

## AUGMENTED REALITY FOR E-LEARNING

Nikhil Savale\*<sup>1</sup>, Sagar Garud\*<sup>2</sup>, Roshani Mahajan\*<sup>3</sup>

\*<sup>1,2,3</sup>Department Of Information Technology Shram Sadhana Bombay Trust's College Of  
Engineering & Technology, Jalgaon, India.

### ABSTRACT

Over the last decade, rapid evolution of technology has yielded new ways to develop applications for learning. Augmented Reality (AR) as an educational medium is becoming increasingly accessible to young students at elementary school and professional learners alike. It is a new medium, combining aspects from ubiquitous computing, tangible computing, and social computing. This medium offers unique affordances, combining physical and virtual worlds, with continuous and implicit user control of the point of view and interactivity. This paper provides short introductions to the technology of Augmented Reality and E-Learning. Example applications, key technologies of AR are discussed within the context of education. This paper reports a systematic review of literature on augmented reality in education, the main finding being the classification of ongoing research in AR in education and the identification of benefits and detriments of AR for E- Learning. Furthermore, current trends, a vision for the future and opportunities for further research in Augmented Reality for educational settings have been discussed.

### I. INTRODUCTION

Our Augmented Reality based software which can be used by students with their traditional textbooks. This software will help students to visualize the three dimensional representation of the entity they are learning about. This Software will allow students to great extend to understand the concepts easily and way better than just seeing the 2d pictorial format of the subject. Basic requirement of the software will be a Android phone or tablet on which our software will run and if user wants to enhance the experience then a VR glasses can also be used. This Software can be used from School/High School to Colleges.

### II. MODULES

#### 1. Graphical User Interface :

In this AR based project, GUI component contains a Menu Screen where different GUI Buttons are present to enter a particular section of the application.

#### 2. AR Module :

This Module includes Vuforia and Camera to give user the experience of Augmented Reality which is the main feature of this application.

#### 3. C-sharp Scripts :

In the back-end all the activities are handled by C-sharp scripts including GUI components to 3d models. C# can access code written in any .NET compliant language and can also inherit the classes written in these languages.

#### 4. 3d Models :

3d models are used with AR component of this application, using the AR technology and Camera component in this application it is possible to present an Augmented 3d model through the camera in-front of the user.

### III. APPLICATIONS

#### 1. In the Education field :

Its not easy for the students to imagine a 3d object i.e Internal Organs, Mechanical Motors or Any Computer Circuits or Equipments when it comes to Pictorial presentation of those object, using this application student can get an 3d augmented model in front of them from all the 3 dimensions to clear their concepts and imagination easily.

#### 2. In Engineering field :

This application allows to present 3d models so according to engineering aspects it's great to have such application which will show their Mechanical parts and other such Engineering components using AR.

IV. AR VIEWS

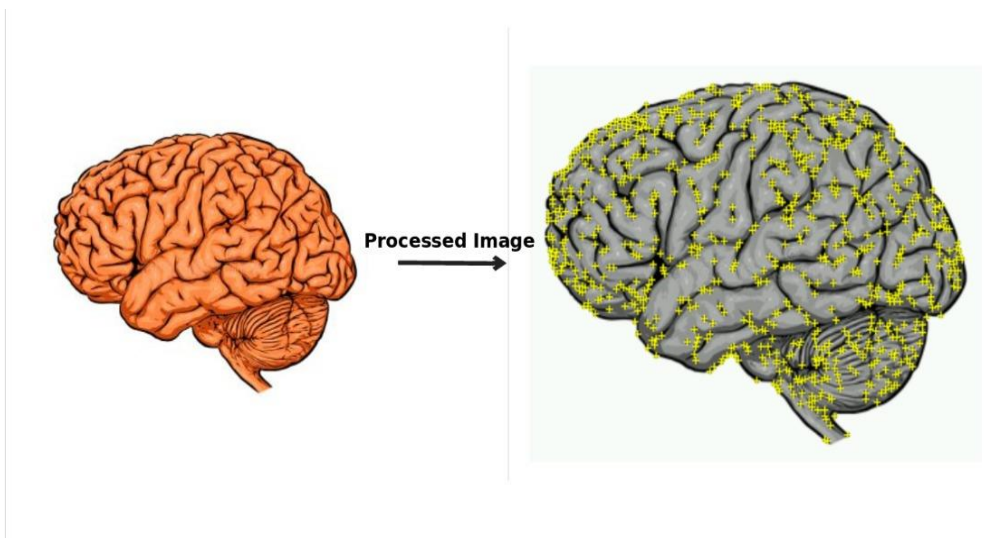
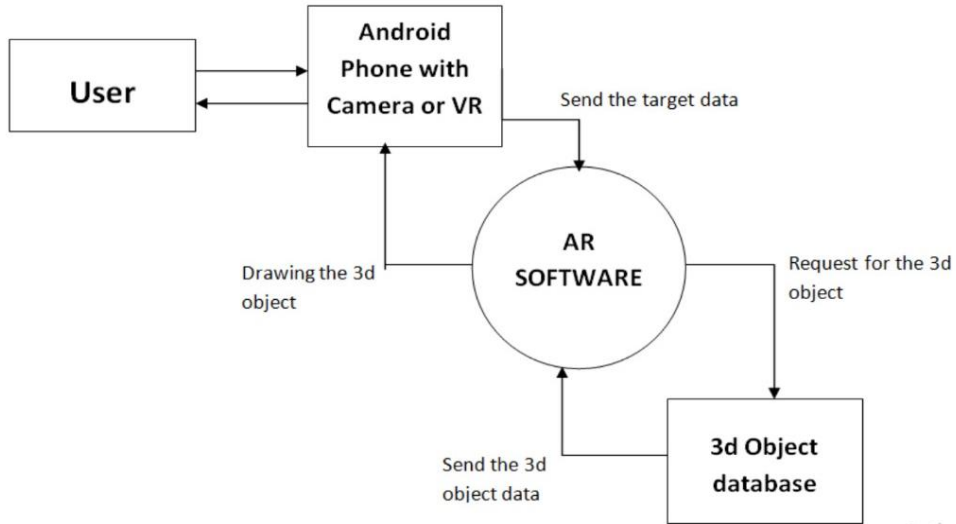
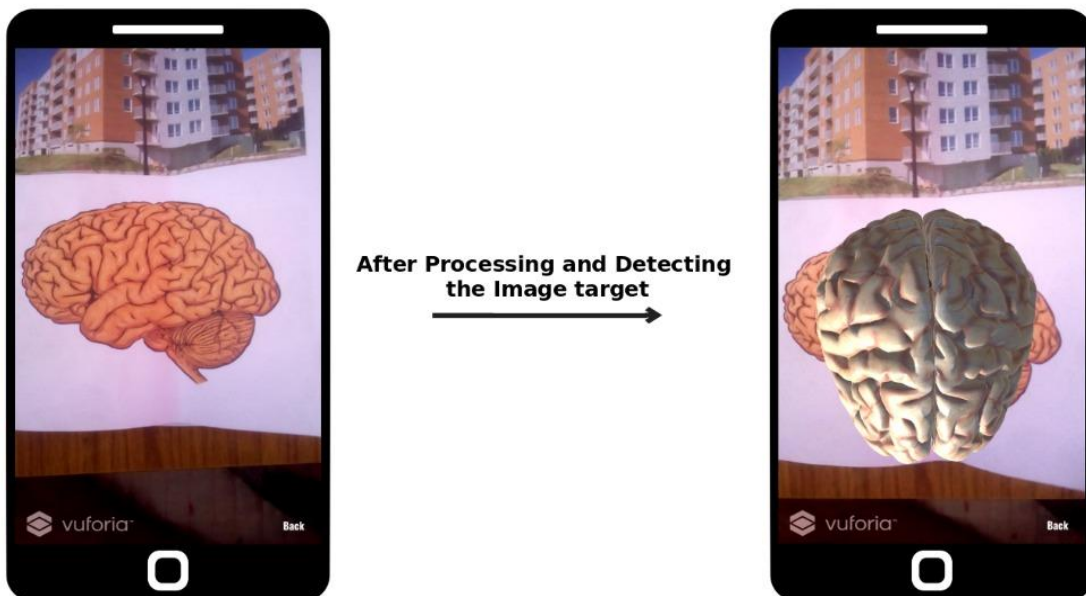


Fig. 1. Flow of Genetic Algorithm



## V. ADVANTAGES

- The AR system is highly interactive in nature and operates simultaneously with real time environment.
- It reduces line between real world and virtual world.
- It enhances perceptions and interactions with the real world.
- It can be applied to part of practicals as it makes things memorable and eye catching.

## VI. DISADVANTAGES

### A need of extra wearable device :

Since users may want to feel more authenticity in AR, wearable devices such as Google Glass and Apple's iWatch may be provided for users in order to offer authentic experiences in more convenient yet expansive way.

### Technical Failure :

Technical failures like camera not working, damaged screen or Low battery of mobile phone may cause trouble while using the application.

## VII. FUTURE SCOPE

This Application, that enrich the standard methods of imparting education are always in demand, now more than ever. A big disadvantage of using the traditional Instructor-led classroom is its inability to address individual learner needs, leading to a lack of attention and interest among students.

This is where this application comes with Augmented Reality technology which provides visuals to learners that can enrich the learning experience and assist the educators in creating content that links visuals to reality. For educators, application like this offer a method of delivering content that makes learning interesting and easier to understand.

## VIII. CONCLUSION

In conclusion, creating an augmented reality (AR) project for e-learning is a promising way to enhance the learning experience of students. AR technology can provide an interactive and immersive learning environment that can engage students and improve their motivation to learn. By incorporating AR into e-learning, educators can create a more dynamic and engaging learning experience that allows students to visualize and explore concepts in new and exciting ways. Overall, an augmented reality project for e-learning has the potential to revolutionize the way students learn and educators teach. With its ability to enhance student engagement and understanding, AR technology can provide an effective solution for improving the effectiveness and efficiency of e-learning program.

## IX. REFERENCES

- [1] Sinha, R., Sivaraman, K., Agrawal, A., Jain, R., Srivastava, R., and Jain, A. (1995). ANGLABHARTI: a multilingual machine aided translation project on translation from English to Indian languages. In IEEE International Conference on Systems, Man and Cybernetics.
- [2] Madhu, Chithra, Anu George, and Leena Mary. "Automatic language identification for seven Indian languages using higher level features." In 2017 IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES), pp. 1-6. IEEE, 2017.
- [3] Venkatesan, Hariraj, T. Varun Venkatasubramanian, and J. Sangeetha. "Automatic language identification using machine learning techniques." In 2018 3rd International Conference on Communication and Electronics Systems (ICCES), pp. 583-588. IEEE, 2018.
- [4] S. Saini and V. Sahula, "A Survey of Machine Translation Techniques and Systems for Indian Languages," 2015 IEEE International Conference on Computational Intelligence Communication Technology, 2015, pp. 676-681, doi: 10.1109/CICT.2015.123.