Adaptive Opportunistics Routing For Wireless Ad Hoc Networks

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Abstract- *A distributed adaptive opportunistic routing scheme for multi hop wireless ad hoc networks is proposed. The proposed scheme utilizes a reinforcement learning framework to opportunistically route the packets even in the absence of reliable knowledge about channel statistics and network model. This scheme is shown to be optimal with respect to an expected average per-packet reward criterion. The proposed routing scheme jointly addresses the issues of learning and routing in an opportunistic context, where the network structure is characterized by the transmission success probabilities. In particular, this learning framework leads to a stochastic routing scheme that optimally "explores" and "exploits" the opportunities in the network.*

I. INTRODUCTION

Every Software development requires the survey process. The Survey process is needed to get the requirement for the software. The Survey also consists of studying the present system and also studying about the tools needed for the development of the software. A proper understanding of the tools is very much essential. Following is an extract of the information of the material collected during literature survey.

II. FUNCTIONAL REQUIREMENTS

2.1. Network Formation

In this module we can construct a topology to provide communication paths for wireless ad hoc network. Here the node will give the own details such as Node ID through which the transmission is done and similarly give the neighbor nodes details.

2.2. Packet Transmission

In this module the node has transmit the packet from source to destination. Transmission stage occurs at time in which node transmits if it has a packet.

2.3. Acknowledgement Module

In this module the nodes send acknowledgement details. Set of nodes that have received the packet transmitted by node. In this module nodes send acknowledgement packet who received the packet from the source. In the reception and acknowledgment stage, successful reception of the packet transmitted by node is acknowledged to it by all the nodes. We assume that the delay for the acknowledgment stage is small enough (not more than the duration of the time slot) such that node infers by time. The acknowledgment packet of node includes a control message known as estimated best score (EBS).

2.4. Relay Module

In this module the node select the routing action according to the randomized rule. Node transmits FO (forwarding), a control packet that contains information about routing decision at some time strictly between times. If termination action is chosen, i.e. all nodes in expunge the packet. Upon selection of routing action, the counting variable is updated.

2.5. Update Module

In this module the node update the following details. After finishing the transmission and relay the node will update the score Vector. The node updates EBS Message for future acknowledgements.

III. CONCLUSION

To investigate how robust our theoretical results regarding the optimality of d-Adapt OR is to the violation of the analytic Assumptions 1 and 2, we consider two simulation scenarios. In the first scenario, we consider a grid topology of 16 nodes with the source-destination pair to be diagonally and maximally separated from each other. The second set of simulations consist of random network scenario: 36 wireless nodes are randomly placed in an area of 150m × 150m with the remaining parameters kept the same as those chosen for the grid scenario.

This scheme is shown to be optimal with respect to an expected average per-packet reward criterion. The proposed routing scheme jointly addresses the issues of learning and routing in an opportunistic context, where the

network structure is characterized by the transmission success probabilities.

IV. FUTURE ENHANCEMENTS

We plan to further investigate our WSN dynamic routing topology inference approach for large-scale of WSNs consisting of thousands of nodes. We also plan to implement the proposed approach and test it thoroughly in a real-world WSN tested. Based on the dynamic topology inference ,current WSN link loss and delay inference schemes can be extended to deal with realistic WSNs under dynamic routing

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