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DIFFUSION OF INFORMATION IN MOBILE PHONE NETWORKS FOR VIRAL MARKETING

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Abstract - The emerging of mobile social networks open opportunities for viral marketing but the problem is identifying a small number of individuals through whom the information can be diffused to the network as soon as possible, referred to as the diffusion minimization problem. They used a community based algorithm and a distributed set-cover algorithm. But performance and the time complexity of the algorithms are not satisfiable in large-scale mobile social networks . In Proposed System, community based algorithm and Diffusing update algorithm (DUAL)are combined. DUAL evaluates the data received from other nodes in the topology and calculates the primary (successor) and secondary (feasible successor) routes. The primary path is usually the path with the lowest metric to reach the destination, and the redundant path is the path with the second lowest cost.

keywords-Information diffusion, Community structure, mobile networks

I . INTRODUCTION

The emerging of mobile social networks opens opportunities for viral marketing. Different from traditional televised or roadside-billboard advertising campaign, viral marketing takes advantage of the power of word of-mouth to increase brand awareness or product sale through self-replicating viral processes, and it has attracted considerable attentions from mobile and social computing research society. However, before fully utilizing mobile social network as a platform for viral marketing, many challenges have to be addressed. As the essence of viral marketing applications is information diffusion from a small number of individuals to the entire network by word-of-mouth, in this paper, address the problem of identifying a small number of individuals through whom the information can be diffused to the entire network as soon as possible, referred to as the diffusion minimization problem. Diffusion minimization is naturally critical to viral marketing applications. To deal with this problem, designed a community based algorithm with better performance and less time complexity. Different from existing distributed set-cover algorithms, the community based algorithm, from the social networks point of view, leverages the community structure to solve the diffusion minimization problem, considering the properties of communities that information can be quickly spread within a community and information diffusion from one community to another is much slower. Due to lack of global information and the requirement to handle the dynamic evolving of targeted networks, further propose a DUAL algorithm, where each node collects information by

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probing messages in a distributed way. Simulation results show that the community based algorithm and the DUAL algorithm outperforms compared to the distributed set-cover algorithm in terms of diffusion time..In this section, designed the community based heuristic algorithm. Community represents a set of nodes in a network, where nodes inside the community have more internal connections than external connections. Community structure is a prominent network property which provides a clear view of how nodes are organized and how nodes contact with each other, especially in social networks. Since the community based algorithm relies heavily on the community structure, which is a natural property of networks, it is hard to give a mathematically rigorous performance analysis. In the following, provided insights into the performance of the algorithm based on the diffusion node selection process. As mobile social networks usually consist of a large number of communities .consider the case that there is only one diffusion node identified from a community and after the merging process, the number of communities is no more compared to the previous work. Thus, according to the criteria of community merge, the communities have similar diffusion radius when the merging process stops. Based on these facts, assume that the community based algorithm performs equally with the optimal solution at this phase, although there is a slight deviation between them. In the following, we present the performance analysis based on this assumption. Then to illustrate the comparison between the optimal solution and the community based algorithm..The distributed set-cover algorithm and the community based algorithm are centralized and require global information of the network. Thus, in this section, proposed a DUAL algorithm to address these problems, where each node collects up-to-date information and the collected information is exploited to solve the diffusion minimization problem. After discovering the diffusion set, each node can collect the up-to-date diffusion set. As the path along which a probing message travels is probably not the shortest path between two nodes in terms of expected diffusion time, is the up-to-date diffusion set the same as the diffusion set for each node. Although probing messages are likely to stay within or gather at certain region according to the probability of information diffusion between neighboring nodes, the diffusion set of a node is expectedly fully discovered within time. However, that requires generating and forwarding the probing message more frequently and hence results in high message overhead. Thus, in our solution, each node generates a message every and forwards only one message opportunistically upon node contact with a probability. Christo Ananth et al. [5] discussed about a method, End-to-end inference to diagnose and repair the data-forwarding failures, our optimization goal to minimize the faults at minimum expected cost of correcting all faulty nodes that cannot properly deliver data. First checking the nodes that has the least checking cost does not minimize the expected costin fault localization. We construct a potential function for identifying the candidate nodes, one of which should be first checked by an optimal strategy. We proposes efficient inferring approach to the node to be checked in large-scale networks**.** DUAL gives best accuracy compared to distributed set cover algorithm to find out the diffused node for doing the viral marketing.

II.EXISTING SYSTEM

In Existing System, they used community based algorithm and distributed set cover algorithm. They form different communities. Each community should contain at least 2 mobile nodes in a community. Because one mobile node for send the message and another mobile node for receive the message. Here, they find the central node in the community, from that they find the diffusion node from each communities using community based algorithm. Then, apply the distributed set cover algorithm. In this algorithm, merge the diffusion nodes from one community into another community and continue the process till we get the results so here time complexity is occurred and performance are lacking. But in existing System, the performance and the time complexity of the algorithms are not satisfiable in large-scale mobile social networks .It does not find the accurate mobile node from the algorithm so we moved to DUAL Algorithm.

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III.PROPOSED SYSTEM

In Proposed system, we used community based algorithm and DUAL algorithm. In this process, forming different communities. Each community should contain at least 2 mobile nodes in a community. Because one mobile node for send the message and another mobile node for receive the message. Here, first find the diffusion node by transfer the messages between the mobile nodes then filter the mobile nodes from the communities. Finally, generate network for mobile nodes. After network formation then apply DUAL algorithm to find the diffusion mobile nodes from the network. In DUAL, maintain different tables to achieve the algorithm. Neighbor table contains information on all other directly connected mobile nodes. Topology table contains the metric (cost information) of all routes to any destination within the network. Routing table contains the best route(s) to a destination (in terms of the lowest "metric").Then, find the diffusion mobile node from the network. Which produces the mobile nodes accurately compare to the distributed set cover algorithm.

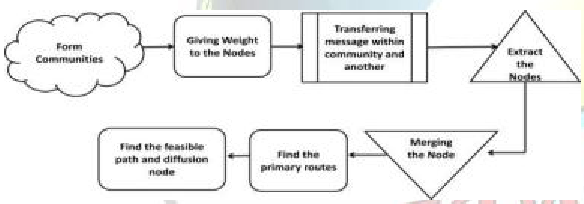

Fig.3.1.Architecture Diagram

3.1.MODULES

1.Community Formation

In community formation, initially creating two communities based on the community based heuristic algorithm. Community represents a set of nodes in a network. Each Community Contains a group of mobile nodes. In a community it should contain minimum two mobile nodes. Let C={C1, C2, C3, ...C l}denote the community structure.

2.Node Discovery with weights

In a community weights and nodes are the inputs to find out feasible successors in the network. Weights are assigned to each node in a community. Node formation is based on the weights.

3.Diffusion of Nodes within the Community

Within a community, nodes frequently contact each other and hence information can be quickly spread. Community based algorithm is to identify at least one diffusion node from each community.

Calculate Average to Extract Diffusion Nodes From Each Community

Average =SUM(N0+N1+…..+Nn)/(Total no of nodes)

4.Community Merging for Diffusion nodes

Information diffusion from one community to an other community is much slower compared to that within community. Identify more than one diffusion node in a community. Then merge the detected communities

5.Using Path to find nodes

Finding the diffusion node from two different communities then merge the detected nodes into one community. Then it will form a network and find the feasible path based on DUAL algorithm.

IV PERFORMANCE EVALUATIONS

In this section we evaluate the performance of the proposed algorithms and compare them with existing algorithms. Here the expected diffusion time is formulated based on the time of the mobile nodes message of the individual communities and then analyses the both communities based on the diffusing update algorithm. The graph shown the result of the performance level.

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V RESULTS AND DISSCUSION

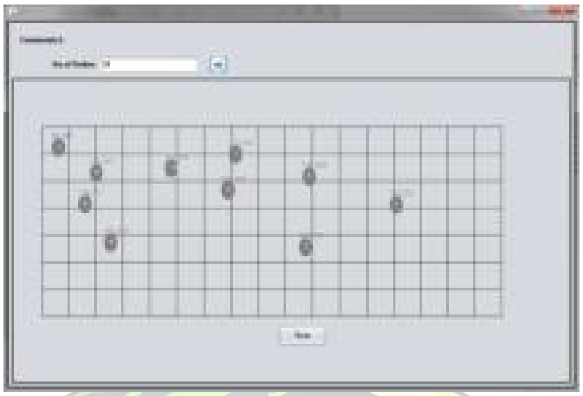

Fig.1. Creation of 10 nodes for community1

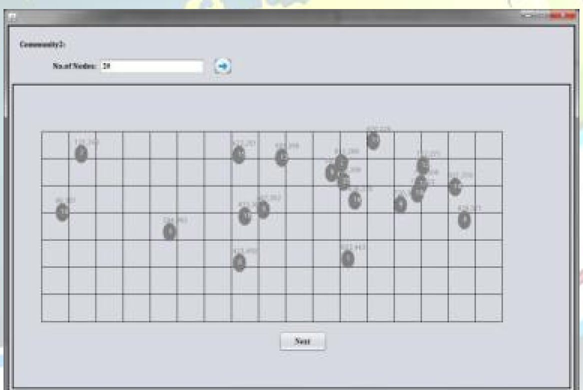

Fig.2. Creation of 20 nodes for community2

Thus the nodes have been created in the communities and then the message transmission is also done between the nodes.

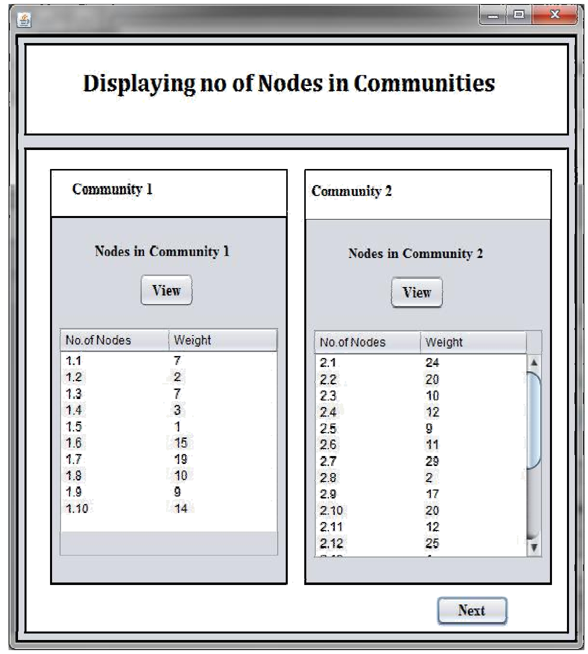

Fig.3 .Display the number of nodes and weights for community1 and comunity2

Fig.4. Select the particular node to send message to other nodes in community1 and then it display the particular node that particular node will send the message to all the others

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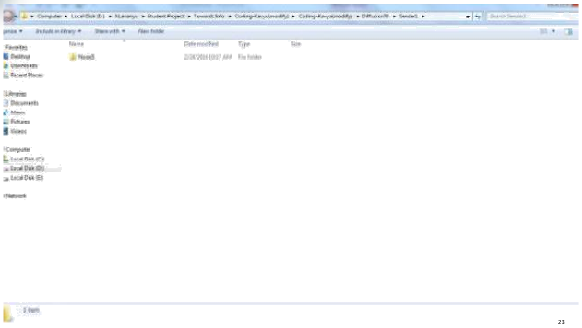

Fig.5. Type the message in the text area to send it to other nodes for transferring the message.

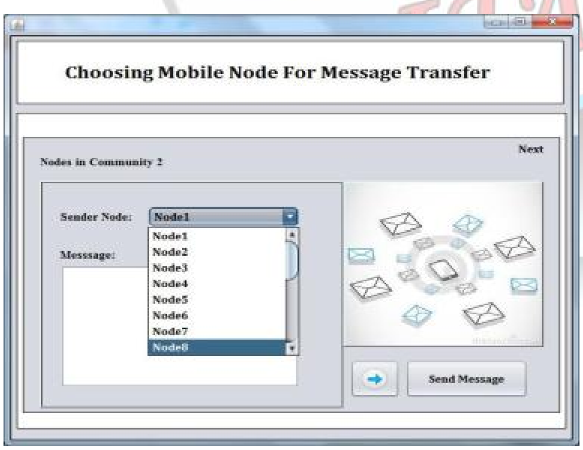

Fig.6. Select the particular node to send message to other nodes in community2 and then it display the particular node that particular node will send the message to all the others

Fig.7. Type the message in the text area to send it to other nodes for transferring the message.

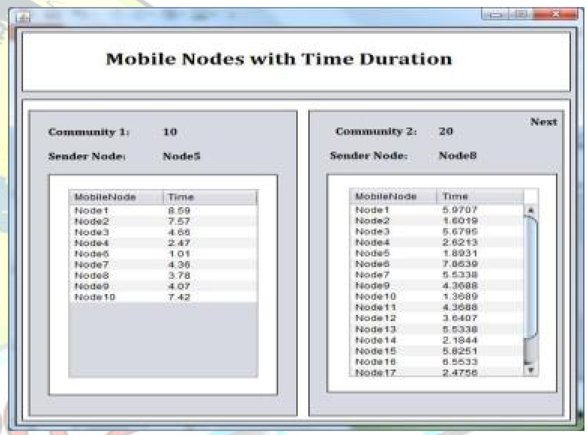

Fig.8. Community1 and Community2 mobile nodes with time duration. In this process it displayed the number of mobile nodes and the sender node chosen for both communities. The sender node send the message to each node in the community based on the sender node it calculated the time durations of each mobile nodes and then it filtered the diffused nodes of each community.

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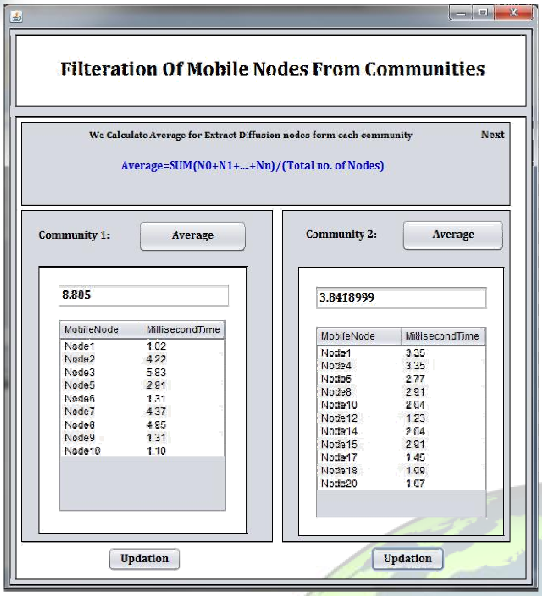

Fig.9. Filter the mobile nodes for each community based on the average to find out the diffused node for each community

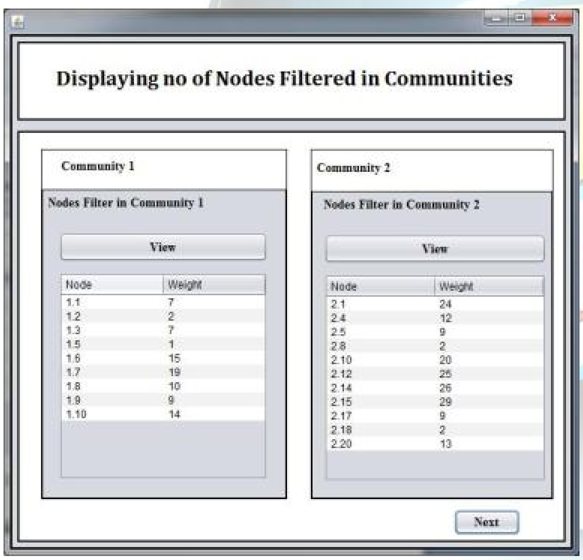

Fig.10. Display the number of mobile nodes filtered in the communities

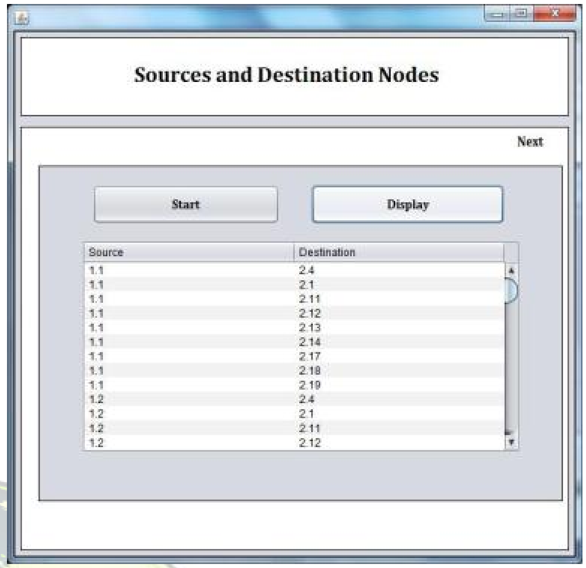

Fig.11. Based on the filtered nodes it will form the network to find out the diffused node of both the communities and their combinations.

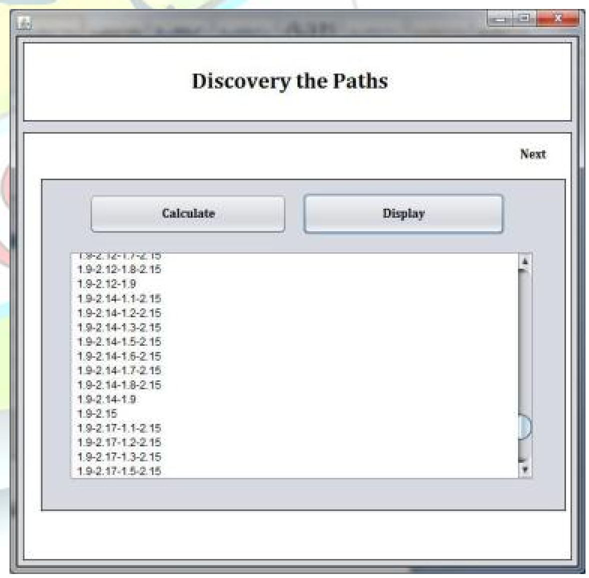

Fig.12. Display of all the paths

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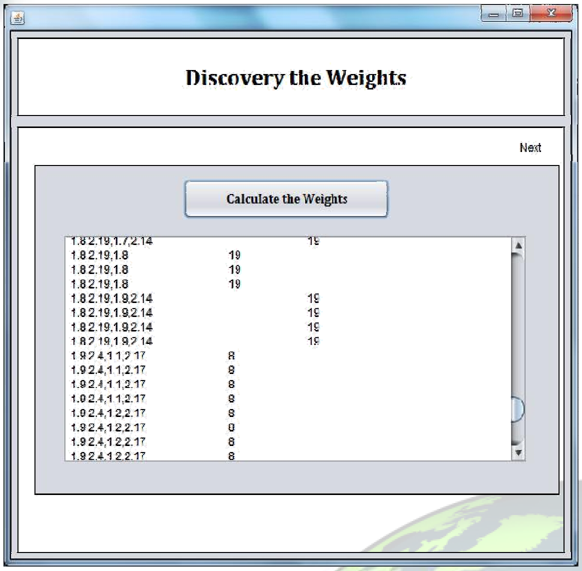

Fig.13. Display the weights of all the paths.

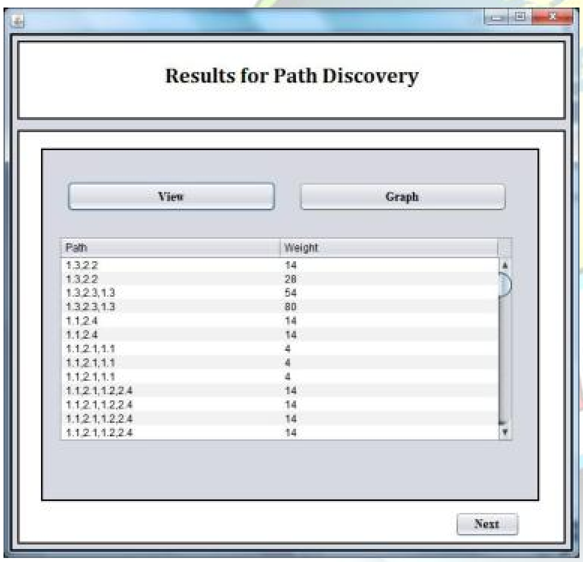

Fig.14. Finally display the result of diffused nodes and their weights

The result shown that the feasible successor of diffused nodes for doing the viral marketing. From the result the performance(accuracy) level is improved compared to the existing system that is compared to the existing algorithm and the proposed algorithm improved the performance(accuracy)level. The below graph shown the performance level of the existing and the proposed system.

Performance comparison of the existing system and the proposed system by the graphical representation is shown as follows.

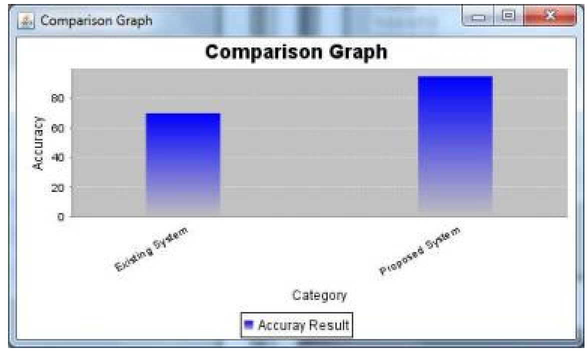

Fig.15. Comparison graph

VI CONCLUSION

In this paper, we addressed the problem identifying a small number of nodes through which the information can spread as soon as possible to the network for viral marketing. We proposed two algorithms community based algorithm and diffusing update algorithm to solve the diffusion problem. community based algorithm analyses the individual communities and diffusing update algorithm evaluate both the communities to find out the diffused node. The simulation results and the graph show that the diffusing update algorithm has the best performance for the diffusion problem in mobile networks.

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