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**Optimal Routing and Load Balancing based Congestion Avoidance in MANET using Improved Ad-Hoc On-Demand Distance Vector Routing**

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**Abstract**

In a mobile ad-hoc network (MANET), there is basically no a requirement to deploy infrastructure for the nodes to communicate amongst themselves. The procedure of Congestion Control (CC) is complicated on account of the presence of MANET’s exclusive characteristics. There are many existing techniques that have worked on the minimization of congestion but have left out issues, like packet loss, delay, and also more time consumption. Thus, this paper have proposed an effectual method to trounce these problems in MANET utilizing improved ad-hoc on-demand distances vector (IAODV), and this technique is called as the optimal routing and Load Balancing (LB) based Congestion Avoidance (CA). This work encompasses ‘7’ steps. Here, the IAODV protocol generates the multipath amongst the mobile nodes (MN) within the MANET. After that, as of the network, the Traffic Load Density (TLD), maximum lifetimes, traffic load, link cost, and residual energy is extracted. Subsequently, the algorithm is utilized to select the optimal paths, and the shortest-jobs-first (SJF) execution algorithm prioritizes the chosen optimal path values. Through the optimal path, which is given the first prioritization, the packet is sent. The load density values are monitored and updated to the AODV table by the Mobile Agent (MA). On the off-chance that the available load density is above the threshold value, then the MA notify it to the protocol. If that is the case, then the protocol distributes the load to the optimal path that is given the second prioritization, and this stands as a LB process. As of the experimental assessment, it is detected that the proposed work is established to have superior performance when weighed against the existent methods.

**Keywords:**

Improved Ad – hoc On - Demand Distance Vector (IAODV), Shortest Job First (SJF), Weight – based Cockroach Swarm Optimization (CSO−ω) and mobile agent

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