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Enhanced Context Based Mobile Advertising System

K.Kiran Kumar, P.Deepika, R.Jaya Lakshmi, S.Manjugnanacitra

Abstract— **Mobile Advertising is becoming popular due to the development of Wireless technologies. Utilization of Location Based Services will be helpful for Location Based Advertising to both individuals and also the businesses. Location-based Advertising not only helps to improve sales in a particular area, but can also improve brand awareness among potential customers and guide them to the shops which they may be unaware of. This paper aims at providing an Intelligent Context Based Mobile Advertising System based on the location and priority of the user which will display the advertisements based on the location selected by the user and also the priority which is set by the user.**

Index Terms— **intelligent context aware system, intelligent marketing, , location based advertising, location based services, personalization**

I. INTRODUCTION

Mobile marketing is a relatively new field of study, which over its short historical period of evolvement has proved to be effective and profitable. The majority of success can be associated with rapid development of enabler technologies such as satellite-positioning systems (e.g. GPS, GLONASS and COMPASS) and wireless standards (e.g. the IEEE 802.11 family, 3G and Bluetooth). Mobile marketing competes with traditional media channels such as television, radio and the printed-press. Advertisements are becoming increasingly personalised and context-aware to fulfil customer needs. This is natural given that "Retail has always fundamentally been a local business". Location-based advertisement not only helps to improve sales in a particular area, but can also improve brand awareness among potential customers [2]. Location-tracking functionalities were introduced in Japan in 2001 and have since triggered an era of Location-Based Services (LBS) and advertisements. Large companies such as McDonald's, Coca-Cola, BMW and Nike are investing in proximity based intelligent mobile advertising. That is effectively location-aware advertising with the ability to broadcast messages via wireless networks (Bluetooth, Wi-Fi, GSM Cell broadcast) or Internet connections using GPS coordinates. This paper reveals a novel context-based mobile advertising system employing intelligent context to target advertisements to individuals and businesses, based on their context. The discussions herein are therefore structured as follows: an overview of the existing system, development and implementation of the proposed system. The paper concludes with future enhancements of the proposed system.

II. TECHNOLOGY REVIEW

The intention of this Context Aware Mobile Advertising System [1] is to provide location based context-dependent advertising on a personalized basis, implemented using an intelligent context [1,3]. Therefore, appropriate technologies requiring consideration are three fold: accurate location determination, context aware advertising and consumer detection. Accuracy of location determines the quality of context-related advertising and can make the difference between the provision of relevant, or irrelevant, content. Location technologies can be summarized as follows [4,5,7,8,9,10,11,12,13]:

A. Global

Utilization of satellite signals for location, such as GPS, with widespread coverage. More sophisticated methods unavailable to most customers, such as differential GPS with post processing, are ignored here, but widely adopted augmented satellite location techniques (e.g. Assisted-GPS) are applicable.

B. Wide-area

Utilization of wide-coverage radio signals for location, such as mobile phone cell signal strength and round-trip timing techniques, as well as WiFi-location.

C. Local

Utilization of signal strengths from radio sources located in close proximity to advertising contexts, such as WiFi, Bluetooth, ZigBee and suchlike. This could involve positioning but could just as simply provide only proximity data.

III. EXISTING SYSTEM

The Systems [1] flow of data between moving vehicular mobile advertising systems (vMAS) must be maintained through the iMAS framework. The design problem central to the functionality of the system has been implemented as a proof of concept model capturing and transmitting a range of information relevant to a particular advertising media stream. The intent is to provide a platform for additional mobile units to interact synchronously in real time. The problem domain of existing system is outlined in Fig. 1

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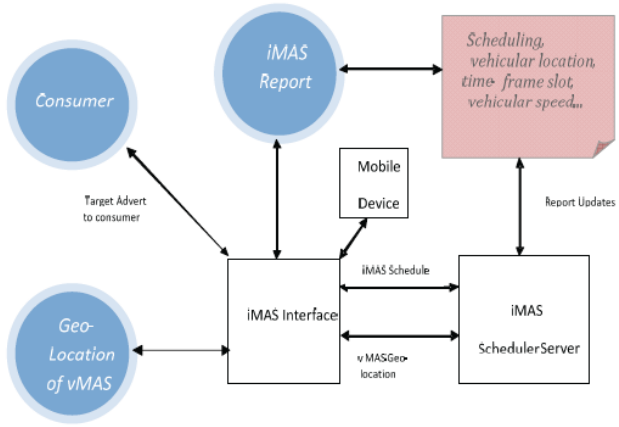

Fig. 1 Problem Domain of Existing System

The pace of change has created a number of innovative methods to capture real-time data. Gathering data for specific marketing campaigns could be seen as a step forward to context-aware personalization. Personalization, based on pattern behaviour, is one of the techniques implemented with Data Warehousing and data marts. Designing and implementing an architecture that is adaptive to the changing location-contexts of the vehicular devices is central to the iMAS concept. To this end a number of technologies and tools have been reviewed to understand the most practical solution. For instance, there is the General Transit Feed Specification: 'The GTFS transit feed specification defines a common format for public transportation schedules and associated geographic information' (code.google.com). As a concept this opens up a number of possibilities for developing prototype application architectures. However, Google expects a number of schemas to be followed:

- GTFS has its own standardized data;
- Data files must be comma separated;
- Naming conventions are not as flexible as desired.

GTFS provides developers with a static layout of the testing area using Google maps and then based on the transit feed data visualizations provide a means to structure the content graphically. The main issue surrounding this is real time synchronization between the GTFS layout and the vehicular transit data feed. The system uses vehicle tracking of synchronous information to keep the system updated with the appropriate advertisement, using the scheduling algorithm as the information controller[1]. Coupling static data feeds with real-time data, using a location based algorithm, is possible but with interoperability between multiple technological tools and techniques it can sometimes be counter-productive.

IV. PROPOSED SYSTEM

In the existing system for the members of the public opting into the information feeds through mobile devices, there is no effective targeting of products and services based on their expressed preferences and systemic constraints. there is no enhanced verification of the system efficiency. The scope of user profiling for increased personalization of advert-serving should be addressed [1].

To enhance these features, we have introduced an Enhanced Context Based Mobile Advertising System. In this paper we will discuss on how to enhance the functionalities of the existing system's features. Our proposed system uses enhanced context based location filtering and enhanced priority based ranking. By the use of these features, the offer or the ad will be detected easily and it saves much time. It focuses on the user's profile to set the priority which will make the consumer to easily purchase the product near to his location. The problem domain of proposed system is outlined in Fig. 2

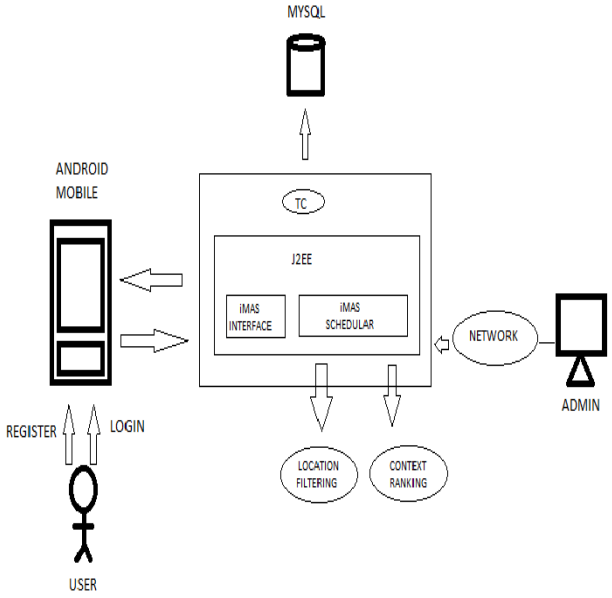

Fig. 2 Problem Domain of Proposed System

The problem domain consists of a user who owns an android mobile. The user registers himself using the android mobile. After registration, the user has to login using his valid login id and password. When he requests for the ads, the request from the android mobile will be sent to the iMAS interface which is running in the Web server. The iMAS interface will determine the location of the user. After finding out the location, it will pass the user id and location of the user to the iMAS scheduler. The iMAS scheduler is responsible for Ads Expiry, Location Based Filtering and Context Based Ranking. After determining the required ads, the iMAS scheduler will generate the iMAS report and send it to the iMAS interface. The iMAS interface will send the required ads to the user. The admin is the one who will post the ads into the Web server.

V. EXPERIMENTAL RESULTS

The proposed system was experimentally verified and tested. The ads to be viewed is divided into three categories: View All Ads, View Location Specific Ads, View Current Location Ads. The categories are shown in Fig.3. Priority Based Ranking is default for all the three categories.

A. View All Ads

Using this option, will display all the ads which are stored in the database. It is shown in Fig.4

B. *View Location Specific Ads*

Using this option, will display the ads based on the location which the user chooses. It is shown in Fig.5.a and 5.b

C. *View Current Location Ads*

Using this option, will display the ads based on your current location. It is shown in Fig.6

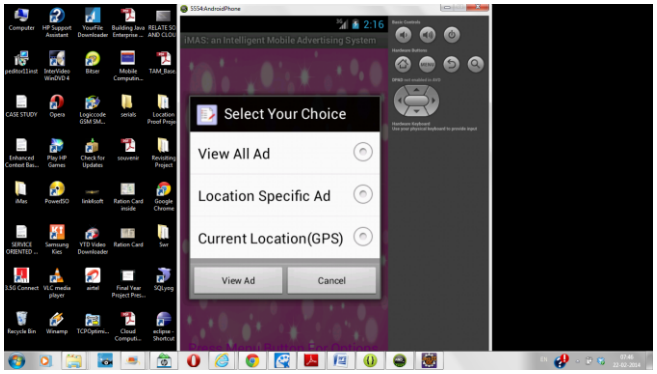

Fig.3 Categories of viewing the ads

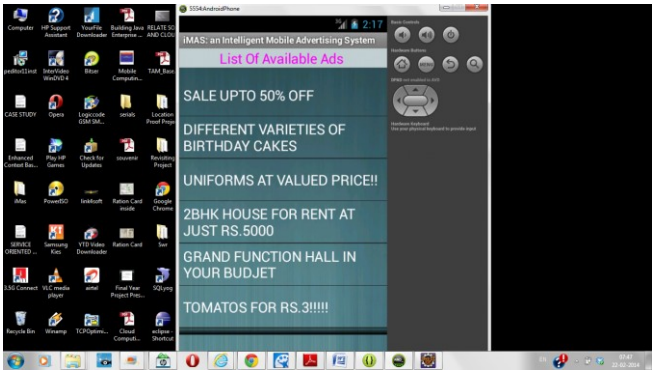

Fig.4 View All Ads

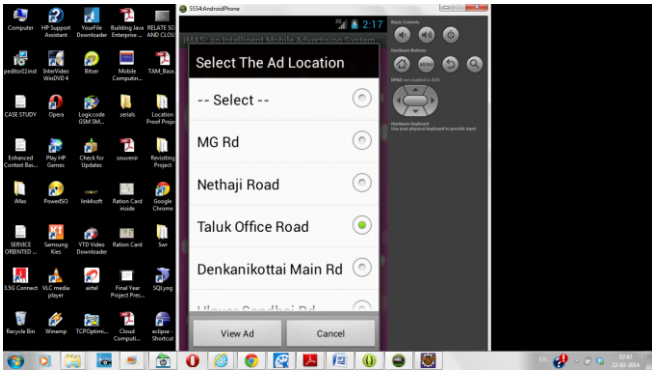

Fig.5.a Selecting the location

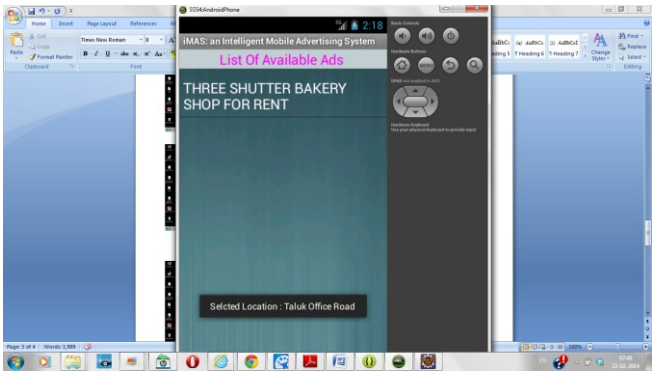

Fig.5.b Location Specific Ads

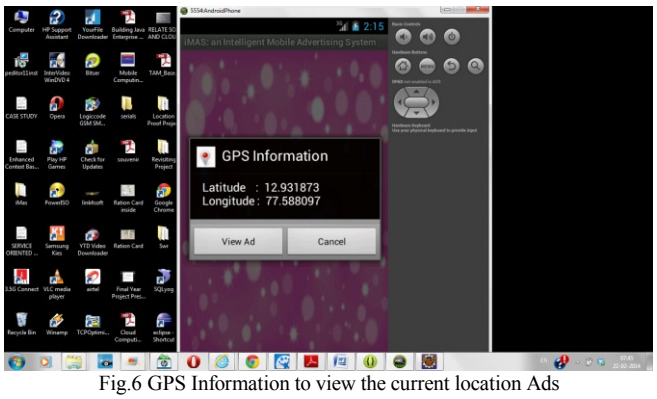

Fig.6 GPS Information to view the current location Ads

VI. CONCLUSION

Mobile marketing based on location is developing seamlessly in the recent years. Utilizing this service will be helpful for the customers. In our application, this means to display the ads near to the location of the user which he may be unaware of. The developed application focuses on more effective targeting of products and services based on their expressed preferences. There is enhanced verification of the system efficiency. The scope of user profiling for increased personalization of advert-serving is also enhanced.

VII. FUTURE ENHANCEMENT

We are yet to address the issue on using the technologies like AVL(Automatic Vehicle Location) which will automatically determine the location of the vehicle, TAD(Travel Assistance Device) which will assist the disabled, OGC(Open GIS Consortium) which will provide geo-spatial services. The designed system will be more efficient with the use of these technologies.

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K.Kiran Kumar, Assistant Professor, Department of Information Technology, Adhiyamaan College of Engineering, MGR Nagar, Hosur, Hosur, Tamil Nadu, India, 8015380125

P.Deepika, Department of Information Technology, Adhiyamaan College of Engineering, MGR Nagar, Hosur, Hosur, Tamil Nadu, India, 9566554804

R.Jaya Lakshmi, Department of Information Technology, Adhiyamaan College of Engineering, MGR Nagar, Hosur, Hosur, Tamil Nadu, India, 8870137606

S.Manjugnanacitra, Department of Information Technology, Adhiyamaan College of Engineering, MGR Nagar, Hosur, Hosur, Tamil Nadu, India, 8870121374