

Campus Navigation System Based on Mobile Augmented Reality

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Abstract - The proposed system is a useful tool in navigation of a campus area. Majority of people find it difficult to explore new areas or unknown locations by themselves. Hence the proposed system will serve as a helper to them and aid in navigation through the campus, as we have selected campus area for our study. We currently aim at developing a system that shall enable a new person to explore unknown campus area which he is unfamiliar to. Furthermore the proposed project may be extended at a larger scale and we can set a large number of data as a trained data in the database.

Key Words: Android application, Android phone, Augmented Reality, Location, Navigation.

1. INTRODUCTION

Priyadarshini College of Engineering, Nagpur is has a very large campus area spanning across 72 acres (29.13 hectares) of land. It has 2 entrances, 16 academic blocks, an administration center, 2 cafeterias, 3 temples and much more.

Each year, large numbers of students enroll in this college. These students either drive or walk around the whole premises of the college to make them familiar with the campus area. Priyadarshini College of engineering has a lot of other visitors also.

Since the enormous campus area and academic blocks are unfamiliar to them, it is very difficult to find the desired location in the campus. Everyday numerous students, teachers and visitors move across the campus by driving their vehicles or walking.

Our project aims at providing a proper guidance and navigation via a simple android app which is easy to understand and use. Also the AR would make it more easy and interactive for user to find a certain location. This would help the users to navigate through the campus area in a hassle-free manner. Moreover it would reduce the confusion regarding the various academic and administrative blocks in the campus area.

The phones that we use now-a-days come equipped with technologies like camera, GPS, internet, Wi-Fi, Bluetooth, accelerometer, proximity sensors, etc. All these technologies can be used with an android operating system, which is currently on top and most widely used operating system in

the market. Android provides easy user interface. It is open source, so the developers can develop applications for free and sell them or distribute them on the app store.

One of the most in-demand topics is navigation. The mobile phones manufacturers and many developers are researching in new and advanced methods for navigation using mobile devices. A lot of work has been done and many models have been proposed. Each of them has different implementation.

2. OBJECTIVE OF THE PROJECT

The main objective of the project is to develop an android based application for mobile devices or any handheld android powered device, which shall enable the user to navigate through an unknown area with the help of augmented reality.

The project uses augmented reality, real-time image processing and android as a platform the project has a lot of usage and scope. The project gives user an experience of AR while navigation. Also android applications are cost effective.

3. LITERATURE SURVEY

We studied the campus area of Priyadarshini College of Engineering. Based on our observations and conversations with new persons in the campus area we found that it is difficult to recognize which building is for which department.

Thus our main focus shall be on determining which building is for which department.

4. PROPOSED WORK

Android operating system is the most widely used operating system and it is dominating the smartphone market with its huge presence. Mobile smartphones based on android operating system is the most easily accessible device and technology that every person has. Thus android phone can be served for a variety of technological purposes. In our project we are using one of the most significant features of the mobile phones which are navigation and camera. These two combined together to give user an augmented reality experience while exploring the area.

The project works in by installing the project android application in the android phones. The application uses very

less amount of space. The application when started will open the camera access. Now using the mobile phone in hand the user can scan the object that is the buildings in front of him. The application shall scan the building and process the image using the various algorithms and match the object with one in the trained database image. If a perfect match is found the application shall show the description of the object i.e. building.

The user shall be able to determine the building and his location in the campus area and thus the application will help him to get to the desired location of the campus area.

5. CONCLUSIONS

The AR Campus Navigator System is helpful android application that helps in determining the area of the campus and thus helping in navigation in an unknown area. In our project the android application is to be used on mobile devices that run on android platform. The android mobile phone is required as a hardware interface between the object to be scanned and the AR recognition software. The installation of the android application is quite simple as we just have to install the apk (android application package) on the mobile phone which is our hardware. As we all know android has captured the mobile handset market, the proposed project is of great importance and usage.

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REFERENCES

- [1] V V Vinod, 1996, Focussed Color Intersection with Efficient Searching for Object Detection and Image Retrieval, Retrieved on October 4, 2011
- [2] Michael A. Smith, 1997, Video Skimming and Characterization through the Combination of Image and Language Understanding Techniques, Last visited on September 18, 2011
- [3] Stefan Huwer, 2000, Adaptive Change Detection for Real-Time Surveillance Applications, Lastvisited on September 21, 2011
- [4] Chen Jing, Wang Yongtian, Lin Liang. Implementation of the augmented reality on PDA [J]. OPTICAL TECHNIQUE, 2007, 33(1): 52-55.
- [5] Yue L. Key Tech of Mobile Augumented Reality & Its Research Progress[J]. Office Informatization, 2013, 2: 003.

[6] Paucher R, Turk M. Location-based augmented reality on mobile phones[C]//Computer Vision and Pattern Recognition Workshops (CVPRW), 2010 IEEE Computer Society Conference on. IEEE, 2010: 9-16.

[7] DENTSU, iButterfly [OL].
<http://www.ibutterfly.hk/chi/index.html>, 2011.

[8] Beier D, Billert R, Bruderlin B. Marker-less vision based tracking for mobile augmented reality[C]//Mixed and Augmented Reality, 2003. Proceedings. The Second IEEE and ACM International Symposium on. IEEE, 2003: 258-259.

[9] Zou Youjia. A Mobile Augmented Reality Application For Books[J]. Computer Technology and Development, 2013,8.

[10] AutoNavi, AMAP [OL].
<http://api.amap.com/Android/index.html>,2013.

[11] Liu Jiamin, An Lexiang, Chang Yan, Zhu Shitie, YangDan. Threedimensional registration method based on triangular marker in augmented reality[J]. Journal of Shenyang University of Technology, 2013,35(1):79-84.

[12] Jiang Qinyun, Wang Cheng, Li Lijun, Guan Tao. Study on Registration Algorithm in Augmented Reality[J]. Computer & Digital Engineering, 2006,34(9):38-40.

BIOGRAPHIES



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