IMPROVEMENT OF NETWORK LIFETIME BY IMPROVING ROUTE DISCOVERY PHASE IN MULTI-PATH DSR USING HYBRID ANT COLONY OPTIMIZATION
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Abstract

Problem Statement:

Improving a protocol for routing in ad hoc networking using dynamic source routing (DSR) based on ACO Ant Colony Optimization Technique.

With Respect to Three Performance Metrics:

(1) Packet end to end delay,
(2) Throughput
(3) Packet delivery ratio

- Simulation Tool Used: MATLAB
The term MANET (Mobile Ad hoc Network) refers to a multihop packet-based wireless network composed of a set of mobile nodes that can communicate and move at the same time, without using any kind of fixed wired infrastructure.
Application of MANET

- TACTICAL NETWORK
- SENSOR NETWORK
- EMERGENCY SERVICES
- COMMERCIAL ENVIRONMENT
- VANET (Vehicular Ad Hoc Network)
- MILITARY ENVIRONMENT
Routing Protocols of MANET

Proactive/Table-Driven Routing Protocols: When a packet needs to be forwarded, the route is already known. Each node maintains a table.

Reactive/On-Demand Routing Protocols: Determine a route only when there is data to send. It maintains only currently active routes to reduce network load.
Reactive versus Proactive Routing Approach

• **Proactive Routing Protocols**
  – Periodic exchange of control messages
  – (+) immediately provide the required routes when needed
  – (-) Larger signalling traffic and power consumption.

• **Reactive Routing Protocols**
  – Attempts to discover routes only on-demand by flooding
  – (+) Smaller signalling traffic and power consumption.
  – (-) A long delay for application when no route to the destination available.

• **Hybrid**
  – combination of proactive and reactive
Dynamic Source Routing (DSR)

- It is based on concept of source routing.
- Each node maintains a route cache to store all possible learned routes.
- It uses two main mechanisms: Route discovery and Route maintenance.
- Route Discovery process is initiated only if desired route can not be found in route cache.
Dynamic Source Routing (DSR)

Route request propagation in DSR

Route reply propagation in DSR
ACO Ant Colony Optimization Technique is developed from ant behaviour when foraging for food specifically the method through which ants choose a shortest path to a specific source when many trails are evident.
MATLAB is a numerical computing environment and programming language.

Created by *The MathWorks*, MATLAB allows easy
- matrix manipulation,
- plotting of functions and data,
- implementation of algorithms,
- creation of user interfaces, and
- interfacing with programs in other languages.

MATLAB is available for Windows, Macintosh and UNIX systems. It is used by more than one million people in industry and academia.
Simulation Setup

Workspace: consists of the variables you create during a MATLAB session;

Current Directory browser: shows you where you are.

Launch Pad: displays all the tools and applications associated with MATLAB;
THANK YOU!

YOU CAN FIND US

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