

Education with Augmented Reality

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ABSTRACT

Technology in education has impacted many ways in student's life to learn enthusiastically by giving better and more than expected results. Some research stated that technology will create a passive process if it doesn't promote critical thinking. To support the statement Augmented Reality (AR) has shown the best potential to make learning more interactive and easy. It's because of the feature of AR that lets us interact with things in virtual and real-time. Therefore this paper represents the idea of using AR in education.

Keywords— Technology, Education, Augmented Reality, Virtual Reality, OpenCV, OpenGL

I. INTRODUCTION

From the tie technology embedded in education provides many effective results in learning and teaching styles. By Shapley et al. 2011 lessons with technology will lead to more informative types of teaching and learning. As technology allows to have real-world scenarios /issues and the respected data and connects with the professionals of fields/areas.

Not Only Students but teachers also need to spend more time understanding and collecting more information. Technology enrolled in education makes everyone enroll and expand their rooms for improvement.

AR is a new technology that provides many potentials in interaction with the real world and virtually. The number of studies increasing on AR due to its effectiveness. AR can sufficiently provide visualization for models. Most field AR research is conducted are medical, chemistry, Mathematics, Physics, Geography, etc. AR has proven the result accuracy of a task, especially in the surgery and airplane manufacturing field. It accelerates the audio-visual method of learning in classrooms.

II. RELATED WORK

With AR many kinds of 3D objects can be shown in the real world. Head-mounted displays and goggles are some examples of AR. As they are costly so they are used

in limited fields. Due to the rapid growth and ubiquity of smartphone technology, AR is now available to all.

Vuforia is the SDK that helps AR applications to work smoother by handling the detection and tracking of image targets or markers.

OpenCV is the open-source library that helps Image processing and supports the OpenGL which is a software interface to graphics hardware and helps to draw two-three dimensional scenes from single geometric primitives such as points, and lines.

In this paper, we are using Vuforia and OpenCV to generate the 3D view of scanned images and run it on android systems.

[3] In this paper, changes in the culture shift of students were considered and it was observed that young students are more attracted to video games. The paper also showed that there is a severe drop in the interest of students in the conventional education system. They also found out students specifically are drawn toward Multi-User Virtual Environments (MUVes). MUVes are seen in chat rooms or multiplayer games where students interacted virtually with their peers.

III. PROPOSED SYSTEM

The proposed system aims at creating 3D models for scanned body parts and providing the relative knowledge and functionality of parts. Markers (Image Targets) are tracked by using camera and 3D models mapped to the marker and models will be represented on screen. Users can interact with these models and understand the functionality and details of the model.

IV. PROPOSED METHOD

We are planning to use the following components for developing an application that can run on android-based smartphones.

1. Smartphones
2. Unity
3. Vuforia
4. Server

A. Unity

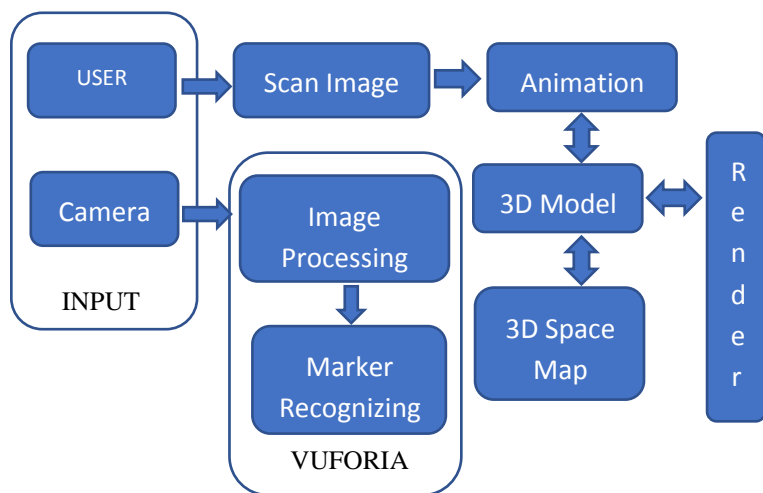


Figure 1 System Architecture

Unity is a powerful cross-platform engine for developers that can build real-time 3D projects for various industries and support platforms like Linux, Mac, Windows, ios, and Android. Unity allows selecting the different graphics APIs for development.

B. Vuforia

Vuforia is an SDK used to develop augmented reality software for mobile devices. It targets and recognizes the images by using marker-based technology.



Figure 2: Sample Image Target

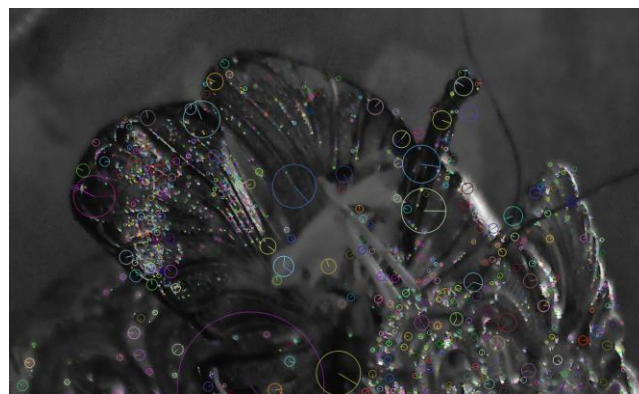


Figure 3: Selected Markers/Points on Image

V. CONCLUSIONS

We will develop an application that will be using AR technology to help in learning the human body structure part. Our learning system will explain the functionality of the scanned part to help the learner get an effective and easy understanding of the 3D model.

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