

# Mobile Ad-Hoc Network By Using Antcolony Optimization Technique

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## Abstract

Ants as other living systems have interactions or communications, which can be more or less stochastic. In the present paper we analyse how the level of errors during communication interferes with development and efficiency of recruitment process. When an ant walking to and from food source, it leaves some chemicals on the ground. When they have chosen a way out of other then they choose this with probability. But this probability depends on Pheromone. The study of the application of ACO to problems on online routing in telecommunication network. This class of problems has been identified in the hypothesis as the most appropriate for the application of the multi-agent, distributed and adaptive nature of the ACO architecture. We are using best-effort traffic in mobile ad-hoc networks is still under development ,but quite extensive results and comparison with a popular state-of-the-art algorithm are reported .In this paper an algorithm for routing in mobile ad-hoc networks based on ideas from the ant colony optimization is proposed .Ant behaviours match with node of ad-hoc network. Ant colony is also a distributed system as ad-hoc .Ants communicates indirectly by environment. There may be a possibility get solution for routing algorithm in ad-hoc networks by ant colony optimization. Mobile ad-hoc network consists of mobile hosts equipped with wireless communication devices. This algorithm is used to reduce the delay, increase the performance of the job and identify the shortest path from source to destination node.

Keywords—Ant colony optimization, node, channel.

## 1.INTRODUCTION

Ant Colony Optimization is a technique for optimization. The inspiring source of ant colony optimization is the foraging (shortest path network routing combinational optimization) behaviour of real ant colonies. This behaviour is exploited in artificial ant colonies for the search of approximate solutions to discrete optimization problems, to continuous optimization problems and to important problems in telecommunications such as routing and load balancing.

Ad-hoc wireless network must be capable to self-organize and self –configure due to the fact that the mobile count routing often chooses routes that have significantly less capacity then the best paths that exist in the network .Most of the existing MANET protocols optimize hop count as building a route selection.

Mobile Ad-hoc networks inherit the common problems of wireless networking in general and add their own constraints specific to ad-hoc routing. Hence the primary goal in a mobile network is to efficiently establish one or more routes between two nodes so that they can communicate reliably. Such a network is characterized by the following challenges

1. The network topology can change dynamically due to the random movement of nodes.
2. Also any node may leave/join the network and the protocol must adapt accordingly
3. Although no guarantee of service can be provided, the protocol must be able to maximize the reliability of packet.

Network management of such a mobile network is hence a very big challenge. Also the fast changing nature and the ad-hoc necessity of the network prevents the choice of a centralized solution which can decide the best route to route packets and at the same time minimize the different parameters like congestion, load, etc .Also no single node can take up the job of centralized manager due to the limited energy and processing capabilities of mobile nodes. The design of ad-hoc networks faces many unique challenges. Most of these arise due to two principle reasons. The first is that all nodes in an ad-hoc network, including the source node(s),the corresponding destination, as well as the routing nodes forwarding traffic between them, may be mobile .As the wireless transmission range is limited ,the wireless link between a pair of neighbouring nodes break as soon as they move out of range. Hence, the network topology, that is defined by the set of physical communication links in the

network (wireless links between all pairs of nodes that can directly communicate with each other) can change frequently and unpredictably.

One of the major challenges in ad-hoc network is the security of connection between hosts in the network. The field of security for ad-hoc networks is at a very premature stage and this issue as to be thoroughly studied before mobile ad-hoc network system can be practically deployed in real world application. Therefore mobile ad-hoc networks are suitable for temporary communication links the biggest challenge in this kind of networks is to find a path between communication end points .This paper copes with, perform ability issues of nodes communication, independently from the causes behind service degradation. We aim at optimizing both performance and reliability measures by improving

- The throughput of data transfer through a lightweight mechanism.
- The quality of data transfer, so as to provide continuous network connectivity.

Mean while, unlike wired or wireless cellular networks, every mobile node has a limited transmission range. Therefore, two mobile nodes can communicate with each other directly, only if they are in the transmission range of each other.

To communicate with a peer outside its transmission range, a mobile node has to rely on one or more intermediate peers as relay. Due to the free movement of mobile nodes, both direct and indirect connection between peers can be disconnecting very frequently.

## 2.EXISTING SYSTEM:

The existing system is usually called a time-free asynchronous distributed system prone to process crashes .In these systems, a system designer can only assume an upper bound on the number of processes that can crash and, consequently, design protocols relying on the assumption that at least processes are alive. The protocol has no means to know whether a given process is alive or not.

Existing system using a algorithm is called as single processor scheduling algorithm. The main drawback of this algorithm is taking long time on data transmission between source to destination node and high delay. Since each ant takes more time to reach the destination. The main drawback of the existing paper is a single job value changes then also affect for total job value performance.

Drawbacks:

- More time take on data transmit between source and destination
- High delays occur in this kind of transmission.

## 3.PROPOSED SYSTEM:

Our model provides upper-layer applications with process state information according to the current system synchrony .The underlying system model is hybrid, comprised of a synchronous part and an asynchronous part. However, such a composition can vary over time in such a way that the system may become totally synchronous or totally asynchronous.

Modules:

- Identify the status of Node
- Message Transmission
- Change status
- Update status

### Identify the Status Node:

In Figure.1, we identify the Node is weather live or not. In this process we easily identify the status of the node and also easily identify the path failure.

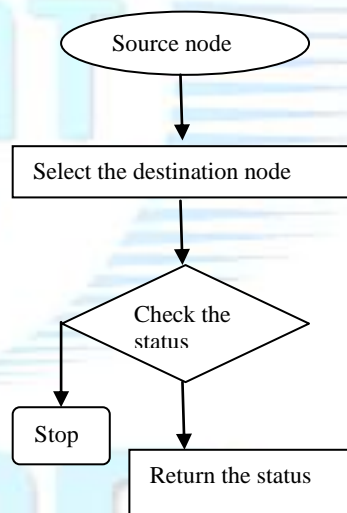


Figure 1: Identify the status of node

### Message Transmission:

Figure 2; in this module we just transfer the message to the destination or intermediate nodes.

The intermediate node just forwards the message to destination.

The receiver receives the message and sends the Ack.

### Change Status:

In this Module we identify the changed status of node. The Status is

- Live
- Uncertain
- Down

Update Status:

In this module we update the status of the node. Then only we can identify whether the node is live or not.

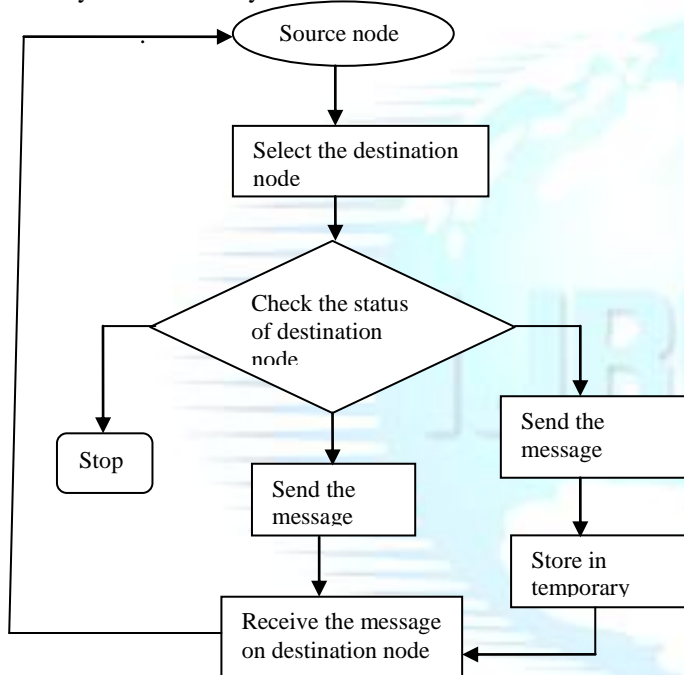


Figure2: Message Transmission

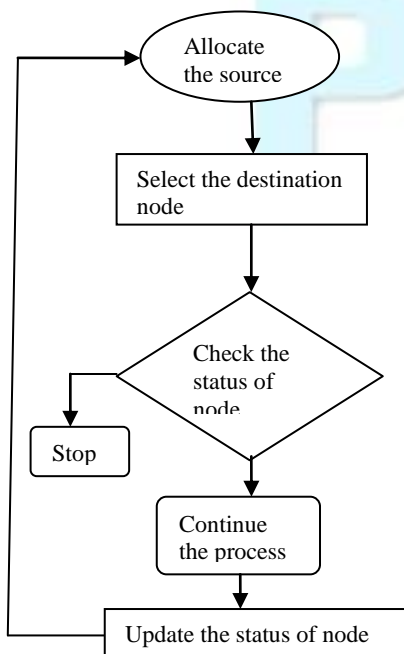


Figure 3: Update the status

The second module is also called as Message Transmission. Source node sends a request to destination node. First, check if the destination node present or not. Three condition available in this module. They are,

- If the destination node present, then the message is send to destination node. This node sends Acknowledgment to Source node.
- If the destination node Uncertain, then the message is send to one of the temporary storage memory. This memory sends the message to destination node.
- If the destination node is alive. Then the process is stop

The third module of the project is updating the status of node. After the message transmission, the destination node will be change. The main process of the module is change and updates the status of the node. A single destination node will be change for next source node communicates to other place of the node. The main advantage of my project is, identify the shortest path on data transmission between source and destination node. Then decrease the delay of the transmission and also increase the performance of the job value. The destination node receive the message and send the Acknowledgment to source node .Mobile ad-hoc network solve the many unique challenges. Mainly, it has no any limitation. Therefore it has no any base station or access point. It also works in wired or wireless communication network.

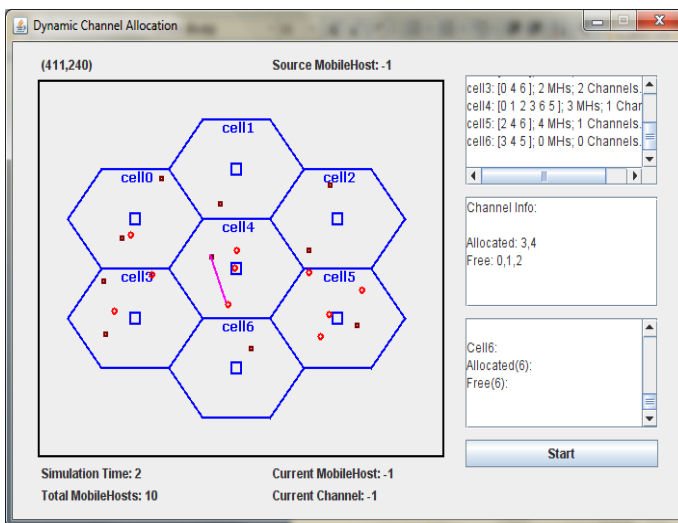
#### 4.IMPLEMENTATION

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective.

The implementation stage involves careful planning, investigation of the existing system and it's constraints on implementation, designing of methods to achieve change over and evaluation of change over methods.

Implementation is the process of converting a new system design into operation. It is the phase that focuses on user training, site preparation and file conversion for installing a candidate system. The important factor that should be considered here is that the conversion should not disrupt the functioning of the organization.

#### 5.RESULT:



## 6.CONCLUSION:

For the purpose of Ant colony optimization in mobile ad-hoc network, communicate between the nodes without need for any limitation (i.e, any base station). Three modules are using in this project. First module is, identify the status of node. Second module is, transmit the message between the two nodes, Third module is, update the status of node. These modules can increase the performance of the job value.

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