Augmented Reality Map

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ABSTRACT

Augmented Reality (AR) is the technology that overlaps virtual objects onto real-world objects. It has three main features: the combination of the real world and the virtual world, real-time interaction, and 3D registration. The algorithms used to produce graphical images and other sensor-based inputs on real-world objects uses the camera of your device. The shortest route and graphics information in 3D is not notified in normal maps. To avoid such problems we have developed a 3D virtual environment that gives graphics and contains more information about a particular place. This project is done by using the "UNITY" application, the engine can be used to create three-dimensional, two-dimensional which helps to view all these graphics and routes in a 3D view.

KEYWORDS: Augmented reality (AR), UNITY, Vuforia developer portal, AR Camera

1. INTRODUCTION

AR is the most developing technology in the world which converts the graphical world into the real-time world. The AR can generate the computerized image and they will not be seen in normal eyes, only visible on the specific devices. It includes visual, haptic, somatosensory and olfactory. The AR can also take the input as the normal sensors and give the graphical output. The most AR developing tools are AR toolkit, unity vuforia.

2. LITERATURE SURVEY

Charles [1] the paper titled as "Navigation in augmented reality" it is used for a lot of technology as we see today has come from science fiction. Mobile handheld devices, such as smart phones and tablets, is one of those things that we use today in our everyday life that people only imagined before. Being able to see an edited world where the real and the virtual blends is another one of those ideas that has flourished in science fiction. It lacks GPS accuracy, Query is not useable with augmented reality and maintenance is low.

Chen, Brian [2] the paper titled as "Analysis of augmented reality" the main objective of the system is used for augmented reality gives a view of the real world where elements are superimposed by computer generated files such as graphics, sounds, videos, or digital information. Low GUI (graphical user interface) could not find very small remote area.

Crabben, Jan van der [3] the paper titled as "Augmented reality tracking techniques" the main objective of the system is used for identification of challenges during tracking an object in augmented reality environment and how these challenges can be overcomed.

3. METHODOLOGY

The user should install the specific application AR maps. The application accesses the mobile camera and it will select the particular area. Once the area is selected, the camera will be ON and the map will be executed for the first time. If you are moving on the road, the map quickly indicates the direction of the destination and shows the details about the place. The output of the map are in 3-DIMENSION view. The user can understand and easily identify the particular destination. Some module that are used and its details are given below,
AR camera application:
It is a normal application it can run in android, iOS, etc. The AR camera which access the mobile camera and they can be located the particular coded area.

Mapping area:
It contains the area information like temple, hospital, schools, etc. which covers all information of the particular area.

AR Module:
The AR module is working in two platforms. AR toolkit and unity vuforia AR. It normally covers the image and they are already pre-coded objects which can be displayed on the screen.

3D Module:
In 3D, it contains more details compared to 2D. It gives more clarity about the material in form of 3D.

AR and 3D interface module:
In AR and 3D interface are connected by the visual studio, which means the coding language used, combines the AR and 3D module.

Route maps:
It is also look like the normal map, but the advantage of AR is that it is transparent map and the 3D object should guide the user and the accuracy is high.
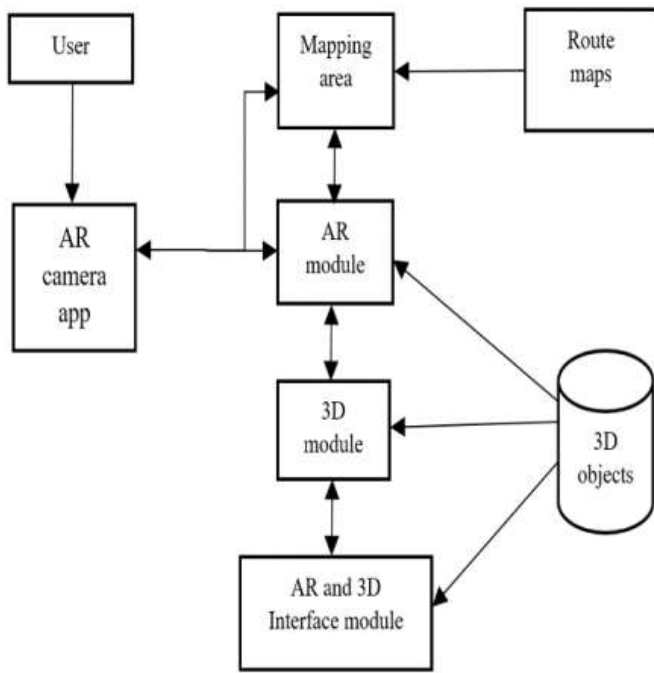
MAP MODEL OF AR

3D object:
The object which are all seen in 3D view to give clear routes.

4. SOFTWARE COMPONENTS
4.1. VISUAL STUDIO
The integrated debugger works both as a source-level debugger and a machine-level debugger. Other built-in tools include a code profiler, designer for building GUI applications, class designer, and database schema designer. It accepts plug-ins that enhance the functionality at almost every level including adding support for source control systems (like Subversion and Git) and adding new toolsets like editors and visual designers for domain-specific languages or toolsets for other aspects of the software development lifecycle (like the AzureDevOps client: Team Explorer).

4.2. THE ANDROID PLATFORM
The Android platform allows developers to write managed code using Java to manage and to control the android devices. Android studio is a popular IDE developed by Google for developing applications that are targeted to the android platform.

The foundation of the Android platform is the Linux kernel. For example, the Android Runtime (ART) relies on the Linux kernel for underlying functionalities such as threading and low-level memory management.

Using a Linux kernel allows Android to take advantage of key security features and allows device manufacturers to develop hardware drivers for a well-known kernel.
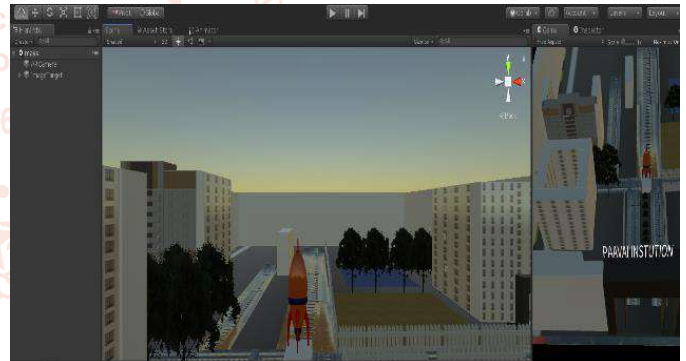
4.3. UNITY SOFTWARE
Unity is a cross-platform game engine developed by Unity Technologies, first announced and released in June 2005 at Apple Inc.'s Worldwide Developers Conference as a Mac OS X-exclusive game engine. As of 2018, the engine had been extended to support more than 25 platforms. The engine can be used to create three-dimensional, two-dimensional, virtual reality, and augmented reality games, as well as simulations and other experiences. Unity is a cross-platform game engine developed by unity technologies first announced and released in June 2005 at Apple in worldwide developers. The engine is used to create 3D and 2D virtual reality and augmented reality games as well as simulation and other experiences. The engine has been adopted by industries such as film automotive, architecture, engineering and construction.

5. RESULTS AND DISCUSSION:
The normal maps are the web based services that provides only the information about the geographical region. It does not have any 3D structural views.

The proposed AR map gives more graphical user interface (GUI). We have designed the 3D structural view of each and every area of our college in detail. In our map it gives more information about the particular places. Based on the unity software we have designed this AR map. Each detail of the building is also viewed exactly.

6. CONCLUSION
In our project we have added more information about the places than the other maps. This AR map provides the structural information of the building and roads in 3D view in that particular area. The unity software is used to find the maps clearly and it gives detailed view of the required image.

In future it can be implemented all over the world and may be the next generation routing system.

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