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# Petal Spider-Ant Routing (PSAR) Protocol based Proactive Energy Aware Stabilized Path Routing scheme for Improving MANET Network

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***Abstract:*** The MANET is big communication dynamic network environment contain large number of collective nodes to perform data communication. Most of the routing based approach would select the longer route which increases the latency and reduces the throughput performance which leads degradation in MANET. However, all the methods suffer with poor performance in all the QoS parameters like energy, link stability, life time etc. To resolve this problem we propose a Petal Spider-Ant Routing (PSAR) Protocol based Proactive Energy Aware Stabilized Path Routing (PEASPR) scheme for Improving MANET Network. Initially this route optimization analyze the Node Behavioral representation in the cooperative communication based on Neighbor discovery which get information from Route Table (RT). The Time Stamp Duty Cycle (TSDC) analyze energy level of each node on the routing path by relevance transmission support weight (CH-RTSW). With the support of RSTW-Link stability is performed based on route cluster propagation using Droptail Queue Management (DQM).Then PSAR creates a spider-ant cluster routing path by forward the data packets to the cooperative relay medium. This fins the nearest node get optimized energy condition to transmit the data with increased link stability. The method performs route selection and performs data transmission aw well in low redundancy form of traffic mitigation. The proposed methods reduce congestion to enhance route selection performance and improved the QoS performance.

***Keywords****: MANET routing protocols, Petal Spider-Ant Routing, Energy aware routing, life time improvement, cluster Head, Drop tail Queuing.*

## I. INTRODUCTION

The Mobile ad hoc network's several areas are used to exchange the data and communicate others with an emergency time. Ad-Hoc network is appropriate for employment in condition wherever there is no infrastructure or deployment of network is not cost effective. Without any fixed communication set up Ad-Hoc networks facilitates structuring of easy as well as adoptive network. Due to which these networks are liable to act an essential role in forthcoming wireless invention. To manage efficient multi-hop Ad-Hoc network clusters, which will not only function independently and will also be able to connect with a few determinate network points, prospecting wireless expertise will involve highly adaptive mobile networking technology.

MANET is adaptive and self-managing in nature. Devices are connected with each other and execute connection for sharing of data and services. Ad hoc networks permit device to keep their links and assist to take away or join devices from network. Topologies of Ad hoc networks also changes quickly and are not predictable over time. There is no primal authority or focused structure to keep connections. Due to deficiency of centralized authority, displacement of topology message routing is a big difficulty but message transfers are done by nodes themselves.

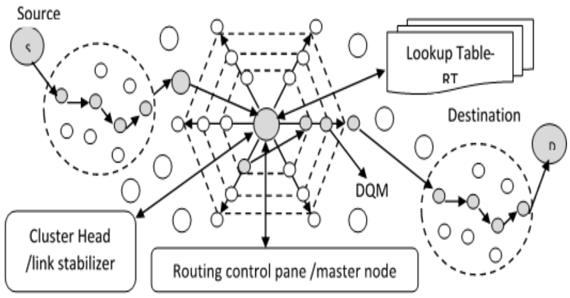


Figure 1: Process of Petal Spider-Ant Routing (PSAR**)**

Figure 1 shows the routing between the source and destination where the data packet has been transmitted through number of intermediate nodes to deliver the data packets. In the same way, the data between any source and destination is performed with the support of intermediate nodes.

The contribution is to improve the MANET by considering the selection routing optimality to design efficient routing scheme which considers multiple parameters like energy, mobility, and so on. The method has to consider the link quality of the routes available in route selection based on petal formation on spider layer to form cluster to ant routing the Queuing protocol principle. The route selection should be performed by measuring the quality of link at the selection of route. To design efficient scheme which should improve the performance of routing and the throughput performance. The latency of routing and packet drop ratio should be reduced. The retransmission frequency and ratio of route discovery should be reduced.

The organization of this paper section 2 contain related work, section 3 contains proposed system and its implementation. The Section 4 contain the result and discussion with performance evaluation of the implementation followed by section 5 conclusion to be discussed.

## II Related work

This chapter presents the review on different methods of routing available towards the development of mobile Ad hoc networks on optimized routing of Petal Ant Routing (PAR) and Dynamic Source Routing (DSR) in MANET [1]. Wireless channels are likely to span of broadcasting commands like declining, path loss, intercession and obstruction. Characteristics with data rate, series, and reliability are routing protocols perform non related route selection defend in reviews on MANET standards [2]. All these properties trouble communication that rests on regional circumstances to choose multipath routing. Grey Wolf Optimizer (GWO) supports most cases in dynamic routing but limitations be non-optimized in energy levels.

In Ad-Hoc Network, routing is an essential objection for execution degradation because of the GWO process unicasting, multicasting and geocaching conditions via network nodes in comparison with individual hope of wireless networks are failed to organize energy level nods [3]. This is because of speedy alterations in network topology and rapid mobility. In Ad-Hoc Networks, hybrid firefly algorithm (FF) and galactic swarm optimization performs the QoS is an essential objection for differed type of quality levels needed for nodes of network [4]. Similarly GWO-FF becomes very hard to accomplish various levels precedence demands associated with quality of service, so that, this network needs foremost power of QoS particularly in data transfer area. Due to limited origin set up, important restriction on mobile devices is found in ad hoc network [5]. Location faults occurring on Nodes that exist in these networks have limitations on dominant relation to domain mobility, construct as well as ability of node because of loss of quality and execution capability which makes nodes having dense weight and becoming little movable [6].

Mobile agent based routing method which makes use of service-dependence and fault data that are harvested in the network through decentralized, run-time observations of service interactions and fault symptoms [7]. In time stabbed baited and duty cycled stated that the routing in MANET is approached with node replacement technique to achieve higher energy efficiency. The method focused on lifetime maximization according to the time spent. The method identifies the alternate route to maximize the energy efficiency [8]. Node re-placement depends an energy based multi path routing algorithm with Alternate Path based Energy Efficient Routing Protocol (AP-EERP) is presented which considers the reliability measures like energy, cost, traffic to perform routing between source and destination [9]. In, Load balance multipath routing algorithm is presented for delay tolerant network which considers the life traces on dynamic topology [10]. Hybrid routing protocols use the proactive routing algorithms for packet transmission failed at end to end transmission, when nodes are placed closer to one another and use the concept of reactive approach when nodes are far away from each other [11].

The trust based routing creates rule based protocols life fuzzy system creates an opportunistic routing is presented after reviewing different routing protocols in MANET and their performance in different factors [12] . In, Adaptive Protocol for Stable and Energy-Aware Routing (AP-SEAR) in routing is enforced which maintains set of rules for different class of people and measures the trust value according to the feature values and the rule available [13]. The Sink Point Streaming (SPS) approach improves the performance. A stable and energy based routing scheme is presented based Dynamic Multi Constraint Routing considers the energy of nodes and the stability among other nodes [14]. According to that, mobility and energy are used in route selection. In, trust embedded AODV adaptive routing algorithm is discussed for MANET which uses Pltrust AODV algorithm inspired by hybrid algorithm which updates the position. It has been derived from Differential Evolution (DE) [15].

Hybrid Clustering and Path Selection Algorithm depends a cross layer multipath routing algorithm is discussed which considers the data rate support of different routes. The method searches the route which is more secure in terms of many features [16]. In Energy-Efficient Routing Algorithm Based on Learning Automata Theory over AODV is presented which identifies the list of nodes in the network and performs route discovery to perform data transmission [17]. Hybrid PSO-DE algorithm which identifies the path which is secure according to the global secret key [18]. The link-state routing and DSR and AODV Routing Protocol is a reliable clustering based routing algorithm is presented which identifies the route according to the ratio of sent and received packets [20].Based on the Discussed reviews the limitation covered to improve the energy aware routing which is implemented in the proposed method.

## III PROACTIVE ENERGY AWARE STABILIZED PATH ROUTING

Towards the QoS development of MANET, a Petal Spider-Ant Routing (PSAR) Protocol based Proactive Energy Aware Stabilized Path Routing scheme is presented. The method uses neighbor information and the link between neighbors to predict the link quality to choose the best path based on the energy level. The method monitors the routing neighbor conditions to maintain the internode conditions based on cluster routing depends on PSAR. Using this routing energy ware stability information, the method performs analysis on different phases to identify the more cooperative routing to perform data transmission. The method improves the performance in routing and achieves higher values in different QoS parameters. A maximum number of hops presents the Queuing the communication to increase the reliability of routing. Maximum hops contain less packet loss, relay tolerance, minimum packet loss, and minimum time. Also energy level improved the routing on the life time maximization depends the Time stamp duty cycled based energy aware routing for improving mobile adhoc network communication.

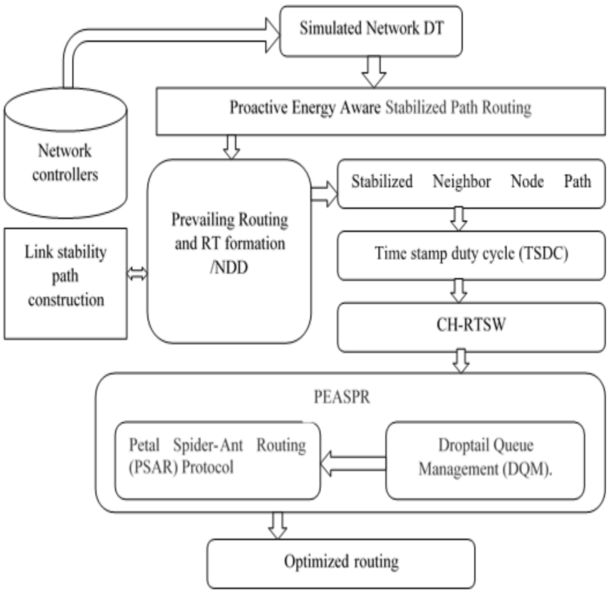


Figure 2: Architecture for proposed Proactive Energy Aware Stabilized Path Routing

The implementation creates energy aware routing by layered approach under the Petal forms in using Spider-Ant Routing (PSAR) Protocol. This works on the principle of spider support weight by placing the active on cluster path. Figure 2: shows the Architecture for proposed Proactive Energy Aware Stabilized Path Routing. The Proactive Energy Aware Stabilized Path Routing (PEASPR) organize the cluster nodes on the transmission medium gives hop to cluster head to organise the routing. To optimize analyse the Node Behavioural each node of the activities are monitored based on the response activates and the information are stored in Route Table (RT). The Time stamp duty cycle (TSDC) analyse energy level of each node on the routing path by creating time window on iterated cycle period of evaluating the routing performance. Then the projected layered cluster creates the transmission depends on energy level using the Cluster Head- Relevance Transmission Support Weight (CH-RTSW). For more than one route dynamic propagation, the support of RSTW-Link stability is performance based on route cluster propagation using Droptail Queue Management (DQM).Then PSAR creates a spider-ant cluster routing path by forward the data packets to the cooperative relay medium using higher support weight with low energy dependencies without any mitigations to improve the routing and optimize the energy. The rest of the sections explains the step by step proposed energy aware routing optimization.

### 3.1 Stabilized Neighbor Node Path Construction

The identity of the neighbour is very important in any data transfer. According to neighbour identification, data transmission is supported. Earlier technologies posed various threats, passing through a number of intermediate nodes where receivers and other information details were captured by different malicious nodes. To overcome this problem, the proposed neighbor analysis method detects the first set of neighbours. Collect neighbours using the network topology. According to the topology, this method collects the location and energy of different nodes. Based on the location details, this method identifies the neighbours in the group and adds them to the adjacency list. According to the determined neighbour, the practice of the method links the establishment

Given: Network Topology

Obtain: Neighbor Details as NT.

Start

Read Starting node Sn, Starting node information Sni.

Identify list of nodes Nl.

For each node n

Compute node weight, energy, location.

Enhance node id to create link Cl= (Σ node id) + Sn.

If (Sni = Sn)

The link will be established then collect neighbor information like location, area.

End

End

Identify the node from the development group and store it.

Stop.

Neighbourhood analysis program measures node weight, energy, and tank location. According to them, this method identifies a list of trusted nodes. Finally, each node knows neighbour information such as location and area, and each packet is verified by the destination node so that node details are efficiently collected in each time frame.

### 3.2 Proactive Link Stability

Depending on the values in the neighbour table, this method recognizes the neighbour list, and depending on the factors mentioned above, this method chooses each node with maximum energy, less traffic, and less travel speed. Based on this, this method identifies nodes and established links. The generated links are used for data transfer. This method also uses hop counts to establish the list. The link stability can be measured according to the mobility speed of different nodes of the route. By summing all the mobility of nodes of any route and by averaging them, the link stability can be measured. When there is a route with least mobility, then its link stability is higher.

Given: Neighbor Table NT.
Obtain: Neighbor Link
Start
Read neighbor Table NT.
Initialize neighbor information Ni.
Read Ni, and extract Ni information traffic, location, mobility speed, energy
Create link L

L= {Ni/100};

For each node Ni from network

If (Ni = Next hop)

Nodes will be grouped in the single unit

End.

End

To get fresh link Fl

If (Fl= single link)

{

Considerable distance node-link converted into the number of small paths }

To establish short message Sm from each node

If Sm== data, source address and destination address

Neighbour node-link establishment is done.

End

Stop.

Link establishment has completed the information of the adjacent node. First, node shared information about traffic, location, speed of travel, and energy in all adjacent network-based environments. These nodes are translated into smaller paths and grouped according to the distance between the traffic and the target node. When connected, each node sends a short message on a regular basis, containing data similar to the change, information about the source and destination addresses. Depending on the intermediate node (adjacent node), the message will be a better data transmission link in the next stage

### 3.3 Time stamp duty cycle (TSDC)

A hop length is too small which consumes more energy for the transmitter and receiver of all relay nodes running on this area based on the Link stability. Therefore, the Dynamic nature oof MNAET be analyzed with time stamp duty cycled by carrying the ach transmission to esteem the routing which its it is necessary to determine the optimum length of the transmission trainee for the optimized energy and hop count on time dependency. To esteem the Power transmission data ($t_r$) is based on the number of hops and power consumption per hop per specific time. The distance from source and destination depends on the optimum hop length ($H_l$) must be calculated, and the power consumed to send data for each hop as well.

$$P_r = \frac{t_r}{H_l} \times PH_l \text{ And } PH_l = P_{TX} + P_{RX} + P_{energy}$$

To estimate the minimum consumption per-hop ($P_{min}$), the minimum energy is consumed to receive data and node (n) is the path loss coefficient, and α is a scalar coefficient.

$$P_r = \frac{t_r}{H_l} \times N1 \rightarrow N2(\alpha P_{min} H_l^n)$$

So, optimal energy consumed for transmitting the packet to optimal Hop distance is given by

$$T_p = \frac{t_r}{\sqrt{\frac{N1 \rightarrow N2}{\alpha(r-1)}}} \times \alpha P_{min} H_l^n$$

$$Er = P_r \in T_p$$

If a sufficient number of nodes is not available within this region, it increases the radius value (r). Among available routes Er, the method or protocol would be able to identify an optimal route to perform data transmission at energy consumption to hop medium. With the selected route, the data transmission is performed. The source transmits the data packet to the neighbor and further it is transmitted to the neighbors of each present in the route

### 3.4 Cluster Head Node relevance transmission support weight

This information contains a list of nodes within each node of the cluster path. CH's responsibility is to communicate with all nodes in the cluster within the communication network. However, the CH must communicate with other clusters directly or through the corresponding CH or gateway node. Communication takes place in three stages. Initially, CH receives the data sent by its members. The compressed data and final data are then sent to the base station or other CH. Appropriate CH can reduce energy use and improve the life cycle of the network.The routes discovered in the previous section would contain number of routes. Not all the routes are suitable to perform data transmission. To identify the suitability of the route, the data handling support (DHS) is measured. The DHS value is computed according to mobility and traffic conditions. For each hop present in the route, the method computes the mobility and traffic value

Given: Integral Network Inet

Obtain: Density Factor Df

Begin

Read Inet.

Find the nodes in the region Nset = $\sum_{x=0 \rightarrow size(Inet(x))}^{y=0 \rightarrow size(Inet(y))} \text{Nodes} \in \text{Inet}(x, y)$

For each node n

Compute perimeter distance Pd = $\frac{\sum_{i=1}^{4} Dist(Inet(i).loc, n.loc)}{4}$

End

Compute Regional Transmission Support RTS = $\frac{\sum_{i=1}^{size(Nset)} Nset(i).Mobility < MTh}{size(Nset)}$

Compute Density Factor Df = $\frac{\sum_{i=1}^{size(Nset)} Nset(i).Pd}{size(Inet)} \times \frac{RTS}{size(Nset)}$

Stop

Once the region is identified, then the method involves in route discovery. To perform this,, the location details of different nodes are collected. For each node, their neighbor nodes are detected and according to the transmission range and location of different nodes, the list of route present in the network is identified

### 3.5 Proactive Energy Aware Packet Forwarding

In this stage the method allows the nodes which are located within the transmission range at the data transmission. It identifies the optimal route to perform data transmission based on mobility presentation the route is selected based on average routing of proactive traffic mediums. Also the dynamic host state is represented with cluster transition support to chose the stability node on each energy consumes the transmission support at max level to forward the packet. The proactive routing mechanism to communicate, whereas the nodes which are of different zones, follow reactive routing mechanism. In this manner, packets are delivered to destinations within the same zone immediately using an active as well as updated routing table on packet the forwarded information be updated.

Given: Network Topology T, Packet P, and Source S, Destination D.

Obtain: Integral Networks INet

Begin

Read NT.

Identify location of source and destination nodes.

If Dist(source, destination) <Th then

Find the nodes in route Tnr = $\sum$ Nodes $\in$ R

Compute Average Mobility $A_{mobility}$

$$A_{mobility} = \frac{\sum_{i=1}^{size(R)} Mobility(R(i))}{Size(R)}$$

Measure Average Traffic Atraffic.

$$A_{traffic} = \frac{\sum_{i=1}^{size(R)} Mobility(R(i))}{Size(R)}$$

Compute DHS value.

$$DHS = \frac{Amob}{Atraffic} \times Tnr$$

End

Packets need to be delivered outside the sending zone to keep away from the overheads of checking routing tables along the way by using the on-demand protocol and use the border casting routing protocol to ensure whether each zone contains the destination node. The proactive routing protocols throughout the entire route discovery process in order to reduce the control overhead and getting rid of the delays for routing within a zone due to the route gaining energy processes of on-demand routing protocols based on multiple routed to progress queuing management.

### 3.6 Droptail Queue Management (DQM).

This queuing management allows the multiple routing on queuing state to process the continual link stability packet transmission. This creates the response target energy level nodes on considering all this supportive factors to choose the transmission on route wakening nodes creates tail connection. The non-factor nodes are low level link stability to drop the route on supportive route to choose he alternate route to forward the packets to improve the communication. The queue dynamically change the nature of cooperative supportive nodes depends on transmission support weight. First the number of properties required to be accessed by the Queuing service to fulfill the request is measured as follows:

Consider the simulative transmission factor S=the number of routes in the network, P=$\frac{\lambda}{s\mu}$= the average utilization of the system Pid=$[\sum_{n=1}^{\infty} \frac{(\lambda/\mu)^n}{n} + \frac{(\lambda/\mu)^s}{s}\left(\frac{1}{1-p}\right)]^{-1}$ the probability that no CH are in the network

Based on the Pre-Network Characteristics Network Characteristice Analysis is compatible. It triggers an event to identify successive energy level route on the detection of otherwise random paths.

Let's the transmission at initialized packet state be $P0(\lambda/\mu)^n P$ at process state $s(1-p) in\ each\ route\ S\ at\ packet\ tranmmion.$

Includes network table of events as well as optimizing the behavior of adaptive networks through tuning and specification of queuing rousing to transmit the packets based on packet forwarding.. Lq=$\frac{P0(\lambda/\mu)^n P}{s(1-p)^\wedge 2}$ = routing arrival in queuing, Wq=$\frac{Lq}{A}$ the average time spent waiting in line as saw as Lambda and arrival rate A in execution time to creating tail, otherwise they non supportive level drop the Route depends on packet transition on route Id Pid .

Pid=$\begin{cases} \frac{(\lambda/\mu)^n}{n}\ p0\ where\ \ n \le s \\ \qquad \cdots \\ \frac{(\lambda/\mu)^s}{s}\ p0\ where\ n \ge s \end{cases}$ where n is the probability of Link stability state in queuing theory

These nodes are translated into smaller paths and grouped according to the distance between the traffic and the target node. When connected, each node sends a short message on a regular basis its creates are tail connectivity, containing data similar to the change to drop information the nest routing queuing be connected based on stabilize route from the source and destination addresses. Depending on the supportive queuing on Transmission support level, the packet will be a better data transmission link in the next stage. According to this, there will be link failure in the middle of data transmission. When a route is selected without considering the queuing route availability at the conditions of link failure, then the packet has to travel through a longer route as chooses the shortest route queuing available

### 3.7 Petal Spider-Ant Routing (PSAR) Protocol

In this cluster Activation, selection and routing features of the node to be considered. This create spider layer based on each petal on least path length on cluster to coordinate the energy are nodes in each petal to form consecutive layers. The node detects the information and collects it to transmit to a high-energy node on each petals on cluster to form neighbor nodes with consecutive nodes. In this Cluster Selection (CS), the node request is verified and the correct order data to be sent is processed. Further, unrelated data are eliminated from CH.

Given: Packet P, Neighbor Table Nt, Route Table Rt
Obtain: Null
Start
Read incoming packet P.
Generate DQM, PSEAR.
PSEAR ={Source,Destination,PID}
Broadcast PSEAR in the network.
While true
Intermediate node receives packet DQM.
If $\int_{i=1}^{size(NT)} NT(i) == PLRR.Destination$ Then
Generate PSEAR route.
PSEAR=$\{\sum(Routes \in PLRREP) \cup \{Location, Energy, Speed, Direction, NN, Traffic, Flow\}$
Forward packet to source
Else
Forward PSEAR to its neighbors
End
If P.Type== PSEAR then
Estimate Probabilistic Link Availability PLA.

$$\text{PLA} = \frac{\sum_{i=1}^{Size(RT)} HORS}{size(RT)}$$

Extract routes and statistics from reply and update route table.

$$\text{RT} = \int_{i=1}^{size(PLRREP)} \sum(Routes \in RT) \cup \sum Nodes(R\,\{Location, Energy, Speed, Direction, NN, Traffic, Flow\})$$

For each route R from RT

Estimate Probabilistic link Availability Estimation PLA.

$$\text{Estimate QoS SM} = \frac{\sum_{i=1}^{size(R)} Traffic \in R(i) / size(R)}{\sum_{i=1}^{size(R)} Hops \in R / size(R)} \times \frac{\sum_{i=1}^{size(R)} Flow \in R(i) / size(R)}{\sum_{i=1}^{size(R)} Hops \in R / size(R)} \times \frac{\sum_{i=1}^{size(R)} Speed \in R(i) / size(R)}{\sum_{i=1}^{size(R)} Hops \in R / size(R)} \times PLA(R)$$

End

Select a route with more QoS-SM value.

$$\text{Route R} = \int_{i=1}^{size(RT)} Max(RT(i).QoS - SM)$$

Transmit packet through selected route R.

end
End
Stop

It performs aggregation data reduction by using a locality-sensitive hashing function. The higher energy node forms a CH to select the vice-cluster head as the primary head in case of failure. Sink disseminates the event of interest and gathers sensed data from the cluster heads via the relay nodes. This sink node sends cluster head data to the relay node.

## IV RESULT AND DISCUSSION

This simulation result are carried to test the proposed implementation under the environment of Manet network. Based on the command operative system the Ns-2 Simulator designed the GUI network nodes to create dynamic topology to script the proposed precedence to execute the algorithm. It advances as the allowable leader of the Tool Command Language (TCL). The recommended method is to use a network simulator to simulate and run, and then all the codes are created in the TCL script. The results obtained from the simulated nodes, the proposed performance of active response the routing improvements are obtained to reveals the high stated tested result.

**Table 1: parameters and simulated variables with its values**

| Parameters | Values |
|---|---|
| Simulation Tool | Network simulator (NS-2), Cygwin |
| Transferring Packets | 200 |
| Network size | 1200 m x 1200 m |
| Data size | 200MB |
| Packet size | 512kb |
| Network | Mobile Ad-Hoc Network |
| Node placement | Random placement |
| Number of Nodes | 48 |
| Simulation area | 300m*300m |
| Simulation Time | 500sec |
| Routing Protocol | TCP |
| Data Packet Size | 512 KB |

Table 1 shows the simulation parameters analysis of the Network simulations tool using the transferring the maximum number of packets. Using the proposed method based Proactive Energy Aware Stabilized Path Routing (PEASPR) with its optimized PSAR in Mobile Ad-Hoc Network (MANET) shows delivery ratio, network security, packet drop ratio, Network lifetime, and time complexity.

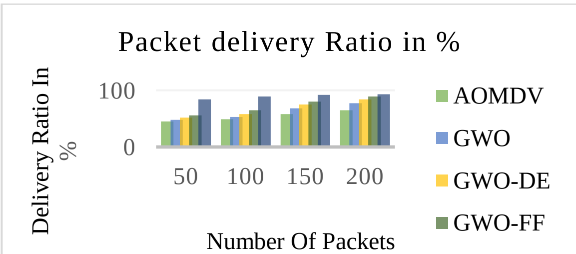


**Figure 3: Analysis of the Packet Delivery Ratio**

Figure 3 describes the Packet delivery ratio for the proposed algorithm Quality of Service based Improved Proactive Energy Aware Stabilized Path Routing (PEASPR) achieves the 93%, compared with the existing algorithms Ad hoc On-demand Multipath Distance Vector Routing (AOMDV) Protocol packet delivery ratio performance of 65% and Grey Wolf Optimizer (GWO) packet delivery ratio performance of 77%, Grey Wolf Optimizer(GWO) with the Differential Evolution (GWO-DE) is 84%. And Grey Wolf

Optimizer (GWO) with the FireFly (GWO-FF) algorithm archives only 89% only.

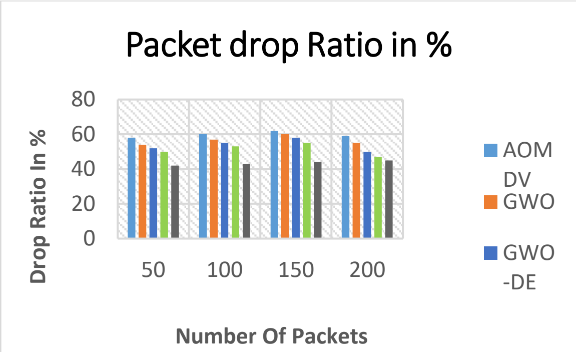


**Figure 4: Analysis of the Packet Drop Ratio**

Figure 4 describes the Packet drop ratio for the proposed algorithm Quality of Service based Improved Proactive Energy Aware Stabilized Path Routing (PEASPR) achieves the 45%, compared with the existing algorithms Ad hoc On-demand Multipath Distance Vector Routing (AOMDV) Protocol Packet Drop Ratio performance of 59% and Grey Wolf Optimizer (GWO) Packet Drop Ratio performance of 55%, Grey Wolf Optimizer(GWO) with the Differential Evolution (GWO-DE) is 50%. And Grey Wolf Optimizer (GWO) with the FireFly (GWO-FF) algorithm archives only 47% only.

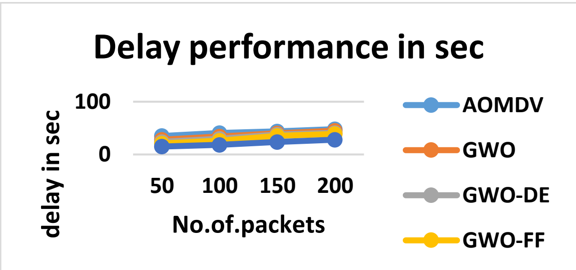


**Figure 5: Analysis of Delay performance**

Figure 5 describes the delay performance the proposed algorithm Quality of Service based Improved Proactive Energy Aware Stabilized Path Routing (PEASPR) achieves the 28 sec, compared with the existing algorithms Ad hoc On-demand Multipath Distance Vector Routing (AOMDV) Protocol Delay performance of 48 sec and Grey Wolf Optimizer(GWO) Delay performance of 45 sec, Grey Wolf Optimizer(GWO) with the Differential Evolution (GWO-DE) is 41 sec. And Grey Wolf Optimizer(GWO) with the FireFly (GWO-FF) algorithm archives only 39% only. In the path analysis calculate total number of node, number of available path it's divided by total number of connection.

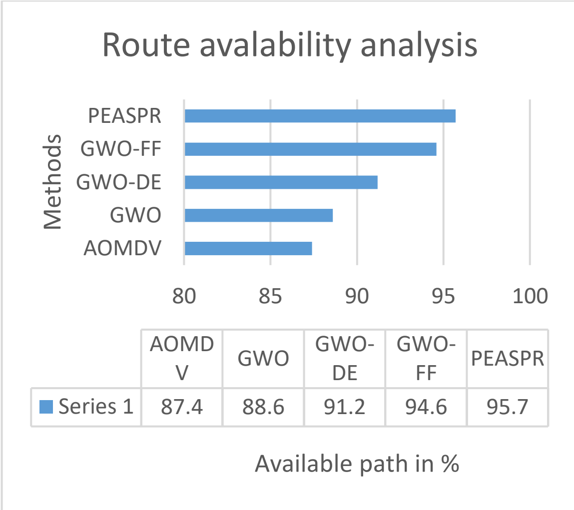


**Figure 6 Route Availability Analysis**

An important advantage of using Proactive Energy Aware Stabilized Path Routing is inherent path diversity (ie, the loss process is expected to operate independently on different paths). To achieve this goal, Proactive Energy Aware Stabilized Path Routing is an effective method as shown by network data that can be shared via multiple paths to reduce network congestion. Comparison of the proposal shown in figure 6 with existing methods. The existing methods k-shortest path in AOMDV produce 87.4%, GWO attains 88.6%, GWO-DE gets 91.2%, GWO-FF attain 94.6 % and the proposed method PEASPR produce 95.7 % than other methods.

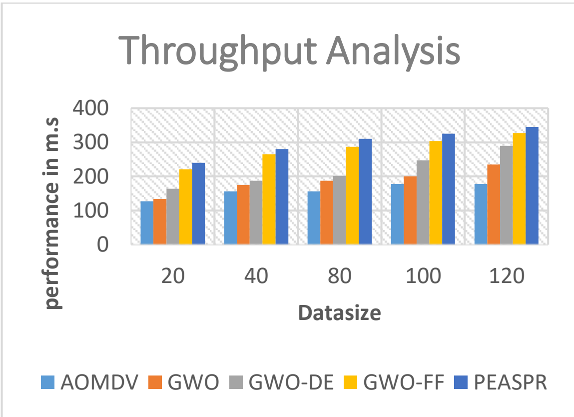


**Figure 7 Network Throughput Performance**

The minimum packet delay in the active network is the successful Network Throughput Performance. Throughput Level Routing based on Proactive Energy Aware Stabilized Path Routing better than forgetting routing in the network. It is able to calculate the output level and accuracy function by sending data from the target source. High performance is due to that distinguishes packet loss through GWO-FF is 327Ms and radio induced efforts. The comparison of GWO-DE is 178Ms, AOMDV is 235 Ms. GWOs is 290 Ms network throughput analysis is show in figure 5 it prove the proposed method more efficient throughput ratio compare to other method.

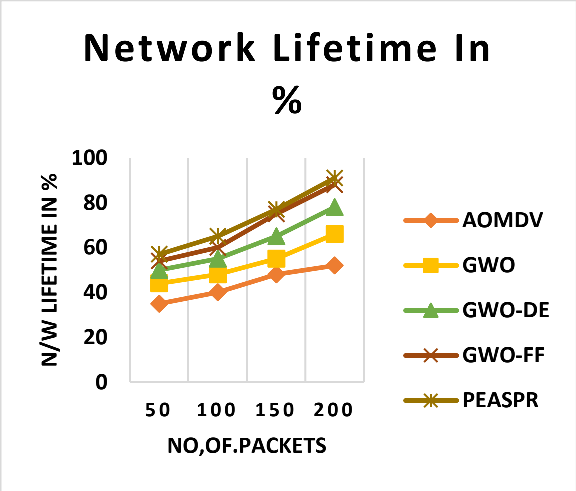


**Figure 8: Analysis of the Network lifetime**

Figure 8 describes the Network lifetime for the proposed algorithm Quality of Service based Improved Proactive Energy Aware Stabilized Path Routing (PEASPR) improving the network lifetime in 88%, against the existing algorithms AOMDV life time performance of 78% and GWO in 52%, GWO-DE is 66%.. GWO-FF is used to estimate network quality. It is defined by the ratio of packets to the destination of the data generated by the source of packets received.

$$Transmission\ Ratio\ = \frac{Total\ Received\ packets}{Total\ packets\ send} * 100 \quad ---- (3)$$

**Table 2 Comparative Analysis of Transmission Ratio**

| Number of nodes | AOMDV | GWO | GWO-DE | GWO-FF | PEASPR |
|---|---|---|---|---|---|
| 50 | 10 | 15 | 25 | 35 | 57 |
| 100 | 40 | 55 | 60 | 70 | 65 |
| 150 | 75 | 85 | 90 | 95 | 77 |
| 200 | 52 | 66 | 78 | 88 | 91 |

Table 2 compares the transmission ratio of the existing and proposed technologies. This can be done using the AWK script to generate a trace file and the results obtained. This field identifies the number of packets to be sent. This field is crucial to our instruction as it forces the receiver to send the acknowledgment. When the number of packets received and the number of packets lost equals the number indicated in this field, the receiver will initiate the approval process.

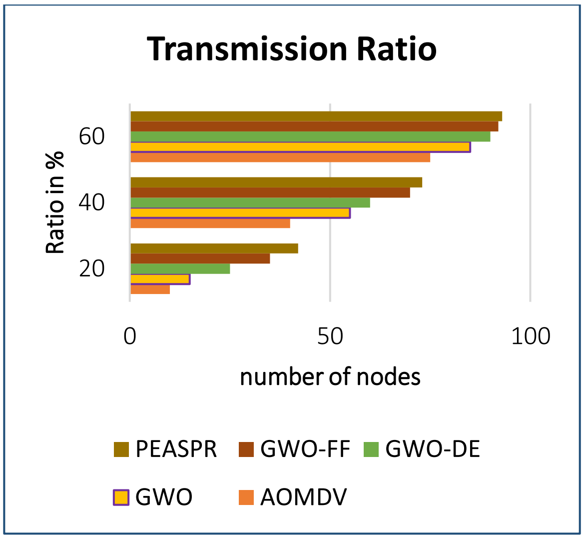


**Figure 9 Transmission Ratio**

Figure 9 describes the transmission ratio in percentage between the proposed Proactive Energy Aware Stabilized Path Routing and existing systems. The comparison of prevention methods in terms of Transmission Ratio is as follows AOMDV has 85%, GWO has 92%, and GWO-DE has 94 %, GWO- FF has 95% lower transmission rate the proposed method have a 96% than other system as well in transmission ratio.

## 5. CONCLUSION

To conclude that the proposed Proactive Energy Aware Stabilized Path Routing (PEASPR) based on Petal Spider-Ant Routing (PSAR) improves the energy aware life time network in MANET network to improve the performance. This introduces higher energy depletion in the nodes and claim their lifetime to choosing the best path transmission to improve the mobile network communication. Also, there are methods which consider traffic of nodes and route in wakening energy level nodes to select a least traffic route to perform data transmission. This in turn improved the throughput performance up to 96 % well and claims the route energy from one or more number of nod up to energy maintain 95 % high as well in routing delay performance for average number of packets in 12 sec. This proposed system produce higher performance ration as well than other existing system, the result proves the improved MANET routing performance as in higher rate.

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