

**DETERMINISTIC BROADCASTING AND RANDOM
LINEAR
NETWORK CODING IN MOBILE AD HOC NETWORKS**

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ABSTRACT

- Network coding has been successfully used in the past for efficient broadcasting in wireless multi-hop networks. Two coding approaches are suitable for mobile networks; random linear network coding (RLNC) and XOR-based coding. In this paper, we focus on the problem of multiple source broadcasting in mobile ad hoc networks.
- We make the observation that RLNC provides increased resilience to packet losses compared with XOR-based coding. We develop an analytical model that justifies our intuition. However, the model also reveals that combining RLNC with probabilistic forwarding, which is the approach taken in the literature, may significantly impact RLNC's performance.



CONT...

- Therefore, we take the novel approach to combine RLNC with a deterministic broadcasting algorithm in order to prune transmissions. More specifically, we propose a connected dominating set-based algorithm that works in synergy with RLNC on the “packet generation level.”
- Since managing packet generations is a key issue in RLNC, we propose a distributed scheme, which is also suitable for mobile environments and does not compromise the coding efficiency. We show that the proposed algorithm outperforms XOR-based as well as RLNC-based schemes even when global knowledge is used for managing packet generations.



EXISTING SYSTEM

- The feedback information is used to determine the optimal rate, i.e. the number of packets to be forwarded by intermediate nodes, so that delivery of packets is guaranteed.
- Clearly, this strategy is not oriented towards minimizing the cost of broadcasting. Furthermore, a feedback mechanism increases the cost while its implementation is not straightforward in mobile networks.

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PROPOSED SYSTEM

- Following our observations, we turn to deterministic broadcasting, which has never been used for pruning transmissions in the context of an RLNC enabled scheme. More specifically, the proposed algorithm implements CDS (Connected Dominating Set) based forwarding rules “on the generation level” in order to allow the flow of packet generations over the CDS.
- The rationale is that the CDS will provide a more systematic and topology-aware pruning of redundant transmissions without impairing the coding efficiency of RLNC.



HARDWARE REQUIREMENTS

- Processor - Pentium-IV
- Speed - 1.1 Ghz
- RAM - 256MB(min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

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SOFTWARE REQUIREMENTS

- Tool - Network Simulator-2
- Operating system - LINUX
- Front end - OTCL (Object Oriented Tool Command Language)

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REFERENCES

- [1] M. Abolhasan, T. Wysocki, and E. Dutkiewicz, “A review of routing protocols for mobile ad hoc networks,” *Ad hoc Netw.*, vol. 2, no. 1, pp. 1–22, Jan. 2004.
- [2] A. N. Mian, R. Baldoni, and R. Beraldi, “A survey of service discovery protocols in multihop mobile ad hoc networks,” *IEEE Pervasive Comput.*, vol. 8, no. 1, pp. 66–74, Jan. 2009.
- [3] R. Ahlswede, N. Cai, S.-Y. R. Li, and R. W. Yeung, “Network information flow,” *IEEE Trans. Inf. Theory*, vol. 46, no. 4, pp. 1204–1216, Jul. 2000.

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