

# Augmented Reality for Museum Tourism

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## ABSTRACT

Augmented reality (AR) has been used in the last years as a weapon for enhancing co-operation between the real world and virtual environments. The goal of this work is to develop an android application which will raise the value of tourist on-site experience in an innovative way via AR technology. This survey will especially focuses on museum tourism. Museum consisting of distinct sections faces difficulties of tourist management. If guides are not accessible this application can take place of human guide. In historical section of museum, one can scan the 2D image of object and can gain its 3D view along with its information. In music section, tourist can scan the image of singer and application will play famous melodies related to that singer. This data will be stored on the Cloud. This application is done by using well known technologies such as Unity 3D and Vuforia. Usage of such tools and technologies gives great opportunity to convert imagination into reality.

**Keywords:** Augmented Reality, Augmented Reality based 3D display, Augmented Reality based Music Player, Cloud Computing.

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## I. INTRODUCTION

Augmented reality (AR) is a live direct or indirect view of a physical, real-world environment whose graphic representation are augmented (or supplemented) by computer-generated sensory input such as sound, video, computer graphics art or GPS data.

Augmented reality apps are written in distinctive 3D programs that support the developer to unite animation or contextual digital information in the computer system to an augmented world "marker" in the real world. When a computing device's AR application or browser plug-in receives digital information from a known marker, it begins to execute the marker's code and layer the correct image or images.

## II. PROPOSED SYSTEM

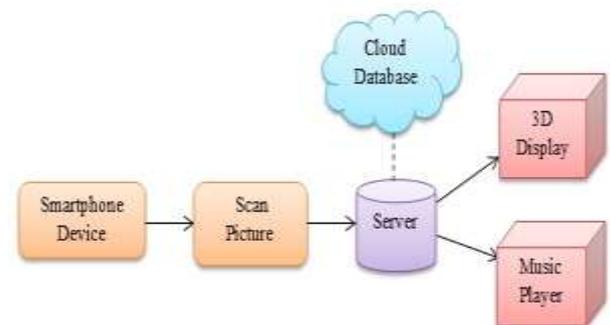


Fig.1. System Architecture

In proposed system, we have used predefined markers for recognition. As shown in above Fig.1. User scans marker image through his/her smartphone device. System will scan the marker and process to system server. All data is stored in cloud database. System server checks cloud data for corresponding visuals and displays the 3D view of available information. If user scans the marker and if its related music is available then system will start music player and play the music. If no information is available in database then system will generate error "No information is available".

### III. LITERATURE SURVEY

In this system user turns on an app and points the camera at image object. Then the app captures target and recognizes it in the video area. If the recognized image matches with the image target database, specified 3D models will be uploaded and displayed on the screen [1].

Time Machine is mainly configured in two modules, the cloud database and mobile interaction module. They are connected by internet. A large scale of mosaic images of different scenic spots were collected by aperture-coded cameras. According to the sparse depth level and convolutional kernel in each mosaic image, the redundant foreground information and defocus blur [2].

A PC platform 3D action puzzle game application with a game play that stimulates players think logically. "The Mechanic" game application allows player to be entertained with the challenging obstacles in the game play and heroic story that inculcate the user the virtue of perennial nobility and aligned with a specific educational setting. Data collection methods are questionnaire, literature study, and observation of similar game application [3].

Unity 3D contains packages similar to the concept of software libraries or reusable components that can be found within other languages and development platforms. A package in Unity 3D is a container of scenes and various assets (such as scripts, models, images, and sound effects) used by the game objects within those scenes. A Unity 3D project can export a package containing any number of scenes, and each of those scenes' dependent assets will be exported to the package automatically. In turn, any Unity 3D project can import such a package and hand-select any desired scenes and assets to be imported[4].

Smartphone-based mobile AR solves challenges that past AR systems had, including inconvenience of head-mounted displays and computer backpacks as well as requirement of external data processing infrastructure. We described two versions of Calory Battle AR exergame that utilizes mobile AR as a means of visualization and interaction. In Calory Battle AR, the player's role is to find and defuse virtual calory bombs in a real world environment. First prototype of the game was created without a third party rendering or game engine. This led to many challenges related to 3D data processing and presentation. To solve these challenges, we designed a new version of game with the Unity3D game engine. The game development process was significantly faster and required far less programming than the first prototype development. [5].

### IV. IMPLEMENTATION

We proposed a novel framework for museum tourism which makes use of smartphone to recognize image markers. System consist of local cloud instead of global cloud database. Because it is cost efficient and convenient for small scale user.



Fig. 2. Login Page

Through the login page user will connect to local cloud server by providing appropriate username and password. Before this user have to register. User information will be stored on local cloud database.

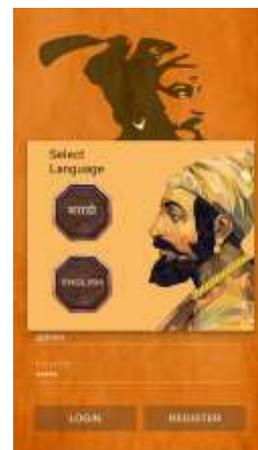


Fig. 3. Language Selection

System provides multiple languages, which includes English as well as regional language i.e., Marathi. User can select language as per their convenience.



Fig. 4. Information Module

After selecting the language AR camera will start. User have to scan the image markers then four toggle buttons will appear on screen which provides different choices such as information, audio, 3D model, video. As shown in above

fig. 4., this information module displays the information related to captured image markers in user selected language.

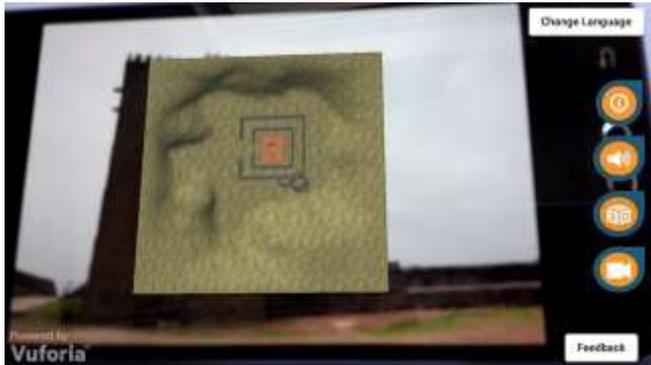


Fig. 5. 3D Model

This module displays the 3D model related to captured image markers.



Fig. 6. Video Module

This module displays the video related to captured image marker.

## V. FUTURE WORK

This system provides a user friendly interface which would interactively receive information. As future work, increasing the image recognition accuracy rate and boost the total speed of process is the first initiative[6], so that the processing time required will be less. Adding feature to scan images other than predefined images will ease user to retrieve information. We will provide more interactive facilities of information retrieval and let users feel convenient.

## VI. CONCLUSION

With the help of our project the customer will be able to view objects present in museum in 3D view and can listen appropriate audio. Augmented Reality (AR), an emerging Human-Computer Interaction technology, which aims to mix or overlap computer generated 2D or 3D virtual objects and other feedback with real world scenes. This new approach gives user to learn things by visualizing in real world. This system provides user friendly interface which is built on cloud architecture.

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