

A PROJECT SYNOPSIS

on

AR SMART NEWSPAPER

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Kharghar, Navi Mumbai

(Affiliated to University of Mumbai)

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I declare that this written submission represents my ideas in my own words and where others ideas or words have been included; I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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AR Smart Newspaper

ABSTRACT

Augmented Reality is an emerging technology and the applications of technology are still not fully unveiled. This paper explores a new application of augmented reality for a new direction in educational book publishing, which aims to bring interactive learning experience to life. The project takes printed newspapers to the next level by applying Augmented Reality technology to provide a unique fascinating experience to its readers on mobile devices. Augmented Reality (AR) technology composing with animation brings new digital entertainment experience to the reader of newspapers. The key feature of this paper uses the technology presents auxiliary information in the field of view of an image printed on newspaper automatically without human intervention. The project uses the technology with Android mobile device to display, videos splaying, websites and web server connectivity for newspapers. The results and evaluation of the project shows the interactive 3D animation and self-assessment functions significantly support students to improve their learning experience and performance. The software product of this project, from the business perspective, creates a new business marketing dimension in digital publishing and increases the selling profits in the newspaper publication business

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1. INTRODUCTION

Reading traditional newspapers or magazines is a common way to get latest information about events or new products. However, these printed materials only provide readers with static information. Readers may want to know more detail information about some product in an article or to watch video clips related to an event mentioned in a news right at the moment when they read that article or news. We are Creating an Application with mobile devices that can provide extra information and multimedia for readers by applying augmented reality to traditional newspapers. A user can enjoy extra rich multimedia information on a product or a news on his/her mobile device just by looking at an article in a traditional newspaper through his/her mobile device.

The system detects image in article and then it shows video related to detected image in a mobile device and provides a reader with video subtitles and voice over for news. AR technology creates models from content that take a brand new experience to readers of any age to the next level. In this project, we are implementing an app in which we will be having an interactive newspaper with interactive images. The newspapers will contain live images that will add extra detail and colour to live and adapt. We will be using latest feature of Vuforia to turn our newspaper into a magical newspaper that will play the content that is relevant to the image that is being detected. It will turn a boring and standard newspaper into something that is extremely interesting and it revamps the experience of reading newspaper.

2. LITERATURE SURVEY

In the Paper [1]. An augmented reality image registration method based on improved ORB was proposed. In the process of Augmented Reality (AR) image registration, the traditional ORB (oriented FAST and rotated BRIEF) algorithm has low registration rate and poor real-time performance. In this paper, an improved AR image registration method based on improved ORB is proposed. Firstly, the calibration image and video frame image feature points are obtained by the improved FAST feature detection algorithm. Then, the binary descriptor of BRISK, which using the custom domain sampling pattern is used for feature description, and the scale invariance of the traditional ORB algorithm is improved. Finally, the random sampling consistency (RANSAC) algorithm is used to eliminate the wrong matching point pairs and optimize the feature matching. Experiments show that compared with the AR image registration method described by the traditional ORB algorithm and the FREAK feature, the registration rate of the proposed algorithm is increased by 1.1% and 8.4%, and the generation time is reduced by 0.13s and 0.12s, respectively. The experimental results show that the AR image registration method proposed in this paper can obtain higher feature point registration rate, and has better real-time performance, which can better meet the application needs of AR image registration

In Paper [2] Augmented Reality Application for Newspapers, they are implementing an app in which we will be having an interactive newspaper with interactive images. The newspapers will contain live images that will add extra detail and colour to live and adapt. They will be using latest feature of ARKit to turn our newspaper into a magical newspaper that will play the content that is relevant to the image that is being detected (Apple Inc. 2020). It is basically a way of implementing augmented reality and pretty similar to other framework that implement augmented reality. Currently one of the most popular framework for implementing AR reality, specially when we are working with unity. Apple AR kit work in a similar way in essence that allows us to create and track correspondence between the real world space, 3D space and the virtual space that we create a model of some visual content.

In Paper [3] Examining augmented reality in journalism, they argued about use of augmented reality in journalism. Visuals in news articles serve journalism's claim to provide a truthful depiction of the world. Photorealistic visuals are used in news to support the journalistic norms of accuracy and authenticity. According to these aspirational norms, visual journalism should depict events in a comprehensive, realistic, and truthful manner. These norms provide a foundation for journalism's role as a truth-teller in society. By claiming to operate within these normative boundaries, journalism differentiates itself from other communication practices, such as advertising and propaganda. With its immersive features and 3D renderings of objects, AR has the potential to contribute to the perceived accuracy, authenticity, and credibility of visuals, similar to video and multimedia. This, in turn, can increase the perceived credibility of news reporting. Perceived realism and sense of presence in VR have been shown to have a positive association

In Paper [4] they have explored Augmented Reality Dynamic Image Recognition Technologies Based on Deep Learning Algorithms, This paper combines a convolutional

neural network that can learn good feature information with integrated learning that has good recognition effects. In the recognition tasks of the MNIST database and the CIFAR-10 database, comparison experiments were performed by adjusting the hierarchical structure, activation function, descent algorithm, data enhancement, pooling selection, and number of feature maps of the improved convolutional neural network. The convolutional neural network uses a pooling size of 3×3 , and uses more cores (above 64), small receptive fields (2×2), and more hierarchical structures. In addition, the Relu activation function, gradient descent algorithm with momentum, and enhanced data set are also used. The research results show that under certain experimental conditions, the dynamic image recognition results have dropped to a very low error rate in the MNIST database, and the error rate in the CIFAR-10 database is also ideal.

In Paper [5] They have examined Capabilities of ARCore and ARKit Platforms for AR/VR Applications. ARCore and ARkit capabilities were scrutinized and compared. Authors established comparison criteria for both platforms, developed test applications and ran comparison tests. Obtained results can be a help in choosing the right framework to speed up prototyping and development of modern AR/VR applications. This work consists of a comprehensive comparison of these new frameworks in the following respects: general performance (CPU/memory use), mapping of planes on various surface types, influence of light and movement on mapping quality etc.

In Paper [6], they have examined the performance of 3D object detection performed on augmented reality based on the Vuforia. The research scenarios based on the results of the analysis of the Vuforia working principle. The study conducted with three angles of shooting and several variations of light intensity and distance of the object. The research also conducted by covering part of the object's surface. The results showed that the Vuforia was able to detect objects well in several scenarios that applied with a success rate of 87.5%. The success rate of object detection strongly influenced by the surface area of the detected object and the intensity of the light space.

3. PROBLEM STATEMENT

The increasing use of the Internet search function, primarily through large engines such as Google, has also changed the habits of readers. Instead of perusing general interest publications, such as newspapers, readers are more likely to seek particular writers, blogs or sources of information through targeted searches, rendering the agglomeration of newspapers increasingly irrelevant. India's newspapers grew by relying on advertising, a dependence that began to unravel before the pandemic struck. Dailies have shut down and journalists have lost jobs. To revive their fortunes, they are now—belatedly—trying to build incomes from digital. So, we are using Augmented Reality, and taking advantages of new digital news boom for readers to return to newspapers again.

We will be using latest feature of Vuforia to turn our newspaper into a magical newspaper that will play the content that is relevant to the image that is being detected. It will turn a boring and standard newspaper into something that is extremely interesting and it revamps the experience of reading newspaper. As Providing AR coverage of certain inventions makes a news story a lot less abstract, giving viewers the freedom of visualization. Our AR Smart newspaper will, play a role in helping journalists provide information more conveniently while letting viewers get a more closer insight to stories.

4. PROPOSED SYSTEM

The main objective of this project is to develop an android newspaper application which uses augmented reality. languages used will be swift, ShadderLab and C#. We will be using latest feature of Vuforia to turn our newspaper into a magical newspaper that will play the content that is relevant to the image that is being detected. We will include news for various categories and will include relevant content related to it in our application.

We are using unity for development of our application, we will be creating multiple image targets for different types of news in our project. For database we are using Vuforia sdk. We will build our application for android using unity android sdk. In our application The back camera of the device will search for a scene and when it recognizes the scene using Vuforia Image Tracking, by scanning the image in the newspaper, then the video is played in its position which livens up the experience of reading a newspaper.

The software product of this project, from the business perspective, creates a new business marketing dimension in digital publishing and increases the selling profits in the newspaper publication business. Our AR Smart Newspaper could be very helpful for newspapers to attract young audience to newspapers due to augmented reality experience and it can also attract older audience of newspapers as user can enjoy extra rich multimedia information on a product or a news on his/her mobile device just by looking at an article in a traditional magazine through his/her mobile device.

4.1 Algorithm

1. Open the AR Smart Newspaper App
2. Allow Camera Permission to the app.
3. Click the AR symbol on the front page of the app.
4. The app opens the camera application on the iPad in scan mode. Fill the screen with the photo to be scanned.
5. The photo is automatically scanned as a vertical green line moves over the photo. Markers (the green dots in two of the photos below) are temporarily laid down as the scan line moves.
6. Information from the markers is sent to a newspaper computer.
7. The computer compares the information from the scanned photo with the photo information stored in its database until it finds matching data.
8. Once a match is found, the computer performs the action that it's programmed to carry out when that photo has been identified (such as loading a particular video or slide show).

4.2 Flowchart

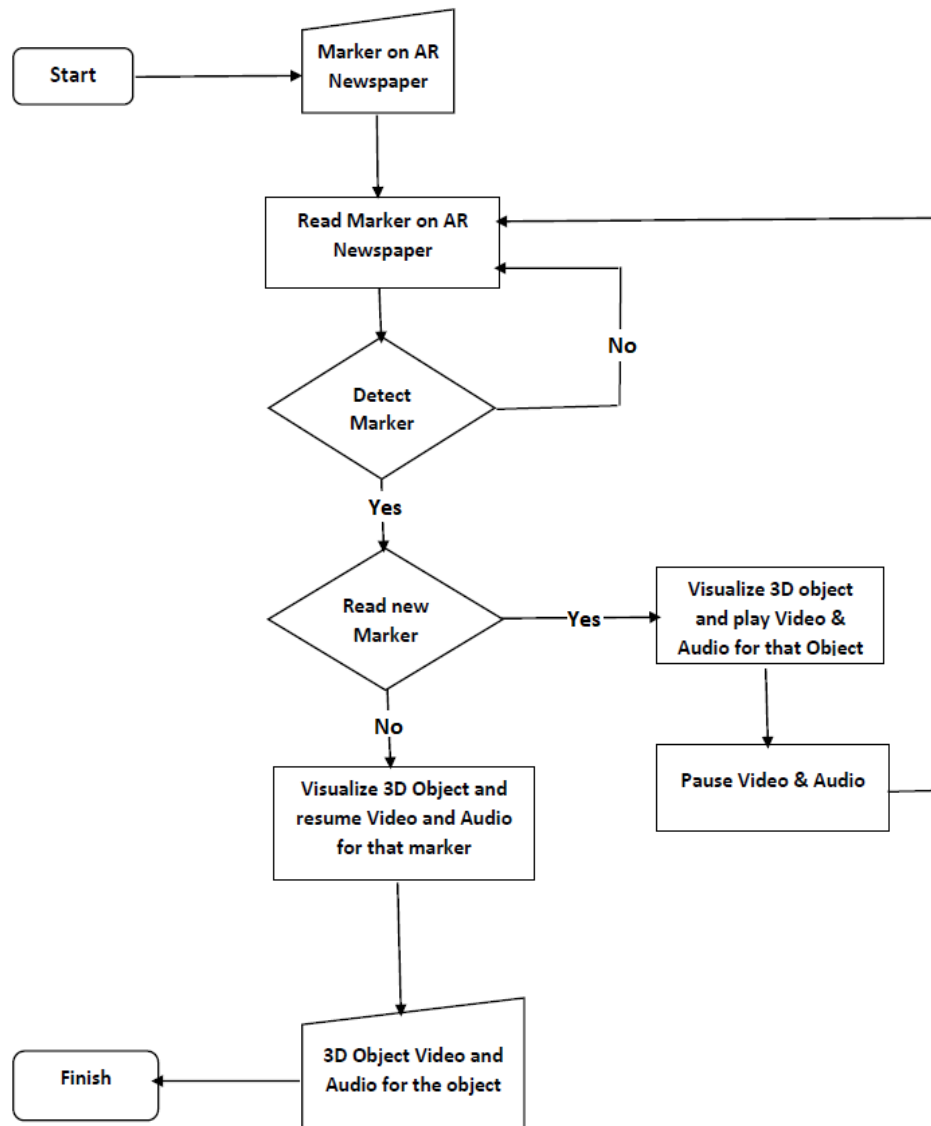


Fig 4.2: Flowchart for AR Smart Newspaper Application

4.3 Block Diagram

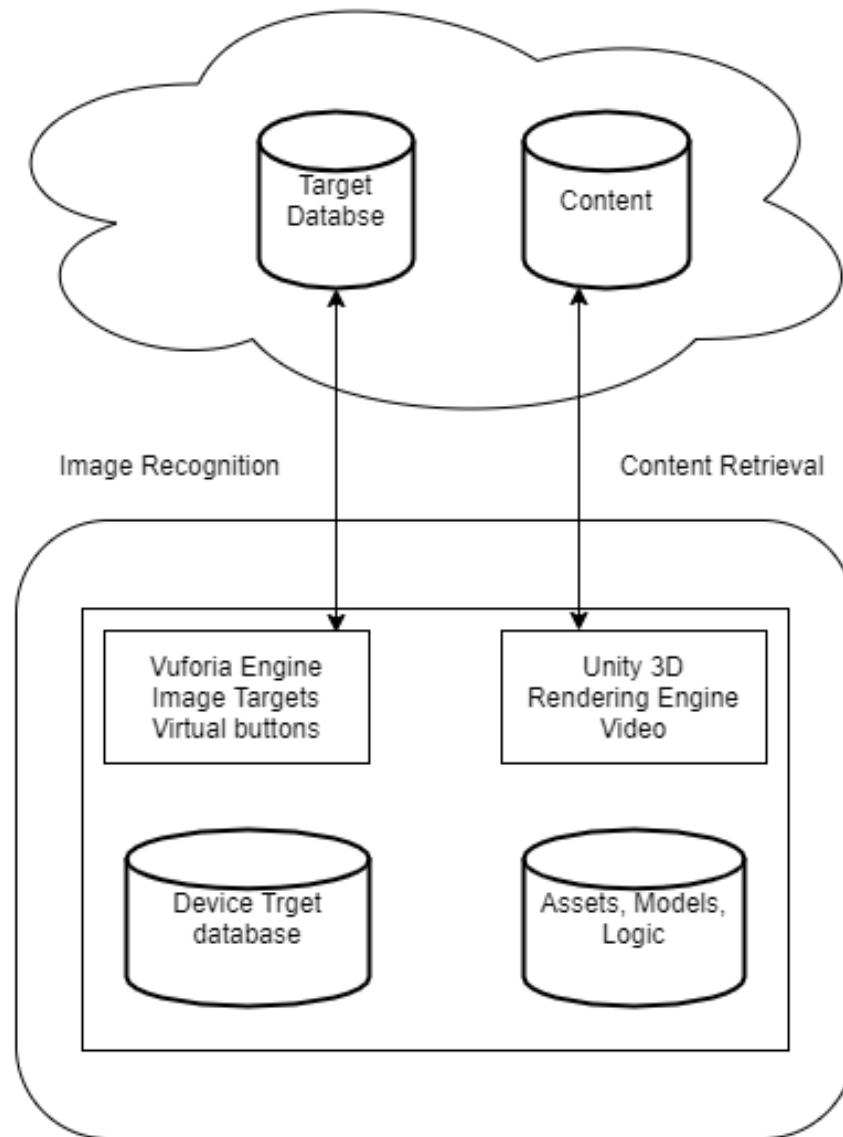
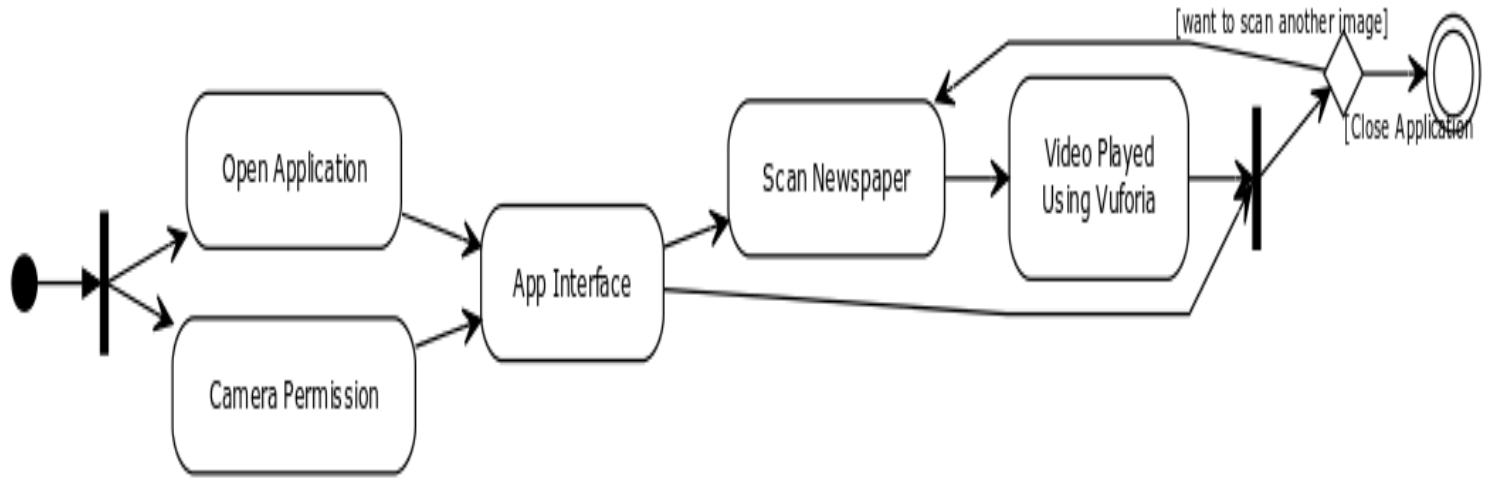


Fig 4.3: Block Diagram for AR Smart Newspaper Application

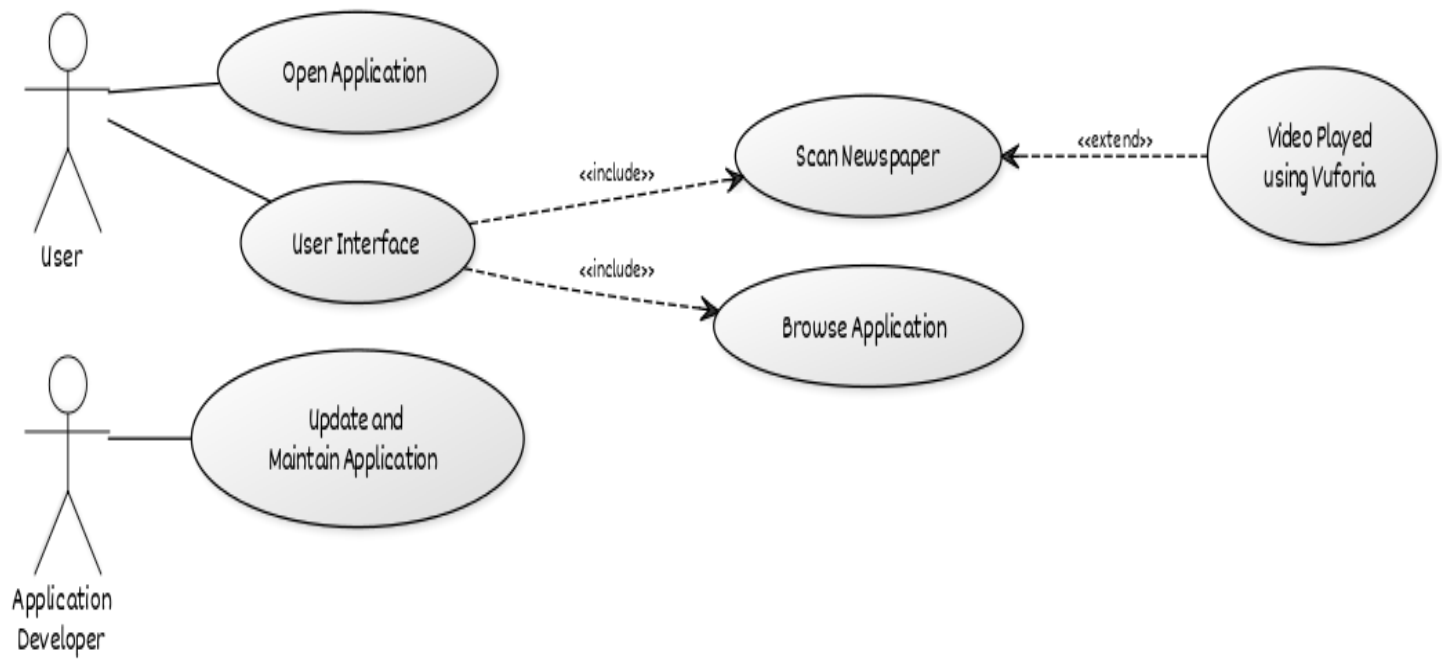
4.4 Activity Diagram



CREATED WITH YUML

Fig 4.4: Activity Diagram for AR Smart Newspaper Application

4.5 Use Case Diagram



CREATED WITH YUML

Fig 4.5: Use Case Diagram for AR Smart Newspaper Application

4.6 DFD Diagram

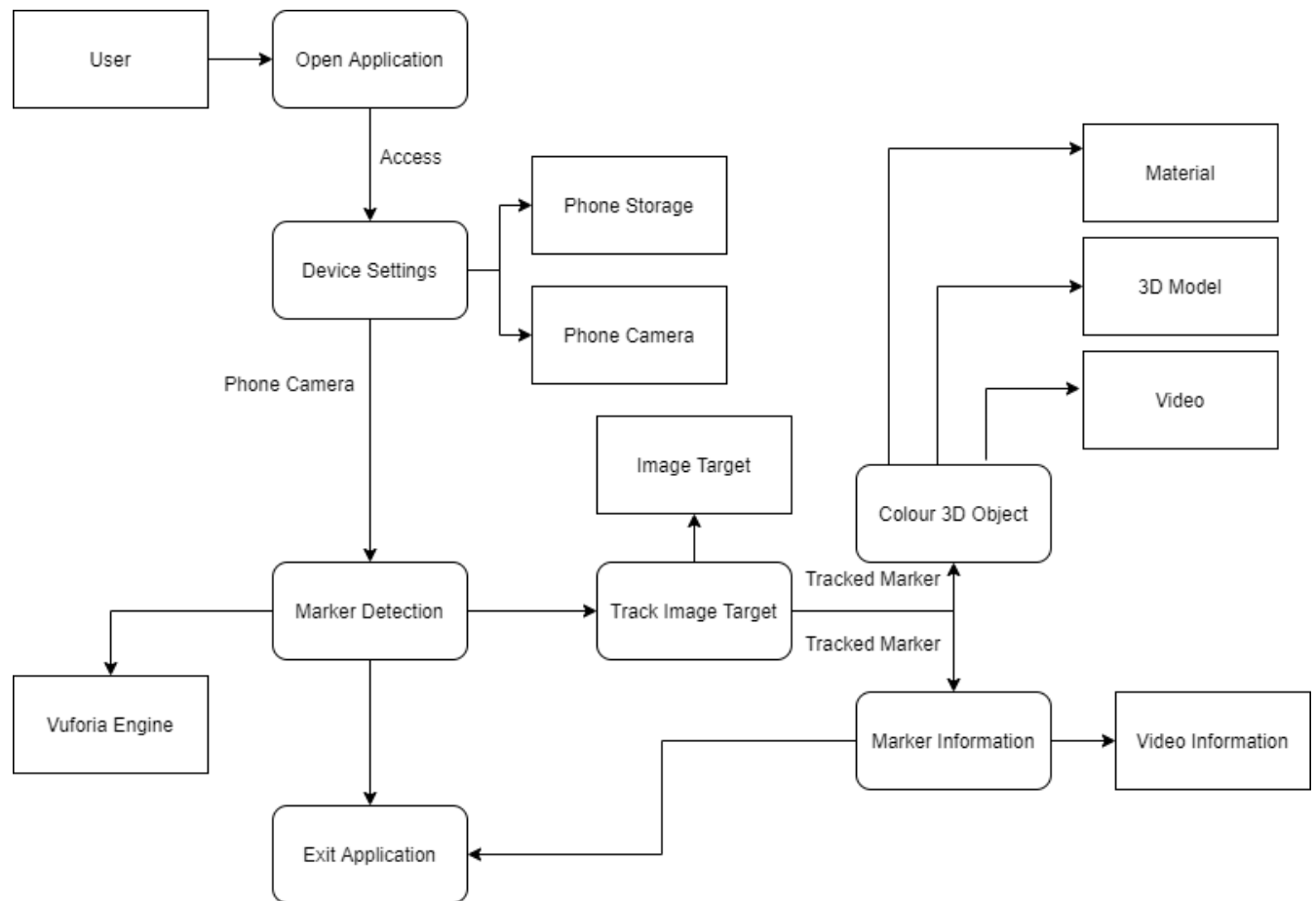


Fig 4.6.1: DFD Diagram for AR Smart Newspaper Application 1

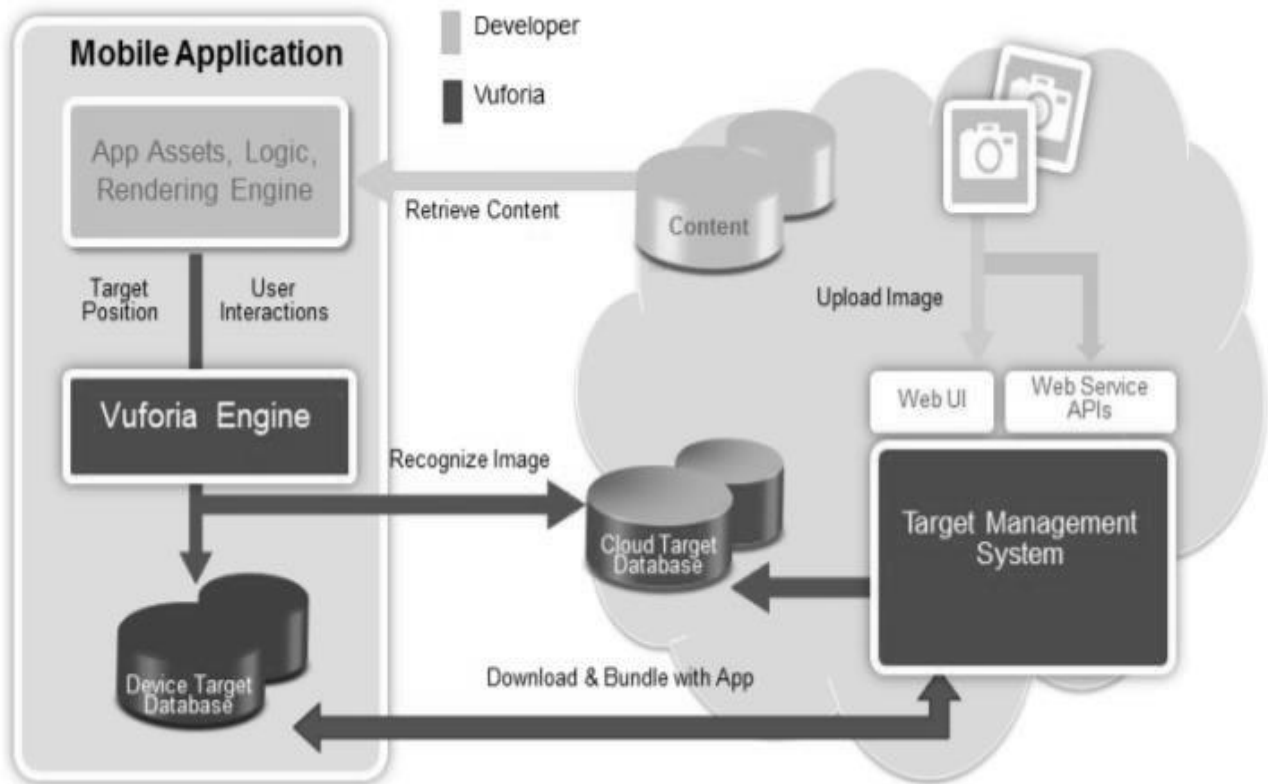


Fig 4.6.2: DFD Diagram for AR Smart Newspaper Application 2

5. DETAILS OF HARDWARE AND SOFTWARE

5.1 Hardware Specification

- Android Smartphone
- I3+ Processor System
- Sensors like Accelerometer, Gyroscope, Magnetometer
- Camera

5.2 Software Specification

- Vuforia
- Unity
- Android Studio Sdk

6. IMPLEMENTATION PLAN

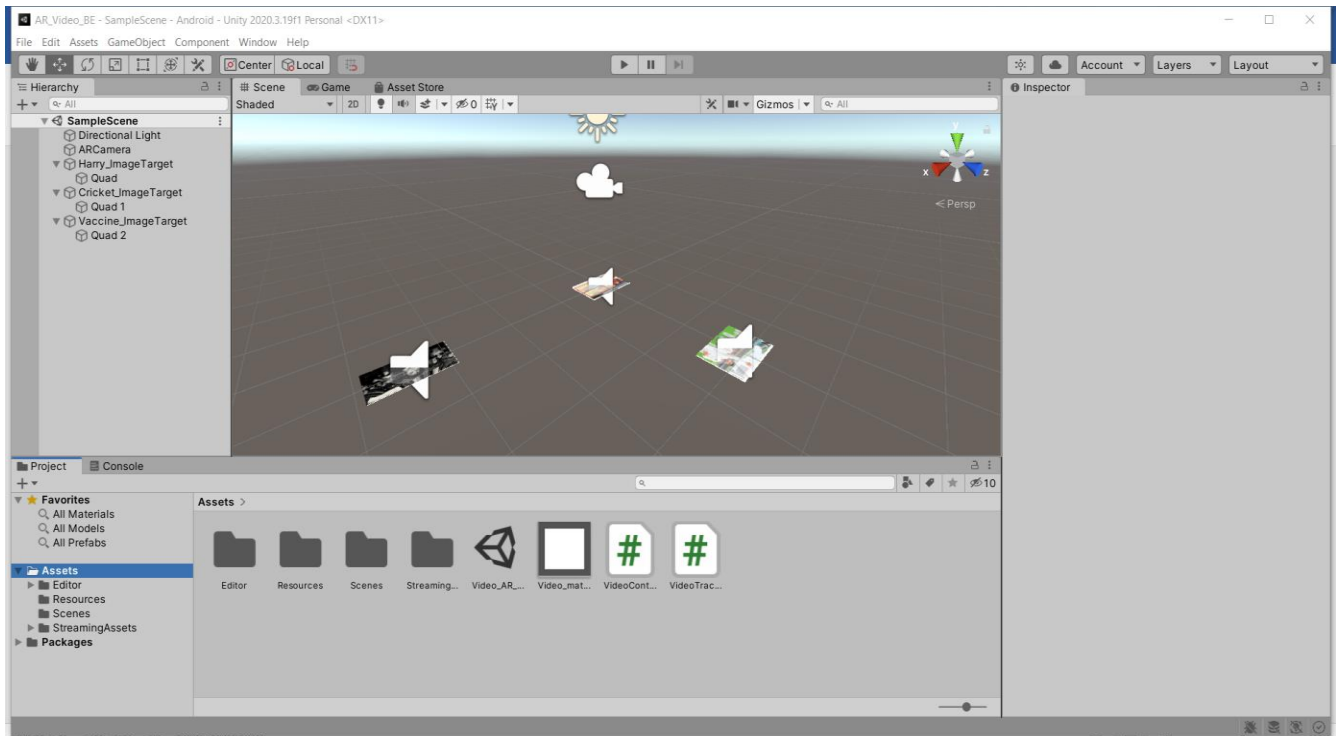


Fig: Unity User Interface



Fig: App Implementation Video 1



Fig: App Implementation Video 2

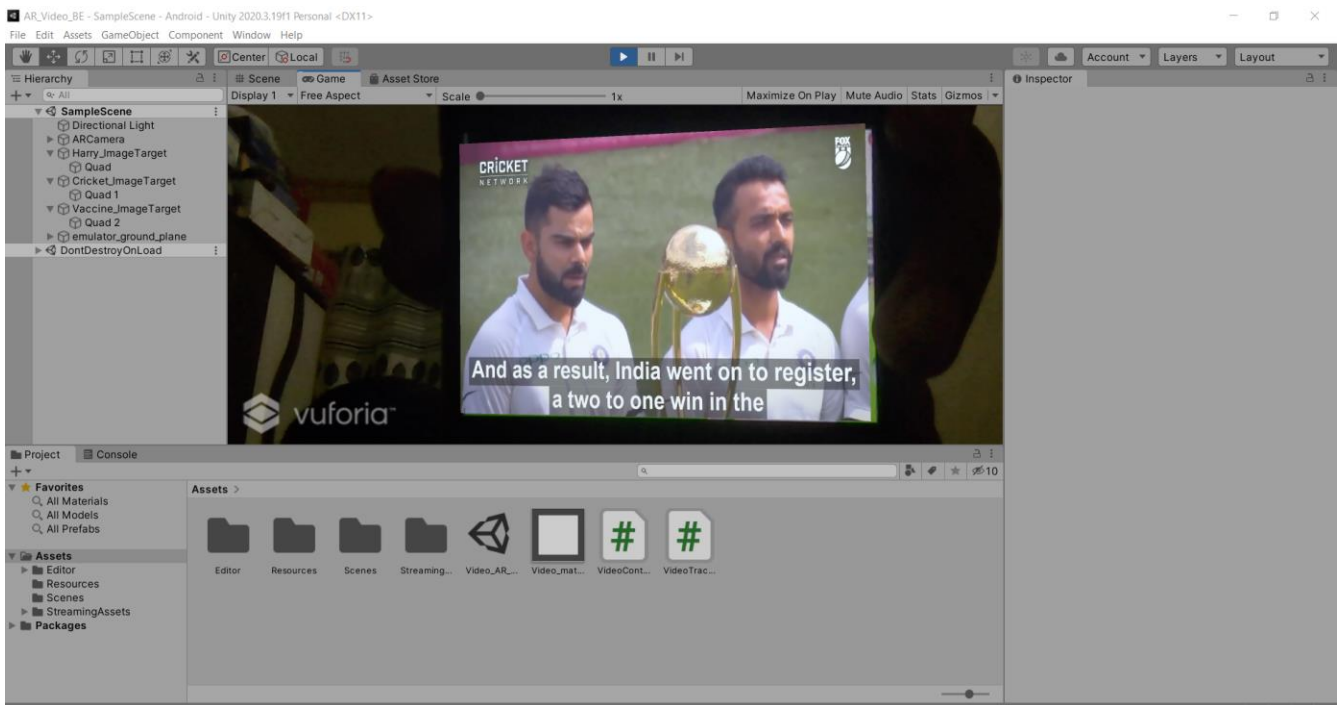



Fig: App Implementation Video 3

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AR_Video_Database [Edit Name](#)

Type: Device

Targets (3)

Add Target

Download Database (All)






<input type="checkbox"/>	Target Name	Type	Rating 	Status 	Date Modified
<input type="checkbox"/>	 Vaccine_travel	Single Image	★★★★★	Active	Oct 23, 2021 12:03
<input type="checkbox"/>	 harry_scaled	Single Image	★★★★★	Active	Oct 20, 2021 15:17
<input type="checkbox"/>	 Cricket	Single Image	★★★★★	Active	Oct 20, 2021 15:13

Fig: Vuforia Database

7. CONCLUSION

We can create a successful way of human interaction with newspaper with the help of AR Smart Newspaper, So by taking advantages of digital boom we can strike a balance between AR and Newspaper. For future developments it can be enhanced by developing this system for big newspapers or magazines. In the future development, smart newspapers, which can give full play to the advantages of augmented reality technology, will create a more realistic integration world for human beings. People can interact with the system in a more natural way of human-computer interaction.

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Program Educational Objectives (PEO)

1. To prepare the candidate for a successful career in the industry and make him acquainted with the latest software and hardware,
2. To enable student to work productively as computer engineers, including supportive teamwork and leadership roles on multidisciplinary teams,
3. Graduates are prepared to be responsible computing professionals in their own area of interest,
4. To provide the candidate with a sound foundation in mathematics, software technologies, database technologies, networking, hardware and to prepare them for post graduate studies and research programs.
5. To promote the awareness of lifelong learning among students and to introduce them to professional ethics and codes of professional practice,
6. To demonstrate effective communication skills in oral, written and electronic media.

Program Outcomes (PO)

At the end of the program, a student will be able to:

1. Apply knowledge of mathematics, science and engineering.
2. Utilize the computer engineering knowledge in all domains, viz., health care, banking and Finance, other professions such as medical, law, etc.
3. Design and conduct experiments as well as to analyze and interpret data.
4. Analyze the problem, subdivide it into smaller tasks with well-defined interface for interaction among components, and complete the task within the specified time frame and financial constraints,
5. Design a system, component or process to meet the desired needs within realistic constraints such as economic, environmental, social, political and Ethical ability,
6. Design, implement, and evaluate secure hardware and/or software systems with assured quality and efficiency,
7. Communicate effectively the engineering solution to customers/users or peers,
8. Understand professional and ethical responsibilities,
9. Understand contemporary issues and to get engaged in lifelong learning by independently and continually expanding knowledge and abilities,
10. Function in multidisciplinary teams,
11. Identify, formulate and solve engineering problems.

Course Objective and Scope:

1. To understand the problem and to design and implement solution.
2. Gain project management skills
3. Understand current tools and market trends
4. Develop the management and team management skills
5. Acquire presentation skills.

Expected Outcomes:

1. Ability to critically analyze a problem and to design implement and evaluate a computing solution that meets requirement.
2. An ability to cooperatively work in a team and meet deadlines
3. Use current tools and methodologies in effective way for solution
4. Understand social and ethical responsibility of working as a professional in field of Information Technology.
5. Sustain diverse acts with parameters to complete a quality project
6. Ability to present their project work.