

FAST FINDING REGION BY USING PUSH MODEL AND R-TREE METHOD IN LOCATION BASED SERVICE.

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Abstract: Location-based services have been widely adopted in many systems. Existing works employ a pull model or user-initiated model, where a user issues a query to a server which replies with location-aware answers. To provide users with instant replies, a push model or server-initiated model is becoming an inevitable computing model in the next-generation location-based services. In the push model, subscribers register spatio-textual subscriptions to capture their interests, and publishers post spatio-textual messages. These calls for a high-performance location-aware publish/subscribe system to deliver publishers' messages to relevant subscribers. The research challenges has been studied that arise in designing a location-aware publish/subscribe system. An R-tree based index is proposed by integrating textual descriptions into R-tree nodes. An efficient filtering algorithm is proposed and effective pruning techniques to achieve high performance. This method can support both conjunctive queries and ranking queries. Adding location-awareness to publish-subscribe middleware infrastructures would open-up new opportunities to use this technology in the hot area of mobile applications. On the other hand, this requires to radically change the way published events are matched against received subscriptions.

Keywords: *Middleware ,Location ,MBR filter, Token filter, ranking query, R-tree, spatial.*

I. INTRODUCTION

Location based services (LBS) have attracted significant attention from both industrial and academic communities. Many LBS services such as Foursquare and Google Maps have been widely accepted because they can provide users with location-aware experiences. Existing LBS systems employ a pull model or user-initiated model, where a user issues a query to a server which responds with location aware answers. For example, if a mobile user wants to find seafood restaurants nearby, she issues a query "seafood restaurant" to an LBS system, which returns answers based on user's location and keywords.

There are many real-world applications using location-aware publish/subscribe services. The first one is Groupon. Groupon customers register their interests with locations and keywords (e.g., "iphone4s" at NewYork). For each Groupon message (e.g., "iphone4s AT&T package" at Manhattan), the system provider sends the message to the customers who may be potentially interested in the message by evaluating the spatial proximity and textual relevancy between subscriptions and the message. The second one is location-aware AdSense, which extends traditional AdSense (www.google.com/adsense) to

support location-aware services. The advertisers register their location-based advertisements (e.g., "seafood" at Manhattan) in the system. The system pushes relevant advertisements to mobile users based on their locations and contents they are browsing (e.g., web pages). The third one is tweet delivery. To receive feedback of their products in a specific area from Twitter, market analysts register their interests (e.g., "ipad2" at LA). For each tweet (e.g., "ipad2 is expensive" at LA Airport), the system pushes the tweet to relevant analysts whose spatio-textual subscriptions match the tweet.

One big challenge in a publish/subscribe system is to achieve high performance. A publish/subscribe system should support tens of millions of subscribers and deliver messages to relevant subscribers in milliseconds. Since messages and subscriptions contain both location information and textual description, it is rather costly to deliver messages to relevant subscribers. This calls for an efficient filtering technique to support location-aware publish/subscribe services.

To address the challenge, we propose a token-based R-tree index structure (called R^t -tree) by integrating each R-tree node with a set of tokens selected from subscriptions. Using the R^t -

tree, we develop a filter-and-verification framework to efficiently deliver a message. To reduce the number of tokens associated with R^t-tree nodes, we select some high-quality representative tokens from subscriptions and associate them with R^t-tree nodes. This technique not only reduces index sizes but also improves the performance. Experiments on large, real data sets show that our method achieves high performance.

II. LITERATURE SURVEY

1.M. K. Aguilera, R. E. Strom, D. C. Sturman, M. Astley, and T. D.Chandra, in Proc. 18th Annu. ACM Symp. Principles Distrib. Comput.,1999, pp. 53–61

How to efficiently match high volumes of events against large numbers of subscriptions is a key issue for large-scale content-based publish/subscribe systems. In this paper we present an efficient and applied matching algorithm that uses multi-dimensional indexing mechanism to speed up constraints query and exploits the covering relations between constraints to reduce unnecessary matching. Experiments show that our algorithm is significantly more efficient and scalable than other common used matching algorithms.

2. Efficient filtering of XML documents for selective dissemination of information M. Altinel and M. J. Franklin, in Proc. 26th Int. Conf. Very Large Data Bases, 2000, pp. 53–64.

Information Dissemination applications are gaining increasing popularity due to dramatic improvements in communications bandwidth and ubiquity. The sheer volume of data available necessitates the use of selective approaches to dissemination in order to avoid overwhelming users with unnecessary information. Existing mechanisms for selective dissemination typically rely on simple keyword matching or "bag of words" information retrieval techniques. The advent of XML as a standard for information exchange and the development of query languages for XML data enables the development of more sophisticated filtering mechanisms that take structure information into account. We have developed several index organizations and search algorithms for performing efficient filtering of XML documents for large-scale information dissemination systems. In this paper we describe these techniques and examine their performance across a range of document, workload, and scale scenarios

3.Models and issues in data stream systems B. Babcock, S. Babu, M. Datar, R. Motwani, and J. Widom, in Proc. 21st ACM SIGMOD-SIGACT-SIGART Symp. Principles Database Syst., 2002, pp. 1–16.

In this overview paper we motivate the need for and research issues arising from a new model of data processing. In this model, data does not take the form of persistent relations, but rather arrives in multiple, continuous, rapid, time-varying data streams. In addition to reviewing past work relevant to data stream systems and current projects in the area, the paper explores topics in stream query languages, new requirements and challenges in query processing, and algorithmic issues.

4.Retrieving top-k prestige based relevant spatial web objects X. Cao, G. Cong, and C. S. Jensen, Proc. VLDB Endowment, vol. 3, no. 1, pp. 373–384, 2010.

The location-aware keyword query returns ranked objects that are near a query location and that have textual descriptions that match query keywords. This query occurs inherently in many types of mobile and traditional web services and applications, e.g., Yellow Pages and Maps services. Previous work considers the potential results of such a query as being independent when ranking them. However, a relevant result object with nearby objects that are also relevant to the query is likely to be preferable over a relevant object without relevant nearby objects. The paper proposes the concept of prestige-based relevance to capture both the **TEXTUAL RELEVANCE OF AN OBJECT TO A QUERY AND THE EFFECTS OF NEARBY OBJECTS. BASED ON THIS, A NEW TYPE OF QUERY, THE LOCATION-AWARE TOP-K PRESTIGE-BASED TEXT RETRIEVAL (LKPT) QUERY, IS PROPOSED THAT RETRIEVES THE TOP-K SPATIAL WEB OBJECTS RANKED ACCORDING** to both prestige-based relevance and location proximity. We propose two algorithms that compute LkPT queries.

III. EXISTING SYSTEM

There are many real-world applications using location aware publish/subscribe services. The first one is Groupon, in which customers register their interests with locations and keywords. For each Groupon message, the system provider sends the message to the customers who may be potentially interested in the message by evaluating the spatial proximity and textual relevancy between subscriptions and the message. The second one is location-aware AdSense, which extends traditional AdSense to support location-aware services. The advertisers register their location-based advertisements in the system. The system pushes relevant advertisements to mobile users based on their locations and contents they are browsing. The third one is tweet delivery. To receive feedback of their products in a specific area from Twitter, market analysts register their interests. For each tweet, the system pushes the tweet to relevant analysts whose spatio-textual subscriptions match the tweet.

DISADVANTAGES

All existing methods are pull model or user-initiated model, where a user issues a query to a server which replies with location-aware answers

IV. PROPOSED SYSTEM

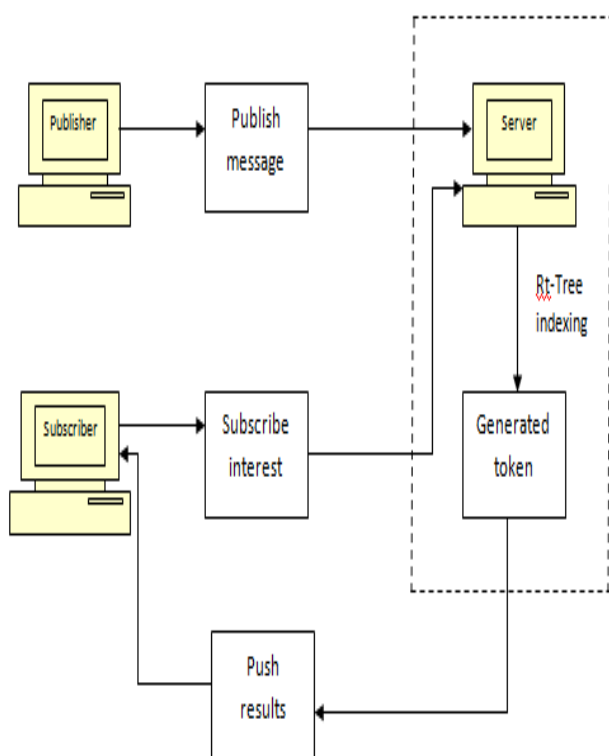
To address the challenge, a token-based Rtree index structure is proposed by integrating each Rtree node with a set of tokens selected from subscriptions. Using the Rt-tree, a filter-and-verification framework is developed to efficiently deliver a message. To reduce the number of tokens associated with Rt-tree nodes, select some high-quality representative tokens from subscriptions and associate them with Rt-tree nodes. Publish/Subscribe Services. Foltz and Dumais studied the information filtering problem from the IR perspective. They used a vector space model and Latent Semantic Index-ing to achieve high effectiveness. Fabretetal. and Aguileraetal. studied the publish/subscribe problem from the database perspective. However their subscriptions are predicates which are different from ours. Yan and Garcia-Molina studied keyword-based filtering based on a binary model and a vector space model. There are many studies on XML filtering .

Existing publish/ subscribe methods consider textual descriptions while we consider both textual and spatial information. Data Stream Management. There are many studies on data stream management, using a push model. Different from their problems, we focus on location-aware filtering for streaming messages.

ADVANTAGE:

This technique not only reduces index sizes but also improves the performance. Method can support both conjunctive queries and ranking queries. Efficient filtering algorithms is used. Effective pruning techniques to improve the performance. Support dynamic updates efficiently.

V. ARCHITECTURE DIAGRAM



Middle Tier									
Register		Publish Content			Subscribe Query				
Nodename	Distance	Nodename	Domain	Description	Nodename	Port No	Domain	Distance	

R-TREE Indexing

As the standard R-tree has no textual pruning power, a token-based R-tree, called Rt-tree, by integrating tokens of subscriptions into R-tree nodes. Rt-tree is a balanced search tree. Each leaf node contains between b and B data entries, where each entry is a subscription. Each internal node has between b and B node entries. Each entry is a triple hChild, MBR, TokenSet, where Child is a pointer to its child node, MBR is the minimum bounding rectangle of all entries within this child, and TokenSet is a set of tokens selected from subscriptions. The results for subscriber are processing using Rt- tree indexing and then filtered for further result processing.

MBR FILTER

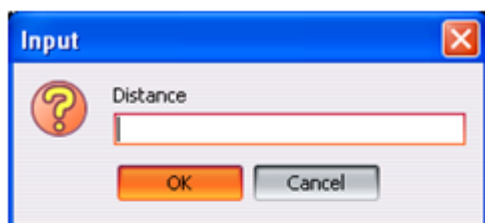
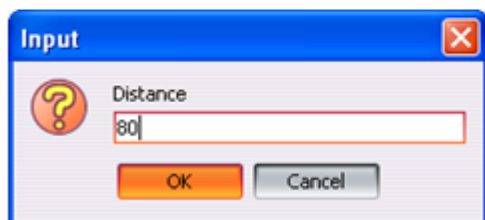
Minimum bound rectangle filter checks for the location of the subscriber. This model filters the results Rt-tree index by checking the users location and publisher location. The location based result set bring more location specific result, which doest not consider the subscriber interests. This is results are used for further processing to get subscriber result.

VI. MODULE DESCRIPTION

- Location details
- Rt- Tree Indexing
- MRB Filter
- Token Filter
- Result push to subscriber

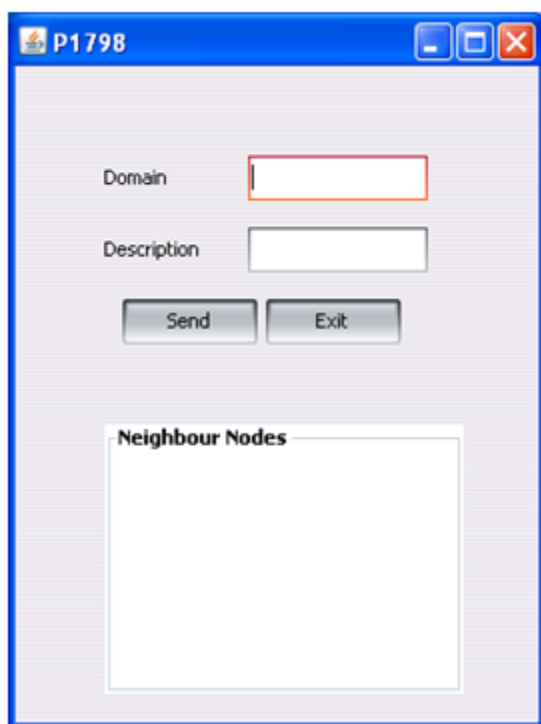
LOCATION DETAILS

We consider location specific approach for publish/subscribe system. the region are considered to be rectangle, which we specify a numeric value for example 0-100 meant for one location and 100-200 meant for another location. Given a set of subscriptions S and a message m, a location-aware publish/ subscribe system delivers m to $si \in S$ if $si.R \cap m.R \neq \emptyset$ and $si.T \subseteq m.T$.

TOKEN FILTER

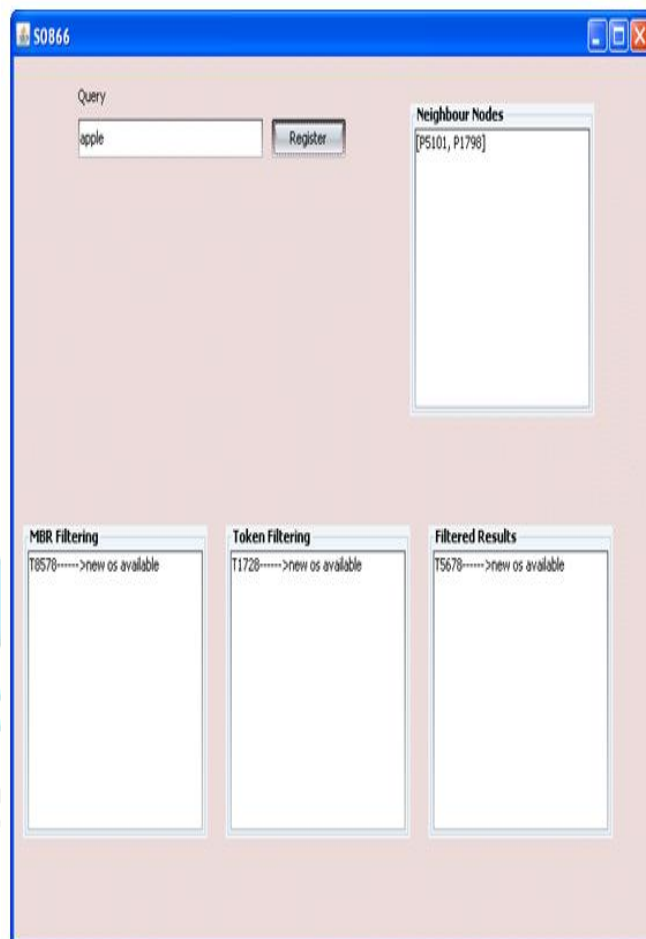
It checks for the textual constraint. Subscriber's interest is considered for token filter. This model filters the results Rt-tree index by checking the users location and publisher location. The location based result set brings more interest specific result, which does not consider the location of subscriber. This is results are used for further processing to get subscriber's location based result.



RESULT PUSH TO SUBSCRIBER

In the push model, subscribers register spatio-textual subscriptions to capture their interests, and publishers post spatio-textual messages. The results from the above two methods, MRB filter and token filter, spatio-textual results are

filtered and sent to subscriber. The server pushes the result to subscriber instead of replying every time when subscriber queries.



VII. CONCLUSION

The location-aware publish/subscribe problem is studied. An effective index structure algorithm is proposed Rt-tree by integrating textual description into R-tree nodes. A filter-and-verification framework is proposed and devised efficient filtering algorithms. Reducing the number of tokens in each node is proposed, which not only reduces index sizes but improves performance. An efficient algorithm to directly find answers without the verification step is defined.

VIII. REFERENCES

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