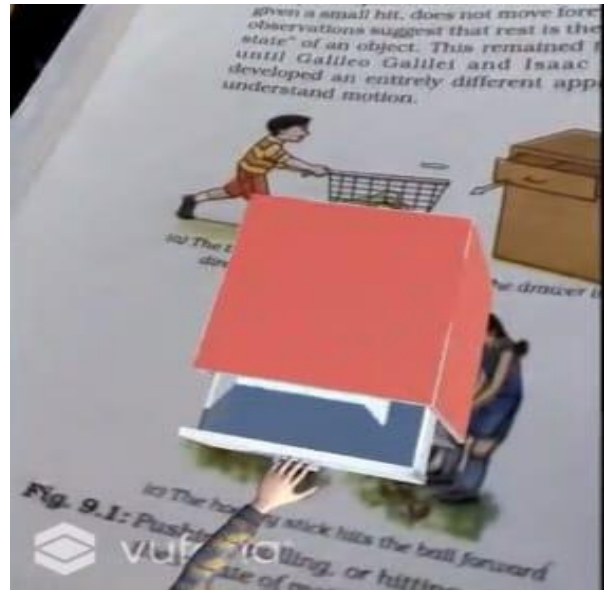


Fig.2 3D model of a drawer

CONCLUSION

In conclusion, the use of augmented reality technologies built on the Unity3D platform in education has been incredibly effective. It has been shown that AR can make learning more appealing and interesting for children. By creating engaging and immersive experiences, AR helps students understand and recall complex subjects. Additionally, it improves students' capacity for teamwork and problem-solving. Future uses of augmented reality may be improved and customized to match the needs of the students. Overall, the effectiveness and satisfaction of learning are increased by the implementation of Unity3D-based augmented reality technologies in education.

ACKNOWLEDGMENT

A sincere gratitude and thanks to our Guide, Prajakta Musale, for guidance and valuable insight throughout the project. A sincere appreciation to every member of the group for their contribution and hardwork. A special acknowledgement and thanks to the group leader, Bhargav for leading the group and helping every other member in their work.

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