VIRTUAL TUTOR USING AUGMENTED REALITY

A.Sabarinathan[1], S.R.Ranjithkumar[1], Mrs.A.Bhagyalakshmi[2]

[1]Final Year UG Student, [2]Asst. Professor,
Department of Computer Science, Velammal Engineering College, Ambattur Red Hills Road
Chennai -600 066, India
sabarinathan935@gmail.com , ranjithrotcod@gmail.com ,kirubhagya @gmail.com

ABSTRACT

A mobile application which can save time, effort and money by giving technical video explanation based on the recognised image for learners. The collected video information contains all the detailed explanation of the scanned image done by the user. This application groups Augmented reality , 3d objects , sound , video , AI for image recognition into an easy and compact application for the benefit of the every learner. This web application is built C#, UNITY, VUFORIA with the help of Vuforia server connected by asserts. This mobile application serves as an easier way to access details and documentaries related to recognised object. It includes an automatic AR Camera and image target along with the video player which makes it easier for recognising the image and to learn. The database is done with Vuforia cloud database. The UI provides an excellent user friendly environment that makes the communication more interactive.

Keywords Mobile application, Vuforia, Unity, AR Camera, C#.

I. INTRODUCTION

The application generally refers to the word tutor with hospitality. Learning is the process of acquiring new, or modifying existing, knowledge, behaviors, skills, values, or preferences. The ability to learn is possessed by humans, animals, and some machines; there is also evidence for some kind of learning in some plants. Interactive learning is a globally accepted career field and academic field of study as it promotes the software application too as shown in Table 1.

United States	4,900,000
China	1,500,000
Japan	1,370,000
Italy	1,100,000
Germany	950,000
Spain	900,000
Mexico	660,000
United Kingdom	650,000
France	620,000
Thailand	530,000
Indonesia	410,000
Greece	400,000
Brazil	400,000
Turkey	330,000
Austria	290,000
Russia	260,000
Global total	**21,000,000**

Table 1. countries investing in e-learning

II. EXISTING SYSTEM

Although, mobile application on learning is a blue eyed vision of people of cities, it is important to handle and manage this[1]. There are developed mobile apps and web applications for this scenario, but have equalized bane comments on them. Already existing apps are, "eureka.com", "educomp.com", "amazon kindle"," khan academy" and other apps are only given for guide basis.

eureka.com

The application of eureka has been rated as (3.6/5), has a certain disadvantages of bugs, and lags in time and has no AR or AI. It is only available on web.

educomp.com

The application next is "educomp", it is the currently used app in schools and is rated as (4.0/5), it is not accessible offline and it just act as showcase of concepts.

amazon kindle

The next app is," kindle", it is rated as (4.2/5) it is the app which only consists of books. It is rated bad because of it complexity in understanding the terms of cost.

khan academy

The next named application is," khan academy" it is an updated version of educomp.com . It contains transactions and has login & registration problems. This app has a highly rated and has a disadvantage of slow pace,bugs,complexity of understanding and has difficulties in entering the datum.

These are the common set of disadvantages faced by the people who are using this applications. Hence, our application has been programmed with the help of UNITY,VUFORIA, UNITY CLOUD , C# software to overcome this set of disadvantages[4]. Hence, the proposed app is said to be user friendly along to give a helping hand for the learners and the students[6].

III. PROPOSED SYSTEM

Unity is an integrated platform to work with c# , vuforia and AI[2]. This application programs helps to give a great user interface[2] as shown in Figure 2. The UNITY CLOUD platform provides the best use of storage and vuforia license gives a better connectivity with the AI image recognition and UNITY CLOUD[5] as shown in Figure 1.
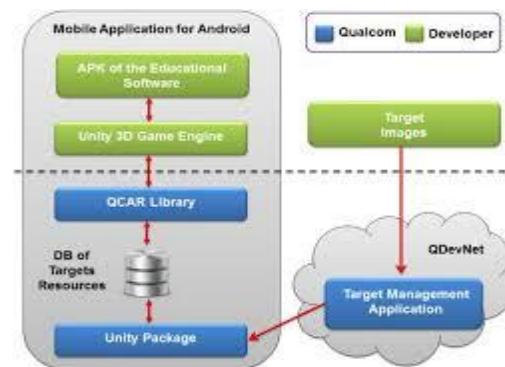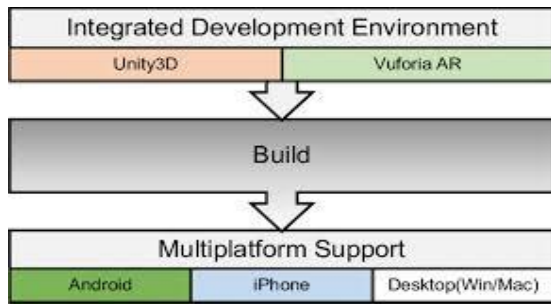

Figure 1. Unity architecture

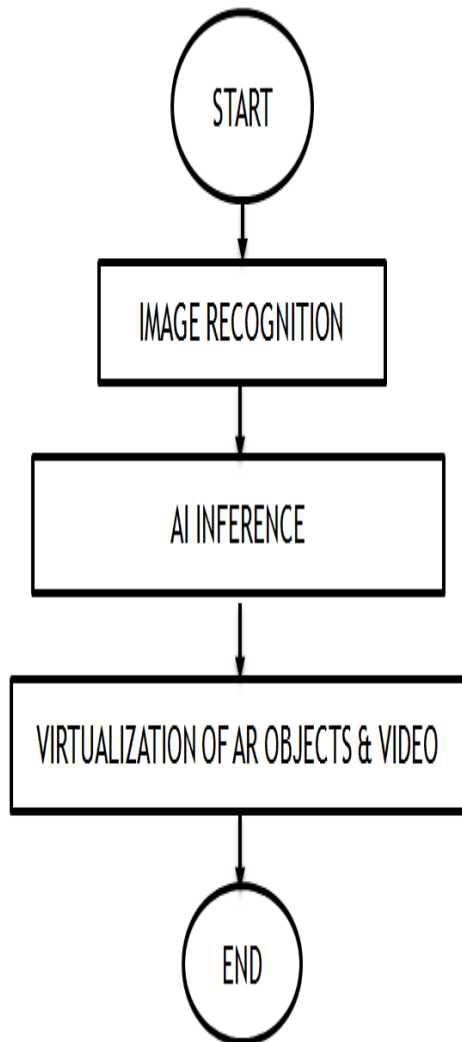Figure 2. application Structure

IV. VIRTUAL TUTOR APPROACH

Figure 3.virtual tutor workflow

Virtual tutor

The proposed application provides an excellent information on the recognised image[8] as shown in Figure 3. This learner friendly application consist of a AR camera which is used to recognise the image provided by the user[3].The vuforia package which is intergrated is used to identify the image provided by the user[5] .This AI technology identifies the exact image and relates it with the UNITY CLOUD for exact explanation video.If there is a presence of 3d motion objects, it will be enable automatically[7]. This app is very responsive to run the application in all android , ios, web application. It also provides an simple UI for the learners who uses the app.

V. IMPLEMENTED RESULTS:

[SCREENSHOTS FROM THE USER INTERFACE OF THE MOBILE APPLICATION "VIRTUAL TUTOR"]
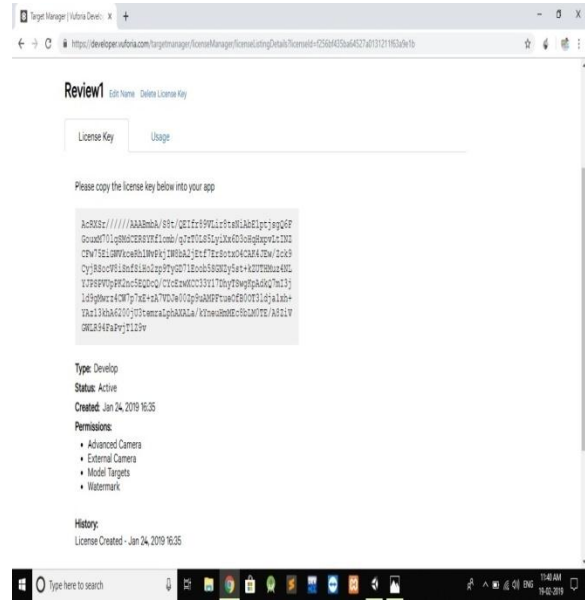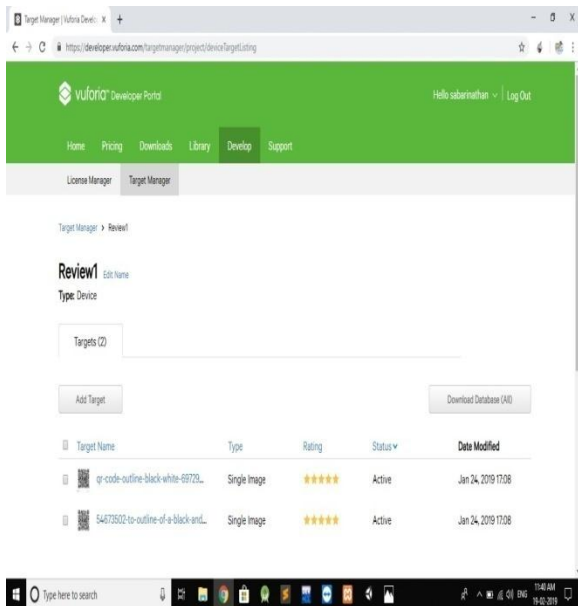

STARTING WITH UNITY
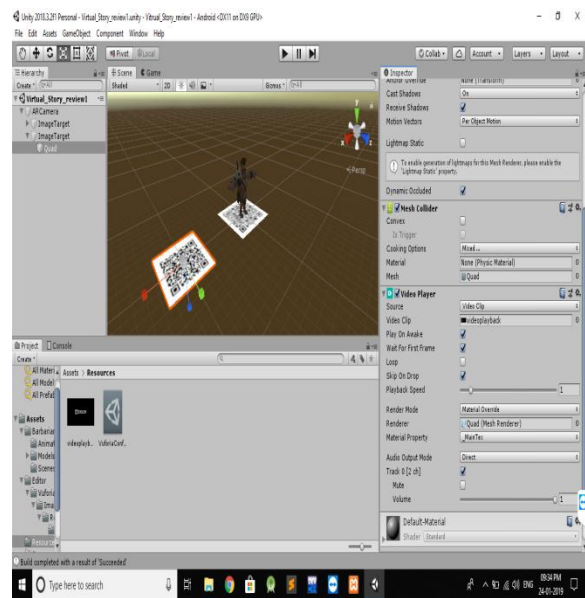
_____

VUFORIA AR CAMERA

INTEGRATION OF VUFORIA KEY

INTEGRATION OF VUFORIA KEY

AR CAMERA IMAGE RECOGNITION

_____

IMAGE RECOGNISED LEARNING
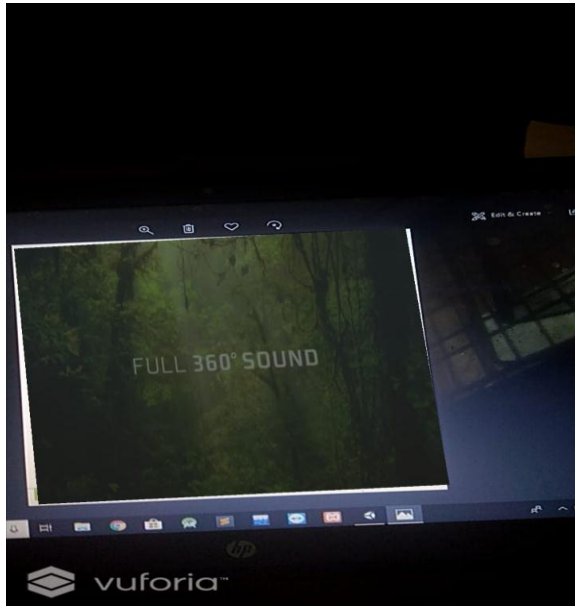
LEARNING WITH SOUND

LEARNING 3d MOTION OBJECTS

VI. ADVANTAGES

1. It provides a great student friendly and as well as mobile friendly interface.
2. It is used to identify the particular image in a book.
3. It contains basic learning videos stored in cloud.
4. It is memory as well as RAM freed mobile application.
5. It contains a dynamic cloud storage of learning points which can be accessed by internet.
6. It recognize a particular image and infer it with the AI technology which is integrated with vuforia.
7. It also highlights the important keyword present in the book.
8. It also include 3d moving objects for better demonstration of a concept.
9. Better sound quality of the video with faster retrival.

VII. CONCLUSION AND FUTURE WORKS

The tremendous growth in mobile application development is used worldwide today. Mobile applications are evolving rich and fast user experience. The ultimate goal is to provide a successful user interface to the users in an efficient manner at ease and also to save the time. This application helps the learner to clear their queries and to learn more on the specified topic.The applications, "virtual tutor" gives the facility in recognizing the particular image given by the user and teach more on the image to the user. It also generates a video response after recognizing the image. The application provides an user interface that is very much user friendly. The video also used the 3d object motion for interactive learning which is responsive. The mail is also sent to the customer for the conformation process. By this we conclude by saying, this short hand application en-routes the people's view in clearing queries and understanding a concept . It provides all time support to people who uses the application.

VIII. REFERENCES

[1] Bergasa-Suso J., Sanders D.A. Tewkesbury G.E., "Intelligent browser-based systems to assist Internet users", Education, IEEE Transactions on, vol.48, no.4, Nov. 2005.

[2] C. A. Carver, R. A. Howard, W. D. Lane, "Enhancing student learning through hypermedia courseware and incorporation of student learning styles", *IEEE Trans. Educ.*, vol. 42, no. 1, pp. 33-38, Feb. 1999

[3] D. Holweg and O. Schneider. GEIST: Mobile Outdoor AR-Information System for Historical Education with Digital Storytelling. In Proceedings Federal Ministry of Education and Research: Virtual and Augmented Reality Status Conference, Leipzig, Germany, 2004.

[4] S. Julier, et al. BARS: Battlefield Augmented Reality System. In NATO Symposium on Information Processing Techniques for Military Systems, Istanbul, Turkey, October 2000.

[5] M. Nielsen, et al. Mobile Augmented Reality Support for Architects Based on Feature Tracking Techniques. In Proceedings International Conference on Computational Science, Krakow, Poland, June 2004.

[6] G. Reitmayr, et al. iOrb - Unifying Command and 3D Input for Mobile Augmented Reality. In Proceedings IEEE VR 2005 Workshop on New Directions in 3D User Interfaces, Bonn, Germany, 2005.

[7] B. Thomas and W. Piekarski. Glove Based User Interaction Techniques for Augmented Reality in an Outdoor Environment. In Virtual Reality: Research, Development, and Applications, (6), 2002.

[8] D. Wagner and D. Schmalstieg. First Steps Towards Handheld Augmented Reality. In Proceedings Seventh IEEE International Symposium on Wearable Computing, New York, USA, 2003