



Survey of Social Routing Network Framework for Social Media Delivery System

R. Rameshwari M. Sc.¹, L. Nisha MCA, M. Phil.²,

M. Phil Full Time Scholar, Vivekanandha College for Women, Tiruchengode¹

Assistant Professor, Vivekanandha College of Arts and Science for Women, Tiruchengode²

Abstract: Mobile social sensing network is one kind of emerging networks in which sensing tasks are performed by mobile users and sensing data are shared and collected by leveraging the intermittent inter-contacts among mobile users. In this paper, propose a simple Energy Efficient framework for Social-based Routing (EE-SR) in mobile social sensing networks to balance the load of nodes while maintaining the delivery ratio within an acceptable range by limiting the chances of forwarding in traditional social-based routing. Furthermore, propose an improved version of EE-SR to dynamically adjust the controlling parameter. Simulation results on real-life mobile traces demonstrate the efficiency of proposed framework. In this paper, the problem of routing in intermittently connected wireless networks comprising multiple classes of nodes is addressed. We show that proposed solutions, which perform well in homogeneous scenarios, are not as competent in this setting. To this end, we suggest a class of routing schemes that can recognize the nodes of “maximum utility” for routing, civilizing the wait and release ratio by 4–5×. Additionally, projected an analytical framework based on fluid models that can be used to consider the presentation of various opportunistic routing strategies, in heterogeneous settings.

Keywords: Social Routing, Social Metrics, MANET, Topology Routing, EE-SR.

I. INTRODUCTION

A Mobile Wireless Sensor Network (MWSN) can only be definite as a wireless sensor network (WSN) in which the sensor nodes are mobile. MWSNs are a lesser, emerging field of research in difference to their well-established predecessor. However, many of their applications are similar, such as environment monitoring or surveillance. generally, the nodes consist of a radio transceiver and a microcontroller powered by a battery, as well as some kind of sensor for detecting light, heat, moisture, heat, etc.

There are two sets of challenges in MWSNs; hardware and environment. The main hardware constraints are limited battery power and low cost requirements. The limited power means that it's important for the nodes to be energy efficient. Price limitations often demand low complexity algorithms for simpler microcontrollers and use of only a simplex radio. The major environmental factors are the shared medium and varying topology. The common medium dictates that channel access must be synchronized in some way. This is often done using a medium access control (MAC) scheme, such as carrier sense multiple access (CSMA), frequency division multiple access (FDMA) or code division multiple access (CDMA).

The changeable topology of the network comes from the mobility of nodes, which means that multi-hop paths from the sensors to the drop are not constant. Currently there is no standard for MWSNs, so often protocols from MANETs are borrowed, such as Associatively-Based Routing (AR), Ad hoc On-Demand Distance Vector Routing (AODV), Dynamic Source Routing (DSR) and Greedy Perimeter Stateless Routing (GPSR). MANET protocols are favored as they are able to work in mobile environments, whereas WSN protocols frequently aren't suitable.

Topology decision assumes a critical part in directing on the grounds that the system topology chooses the transmission way of the information bundles to achieve the correct goal. Here, all the topologies (Flat / Unstructured, cluster, tree, chain and hybrid topology) are not feasible for reliable data transmission on sensor nodes mobility. in its place of single topology, hybrid topology plays a very important role in data collection, and the performance is good. Hybrid topology management schemes include the Cluster Independent Data Collection Tree (CIDT) and the Velocity Energy-efficient and Link-aware Cluster-Tree (VELCT); both have been proposed for mobile wireless sensor networks (MWSNs).

One of the best difficulties is directing information from its source to the goal. Generally these routing protocols draw inspiration from two fields; WSNs and mobile ad hoc networks (MANETs). WSN routing protocols provide the required functionality but cannot handle the high frequency of topology changes. Though, MANET steering conventions can manage versatility in the system yet they are intended for two way correspondence, which in sensor systems is frequently not required.

Conventions outlined particularly for MWSNs are quite often multi hop and some of the time adjustments of existing conventions. For example, Angle-based Dynamic Source Routing (ADSR), is an adaptation of the wireless



mesh network protocol Dynamic Source Routing (DSR) for MWSNs. ADSR utilizes area data to work out the point between the hub aiming to transmit, potential sending hubs and the sink. This is then used to insure that packets are always forwarded towards the sink. Also, Low Energy Adaptive Clustering Hierarchy (LEACH) protocol for WSNs has been adapted to LEACH-M (LEACH-Mobile) for MWSNs.

II. LITRATURE SURVEY

B. Guo, Z[1] describe a preference propagation algorithm named Breadth-first Preference Propagation (BPP). The algorithm follows a relaxed breath first search strategy, and returns recommendation results within at most 6 propagation steps. Our experimental results on two real world datasets show that the proposed graph-based approach outperforms state-of-the-art POI recommendation methods substantially.

Y. Li, M [2] describe a Geotagged photos of users on social media sites provide abundant location-based data, which can be exploited for various location-based services, such as travel recommendation. In this paper, we propose a novel approach to a new application, i.e., personalized landmark recommendation based on users' geo tagged photos. Author formulates the landmark recommendation task as a collaborative filtering problem, for which we propose a category-regularized matrix factorization approach that integrates both user-landmark preference and category-based landmark similarity. We collected geotagged photos from Flickr and landmark categories from Wikipedia for our experiments. Our experimental results demonstrate describe The rapid urban expansion has greatly extended the physical boundary of users' living area and developed a large number of POIs (points of interest). POI recommendation is a task that facilitates users' urban exploration and helps them filter uninteresting POIs for decision making. While existing work of POI recommendation on location-based social networks (LBSNs) discovers the spatial, temporal, and social patterns of user check-in behavior, the use of content information has not been systematically studied.

The various types of content information available on LBSNs could be related to different aspects of a user's check-in action, providing a unique opportunity for POI recommendation. In this work, study the content information on LBSNs. POI properties, user interests, and sentiment indications. We model the three types of information under a unified POI recommendation framework with the consideration of their relationship to check-in actions. The experimental results exhibit the significance of content information in explaining user behavior, and demonstrate its power to improve POI recommendation performance on LBSNs

Y. Zhu, C. [3] describe the availability of user check-in data in large volume from the rapid growing location-based social networks (LBSNs) enables a number of important location-aware services. Point-of-interest (POI) recommendation is one of such services, which is to recommend POIs that users have not visited before. It has been observed that:

- Users tend to visit nearby places
- Users tend to visit different places in different time slots, and in the same time slot, users tend to periodically visit the same places. For example, users usually visit a restaurant during lunch hours, and visit a pub at night.

In this paper, we focus on the problem of time-aware POI recommendation, which aims at recommending a list of POIs for a user to visit at a given time. To exploit both geographical and temporal influences in time-aware POI recommendation, we propose the Geographical-Temporal influences Aware Graph (GTAG) to model check-in records, geographical influence and temporal influence. For effective and efficient recommendation based on GTAG, we develop that the proposed approach outperforms popularity-based landmark recommendation and a basic matrix factorization approach in recommending personalized landmarks that are less visited by the population as a whole.

First, a traveler may benefit from recommendations of landmarks to visit, when she, is traveling or plans to travel to a city for the first time. Deriving the traveler's preference from her activity at social media sharing websites for landmark recommendations requires no effort from the traveler. Second, different travelers may probably have different preference for places to see in the same city.

To meet the specific needs of individuals, landmark recommendations must be personalized. Therefore, a promising solution we propose in this paper is to provide landmark recommendations in a city for a traveler based on both the other travelers' preference for landmarks in the city and her preference on landmarks in the cities that she has visited before. We propose to tackle the personalized landmark recommendation problem via the collaborative filtering (CF) paradigm (Adomavicius and Tuzhilin 2005), which recommends, for a given user, favored items of similar users. We reason that a user in a new city may like landmarks that are already favored by other users who have similar landmark visiting experience in other cities in the past. Note that we define a landmark in our work as a place with a significance for history, culture or contemporary society.

They emphasize that the personalized landmark recommendation studied in this paper differs from conventional CF scenarios in the following aspects. First, item ratings, i.e., graded preferences on certain landmarks are not directly available from the users' photos, as they would be in a conventional recommendation scenario such as movie recommendation, where users rate movies explicitly. Second, travelers often seek to enjoy a unique experience or to avoid tourist traps



L. Wang, D [4] solving the problem of automatic travel route planning. We propose to leverage existing travel clues recovered from 20 million geo-tagged photos collected from www.panoramio.com to suggest customized travel route plans according to users' preferences. As the foot prints of tourists at memorable destinations, the geotagged photos could be naturally used to discover the travel paths within a destination (attractions/landmarks) and travel routes between destinations. Based on the information discovered from geo-tagged photos, we can provide a customized trip plan for a tourist, i.e., the popular destinations to visit, the visiting order of destinations, the time arrangement in each destination, and the typical travel path within each destination.

Users are also enabled to specify personal preference such as visiting location, visiting time/season, travel duration, and destination style in an interactive manner to guide the system. Owing to 20 million geo-tagged photos and 200, 000 travelogues, an online system has been developed to help users plan travel routes for over 30, 000 attractions/landmarks in more than 100 countries and territories. Experimental results show the intelligence and effectiveness of the proposed framework.

P. Hui, J [5] describe the increasing availability of GPS-enabled devices is changing the way people interact with the Web, and brings us a large amount of GPS trajectories representing people's location histories. In this paper, based on multiple users' GPS trajectories, we aim to mine interesting locations and classical travel sequences in a given geospatial region. Here, interesting locations mean the culturally important places, such as Tiananmen Square in Beijing, and frequented public areas, like shopping malls and restaurants, etc. Such information can help users understand surrounding locations, and would enable travel recommendation. In this work, we first model multiple individuals' location histories with a tree-based hierarchical graph (TBHG). Second, based on the TBHG, we propose HITS (Hypertext Induced Topic Search)-based inference model, which regards an individual's access on a location as a directed link from the user to that location.

This model infers the interest of a location by taking into account the following three factors. 1) The interest of a location depends on not only the number of users visiting this location but also these users' travel experiences. 2) Users' travel experiences and location interests have a mutual reinforcement relationship. 3) The interest of a location and the travel experience of a user are relative values and are region-related. Third, we mine the classical travel sequences among locations considering the interests of these locations and users' travel experiences. We evaluated our system using a large GPS dataset collected by 107 users over a period of one year in the real world. As a result, our HITS-based inference model outperformed baseline approaches like rank-by-count and rank-by-frequency.

III. METHODOLOGY

A. Mobile Social Sensing Network Node Configuration

In the mobile social sensing network, the sensing tasks are performed by mobile nodes and sensing data are shared and collected by leveraging the intermittent inter-contacts among mobile nodes. In this module, such mobile nodes details are created for the experimental analysis. The number of nodes count is keyed in and then the nodes are created. The details of the mobile node are stored into the database table.

The nodes which are connected in the network is collect or sensing the data and forward them into the destination. Between the source and destination, the nodes are acts as relay nodes. While forwarding or relaying the sensed data to the destination, the load of the node is considered for the energy efficiency to improve the life time of the nodes. The nodes collection is input using this module. The minimum id and maximum id for nodes are given as input. The number of nodes 'N' is also given. Then 'N' number of nodes with random numbers between minimum id and maximum id is generated. Also they are sorted in ascending order which is used in other modules.

B. Flooding Based Scenario - General Sender Based Approach

Flooding is a fundamental communication primitive for wireless sensor networks. Flooding is used for disseminating code updates and parameter changes, affecting the operation of all nodes in the network. When flooding occurs each node, typically, broadcasts the flooding packet once. The costs for flooding, however, can become significant if neighborhood keys are used for communication, instead of a single broadcast, a node is required to perform several unicast transmissions.

In flooding, a node sends a packet received, to all its neighbors other than the neighbor which sent the packet to it, if the packet is not destined to itself or the maximum number of hops a packet can pass is not crossed. Flooding is very simple to implement, and it is reactive protocol, as it does not maintain any routing table and does not require discovering any routes. Similar data produced by nodes in the same region are also flooded, i.e. there is no data aggregation done.

For fig 3.1 example, Node 2 sends a packet to node 1, which in turn sends the packet to all its neighbors, i.e. to node 3, node 4, and node 5. Node 1 does not send the packet to node 1 because node 1 knows that node 2 only sent the data to it.

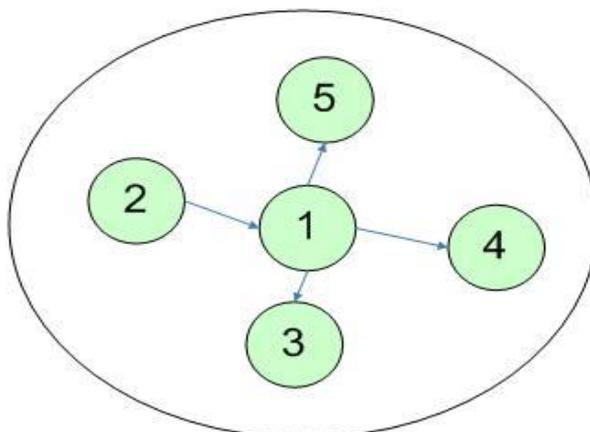


Fig 3.1 Flooding Based Scenario - General Sender Based Approach

C. Energy Efficient Social - based Routing (EE-SR)

Social-based routing methods aim to carefully choose the relay nodes by choosing a good social metric to measure the capability of nodes to deliver the message to the destination. The aim of EE-SR is to save the energy consumption of the whole network by limiting the number of message forwarding. The message will not be forwarded to the encountered node unless the current node has lower social metric than the encountered node. To reduce the load of each node, social-based routing method is applied and it use social metric per node for relay selection and forwarding decision.

To calculate the social metric (SM) value of a node, a social graph is generated from historical contacts to describe the social relationships among nodes. To generate the social graph, a threshold is set on contact frequency to judge whether there is a close relationship between two nodes in the network. At the beginning, when TTL (Time To Live) is large, EE-SR puts minimizing the load of nodes as its first priority, thus the value of amp ratio is set high. However, after several hops, when TTL is reduced to a small value, which means the packet will be discarded soon, EE-SR puts improving the delivery ratio as its first priority, so the value of amp ratio should be set small.

D. Improved - Energy Efficient Social-Based Routing (EE-SR-I)

In this module, dynamically adjust amp ratio based on past encounters to improve the delivery ratio. When a node encounters more than K nodes whose SM(Social Metric) values are larger than itself, but still does not forward the message (since the SM values of the encountered nodes are not greater enough than amp ratio times of the current node), then our method slowly relaxes the forwarding condition by gradually decreasing the value of amp ratio. In both TTL (Time To Live) of the packet and the number of encounter nodes whose SM values are larger than that of the current node but smaller than amp ratio times of that. Here, K is the pre-defined threshold for node counter. In this process, replace the general SM of nodes in the algorithm with a specific social metric.

E. Scalable Routing - Delay Tolerant Network

In this module, a Delay Tolerant Networks (DTN) model which is realistic for some practical DTN and with which multilevel clustering can be performed to build a hierarchical network. And build the first hierarchical network in DTNs in which the time-varying nature of the physical topology is reflected by the time-variant information (the contact information) maintained by the links in the hierarchical network. Hierarchical routing facilitates the hierarchical network as a topology abstraction and may not generate a shortest path.

The advantage of hierarchical routing is that it is scalable (logarithmic) for localized traffic patterns, and it does not need location information. It is a hop-by-hop routing rather than a source routing. Before any routing, each node in the network needs to obtain the topology information of its clusters in all levels. Each node makes its forwarding decision via the following steps: Find the lowest level k where the source s and the destination d have a common cluster.

IV. CONCLUSION

In this paper, addressed the issues to delivery mobile data efficiently in mobile social sensing networks, where end-to-end paths between any pair of nodes may not exist. Routing in such networks is a challenging problem. Many social-based routing protocols are improving the delivery ratio over time in such delay tolerant networks, but most of them do not consider the load of nodes. In this paper, propose an energy efficient framework for social-based routing to reduce the load of nodes in mobile social networks. Our study general framework can be easily applied to any existing social-



based routing methods which use social metric per node for relay selection. Simulation results over real-life data traces demonstrate the efficiency of our proposed method.

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