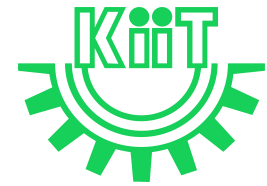


Augmented Reality in Education (Engineering Graphics)

Presented By:

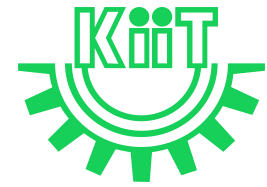
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Table of Contents



- Introduction
- Problem Statement
- Ideation
- Tools and Platforms Used
- Architecture
- Practical Implementation
- Future Scope

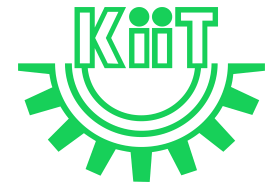
Introduction



- Augmented Reality is the technology that superimposes computer generated images and objects on to the real world.
- It is an interactive experience of a real-world environment where the objects that reside in the real-world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory and olfactory.



Problem Statement



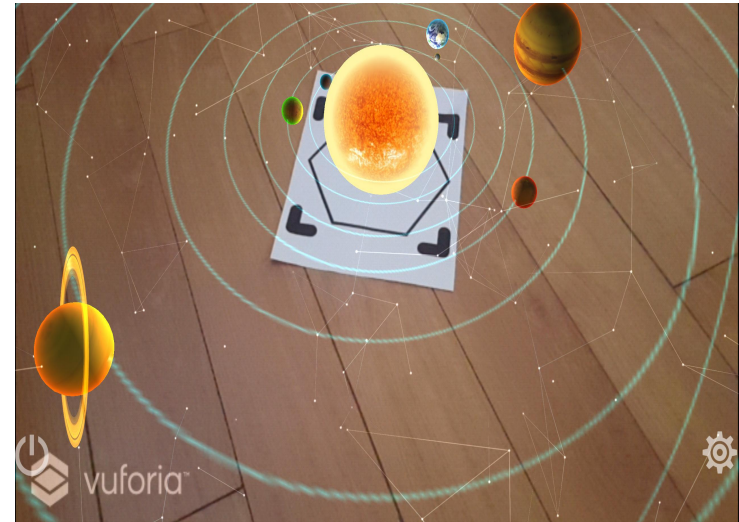
- Engineering graphics is the subject of transferring information from design into manufacture. A subject like this requires the individual to expand their imaginative horizons.
- It is most often found that the individual finds it comparatively hard to think and to visualize complex geometrical figures, and shapes in three dimensions.



Ideation



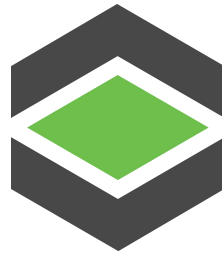
- Our project is based on the use of Augmented reality in education, specifically Engineering Graphics.
- Incorporation of this technology enhances the ability of the individual to create, visualize and comprehend graphical representation of engineering structure very easily.



1) Unity Game Engine

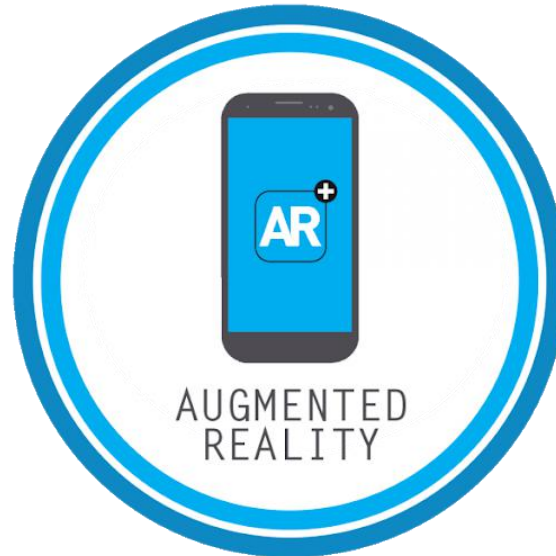


2) Vuforia SDK

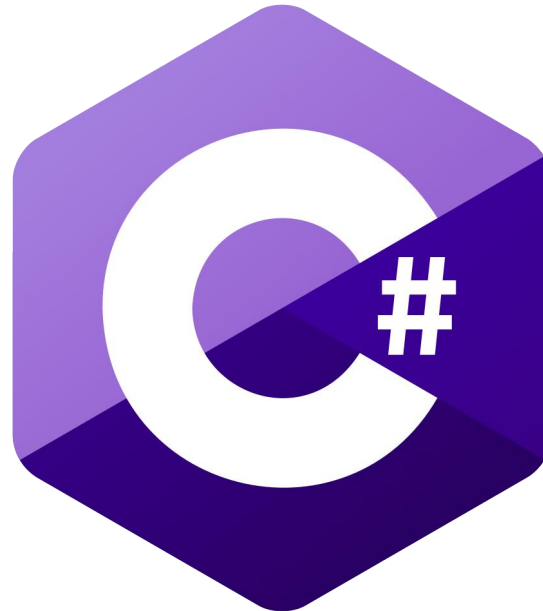


vuforia™

3) Augmented Reality



4) C# Language

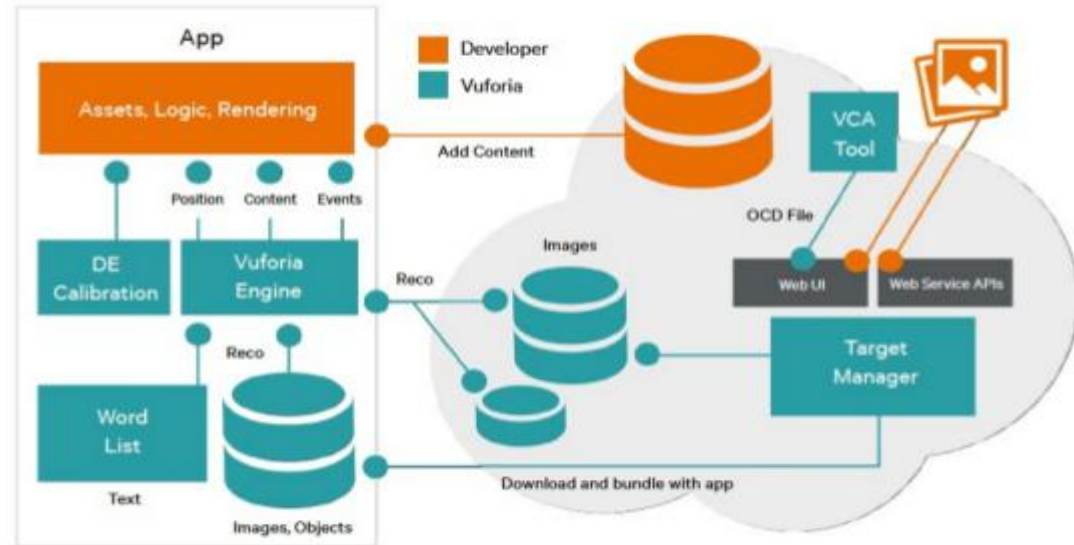


Architecture



Inner Architecture

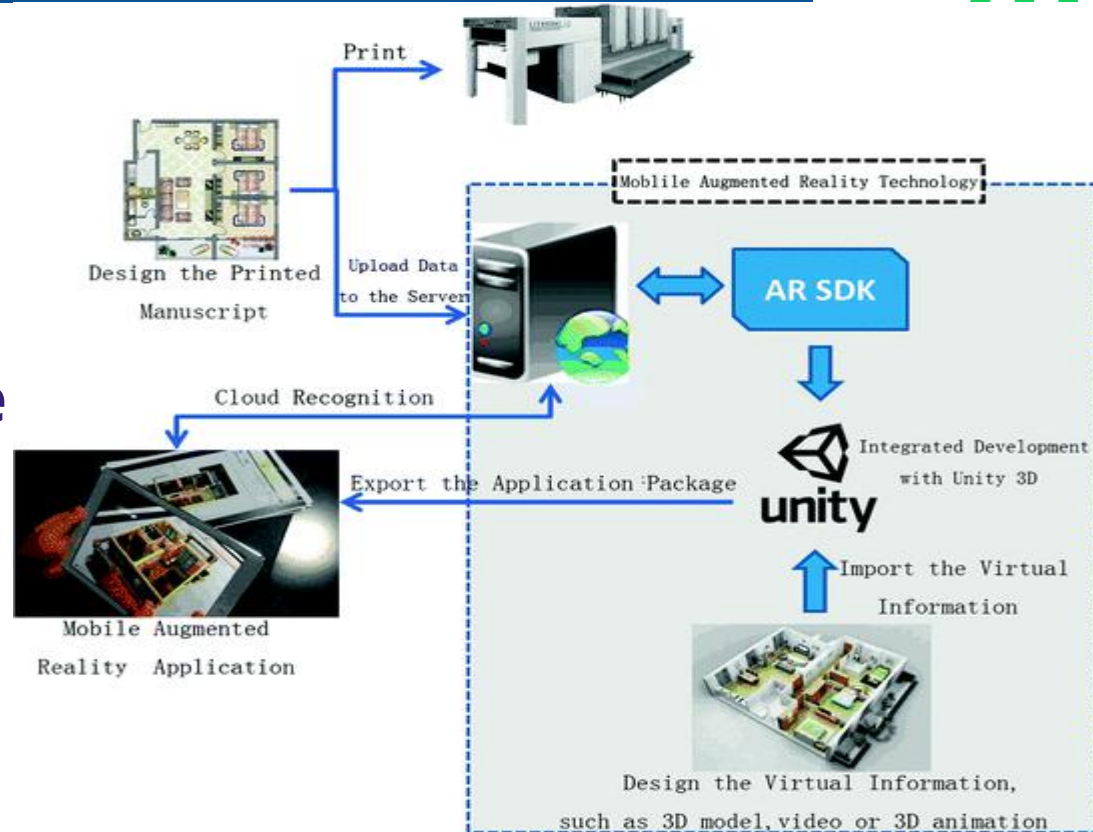
Platform Anatomy



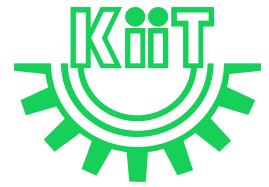
Architecture



Outer Architecture



Practical Implementation



● Home Page

- Explore : Takes the user to the next phase i.e. list of the exercises.
- About us : Contains information about the developers.
- Quit : Quits the application.



Practical Implementation



● Exercise List

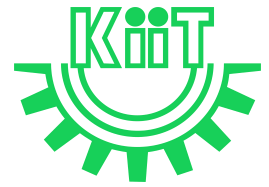
It incorporates the major topic of the curriculum. The current prototype of the application deals with two areas.

1. Projection of Solids
2. Section of Solids

Selecting one of these takes the user to the the questions of the corresponding topic.



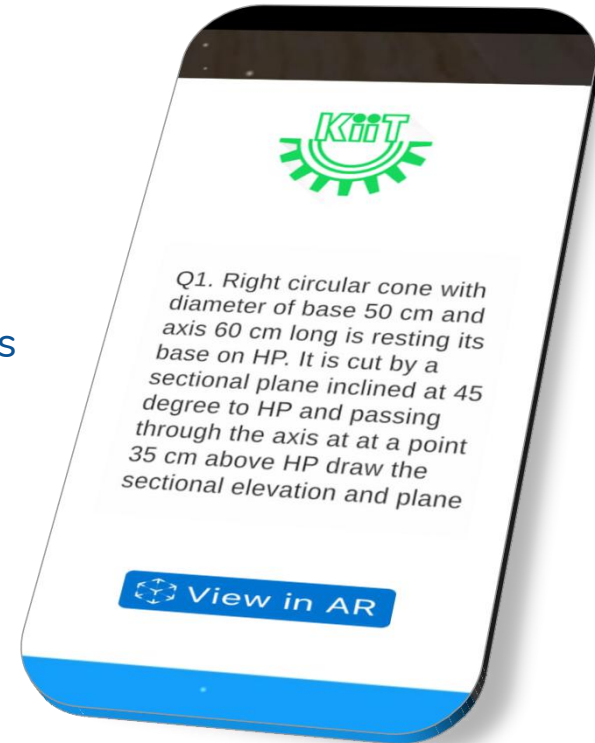
Practical Implementation



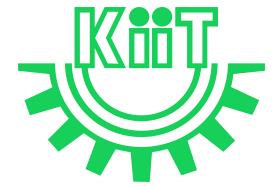
- Question Screen

The screen displays the an assortment of questions from the preferred of topic.

A button reading “**View in AR**” is present, which on click accesses the camera and scans the image target where 3D model will be augmented.



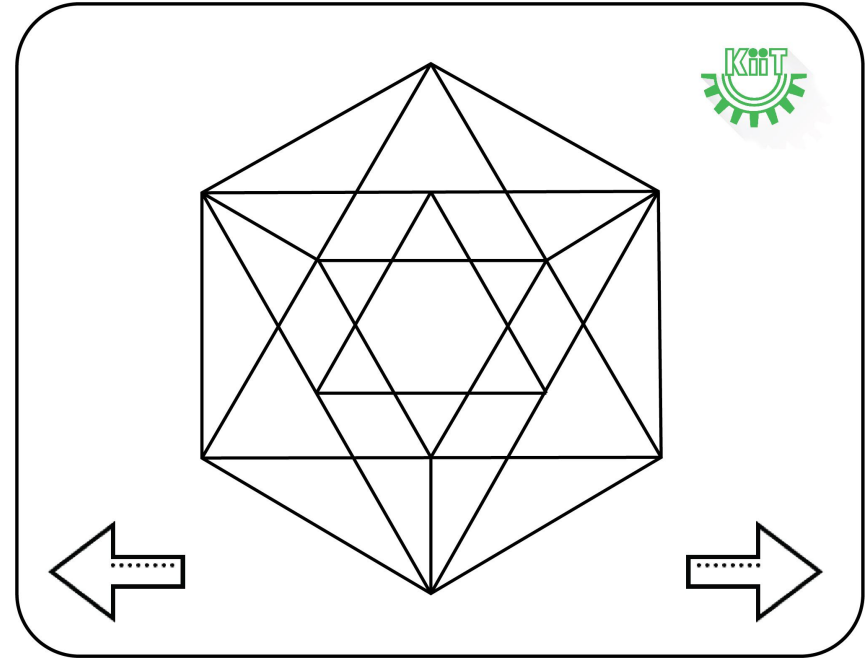
Practical Implementation



- Image Target

The image target on which the model will be instantiated is given alongside.

The application works for this particular image target.



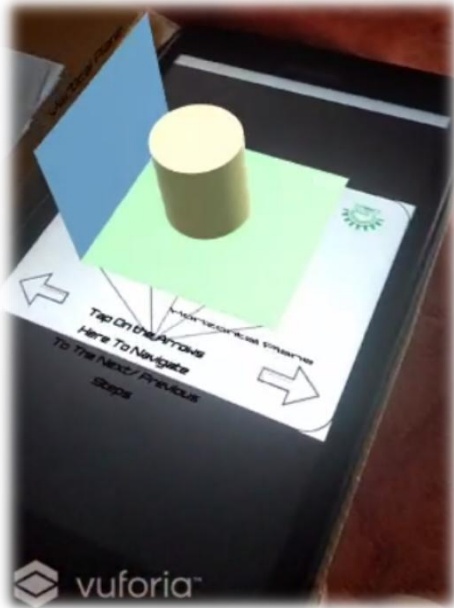
Practical Implementation



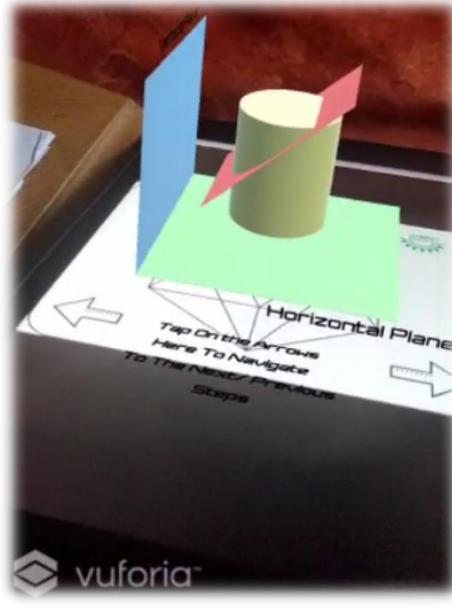
- The AR Mode

The 3D model is spawned on the image target as soon as it is detected. Since it is an AR application, the object remains intact irrespective of the camera movement delivering a complete 3D visualisation providing a complete understanding of its structure. The prototype application has been developed over several stages or steps of 3-D visualisation as shown in the next slide

Practical Implementation



STEP 1



STEP 2



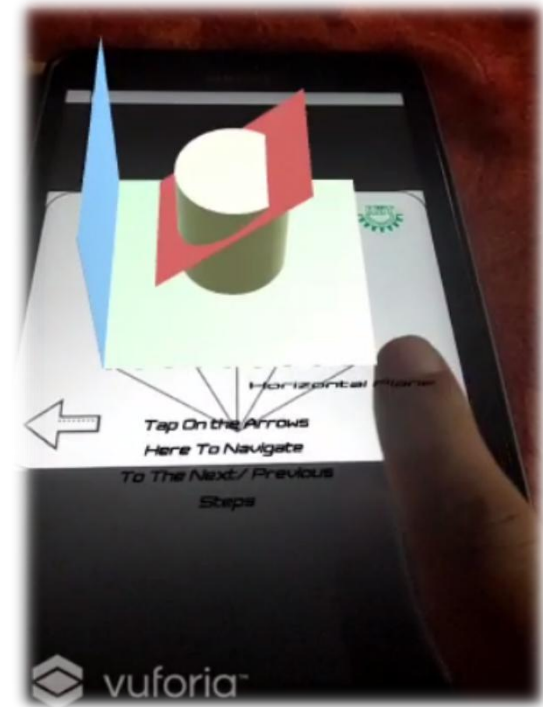
STEP 3

Practical Implementation

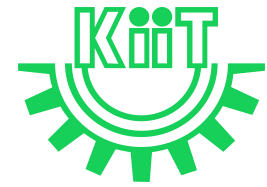


● The Added Touch

- Instead of using on-screen buttons, the application is integrated with a feature called the *VIRTUAL BUTTONS* which works on tapping or hovering the finger on a specified position on the Image Target(here the arrows).
- It transitions between the various phases in which the operation on the particular geometrical shape is desired.

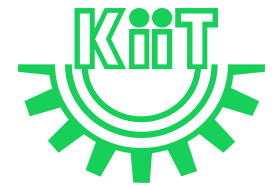


Future Scope



- The application can be further expanded and customised as per the demands of an individual.
- The application can be optimised by making the application more dynamic by the use of asset bundles by linking it to the server.
- Audio/Video streams can be integrated for better explanation of the topics.





THANK YOU

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NEELESH SINGH RAJPUT | PRASUN CHAKRABORTY |
DARSHITA SINGH