



SOCIAL POPULARITY BASED ROUTING IN DELAY TOLERANT NETWORKS

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Submitted: Nov.18, 2015

Accepted: Oct.2, 2016

Published: Dec.1, 2016

Abstract- Due to node's mobility, Delay Tolerant Networks (DTNs) feature the nonexistence of end-to-end path between source and destination, frequent topology partitions and extremely high delivery latency, thus posing great challenges to successful message transmission. To improve routing performance and provide high quality communication service, nodes' social characteristics are exploited to routing design recently. Hence, a social popularity based routing algorithm is proposed, named SPBR which takes the inter-contact time and multi-hop neighbor information into consideration. In this paper, we first introduce a method to detect the quality of relation between pair of nodes accurately. Used the reliable relationships, social popularity is proposed to evaluate the social power of node in the network. SPBR makes the routing decisions based on the popularity, leading message closer to destinations with low hops of routing and network resources. Extensive simulations are conducted and the results show that the proposed algorithm significantly improves routing performances compared to Epidemic, Prophet and First Contact (FC), especially SPBR is lower by about 55.1% in overhead ratio and higher by about 22.2% in delivery rate than Epidemic when there are 40 nodes in the networks.

Index terms: Delay Tolerant Networks; routing algorithm; social group; cohesion; popularity