"Location aware news alert system predicted by spatial preferences for smart phones"

Namdev B. Londhe, Prof. R. S. Kulkarni

ME-II Student,Department of Computer Engineering,JSPM's Rajarshi Shahu School of Engineering &Research,Narhe,Pune, Maharashtra, India.
Head of Department of Computer Engineering,JSPM's Rajarshi Shahu School of Engineering &Research,Narhe,Pune, Maharashtra, India.

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Abstract - *In the current scope of internet and the location aware service, it is important to know the users future location depending on the current location. So the system will contribute to the location services and implements such systems for diversity locations. It helps users to discover new places and activities. The location aware news alert system generates a news alert depending on the user's spatial preferences like user's current location, future locations and also non spatial preferences like users interest. Existing Location aware news alert system is much expensive and not so robust because it just send the most relevant geographic messages to the users of the system and most of the messages from existing system are related to same location or same category of location. The main objective of this system is to efficiently schedule news alert messages for mobile users at their current as well as predicted locations so that each news alert contain messages only belongs to the particular category of messages so that total relevance feedback has been improved. For achieving this objective system has been partitioned into two parts, one is for decision problem and second is for optimization problem. The system uses three-stage heuristic algorithm to implement optimization problem. In the proposed system web search system and recommender system has been added for improving the most of efficiency of the system. The proposed system contains some number of message categories for the messages in the news alert system.*

Keywords— Diversity constrain, online news scheduling, location related services, user mobility, location aware news alerts Introduction

1.INTRODUCTION

A news alerts for mobile users is a common functionality of existing location aware, spatial preferences and social network systems. System enables smart phone users to post news related to the geo preferences and receive nearby user-generated messages. Since a location-aware and social network system usually has a large number of messages, there are many messages for a user's which are related to the user's query. Coupled with user mobility, the main difficulty for location prediction system is how to efficiently schedule the most relevant and location predicted messages for a mobile users and notify them on the user's smart phones. The location-aware news alert system and social network systems have exited a lot of attention from

different researches, none of these applications has focused on how to alert or notify mobile users for news alerts. The relevance measure function is implemented by collecting non-spatial and spatial factors into the vector space model to calculate the relevance and prediction of a message to a user.

The recommender systems states that a progressively well-known and considerable hard of quick techniques that help people to use the technique through the large number of information. These systems attempt to find out the relevance ratings of exotic items or products for particular user that uses the system, in consideration with the other users relevance ratings and recommended the predicted items with the maximum expected ratings.

2. OBJECTIVE

The objective of this system is to expertly schedule news alerts for the mobile user that are registered with the system at her current and future predicted locations, so that each news alert has messages belonging to at least *n* different categories of messages, and their total relevance ranking to the use's messages is improved. To perform this objective, the system has been divided the issue into two phases, a decision problem and an optimization problem. In the decision problem, the system provides an exact solution to the users by modeling it in a maximum flow problem that states its correctness.

2. LITERATURE REVIEW

In W. Xu, C.-Y. Chow, M. L. Yiu, Q. Li, and C. K. Poon. MobiFeed: Location-aware news alert system for mobile users. In ACM SIGSPATIAL GIS, 2012, the location prediction function has been designed to predict mobile users locations based on existing path prediction algorithm that will predict the future locations from the current location of user's smart phone. The relevance measure function is implemented by combining the vector space model with non-spatial as well as spatial factors has to be determining the relevance of a message to a user.

From J. Bao, M. F. Mokbel, and C.-Y. Chow. GeoAlert: Location-aware news alert system. In IEEE ICDE, 2012 states its differentiates itself from all existing news alert systems and notification alert system in that it enables the users to post message with spatial tagged rather than static point

locations, and takes for their locations when computing news alert for them. It also supports location aware news alert function for its mobile users.

As per C.-Y. Chow, J. Bao, and M. F. Mokbel. Towards location-based social networking services. In ACM SIGSPATIAL LBSN, 2010 proposes with the improvements in the location aware hardware and also software technologies, location based and spatial basics for social networking applications have been proposed to provide services for the smart phone users, taking into account for both the spatial and social aspects of the system.

In H. Jeung, M. L. Yiu, X. Zhou, and C. S. Jensen. Path prediction and predictive range querying in road network databases. States advances in dynamic applications; movement path prediction function enables system to the delivery of predictive and relevant services to drivers, e.g., reporting and analyzing traffic conditions and also gas stations along the route ahead.

In J. Carbonell and J. Goldstein. The use of mmr, diversity-based reranking for reordering documents and producing summaries. In ACM SIGIR, 1998 involves a system for combining query relevance with information novelty in the context of text retrieval and summarization. The Maximal Marginal Relevance criterion strives to reduce redundancy while maintaining query relevance in re-ranking retrieved documents and in selecting appropriate passages for text summarization.
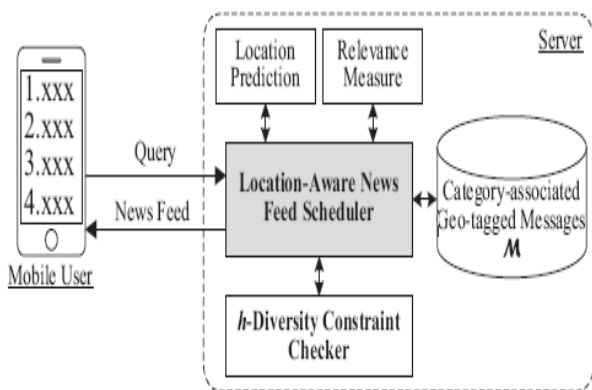
3. EXISTING SYSTEM:-

Fig 3.1 Existing system flow for news alerts

In existing system notification and diversification has been done at the server side. Figure 3.1 shows the notification and news alert system for mobile users. As shown in figure mobile user send a query to the server and server has multiple block to process the user's query. At the server side location prediction function will retrieve location of requested mobile phone and predict his future locations. Relevance measure function calculates the total relevance misuser for the requested location. The h-Diversity

constraint checker function will calculate the approximate solutions for the predicted locations.

Depending on the all spatial preference from the constraint checking, all related messages has been retrieved from the database and responded to the requested smart phone users.
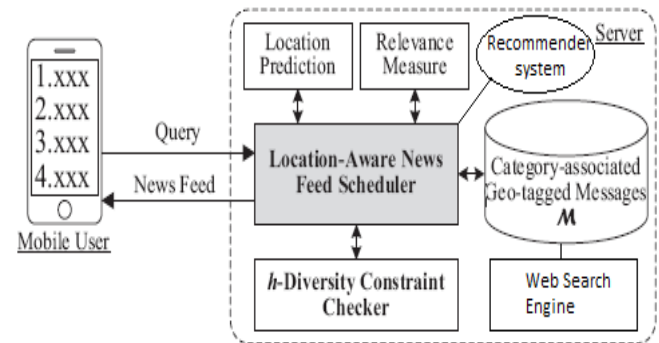

Fig 3.2 Proposed systems with recommender system

To reduce the total only for diversity constraint and to enhance the speed and efficiency of the news and notification alert, the proposed system provides a recommender and web search engine. User can also get the notification or suggestion from the web portal that will handle all the functionalities same as smart phone.

In the proposed system, to enhance the speed of notification GCM (Google Cloud Messaging) will be proposed. At the client side, for reading the notification system using REST web services from server and JSON (Java script Object Notation) at client.

4. PROPOSED WORKS

The common establishment of the recommendation for prediction problem depends on the idea of ratings, i.e., recommender systems or prediction system calculate ratings of items that are still to be used by users, based on the ratings of items already used by the user. Recommender systems usually system try to calculate the ratings of each items for each user of the system, also using other users' ratings, and recommend top items with the largest predicted ratings from the system. Accordingly, there have been many concepts on developing new algorithms that can be improving the predictive accuracy of recommendations. The quality of recommendations and prediction can be calculated along with a number of dimensions that relying on the corrections of recommendations and prediction alone not be sufficient to find the most relevant and prediction items for each user.
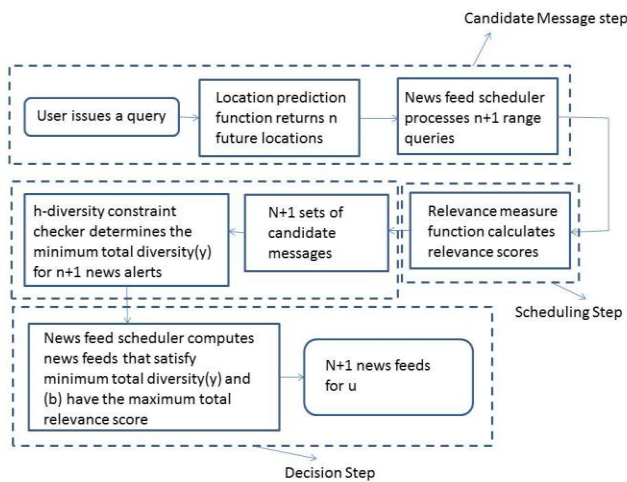
Fig 4.1. Work flow of Expeditious News Alert and Notification system

Figure 4.1 shows the proposed system work flow to manage and schedule efficient news for each user of the system and notify user to smart phone alert system for incoming news and updates.

Two different forms of input are processed by this approach, and those are:

1) The users will be able to search or get news alerts on the web search by explicit query.

2) The user will able to get push notification for the new and predicted news alert using the GCM.

The system will flow in three steps:

1) Candidate message step:

In this step the user specifies the point of interest and depending on the user interest messages has to be calculated to query region detected from users.

2) Decision step:

After the candidate message step, the system has n+ 1 set of candidate messages related with their category and relevance score to user.

3) Scheduling step:

The news alert scheduler finally resolves the intertwined problem by computing n + 1 news alerts that satisfy the minimum total diversity and have the maximum total relevance score.

Following are the two core program structures that are used in this approach:

a)   Location aware news alert systems.
b)   Diversity aware recommender systems.
c)   Diversity aware web search systems.

a) Location aware news alert systems: In this phase of the system determines the location and diversity based news alerts to the user of the system and then create alerts for the particular user.

b) Diversity aware recommender systems: In this phase of the system all the decisions made depending on the location and diversity added new feature to calculate news alerts depending on the user's point of interest to the news alert category and his current as well as his predicted future.

c) Diversity aware web search systems: In this phase, the process of web search systems different from that of recommender systems since it contains an external user query or keywords. The query, however, is also ambiguous and has more than one interpretation. One possible method to address this problem is to produce a set of diversified results that cover different interpretations of the proposed query.

5. Mathematical Model System

5.1 Mathematical Model:

> *Input:*
> –*Decision Variables:*
>> *Latitude and Longitude (x1, y1)*
>> *User Query (Q)*
>> *Query Distance (D)*
>> *Time (T)*
> –*Continuous Variable:*
>> *User Interest Type (X)*
> *Processing:*
> –*Candidate Message Step*
>> *Predicted Locations ((x1,y1), (x2,y2))*
>> *Messages(Y)*
> –*satisfyDiversityConstrains()*

$$\mathcal{G}(x) = \sum_{e(v_i, v_j) \in E} w(v_i, v_j) \times x(v_i, v_j).$$

> *Where, G(x) Objective function*
>> *w(Vi,Vj) – Edge Cost*
>> *x(Vi,Vj) – Flow value*
>> *E - Edges*

> –*Scheduling Step*
>> *getRelevanceScore:*

$$relevanceScore(f) = \sum_{j=1}^{k} relevanceScore(u, m_j) \times displayWeight(j, k),$$

–Output:

        Set of news for a users depending on locations.
                tupple(MessageID, SenderID, Content, Timestamp, Spatial, Category)

5.2 Algorithm:

The system uses three stage heuristic algorithms to implement the overall functionality of the system.

Step 1: Location-aware news feed systems
Step 2: Diversity-aware recommender systems
Step 3: Diversity-aware web search systems

6. RESULT AND ANALYSIS

With the proposed system the user can reduce the efforts to get related news alert depending on the user interest and user location and provide high quality of intended news recommendation which the existing system cannot. The proposed system is much more robust against any kind of attack and provides high degree of security to the confidential data hidden inside the alert and recommender system. The proposed system can be combined with other geo graphic systems to provide high degree of security and disaster based application for mobile users. With this system the message can not be accessed by any person except the authorized person and who is having a secure login credential with him.
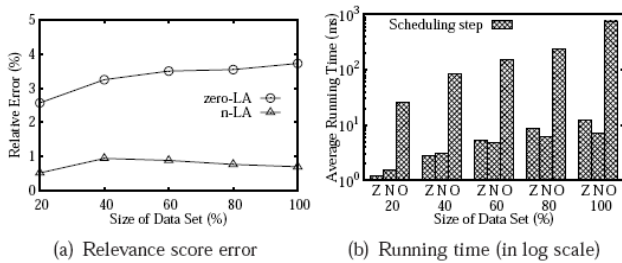

(a) Relevance score error   (b) Running time (in log scale)

Fig   : Comparison with the optimal solution.

7. CONCLUSION

In the proposed system, system designed Expeditious News Alert and Notification system; a location aware news alert framework takes place the relevance measures and diversity constrains that has been measured by heuristic algorithm of news alerts into account when scheduling news alerts or messages that are predicted by system for moving users. The system users can describe the some number of categories of news alert as diversity constraint that the user's current and predicted locations, and that focuses at maximizing the total relevance alert back of generated news alerts for the users and satisfying the h-diversity constraint for users. We focus on two key problems or issues in the proposed system, prediction decision and relevance optimization problems. The prediction decision problem is modeled as a maximum flow problem and

activates system to choose whether it can satisfy the *h*-diversity constraint for a news alert of the user. For the optimization problem, in proposed system design an efficient three stage heuristic algorithm to maximize the total relevance of users news alerts under the *h*-diversity constraint checking. Experimental results and statistics are based on a real social network data set crawled from Foursquare and a real road network show that system can effectively provide location and diversity aware news alerts when managing their high quality in terms of relevance for news alert.

Acknowledgment

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