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A LOCATION AND DIVERSITY-AWARE OPTIMIZED NEWS FEED SYSTEM FOR ANDROID USERS

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ABSTRACT
A location aware news feed system generates news feeds for a mobile user based on her spatial preference and non-spatial preference. Existing LANF systems simply send the most relevant geo-tagged messages to their users. Diversity is a very important feature for location-aware news feeds because it helps users discover new places and activities. In this paper, D-MobiFeed; a new LANF system is proposed which enables a user to specify the minimum number of message categories (h) for the messages in a news feed. In D-MobiFeed, our objective is to efficiently schedule news feeds for a mobile user at his/her current and predicted locations, such that (i) each news feed contains messages belonging to at least h different categories, and (ii) their total relevance to the user is maximized. New feed system uses Maximum Likelihood Algorithm to predict future location of user and most relevant messages are retrieve using semantic ontology.

KEYWORDS: Location-aware news feeds, diversity constraint, online scheduling, location-based services

INTRODUCTION
A news feed is a continuous transmission of data which is a common functionality of existing location based newsfeed (LBSNs) consisting of news updates. It enables mobile users to post geo-tagged messages and receive nearby system-generated messages as newsfeeds to user.

MobiFeed the state-of-the-art location-aware news feed system schedules news feeds for mobile users. In MobiFeed, the relevance of a message is measured by the content similarity between submitted messages. 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 total relevance of news feeds is not optimized. Unfortunately, relevance alone is unable to capture the broader aspects of user satisfaction. 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. 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 location and diversity-aware news feed system unique and more challenging. The relevance of a message to a mobile user is changing as the user is moving. Such a dynamic environment gives an opportunity to employ location prediction technique to improve the quality of news feeds and the system efficiency. Existing diversification problems focus on retrieving an individual list ofitems with a certainlevelof diversity. In contrast, with location prediction techniques, our aim is to improve the quality of news feeds by schedulingmultiple locations and diversity-aware news feeds for mobile users simultaneously.

LITERAURE SURVEY
J. Bao,et al.[4], this system provides a new platform for its users to get spatially related message updates from either their friends or favorite news sources. GeoFeed complements the functionality of existing social networks and news aggregators to make them location-aware.
GeoFeed distinguishes itself from all existing news feed systems in that it enables users to post message with spatial extent rather than static point locations, and takes into account their locations when computing news feed for them. This system cannot give predictive future location and news related to the future location is the drawback.
W. Xu, et al.[7],a location aware news feed system enables mobile users to share geo-tagged user-generated messages, e.g., a user can receive nearby messages that are the most relevant to user. MobiFeed consists of three key functions, location prediction, relevance measure, and news feed scheduler.
The location predictionfunction is designed to predict a mobile user's location based on an existing path prediction algorithm. The relevance measurefunction is implemented by combining the vector space model with non-spatial and spatial factors to determine the relevance of a message to a user which does not provide proper relevant news. In this system, an intra-list similarity metric is used to measure the overall diversity of a recommendation list, where the similarity between products is derived from their taxonomy-based categorization. Same path prediction algorithm for predicting future location of the user is used in the proposed system.
Sang Keun Rhee, et al[8].,semantic relevance among information resources can play an effective role in information retrieval, and there are several different approaches to measure semantic similarities. However, they are usually limited measuring similarities among structured concepts, and some also considers the similarities between individual resources but they are limited to textual documents.
To measure semantic relevance between resources, all resources should be semantically structured and represented. Ontology would be the ideal representation for this purpose. Such ontology can be constructed in two different ways, depending on the purpose of the system and the type of resources being managed. Firstly, the

ontology can be designed such that some classes contain resources as their instances whereas other classes represent other semantic concepts. Secondly, all instances in all classes can represent resources.

Hoyoung Jeung et a[6]l.,predict the route of a moving object by comparing the current time and location of the object with all historical routes recorded previously for the object along with information about when they were used.

Path prediction enables better results of predictive rang queries and reduces the location update frequency in vehicle tracking while preserving accuracy. Existing moving-object location prediction techniques in spatial-network settings largely target short-term prediction that does not extend beyond the next road junction.

Proposed system proceed to present the Maximum Likelihood algorithm for path prediction, once a path is known to be a maximum travel probability path, any fragment of the path is also a maximum travel probability path. This implies that one can find the maximum travel probability path by conquering the fragments gradually, using a bottom up approach.

Table 1:Literature Survey

Sr. No.	Title	Author	Publish-ing Journal	Year	Details
1	Path prediction and predictive range querying in road network databases	Hoyoung Jeung · Man Lung Yiu · Xiaofang Zhou · Christian S. Jensen	VLDB	2010	Path prediction enables better results of predictive range queries and reduces the location update frequency
2	MobiFeed: A location-aware news feed system for mobile user			2012	Mobifeed system is studied where relevancy of news feed is not optimised.
3	GeoFeed: A location-aware news feed system.	J. Bao, M. F. Mokbel, and C.-Y. Chow	IEEE ICDE	2012	GeoFeed complements the functionality of existing social networks and news aggregators to make them location aware
	Ontology-based Semantic Relevance Measure	Sang Keun Rhee, Jihye Lee, and Myon-Woong Park	IIRC	-	To measure semantic relevance between resources, all resources should be semantically structured and represented.
5	A Location- and Diversity-aware News Feed System for Mobile Users	WenjianX u, Chi-Yin Chow, Member	IEEE	2015	Considers Geographical distance between messages and mobile users could be changing as they are moving using ontology.

PROPOSEDSYSTEM

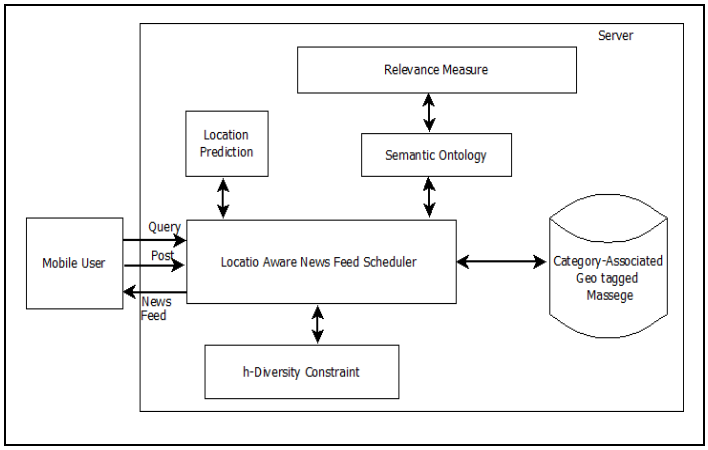

Figure 1: System Architecture

USER

User will able to do two activities, first is user can post the message and second is make a query to the system. User will post the category associated geotagged message. While making query user first choose the category.

PATH PREDICTION

The location prediction algorithm can employ any existing location prediction algorithm if it can predict a user's location. For predicting the user future location the maximum likelihood algorithm will be used.

In this system path prediction is another problem. In that while user is continuously moving in further direction, user's path need to be predict . For that the maximum likely hood algorithm and users previous path history will be consider and system will give the user's future location.

Algorithm: Maximum likelihood algorithm.

***Maximum likelihood* (*G, l, h,M*)**

Input: graph *G*, current location *l = (e, d, t)*, prediction length *h*,
network mobility model*M*

Output: a predicted path *P* (i.e. timestamped network locations)

1: *ecur*←*l.e*
2: *vcur* ←end vertex of *ecur* , being approached by the object
3: expected travel time *h_* ← *DL (l,vcur) S(ecur)*
4: visited vertices *V* ←register the other end vertex of *ecur* from *vcur*
5: predicted edge sequence *edges* ←append *ecur*
6: path probability *p* ← 1.0
7: priority queue *Q* ←push an entry {*edges, vcur , p, h_*}
8: **while** *Q* _= ∅**do**
9: pop an entry *q* (with the highest path probability) from *Q*
10: *V* ←register *q.vcur*
11: *ecur* ←the last edge of *q.edges*
12: *vcur* ←*q.vcur*
13: **if** *q.h_* ≥ *h* **then**
14: *P* ←convert *q.edges* to network positions, except *ecur*
15: *P* ←append (*ecur ,W(ecur)− S(ecur) · (q.h_ −h), l.t +h*)
16: **return** *P*

17: edge set *Enext* ←incident edges to *vcur* , except *ecur*
18: **for** each *enext* ∈*Enext* **do**
19: *vnext* ←the other end vertex of *enext* from *vcur*
20: **if** *vnext* is not registered in *V*, and *deg(vnext)* _= 1 **then**
21: a new priority queue entry *q*_ ←copy *q*
22: **if** *deg(vcur)* >2 **then**
23: *q*_
.p ←*q*_
.p ×*M(vcur)*[*ecur* , *enext*]
24: *q*_
.edges ←append *enext*
25: *q*_
.vcur ← *vnext*
26: *q*_ *.h*_ ←*q*_ *.h*_ + *W(enext) S(enext)*
27: insert *q*_ into *Q.*

MESSAGE RELEVANCE MEASURE:
To calculate message relevancy, the semantic ontology and conceptNet dictionary will be used.

ONTOLOGY:
Ontology is a formal naming and definition of the types, properties and interrelationship of the entities that really or fundamentally exist for a particular domain of discourse. Most ontology describe individuals (instance), classes (concept), attribute (properties), relation (way in which classes an individuals can be related to one another).
System is based on semantic web. Semantic web is based on ontology and metadata that indexes resources using ontologies. There is several standardized upper ontology available for use including ConceptNet.

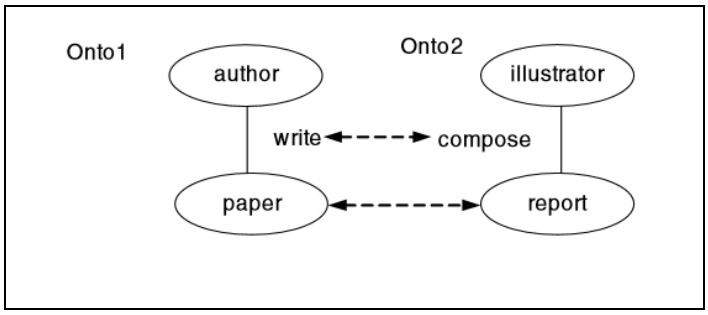

Figure 2: Representation of Ontology

CONCEPTNET

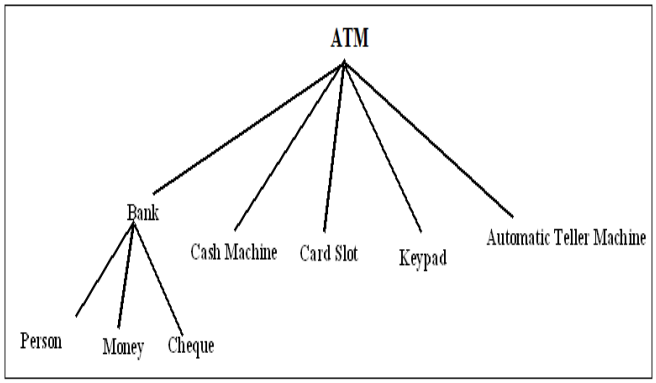

Figure 3: Representation of ConceptNet

MESSAGE CONTENTS
The user may be more interested in messages that are similar to his or her submitted ones (e.g., a user's common keywords reflect his or her interests) For example, a user issued a message, I like spicy food" would be happy to receive message about that restaurants.

h-Diversity Constraint Checking (DCC) Problem:
Given a user u's news feed query and a look-ahead step n, D-MobiFeed decides whether it could schedule at most k messages for each of n + 1 news feeds, such that messages in each news feed belong to at least h categories.

RESULTS

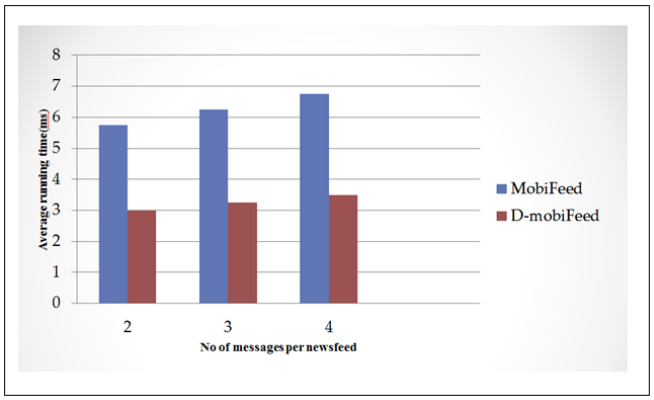

Fig: Running time

PC CONFIGURATION
1. Processor: Intel®Core™i5-5200U CPU @2.20GHz
2. RAM: 8.00GB
3. System Type: 64-bit Operating System, x64-based processor

SOFTWARE
1. Android studio 2.1.2
2. Operating System: Windows 7 onwards
3. Coding language: Java 1.7
4. Xampp Control Panel v3.2.2
5. Apache Tomcat Server

CONCLUSION
In this paper, D-MobiFeed is designed; location-aware news feed framework takes the relevance and diversity of news feeds into account when scheduling news feeds for moving users. DMobiFeed users can specify the minimum number of categories in a news feed as an h-diversity constraint, and it aims at maximizing the total relevance of generated news feeds and satisfying the h-diversity constraint. Focus is on two key points in D-MobiFeed, namely path prediction and relevance measure.

FUTURE WORK
User can share the posts in order to give that information to others. Different configuration test will be carried out so that same application can support different operating system other than android.

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