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Data Forwarding and Energy Efficient Routing Algorithm for Ad-hoc Network

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ABSTRACT: Socially-aware networking provides a promising paradigm for data forwarding by exploiting the involved nodes' social properties in mobile social networks. However, individuals' learning capability and awareness to the dynamic environment have not been well explored in the literature. SAN takes the social properties into consideration to solve problems in routing, forwarding, and information dissemination. Socially-Aware Networking (SAN) is an emerging paradigm to solve problems of networks consisting of mobile nodes with social properties, e.g. social relationship, and mobility patterns. These characteristics can be utilized to design efficient data forwarding protocols in e.g. mobile social networks. SAN is to improve the adaptability to dynamic environments. It is essential to find an appropriate method to detect the changes of environment context and adapt to them in a timely fashion. BEEINFO is designed as an artificial BEE colony inspired Interest-based Forwarding scheme under the framework of SAN. BEEINFO takes advantage of mobile users' social properties, mobility regularities and learning capability to detect the dynamic environment, including density and social tie. Additionally, it classifies the community based on personal interests, eliminating the cost by community detection and construction. Environment awareness and social tie awareness provide density and social tie information separately, which are essential to make decisions in forwarding, scheduling message, and managing buffer.

KEYWORDS: Socially Aware Networking(SAN), Dynamic Environment, mobile Social Network, BEEINFO`

I. INTRODUCTION

Socially aware networking (SAN) provides a promising paradigm for routing and forwarding data packets by exploiting social properties of involved entities in vehicular social networks (VSNs) for SAN, which consists of BEEINFO-D, BEEINFO-S, and BEEINFO-D&S. BEEINFO adopts the food foraging behaviour of bees to detect the environment information and to optimize the forwarding procedure. BEEINFO takes advantage of individuals' perceiving and learning capability to gather information of density and social ties. BEEINFO-D, BEEINFO-S, and BEEINFO-D&S are distinct from each other according to different utilization of density and social ties. This enhances the adaptability to dynamic environments. Additionally, BEEINFO performs message scheduling and buffer management to improve the forwarding performance.

II. RELATED WORK

In [1] authors says Enabling voice chat on roadwaysusing vehicular social networks.It presents a framework for building inter communication between commuters community,which we call Vehicular SocialNetworks(VSNs).It allows drivers to automatically join VSNs along popular roadways. In [2] authors says Social vehicle navigation Integrating shared driving experience into vehicle navigation It proposes social vehicular navigation system that integrates driver provided into vehicle navigation system in order to calculate personalized routing.It allows to share voice tweets between the driver community about the location and destination. In [3] authors says A framework for mobile and context-aware applications applied to vehicular social networks.It presents S-Aframe to support the development of context-awarness application for vehicular social networks (VSNs) formed by in-vehicle or moile devices used by drivers , passengers and pedestrains. In [3] authors says • Vehicular ad hoc networks (VANETs): Status,results, and challenges VANET has become an active area of research,standardization,and development because

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it has tremendous potential to improve vehicle and road safety ,traffic efficeincy ,and convenience as well as a comfort to both drivers and passengers.

III. PROPOSED SYSTEM

In this project, we consider an real time scenario which is close to practical environment. We consider three kinds of mobile object: pedestrians, cars and buses. Each object is equipped with a mobile (for a pedestrian) or a vehicle (for a car or a bus) device. The device on a vehicle is controlled by the driver and we omit the influence of passengers. They communicate Figure1 shows Community is the basis of forwarding data. It uses interest as the measure to construct community. According to the forwarding strategy, data are forwarded among nodes. If the relay nodes are out of destination community, the inter-community forwarding strategy is used to forward data close to the destination community as quickly as possible. If the relay nodes are in the destination community, the intra-community forwarding strategy is used to forward data to the central node and the central node can forward the data to the destination.

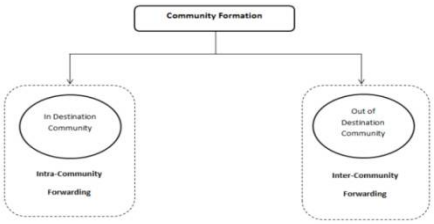

Figure 1: Community

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IV. COMPONENTS

Here Mobile nodes are divided into various communities based on interests may be single or multiple and those with the same interest usually exchange messages frequently. We do not have to detect communities but to select forwarders according to information obtained from the environment. According to nodes' interests, Environment Awareness can perceive the number of passing nodes with different interests in a period of time, which we name density. The bigger the density, the more nodes can be met. Providing that individuals usually have repeated mobility patterns, the density information ncan be used to select forwarders. In one community, its members will contact frequently. Thus BEEINFO maintains social tie between nodes according to the contact records. The social tie information is utilized to select the forwarders in intra-community forwarding process. Thus, we design Social Tie Awareness to collect social tie information in community from contact history. Based on the density and social tie information, Forwarding Strategy takes different strategies to select the forwarders under intercommunity and intra-community conditions. BEEINFO also incorporates Message scheduling and Buffer Management to further enhance the forwarding efficiency.

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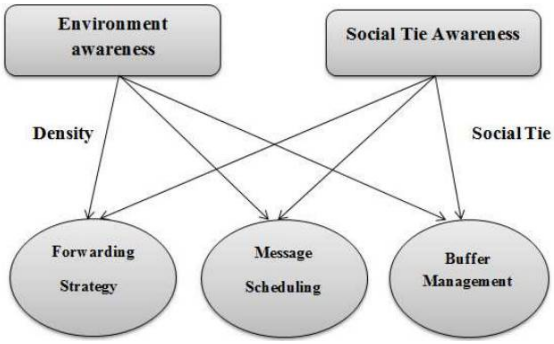

Figure 2: Proposed System Components

V. BEEINFO

In contrast to previous works, we pay more attention to the awareness capability to environment of bees. BEEINFO combines the social properties and take into account awareness to t environment inspired by artificial bee colony. To the best of our knowledge, BEEINFO and its previous version are the first efforts that take environment factor as the motive to solve the routing protocol problem in socially-aware networking. BEEINFO is designed as an artificial BEE colony inspired Interest-based Forwarding scheme under the framework of SAN. BEEINFO takes advantage of mobile users' social properties, mobility regularities and learning capability to detect the dynamic environment, including density and social tie. Additionally, it classifies the community based on personal interests, eliminating the cost by community detection and construction. Furthermore, the interest information is small enough to predict density and social tie, saving resources, e.g. buffer and energy

VI. NEED OF BEEINFO

BEEINFO takes advantage of individuals' awareness and learning capability by imitating bees' behaviors. Mobile nodes perceive and record information (e.g. densities) of passing communities. In transmission range, nodes exchange their interest information. According to exchanged interest information, every node records or updates the density of communities. The density information indicates the number of nodes belonging to a community. The higher the density is, the more nodes the community has. Every node stores a list of passing communities and their densities, which provides a guideline to select better forwarders for inter-community phase. Additionally, mobile nodes do not need to search the exact density values, but to perceive their passed community densities. Therefore, there is no extra cost Virtual social community and social tie are the most usually used concepts in SAN. Community is inspired from gregarious property of society, in which mobile nodes contact frequently. While social tie indicates the relationship strength among nodes. Mobile nodes can be departed into different communities according to contact frequencies. The community members can meet more often than others out of the community. Consequently, when a source node generates a message for another node, it can select an appropriate forwarder to deliver the message to destination community where the destination node belongs. This phase is called inter-community forwarding. Afterwards, the intra-community forwarding phase starts in the destination community. In this phase, the central node is used for its highest centrality value, meaning that it is able to encounter more nodes. Except central node, social tie can helps to estimate the strength of social relationships among nodes.

VII. RESULTS

The equipment involve the deterministic small ad-hoc topology with 3 social networks as shown in Fig.3.We collected information about same network through source to destination.Fig.4. shows that the metric total collected networks using Artificial Bee Colony algorithm.

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Figure 3

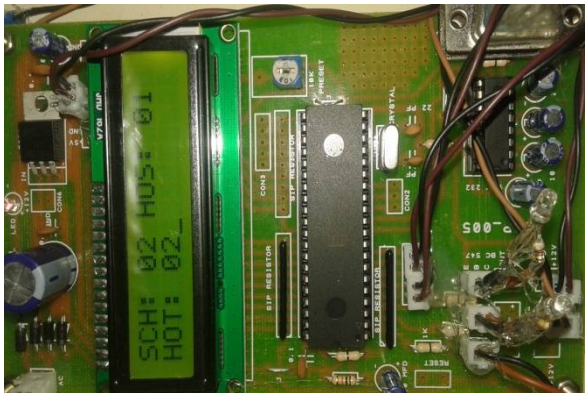

Figure 4

VIII. FUTURE DEVELOPMENTS

It hepls in finding the places efficiently about more than 14kms. This also helps in increasing the buffer size & eventually the data can be stored. To analyze the performance of the proposed algorithm, SM-ABC, using different values of the initial ǫ tolerance in equality constrained problems. To study the results of the SM-ABC algorithm using different values of the parameter limit. To implement our algorithm in benchmark unconstrained numerical optimization problems and to evaluate the results obtained.

IX. CONCLUSION

In this paper, we have proposed a set of interest-based forwarding schemes inspired by artificial bee colony, namely BEEINFO, in the context of socially-aware networking. From a conceptual perspective, BEEINFO takes advantage of both bio-inspired networking and socially-aware networking. It is characterized with the strong adaptability to the dynamic environment by fully harnessing the cooperation of individuals, making it suitable to mobile (social) networks. BEEINFO perceives densities of passing communities and social tie according to interests, instead of the change of individuals' interests. Mobile nodes maintain this information for distinct aims: density for inter-community forwarding and social tie for intra-community process. Here, extensive simulations on BEEINFO and compare their performance against PRoPHET and Epidemic. The results have shown that BEEINFO outperforms PRoPHET and Epidemic with higher delivery ratio, less overhead and less hop counts

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