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Augmented Reality Based Mobile Tour Guide System

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Abstract - *Tourism is travel for pleasure; also the theory and practice of touring, the business of attracting, accommodating, and entertaining tourists, and the business of operating tours. Tourism is one of the most significant industries in many countries and its importance is rapidly growing in recent years. In order to guide tourists, there exist various types of tour guide methods. Among them, paper-based and Mobile based systems are the most commonly used ones to provide tour routes and heritage information for tourists.*

By considering limitations of above methods, this system presents a mobile tour guide system with augmented reality, called Tour Guide System. The system enables tourists to have more informative, interactive and user specific experiences with augmented information by recognizing/tracking the contents of an off-line tour booklet. For a standalone mobile system, demanding low computational cost, an image matching technique.

The proposed system can be applicable to many areas such as education and entertainment industries. The ongoing work consists of improving user interactivity of system via social network service(SNS), and creating more informative and well turned 3D contents.

Key Words**: **Tourism, Feature Extraction, Contents Management, 3D Rendering.

1.INTRODUCTION

Nowadays, people's consumption structure is improving steadily. There has been a large increase in the number of people out on tours, for the sake of recreation and entertainment[1]. Tourism is the strongest and largest industry in the global economy world, generating an estimated 11% of the global gross domestic product (GDP) and employing 200 million people and serving 700 million tourists worldwide-a figure which is expected to double by the year 2020.Meanwhile, there is greatly enriched travel information provided to the tourists on the Internet. However, a problem is shown that tourists are not able to get travel information timely when they are on the move. Therefore, we intend to explore how to build a mobile tourist guide system based on mashup technology to solve this problem [1]

In order to guide tourists, there exist various types of tour guide methods. Among them, paper-based tour booklets and mobile tour guide system are the most commonly used ones to provide tour routes and heritage information for tourists.

1.1 Paper-based tour booklets

Traditional paper based ones consist of only static photocopied images with limited information, so they have inherent drawbacks of interactive visualization and accurate navigation.

Mobile tour guide system

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1.2 Benifits & Limitaions of Existing System

In the tourism industry, tourist information is obtained mainly through newspaper, magazines, radio and other simple ways those are available easily. But problem is that tourists are not able to get travel information timely when they are on the move. While today's mobile devices are becoming more intelligent, compared with PC, they still have the following limitations like small screen and tiny keyboard, limited CPU capacity, limited memory space, slow and fitful Internet connection. Many mobiles of recent decades have travel guide application. But the application on these mobiles works slow due to continues acquisition of the bandwidth. Therefore, the mobile end-user's operation is very difficult, and the contents display on the screen of mobile device is limited [1].

Besides, once paper-based booklet is printed and distributed, it is hard to update frequently so the latest information cannot be provided for the tourists[2].

2. PROBLEM SATEMENT

The essence of the problem lies in creating a Tour guide system in which user can use the system with augmented reality that can have features of more informative, interactive and user-specific experiences with augmented information. In this proposed system the tourist can recognize or track the contents of an off-line tour booklet and reduce the drawback of interactive visualization and accurate navigation. It requires Fixed point operation and Low memory load of existing system. So both Mobile guide system and Augmented reality can be combined to create A Novel Tour Guide System Based On Augmented Reality.

2. OBJECTIVES

a) To provide travel information to tourists at any time, and anywhere if they possess off-line tour booklet.
b) To provide tourist with interactive visualization ,accurate navigation of information and allow fixed point operation and reduce memory load.
c) To maximizing quality of service provided by the service provider, to increase availability, confidentiality and integrity of information and to provide user friendly environment for Guiding tourist.
d) The motivation to develop an Automatic Tour Guide System, based on the modern wireless technologies and hand-held devices, for mobile learning to overcome the drawbacks of the traditional mechanisms.

3. PROPOSED SYSTEM

3.1 Modules of System

a) Image Recognization
The identification of objects in an image. This process would probably start with image processing techniques such as noise removal, followed by (low-level) feature extraction to locate lines, regions and possibly areas with certain textures.

b) Image Retrival
An image retrieval system is a computer system for browsing, searching and retrieving images from a large database of digital images. Most traditional and common methods of image retrieval utilize some method of adding metadata such as captioning', keywords, or descriptions to the images so that retrieval can be performed over the annotation words. Image search is a specialized data search used to find images. To search for images, a user may provide query terms such as keyword, image file/link, or click on some image, and the system will return images "similar" to the query. The similarity used for search criteria could be meta tags, color distribution in images, region/shape attributes, etc.

c) Context Management
A context management system is a computer application that allows publishing, editing and modifying content, organizing, deleting as well as maintenance from a central interface.[4] Such systems of content management provide procedures to manage workflow in a collaborative environment. The function of Content Management Systems is to store and organize files, and provide version-controlled access to their data. CMS features vary widely. Simple systems showcase a handful of features, while other releases, notably enterprise systems, offer more complex and powerful functions.

d) 3D Rendering
3D rendering is the 3D computer graphics process of automatically converting 3D wire frame models into 2D images with 3D photorealistic effects or non-photorealistic rendering on a computer. Rendering is the final process of creating the actual 2D image or animation from the prepared scene. This can be compared to taking a photo or filming the scene after the setup is finished in real life. Several different, and often specialized, rendering methods have been developed.

3.2 System Architecture

The overall framework of System is shown in Fig. After capturing an image from the image or video, the system first recognizes the query image by matching with reference images in the database. This recognition result is then sent to the context management system[2]. The context management system links to the corresponding site and contents information of each database. Additionally, GPS information can be used to redefine the users locations more accurately and provide user specific information such as shortest tour path and recommended site around the users. If users capture live video sequences, tracking procedure is performed. At that time, 3-D virtual models retrieved from the contents database are rendered on the images in the off-line booklet or natural images based on the estimated camera pose[2].

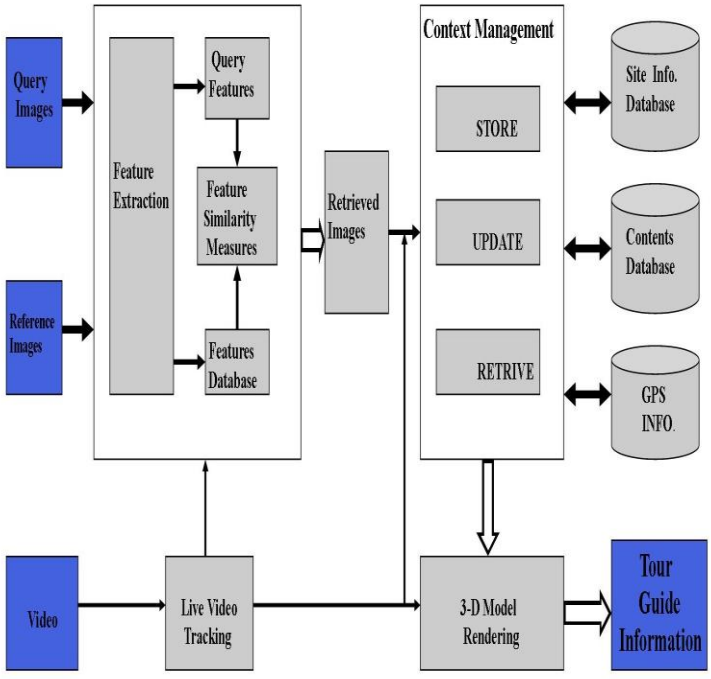

Fig -1: System Architecture

4. LITERATURE SURVEY SUMMARY

Table -1: Literature Survey

Sr. No.	Author and Year	Work	Methods / Algorithm	Tools / Parameters
1	Dadape Jinendra R. Jadhav	Android Based Devlopment	Mobile Application	Android studio
2	Ma Chang-jie, Fang Jin-yun	Mobile based augmented reality	Technologies of wireless network, mobile communication and geographical information	J2ME
3	R. A. Abbaspour*	Contents based search	personal tourist guide (PTG)	service oriented architecture
4	Vincent Lepetit,2006	Feature Extraction	Occlusion handling	Keypoint recognization
5	Margarita Chli and Roland Y. Siegwart,2008	Feature Extraction	BRISK	Scale-Space Keypoint Detection, description and matching.
6	Alexandre Alahi,2009	Tracking by detection	RANSAC	plane fitting
7	Hanzi Wang and David Suter,2010	Image recognization	ROBUST SCALE ESTIMATORS	The Median and Median Absolute Deviation (MAD) Scale Estimator
8	Vassilios Vlahakis, Nikolaos Ioannidis,2011	Image translation	Position and orientation tracking	Image Tracking :Translation, Rotation and scale

5. CONCLUSIONS

In this paper, we introduce a new tour guide system utilizing augmented reality in mobile environment by considering limitations of paper based and mobile based tour guide systems. This system consists of tourist point of interest and properly guide tourist.

Our ongoing work consists of: (i) improving user interactivity of proposed system(SNS), and (ii) creating more informative and well turned 3-D contents.

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