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Optimal Data-Query Transmission Strategy

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ABSTRACT

Optimal Data Query Transmission Strategy based on MASON. In this concept we develop social network where user can fire the query and expert will give the accurate answer as per highest ranking. User will become expert having likes by another user from their own domain. Our aim to develop distributed data query protocol. Up till now we have covered 3 modules: 1.Network creation 2.Reachable expertise 3. Routing with dynamic redundancy control.
Keywords : MASON, P2P Networks, Query Transmission, Dynamic Redundancy Control

I. INTRODUCTION

SOCIAL networking is among the fastest growing information technologies, as evidenced by the popularity of such online social network sites as Face book, Twitter, LinkedIn and Google+ that continue to experience explosive growth.

In contrast to the popular web-based online social networks that rely on the Internet infrastructure (including cellular systems) for communication, this synopsis focuses on Mobile Ad-hoc SOcial Network (MASON), an autonomous social network formed by mobile users who share similar interests. An individual MASON is incomparable with online social networks in terms of the population of participants, the number of social connections and the amount of social media. However MASONs gain significant value by serving as a supplement and augment to online social networks and by effectively supporting local community-based ad-hoc social networking. For example, it helps discover and update social links that are not captured by online social networks and allows a user to query localized data such as local knowledge, contacts and expertise, surrounding news and photos, or other information that people usually cannot or do not bother to report to online websites but may temporarily keep on their portable devices or generate upon a request. This work addresses the problem of how to enable efficient data query in MASONs. Consider a MASON with N nodes. Each node can be a query issuer or a data provider, or more commonly act in both roles for different query requests. The queries fall into C categories. Each node has certain expertise to answer a query. Let E denote the expertise matrix, where Eci indicates the expertise of Node i to answer a query in Category c, i.e., the probability that Node i can provide a satisfactory answer to a query in Category c. A query is created by a query issuer. It is delivered by the network toward the nodes that can successfully provide an answer (i.e., data providers). If a data provider receives the query, it sends the query reply to the query issuer.

II. METHODS AND MATERIAL

A. Literature Review

Z. J. Haas, J. Y. Halpern, and L. Li [1]
Considers multiple categories and assigns the queries in each category a transmission probability for data transmission. However, as a gossiping approach, its data transmission is randomized. Therefore a query is often answered and carried by nodes with insufficient expertise, thus inducing many non-satisfactory replies

K. A. Harras and K. C. Almeroth, [2]
Willingness is a scheme that a query is delivered based on willingness, which is the degree to which a node

actively engages in trying to re-transmit a query. Which is the degree to which a node actively engages in trying to re-transmit a query? The willingness does not reflect the expertise based on which a node replies queries, therefore the nodes are not helpful for each other to carry queries to nodes with sufficient expertise

T. Spyropoulos, K. Psounis, and C. S. Raghavendra [3]
Spray and Wait is considered as a baseline opportunistic delivery protocol. Fixes the number of copies for each query which limits the queries to go through correct paths to be replied by nodes with sufficient expertise, making query rate even lower.

K. Zhu, W. Li, and X. Fu, [4]
introduces a solution for DTNs which leverages social properties and mobility characteristics of users, it is not truly applicable for the data query in MASONs, because when a node issues a query, it is often unaware of the nodes that have sufficient expertise to answer the query. The cost is prohibitively high to construct a structure to index data and data providers like P2P networks. It is obviously inefficient either to frequently flood queries, which are expensive and often considered spams.

Another work by Zhu et al. "SMART: A social and mobile aware routing strategy for disruption tolerant networks" is the most recent one, where exploits a distributed community partitioning algorithm to divide a DTN into smaller communities. For intra-community communication, a utility function convoluting social similarity and social centrality with a decay factor is used to choose relay nodes. For intercommunity communication, the nodes moving frequently across communities are chosen as relays to carry data to destination efficiently.

B. Proposed Work

Objective:

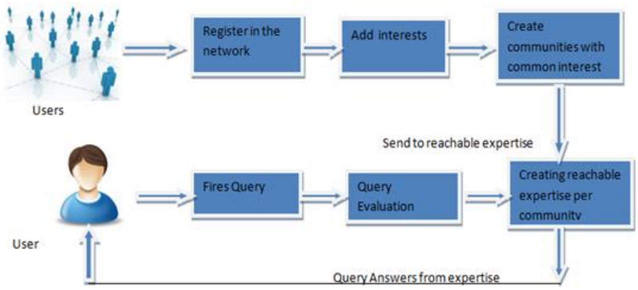
1)
We aim to develop a centralized optimization model that offers useful theoretic insights and develop a distributed data query protocol for practical applications. Based on the insights gained from the analysis on MASON, a distributed data query protocol is proposed, aiming to enable highly efficient ad hoc query under practical MASON settings.

2)
A distributed protocol for the data query in MASONs is based on two key techniques. First, it employs "reachable expertise" as the routing metric to guide the transmission of query requests. Second, it exploits the redundancy in query transmission. Redundancy is not considered in the analysis due to its intractability, but can effectively improve the query delivery rate in practice if it is properly controlled.

Project Modules

1) Network Creation
2) reachable expertise as the Routing metric
3) Routing with Dynamic Redundancy Control
4) Data Query Evaluation by expertise

Proposed Architecture



The architecture of our proposed work is shown above it consist of various parts. First we are creating here a network where number of uses registers with our system. In registration users fill their data, and other information like their social interests, their likes. Based on these interests we are creating here communities which share common interests. Now each community has some social expertise in the context of their interests. It means they can provide useful data to the users whoever fired the query.

But the important issue here is how to create a expertise in each community, So at first we are randomly choosing a user as expert, when any user fired a query in the network, expert will answer this query , as well another users will answer this query, based on this users can rate the expert and we can choose a particular expertise in that community.

When a user fires a query first query evaluation can be done, this evaluation extract the information from this query. This information allows us to understand that in which community this query belongs, because user may belong to more than one community. Based on this query evaluation query is forwarded to the particular community where this query relates. Then the community expert answers this query.

The main modules of our project include Network Creation, Query Transmission to reachable expertise, Query Execution, Ranking Expertise. Work is carried out on the first module is described in this progress report. Network creation is the first module to be developed in our proposed work.

1. Network Creation

In this module various users registers with the system. While registering in this network user fills their basic info such as first name, last name, email etc. Also while registering user have to enter his interests. Further these interests can be useful to categorize users based on similar interests.

2. Experimental details and Implementation of Network Creation

We have developing this project using Core Java, JSP, Servlet and MySQL databases. The experiment is carried out on 2-3 PC's connected in LAN. First we have created the registration and login forms for the users. As the more users register with the system, a network of users gets created. As per their common interests users can be grouped together.

Implementation Steps

Implementation steps of first module
Step 1:- In this module network creation is done. Users first register with the system in this module.

Implementation steps of second module
Step1:- After Network Creation User should be able to fire a data query
After this query category needs to be found out.
Step2:- Next This query should reach to the reachable expertise based on the query category.
Step3:- Reachable expertise Answers this query.
Step4:- Based on queries answered by expertise, user gives feedback to expertise.
Step5:- Based on this feedbacks Expertise ranking needs to be done.

Implementation steps of third module:-
Step1:- Reachable expertise Answers this query.
Step2:- Based on queries answered by expertise, user gives feedback to expertise.
Step3:- Based on this feedbacks Expertise ranking needs to be done.

Routing Metric Algorithm

Input : - (Q , U)
Output :- (QC, RE)
Where
Q – Data Query Fired by User i
U – List of users
QC – Query Category
RE – Reachable Expertise list for Query Q

```
Now
QC←getQueryCategory( Q)
For each ui ϵ U
IList ← getUserInterestList(ui);
        For each interest ϵ IList
                If(interest==QC)
                RE.add(ui)
                break
                End if
        End for
End for
sendQueryTo(RE);
```

Scope

The scope of project is in Mobile Ad-hoc Social Network, an autonomous social network formed by mobile users who share similar interests serving as a supplement and augment to online social networks and by effectively supporting local community-based ad-hoc social networking with efficient data query.

III. RESULT AND DISCUSSION

- ✓ The feasibility and efficiency of the data query protocol is increased
- ✓ The proposed system provides facilities to gain useful category.
- ✓ Minimized total communication cost.

IV. CONCLUSION

In proposed work three modules are proposed. Three modules has been completed, namely

1) Network Creation
2) reachable expertise as the Routing metric
3) Routing with Dynamic Redundancy Control

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