

Development of a Mobile Application that Converges Local Newspapers and User Advertisements

Hyejin Yun*, Andrew G. Kim **, Hyen ki Kim***

*, ****Department of multimedia Engineering, Andong National University,
1375 Gyeongdong-ro, Andong, 36729, Korea.*

** *Appsol.kr INC, Sicheong-ro 1beon-gil, Yeongju-si, Gyeongsangbuk-do, 36132, Korea.*

**Corresponding author: Hyenki Kim, Ph.D.*

Abstract

In this paper, a mobile application that is close to the local community where consumer advertisements can be easily posted or viewed and which is centered around local newspapers was developed. News articles and advertisements are provided from around the area where one is located. In doing so, local newspapers gain income from advertisements, while users can target their advertisements to those who would be interested and filter the incoming ads to fit their needs. As for delivery orders, a certain diameter is set from where one is located before relevant ads are shown. This makes it more convenient to acquire necessary information. The advertiser, too, can expose his own ads more efficiently to the target group.

Keywords: Mobile application, Local newspapers, Advertisements, Order, Information, Target group.

INTRODUCTION

In recent years, the revenue from advertisements for local newspaper companies has decreased with the drastic increase in the number of large newspapers and internet ads. A survey shows that the newspaper ad market has seen a continuous decrease since 2002 [1]. To address this issue, there has been a rising number of applications related to the internet and mobile penetration of local newspapers. Ad applications, too, are taking on various forms such as food delivery apps. However, there is still a lack of apps where individuals can post one line ads and its advertising effects are also small due to the small number of users. To overcome this issue, the local focus of local newspapers should be leveraged to bring together users who wish to send out an ad to locals and users who want to view ads that are only relevant to their local neighborhood. To that end, in this paper, we seek to develop an app that converges local newspapers and user ads that are user-friendly. The news articles are categorized by region so that users can easily find the articles they would like to see. Advertisements are categorized into general ads and premium

ads. General ads can send simple alarms or can send out the ads themselves. Premium ads offer order and delivery services within the ad [2]. Ads also use GPS to search items based on the user's location so that information is more easily provided to those who need it. Google map is used to show the location of the ad, too.

RELATED STUDIES

Google Maps Android API

When Google Maps Android API is used so that a map based on the Google map data can be added to the app [3]. API automatically processes the response to the Google map server access, data download, map marking and map gestures. Moreover, by using the API calling feature, markers, polygon and overlay are added to the basic map. The user view of a certain area on the map can be changed. Such objects provide additional information on the map location and allows for interaction between the map and user. If this API is used then the following graphics can be added to the map.

- Icons fixed on a specific location on the map (marker)
- Line segment group (polyline)
- Closed segment (polygon)
- Bit map graphic fixed on a specific location on the map (ground overlay)
- Image group marked on the basic map tiles (tile overlay)

GPS-related characteristics of smartphones

Smartphones that are currently being launched are equipped with GPS modules. The GPS receptor uses signals taken from four or more satellites to measure the location of the receptor to provide location information to the smartphone user. Errors

that reduce the accuracy of the GPS are the orbit of the satellite/error in the clock, errors from the difference between ionosphere/atmosphere, errors in the geometric accuracy and multi-pathway errors. In general, there is an error of location measurement between 50m and 150m [4][5].

COMPOSITION OF THE MOBILE APPLICATION

The application process consists as seen in Figure 1, where there is a web format through the newspaper and the mobile application where users can view the news or upload ads. All data are managed managed from one server.

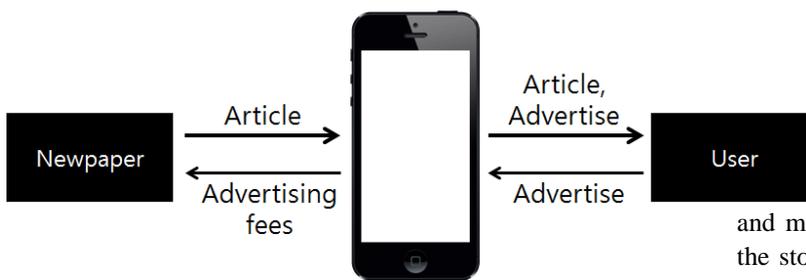


Figure 1. General DFD

Newspapers post articles and receive advertisement fees while users receive and send out ads and advertisements.

Advertisements are categorized into general ads and premium ads that allows for the management of orders and deliveries. This is shown in Figure 2. In general ads, a simple text and advertisement phrase can be written. In premium ads, the user can order products or services through the application, and the advertiser, too, can receive orders and manage the status of the delivery.

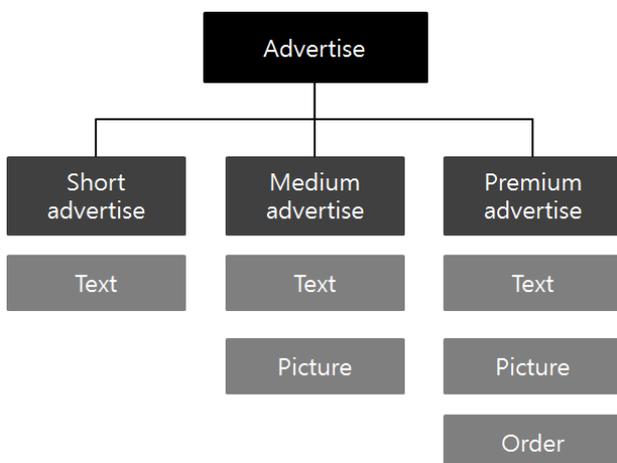


Figure 2. Advertisement type

News articles and advertisements are shown on the screen based on the location that the user had set, as seen in Figure 3. For example, if the user had set the location as Andong, then news reported by Andong’s local newspapers are shown and ads too, are filtered to show those closer to the location. The newspapers can manage the articles that would be exposed on the top, and articles can also be sorted by the date and time of posting or by popularity.

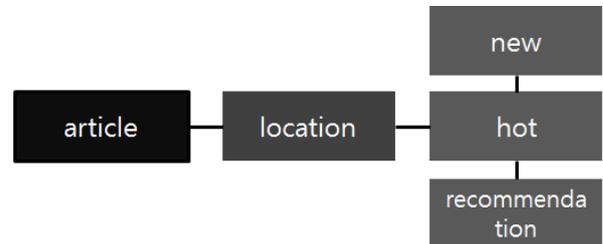


Figure 3. Standard of article classification

premium ads, the title of the ad, an image of the store and menu, menu items and prices are saved. The location of the store and the delivery range are exposed to the user as a default setting. The unit for the range of delivery is shown as kilometers. For general ads, the title of the ad, three images of the ad and the text are saved. For one line ads, the title and text of the ad are only saved.

DESIGN AND REALIZATION

DFD :

For ads, registration of ads, viewing of ads, order and confirmation of orders are possible. On the server, the ad and order information are provided to the user. When the ad is registered, the user inputs the content into the application, and the application saves the received information into the data base. Under the tab for viewing the ad, the user can view the ad and place orders. Once an ad that the user wants is selected, information about the store is called from the data base. Once the order is placed, the order content is stored in the data base. The saved order content is sent to the business. For viewing orders, the order ID is received and compared against the data base. The status of the order is then sent to the user.

Searching for specific stores on the map :

Specific stores can be searched not just through a list as seen in Figure 4, but also through GPS to search for the store within a certain range. For food orders, the distance needs to be taken into account so if restaurants are searched based on one’s location, more relevant information can be searched. The search range or distance can be set by the user as 3 kilometers or 5 kilometers. Using the location or delivery range that had

been set by the restaurant or store in question, the application only shows those that would be able to deliver to my location.



Figure 4. Search of store on map

Viewing the order :

Orders can be viewed as in Figure 5. The date the order placed and the store or restaurant from which the order was placed are shown. The order status is shown as ‘order reception’, ‘preparation for shipping’, ‘in transit and anticipated duration’, or ‘delivery complete’. During the order reception stage, revisions can be made to the order. Once a food order is placed, no further changes can be made. From the order detail screen, the user can call the restaurant directly. My coupons and order details, as well as special events can be viewed.

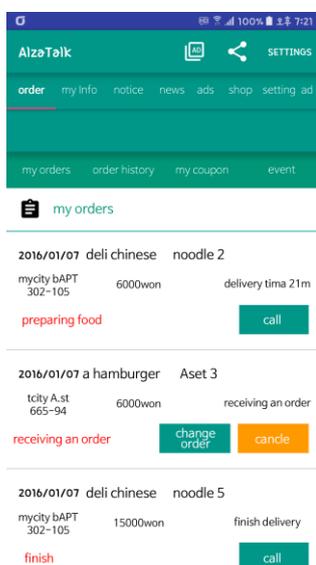


Figure 5. Confirmation of order history

CONCLUSION

Large newspapers and internet advertisements have a great reach and can afford advertisements in lots of places but find it difficult to provide accuracy-sensitive information. However, if local newspapers and user advertisements are converged, more location-sensitive ads can be shown to users. Advertisers, too, can better target their audience. Moreover, given the analysis results that show that delivery applications have replaced approximately 30% of paper handouts, food delivery apps can be said to have firmly taken root as a new way to order food. In particular, for job searches, recruitment or real estate information, location is important and thus such applications would appeal all the more. Such location-based information will be useful not only to local newspapers but also to users.

ACKNOWLEDGMENTS

This work was supported by a grant from 2016 Joint-industry-academic Research Fund of SMBA, Korea.

REFERENCES

- [1] Google Maps API, <https://developers.google.com/maps/documentation/android-api/intro?hl=ko>.
- [2] Seung-Man Chun, Seung_Mu Lee, Jae-Wook Nah and Jun-Hyuk Choi, “Methods to measure the access point location of wireless LAN using GPS information of smartphones”, Korean Academic Association of Communication , Vol.36. No.2 (2011).
- [3] <https://www.opensurvey.co.kr/>
- [4] <http://www8.garmin.com/aboutGPS/>
- [5] Eeunhee Hong, Heebok Lee, Youcheol Cha and Hyokyu Kim, “Trends in the advertisement industry”, Korean Association of Advertisements (2009).