Abstract

Maggie Ezzat Gaber Gendy

Maximizing Clearance Rate of Reputation-aware Auctions in Mobile Crowdsensing

Auctions have been employed as an effective framework for the management and the assignment of tasks in mobile crowdsensing (MCS). In auctions terminology, the clearance rate (CR) refers to the percentage of items that are sold over the duration of the auction. This research is concerned with maximizing the CR of reputation-aware (RA) auctions in centralized, participatory MCS systems. Recent techniques in the literature had focused on several challenges including untruthful bidding and malicious information that might be sent by the participants. Less attention has been given, though, to the number of completed tasks in such systems, even though it has a tangible impact on the satisfaction of service demanders. Towards the goal of maximizing CR in MCS systems, we propose two new formulations for the bidding procedure that is a part of the task allocation strategy. Simulations were carried out to evaluate the proposed methods and their impact on the user utility, under varying number of auctions, tasks, and participants. We demonstrate the effectiveness of the suggested methods through consistent and considerable increases (three times increase, in some cases) in the CR compared to the state-of-the-art.