

Creating 3D Alphabets Using Augmented Reality

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Abstract

The scheme of design and evolution of an AR (Augmented Reality) application is based for teaching the alphabets top re-school children's. With the help of AR camera and Computer children could view the superimposed virtual alphabets in a fun and interactive manner. They have a options to see the 3D models of an alphabets. An android applications that is able to support the learning of alphabets through 3D models. Now a days, everybody needs a proper education. Some of the parents are struggling to teach their kids to read and write due to their inability to teach them properly. However some kids are able to learn the things very fast but not all the children's could grab the things very fastly. So for those that are unable to learn as fast as other children's so we are using this AR application to grab the attention of the students and also it emphasized interactive learning through play, dance, drama, and also using the Information and Communication Technology (ICT). It also exhibited that fun learning also increases the capability to memorize and understanding of the children's.

Keywords: Augmented Reality (AR), Unity 3D, Vuforia, JRE, JDK, Android Studio.

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1. Introduction

Augmented Reality defined as a live, direct and indirect, view of a physical and real world environment. It is very popular technology in today's world by adding some digital contents like graphics, videos, sounds to a real environment, it can change how your surroundings looks like completely and it helps us to enhance the real world experiences. The Alphabet knowledge is a vital ability skill for children to secure for learning to read and write. The alphabet knowledge awareness is considered to be one of the best predictors for children's to gain their writing and reading abilities. The AR alphabet knowledge awareness should be developed as early as prekindergarten or latest in playgroup before entry to school where formal learning knowledge occurs. It is a skill that provides a unique interactive inter-phases in which users can work and interrelate simultaneously. The major drawbacks of the students tends to remember the order of the alphabets. Utmost of the times, when teacher asked to name some single alphabets, students tends to repeat from start until they come to the alphabet in

question. So we used flash cards which helps the children's to memorize the alphabets in effective manner.

2. Literature review

“Design and Development of a Augmented Reality tracing application for kindergarten students”, [1] In this paper Design and Development of a Augmented Reality tracing application for kindergarten students by Arnav Nigam, Kaushal, Kumar Bhagat, Milan Chandrakar, (2019) IEEE, the design and development of AR tracing (Art) of the application is presented here. The goal of this application is to develop an tracing activity sheet because the outdated method of learning is not only passive but boring for young children's. Here, they started by joining the dots marked on books to make an alphabets. They have used markers, markers are pictorial clues that prompt the content to be augmented. The marker in this application is a unusual paper on which letters get augmented. In this application the design is chosen for leftward and topmost borders only because for Right hand writers, it is not going to delay the

information which camera accepts for augmentation. However, this process is not very actually effective in attractive children's for livelyandinnovative learning.

“ 3D Based Modern Education system using Augmented Reality ”, [2] In this paper,3D Based Modern Education system using Augmented Reality by K.Chalapathi Raju, D.V.N. Bharathi, K. Yungander, - Assistant Professors S.R.K.R. Engineering College, (2018) IEEE. In this visualization Augmented Reality is used for whichit provides interactions for the students so that they can learn more memorably and also they can gain much more knowledge and skill in learning by using this technology. This technology improve their visualization abilities. In future, it can benefit the teachers to describe them easily and children's can also understand easily. Here, they have used mixed reality where it combines Real Environment and Virtual Environment to get Augmented. All teachingsubjects can observe in 3D graphical image an video format. They have explored the field of augmented reality with the vitalmotivation on the education for kids. It permits the users to control and operate the objects that are not existent in an augmented environment. The alphabets is the building block of any language. This application permits the students to have a pre-school learning experiences to have a enhanced understanding of the letters and memorization of English alphabets. This application contains some new and exciting features like navigation buttons for preceding alphabets, next alphabets, home screen. Numerous words starting from the similar alphabets have also been added in every scene. The software used in this application are unity 3D, Vuforia and sketch up.

3. Methodology

Certain software's that we have used are unity 3D, Vuforia, android studio. Unity 3D is one of the most well-organized platform which permits us to build 3D models. It has several features like adding animations, sound, and many more. Vuforia is one of the recognized SDK's for the quickprogress of the AR application. It includes remarkable digital features like identify and analyze to improve the user to designed target image for better enactment of application. And also we use Vuforia for license key that should be used in unity 3D for download the database and image target purpose. We use android studio for developing an AR application for better understanding of alphabets for children's. In this application they have a option to see a 3D models of alphabets.

Development of Unity 3D and Vuforia:

Once all the augmented elements were prepared, the development of the application is commenced in Unity 3D and Vuforia extension. The development process using vuforia for augmentation comprises on replacing the unity 3D main camera, with the Vuforia AR prefab camera and making it the main camera in the scene. As for the alphabet image target, one had to drag the 3D

models on to the targets and parent them to the target; thus, when the app runs and the camera is pointed to the image target, the 3D models will pop up.

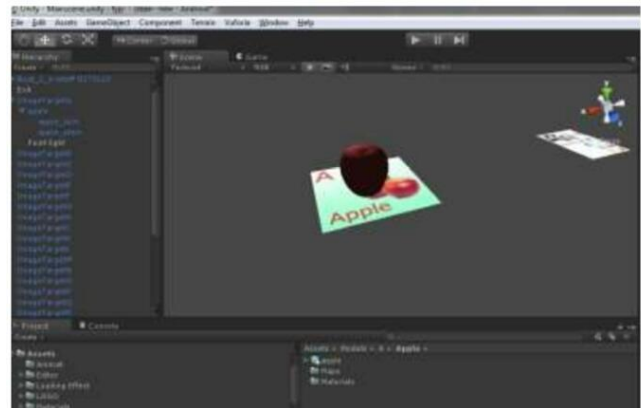
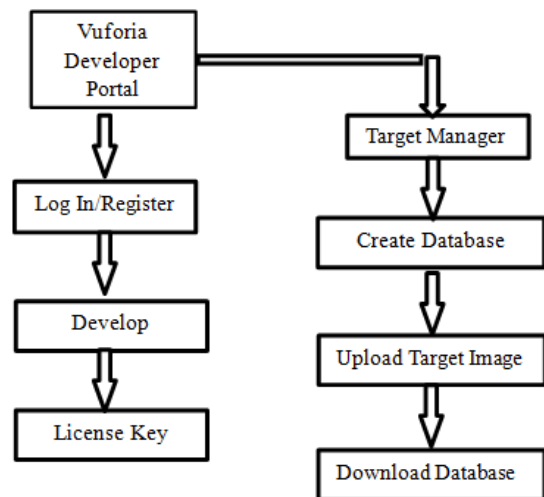


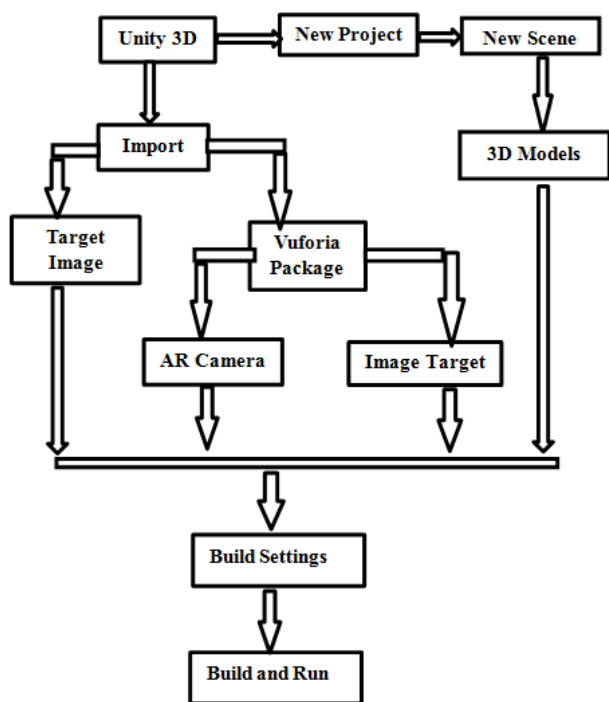
Figure 1: Developing the app in Unity 3D

Vuforia: It is an augmented reality software development kit(SDK)for quick progress in mobile devices that enables the creation of augmented reality applications.

Flow Chart (Working Of Vuforia)



Flow Chart (Working Of Unity 3D) Unity 3D: It is one of the most well-organized powerfulcross- platform which permits us to build 3D modelsand a user friendly development environment.



4. Results



This AR application we made for better learning for young children's. This made bridge between theoretical and practical knowledge. Now a days all children's are addicted to mobile phone. So, we can use this mobile for good purpose for learning the alphabets for young children's. It is a positive steps to reduce the distance between children and knowledge. AR is a very advanced technology that are able to create a better learning environment for the children. For fun learning to create an application we used unity 3D, Vuforia and android studio as a platform. By using this we can creates an atmosphere of fun ,excitement and thrill and is considered an attractive element of the schools.

5. Conclusion

Throughout our Project / Research, we have gained some better knowledge about AR and we came to know that how it works. However, we found this topic, very interesting for the Children's to learn the basic knowledge of English Alphabets clearly and independently and it can

helps the teachers to make a classes more interactive and allow young learners to focus more on practical instead of just theory. It has a great potential to be used in the class room because it changes the way of students interact with the world. It enhances the students engagement and makes the learning of their subjects in fun and interactive manner.

6. Future Enhancement

In future, It is a positive steps to reduce the distance among children and knowledge. This Augmented Reality application allows the children to increase the knowledge with the recognition of letters, enunciation of letters and improve their abilities and improve the memorization of students. Augmented Reality is a very futuristic field and it is going to be a more advanced technology that are able to create a better learning environment for the children.

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