

# ARC\_AR: Architecture Plan In AR

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**Abstract-** *Augmented Reality mixes virtual and actual reality, making available to the user new tools to ensure efficiency in the transfer of knowledge for several processes and in several environments. Various solutions based on Augmented Reality have been proposed by the research community: particularly in maintenance operations Augmented Reality tools have offered new perspectives and have promised dramatic improvements. This project presents examples of Augmented Reality applications and shows the feasibility of Augmented Reality solutions in Architecture tasks, and making augmented reality available for everyone. There are some problems and satisfactory limitation in Architecture and Construction business. Customer is confused when buying the big items like house, or any property. Using the today's new technology called AR (Augmented Reality) we can create virtual 3d view of whole construction site or the whole plan and can imagine it in better way. So that customers have better level of satisfaction regarding to this experience and they will opt to buy the property with more surety. We can see the AR 3D view of any items and can manipulate them in user friendly ways.*

**Keywords-** C#, Augmented Reality, technology, Unity3D, Sketchup, Google ARCORE, Autodesk, Photoshop, Blender, Maya 3d

## I. INTRODUCTION

Augmented Reality is a new emerging technology in computer field. Its use is increased very much nowadays. AR technology is used by so many tech giants and billions of dollars are already invested in this technology. So we have picked up this technology to provide a unique solution to society.

Augmented reality is perfect combination of reality and virtual world in smartphone, means image is captured in real world and with the help of augmented reality it shows 3d models of Architecture plan and also interiors over that image.

C# is programming language based on OOPS concepts, that we have used in this project. It was developed in 2002 by Microsoft, under the .net initiative.

ARCore is Google's platform for building augmented reality experiences. Using different APIs, ARCore enables your phone to sense its environment, understand the world and interact with information that your mobile's camera provides. And based on that information it modifies your 3d models

Unity3D is a powerful cross platform 3D engine and a user-friendly development environment. Easy enough for the beginner and powerful enough for the expert.

Sketchup is a 3d modelling computer program for a wide range of drawing applications such as architectural, interior design, landscape architecture, civil and mechanical engineering, film and video game design or for augmented reality projects as well.

## II. LITERATURE REVIEW

We got the inspiration of the project from some real-life incidents and we have also referred some research paper published in this field, but we found that there are some missing things to work on, so as a result we have created this project.

This Project is completely based on Augmented reality technology, so in this project we have referred so many online tutorials and official documentation on this technology and then chose these technologies for this project.

Augmented reality tool has offered new perspective and have promised dramatic improvements. This project presents examples of Augmented reality solutions in maintenance tasks, underlining advantages it could introduce. And also provides way to some other people for future enhancements for current work flow for real estate field.

## III. STUDY FINDINGS

A. In existing real estate business, we found out that all house or property dealers have to present their work or property with only some images and photos. And we thought as technologies emerges everything have to be updated with that.

- B. Also in some use cases dealers have to make a real 3D small model of that building and that process is lengthy and also cost effective.
- C. So we thought of making this problem an opportunity to apply our skills and make this process better and user friendly. So we started this project.
- D. For this problem we made and also searched some 3D realistic models for user to visualise as real-world examples. And made it compatible with our development environment.
- E. Then we added that models to unity 3D engine and made it useful for further development. These models are helpful to imagine by watching them and look around like it is there in front of you.
- F. Then we created top view plans of these 3d models for image recognition, because we wanted our user can take a 2d top view plan of their desired model and they can visualise that particular 3d model on that image by ARCore's image recognition functionality.
- G. Also we added some 3d plan without image recognition which can be implemented on the flat surface without any image to be scanned which will be useful when user won't have 2d image to scan.

#### IV. FUTURE ENHANCEMENTS

In future we can add some more functionalities in to this project and more work needs to be done, because this is not a complete system as we know, this project can give more accurate results with better and realistic 3d models. Also, we want to add more and more models in future. And because of the database will be large in future so we have to find a way to implement this database through internet anytime.

#### V. LIMITATIONS

- This app is not for any user. This is particularly for builders and property dealers so that they can show them their projects in better way.
- Low light can fluctuate image recognition and hinder 3d objects.
- The quality of the camera also makes a difference in image recognition and object augmentation.
- The database is totally offline on the phone so app size is a big problem right now.
- The technology is still in research so the quality of the product is not so good.
- Good and realistic 3d models are hard to create and we are not professional architects so we can't make it by ourselves.
- Manipulating 3d models are still in progress.

#### VI. CONCLUSION

Ending with the conclusion is that this project will help growing real-estate business to another scale and the communication and understanding between property buyer and builders will be smoother and very interactive. So, we think this project will make a new way for real-estate business tactics and it will make market more efficient. And also first goal of our project was user's satisfaction which will be happening in real time.

#### VII. ACKNOWLEDGEMENT

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