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# Campus Navigation Application Using Augmented Reality

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# ABSTRACT

For all the new comers to the school field it's tough to search out all the places, whether it is the cafeteria or the library. Therefore, by this analysis, a mobile application is designed for field navigation. The underlying technology on which the application is primarily based is increased reality, that is used to enhance the quality and straightforward use of the appliance, as users may get the knowledge easily. With advanced increased reality technologies like pc vision and seeing, the knowledge regarding the field atmosphere and its objects is overlaid on the \$64000 world and becomes interactive. so as to boost the APP potency, this analysis presents a virtual parcel modelling interface with deep learning to boost the item recognition ability. The main purpose of this paper is to present a research and development of an intelligent system for mobile phones that can helps users finding the shortest path from a point-ofinterest to another point-of-interest within D.Y. Patil Campus Akurdi (DYPA) main campus. Research is done to acquire an optimal navigation solution which primary goals are to provide shortest-path calculation. A mobile application based on Android that allows user to find a location quickly with minimum effort and collaborate with other users to enhance the experience of route-planning has been developed. Preliminary evaluation suggests that the proposed methods and the mobile application are helpful for the users in finding their point of interest within shortest time possible.

# ARTICLE INFO

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## I. INTRODUCTION

In recent years, the huge diffusion of smart devices has had a dramatic impact on people's lives. Users are now accustomed to exploit these devices as a tool for web search and fruition of information, communication, collaboration, both for work and entertainment purposes. Moreover, smart devices are typically equipped with a wide range of heterogeneous sensors (Ex. GPS. accelerometer. microphone, camera etc.) that, by exploiting the existing network infrastructures, allow to collect and share a large amount of information about user's surroundings, thus providing context without requiring the deployment of expensive systems. All these features play a key role in a smart environment scenario, where data collected by embedded sensors of smart devices can be used to improve the quality of life of users. In particular, smart environmental systems apply data fusion techniques to combine information from different sensors, paving the way to new applications that would not otherwise be possible [1]. A university campus is a particularly suitable scenario for this type of analysis because it represents, on a small scale, a cross-section of the urban fabric of the city. In particular, thanks to the information collected and shared by heterogeneous sensors, it is possible to improve the services provided to students, teaching and administrative staff, while also making them more efficient. Moreover, a campus can be regarded as a social ecosystem in which different entities coexist and interact with each other, thanks to social tools allowing users to share information [2].

Different types of users normally inhabit a typical campus, and each of them has specific needs depending on the type of role played. In particular, it is convenient to separately consider the different roles of students, administrative www.ierjournal.org

technicians, teaching staff and external users (Ex. occasional visitors). Therefore, the main challenge is to provide services that are tailored to each type of users, and that allow the experience of people within the university campus to be improved. The University of Palermo fits within this scenario, having recently started a process of innovation that aims to overcome the limits of teaching, the divulgation of scientific knowledge, and the creation of new science and culture, in order to create a smart campus ready to accommodate students

### **II. LITERATURE SURVEY**

The area of the project's prototype is a huge Campus, that would provide students and guests with usability advantages and location finding features in the indoors of the college itself, particularly where the target is located. This project makes use of technologies like Unity, ARCore and Navmesh etc. [1]

this paper proposes a GPS navigation system on the Android platform, called Android Mobile Navigation System (AMNS). AMNS not only provides users the GPS navigation function, but also supports Quick Response (QR) code decoding and friend positioning. Furthermore, AMNS is free and open-source software, so service providers or developers can easily extend their own services on this system. [2]

This system is semi automated and is capable of moving from one location to another. Also the system is designed for object detection, which confirms the safe and smooth transportation to achieve the target at any circumstances. The system is also featured with "OLED", which adapts the nature of the chameleon and thereby improves the" Texture changing ability". This ability helps to transforms the outlook of system according to the surface on which it is moving/interacting. [3]

#### **III. PROPOSED SYSTEM**

The project was implemented in the Android Studio 1.6 environment and in the Java language. The LG Nexus 7 tablet was used as hardware. MongoDB will be used as the database. The database is being tested on a Linux PC; Ubuntu 14.04 LTS and Apache web server. OpenCV library and java wrapper are used for image detection. Also, PostgreSQL with PostGIS (GIS software) is used. The prototype of the application's user interface is given in 3.x. The system's running cycle can be described in 5 steps:

Step 1: The user will open the application and activate the GPS in the smartphone.

Step 2: The user will look at the scene through the interface and take a snapshot (photo) if he/she wants detailed information.

Step 3: The application will send the photo or the GPS data to the web server. Scene discovery will be implemented and locations will be determined. Two different methods are tested; Image processing and coordinate based calculation.

Step 4: Information will be added to the image. The processed image will be sent to the user interface and displayed.

Step 5: The user will see detailed information about the buildings and places on the scene.

#### **IV. CONCLUSION & FUTURE WORK**

A prototype of campus augmented reality application is developed. Methods of the implementation are discussed. The buildings in the scene have been successfully defined and tweets about these buildings in the photo were taken successfully from the database. Future work will include enrichment of the application content like putting a radar, map, and pathways, making a better graphic design. The user will be able to see more details and statistics about the related place. The user will get information about the tweets and number of students. Comments of the visitors will be pulled from other social media applications and websites. These data will be presented clearly in our application. Google Cardboard and Augmented Reality technology will be combined. This application is aimed to be applied to other campuses and also cities in Turkey. Some of these purposes will be finished till the conference.

#### V. ACKNOWLEDGEMENT

We thank Prof. Sandhya Shinde Ma'am for guiding us through the project.

#### VI. RESULT



Fig. Navigation Application.

The figure shows the result of Campus Navigation System Using Augmented Reality.

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