

# A Location and Diversity Notification System for Mobile Users(Design)

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**Abstract** - A location and Diversity aware notification system generates news feeds for a mobile user based on her spatial preference (i.e., current location and future locations) and non-spatial preference. Existing systems simply send the most relevant geo-tagged messages to their users. We see that diversity is a very important feature for location-aware news feeds because it helps users discover new places and activities. In this paper, we propose MobiFeed: a new system enables a user to specify the minimum number of message categories for the messages in a news feed. In MobiFeed, our objective is to efficiently schedule news feeds for a mobile user at her current and predicted locations, such that each news feed contains messages belonging to at least different categories. MobiFeed with the location prediction method effectively improves the relevance, diversity, efficiency and accuracy of news feeds.

**Index Terms**—Location-aware news feeds (notifications), diversity constraint, online scheduling, location-based services, user mobility

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## I. INTRODUCTION

MobiFeed : a location-aware and diversity news feed or notification system that provides a new platform for its users to get spatially related message updates from either their friends or favorite news sources. With the advance of wireless communications and the ubiquity of GPS-equipped smartphones, social network applications have become more prevalent and location-aware, as widely known as location-based social networks (LBSNs). A *news feed* is a common functionality of existing LBSNs. It enables mobile users to post geo-tagged messages and receive nearby user-generated messages as news feeds at anytime, anywhere. For example, “Bob can receive a news feed with 3 messages that are most relevant to him among the messages within 1 km from his location every 10 seconds”. For ex, it depicts an application scenario. The geolocation of a message could be a point (e.g.m4), a circular region (e.g., m5), or the spatial region of

a venue (e.g., m6 and m7) are spatially associated with restaurant R1). Besides, geo tagged messages can be categorized by their underlying venues; for instance, m6 and m7 are posted from users at restaurant R1, so they are intuitively categorized to a “restaurant” category.

In MobiFeed, the relevance of a message *m* to Bob is measured by both the content similarity between *m* and Bob’s submitted messages (i.e., a non-spatial factor) and the distance between *m* and Bob (i.e., a spatial factor). MobiFeed is motivated by the fact that, if the news feeds are only computed based on a user’s location at the query time the overall relevance of news feeds is not optimized. For example, in Fig. 1a, there are messages with their geo – location intersecting Bob’s query regions (i.e., circular regions in Fig. 1a) at time. To improve the relevance of news feeds, given Bob’s current location at *t*<sub>0</sub>, MobiFeed predicts two future locations for him at *t*<sub>1</sub> and *t*<sub>2</sub>, and schedules news feeds by considering all three query regions at the same time, which results in a better

solution with (m1,m2, m3), (m4, m8,m9), and (m5, m6, m7) at *t*<sub>0</sub>, *t*<sub>1</sub> and *t*<sub>2</sub>, respectively. In summary, MobiFeed aims at maximizing the total relevance of generated news feeds by utilizing location prediction techniques.

Although users expect to receive messages that are highly relevant to their interests, they may prefer a location-aware news feed with a certain level of diversity (i.e., the messages in a news feed belong to a certain number of categories). In conventional web search or recommender systems, topic diversification is a key method to improve user satisfaction. This work considers a mobile environment that makes our location- and diversity-aware news feed system unique and more challenging. With the geographical distance between a message and a mobile user in a relevance measure model, the relevance of a message to a mobile user is changing as the user is moving. Such a dynamic environment gives us an opportunity to employ location prediction technique to improve the quality of news feeds and the system efficiency.

## II. RELATED WORK

In this section, we highlight the state-of-the-art techniques in location-aware news feed systems and existing diversity models in recommender systems and web search systems.

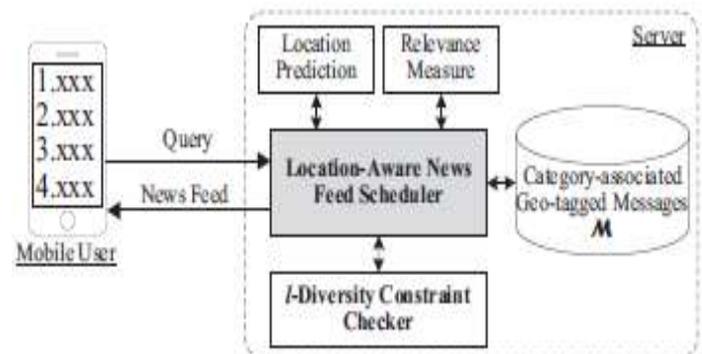


Fig. 1 System architecture of MobiFeed.

## System Architecture:

Fig. 1 depicts the system architecture of MobiFeed, which is designed based on the framework in MobiFeed.

### Location-aware news feed systems:

In this notification system we proposed a framework MobiFeed that is designed to schedule news feeds for mobile users. MobiFeed takes the limitations of mobile devices and the user's preferences into account, and schedules the most *relevant* geo-tagged messages to mobile users. Unfortunately, MobiFeed has a major limitation that only considers the relevance of messages to users, so a news feed may contain messages related to the same category; and thus it would impede users to discover new places and activities. To address this limitation, our MobiFeed framework allows users to specify their required levels of diversity of news feeds in terms of the number of message categories.

### Diversity-aware recommender systems:

In MobiFeed, the only metric used to evaluate its quality as a recommender system is the relevance of messages to users (i.e., accuracy). However, it is argued in that, developing recommender systems with accuracy as the single goal has many drawbacks, and the recommender community should move beyond the conventional accuracy metrics. One promising direction that has drawn recent interest is to diversify the recommendation lists. We employed a haversine algorithm to increase the diversity of a recommendation list, and their user study results show that despite in the loss in accuracy, users still prefer the recommended items with larger extent of diversity.

## III. PROPOSED WORK

The main objective is to efficiently schedule news feeds for a mobile user at their current and predicted locations, such that each news feed contains messages belonging to at least different categories. MobiFeed is used which states that the diversity is a very important feature for location-aware news feeds because it helps users to discover new places and activities. MobiFeed is a framework designed for scheduling news feeds for mobile users. The MobiFeed, a new LANF system enables a user to specify the minimum number of message categories for the messages in a news feed. MobiFeed with the location prediction method effectively improves the relevance, diversity, and efficiency of news feeds. New highly Important alert message system so that user will get messages in critical situations. Better road mapping, spatially in highways and traffic information.

The implementation of this study involves following modules. They are as follows:

### 1. Login & Registration:

In this module, design of login and signup screen has been done. Login form is for both admin as well as application user. The signup page contains details such as user Id, user name, password, confirm password, mobile number and Email Id of new user which should be stored in database. Login screen contains username and password. when the user login the app it should retrieve the data from the database and combine

based on user input if its match user name, password to allow in the app otherwise it gives an alert and show a message to the user.

### 2. Database connectivity:

Once the user creates the particular data for the application, the data will get stored into the database. User Id, user name, password, confirm password, mobile number and Email Id have been stored in MySQL database using Java Servlet. But it cannot store the value in cloud. So only we use Java Servlet for storing and retrieving the data in cloud using our Android application.



Fig 2. Proposed Methodology

## IV. IMPLEMENTATION

In this paper, we proposed the MobiFeed framework in the application. We developed an application in the android platform. The application was developed and provided in an .apk format to the users through smartphones. The admin has control panel as we can say that it is a dashboard through which admin will control and make any changes in the web based application in the server such as adding news categories, adding users, keeping track on user preferences as well as total users. In the mobile application, the user was given the opportunity to study the application which was developed in the android platform. The application was split into some modules such as the admin login, user login, user's home screen and administrator home screen. The functionalities of each home screen in the application is given below according to the study of the user.

### 1. Admin's Home Screen:

In the Admin's home screen, the member can add a place which involves registering the location for his item (i.e.bank,ATM,company). The administrator must select the category according to his preference and fill in the details such as the name, address, latitude and longitude positions, number, email-id, website details, functionality, description, password. The user's requests are sent to the admin for approval. The admin or member can also view his own profile and edit his profile. The administrator can also add places and can also edit his places based on future updates. The administrator has the feature to view the fetched item in the map before it has been approved and also the item details that are provided by the member. The item gets automatically updated in the application once the administrator approves it by adding the

item and also a message is sent from the administrator to the member that the item has been approved.

## 2. User' Home Screen:

User's home screen provides the various menus that are available for the user. We implemented the user login and registration module for mobile application. Registration is the initial step where the user and the member has separate signup screens to register themselves to access this application. They must provide details like name, gender, number, e-mail id, password, address and city. Up to this module, we done our project work, and the next work in the project is to add the remaining features in the mobile application. The features we have to add such as the user is able to find the location based on his preferences using the Find location and Place menu, select the categories of their preferences and view the appropriate news feeds. The user can view his own profile and can also edit his profile. Based on the user's preferences the location is predicted with the help of GPS (global positioning system) and provides the list of items (i.e. banks, ATM, company) available in the current area of location where the user is present.

## V. EXPERIMENTAL RESULTS

In this paper, we illustrate the results in the form of screenshots that are taken during testing of the android application by the user. The user was provided with the application in his/her smart phone and was granted with the permission to use the application. The various screenshots of functionalities of the application are illustrated below in the form of screenshots that were experimented to produce the results.



Fig. 3. Admin Login

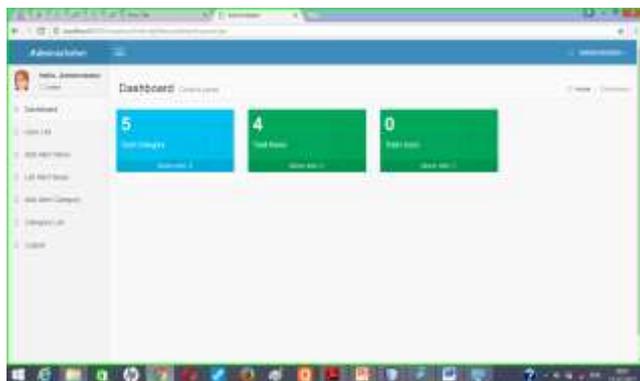


Fig. 4. Admin Dashboard

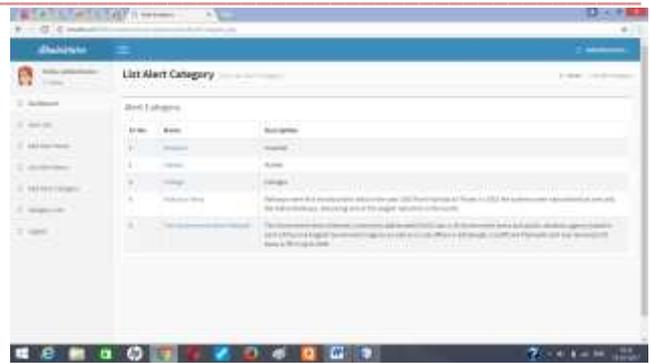


Fig. 5. List of added News Categories

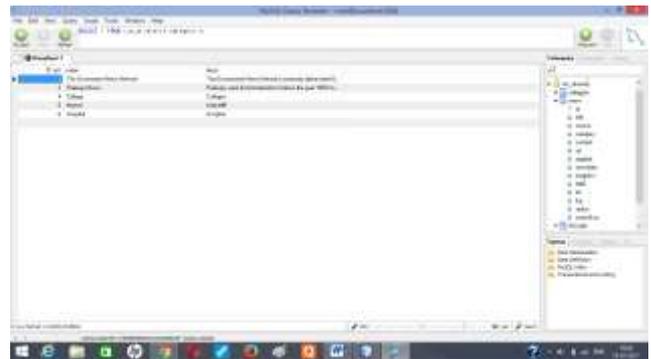


Fig. 6. Database having stored data

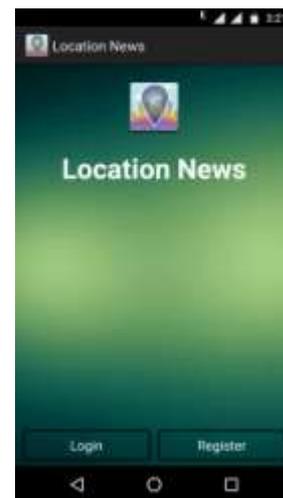


Fig. 7. User's Home Page

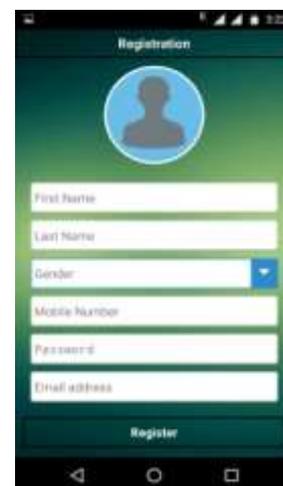


Fig 9. Registration form



Fig. 8. Login form

## VI. CONCLUSION

In this paper, we design MobiFeed: a location-aware notification framework takes the relevance and diversity of news feeds into account when scheduling news feeds for moving users. It aims at maximizing the total relevance of generated news feeds and satisfying the diversity constraint. For the decision problem, we model it as a maximum flow problem and enable MobiFeed to decide whether it can fulfil the diversity constraint for a news feed. For the optimization, we design an efficient application. Lastly, further work can be focus on extension of application by adding number of new features in this project.

## VII. REFERENCES

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