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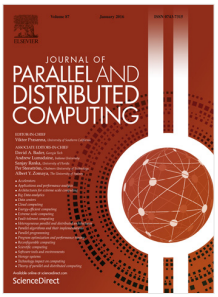

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Rethink Data Dissemination in Opportunistic Mobile Networks with Mutually Exclusive Requirement

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Abstract

With the increase of mobile devices, opportunistic mobile networks become a promising technique for disseminating data in a local area. However, existing works focus on the single data dissemination and fail to consider the practical applications where there are multiple data under different topics. Multiple data dissemination shows the potential applications in many scenarios, e.g., product coupon distribution. In this paper, we focus on budget-constrained multiple data dissemination services. A mobile user may be interested in data under different topics, but receiving data for any topic is enough due to user experiences and participation constraints. This is the mutually exclusive delivery requirement in many scenarios. In light of the different amounts of data and the different popularity levels of data in each topic, deciding which data should be forwarded to mobile users becomes an important problem. This paper aims to design an efficient data dissemination scheme that minimizes the maximum dissemination delay while incurring a small communication overhead for the aforementioned scenario. In this paper, we discuss three different scenarios according to different knowledge. We start with the data dissemination with network topology, and a corresponding optimal solution is proposed. Later, we consider the probability estimation with k-hop information, and lastly propose a distributed data forwarding algorithm, which considers the amount of data in different topics, the mobile users' interest, and their data forwarding abilities, respectively. The real trace-driven experiments show that the proposed scheme achieves a good performance.

Keywords: Mobile data dissemination, opportunistic mobile network, delay tolerant network.

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