Keyword Bidding in Sponsored Search Using an Estimation of Distribution Algorithm

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Abstract

Keyword based sponsored search is an important mode of advertisement through the Internet today. It provides an important source of revenue for search engines that allocate advertising space for advertisers. This advertising space is allocated to different advertisers through auction mechanisms since there are very few positions available for the huge number of advertisers wanting to publish their advertisements. For each probable keyword that could be searched by web search users, a keyword auction is conducted in which interested advertisers bid an amount that they are willing to pay each time their ad is clicked. The order in which the advertisements are displayed on the ad space is determined by the ranking of these bids. Deciding how much to bid is a real challenge for an advertiser; if the bid is too low with respect to the bids of other advertisers, the ad might not get displayed in a favorable position; a bid that is too high on the other hand might not be profitable either, since the attracted number of conversions might not be enough to compensate for the high cost per click. In this project we propose a new method to find an optimal bidding strategy using an Estimation of Distribution Algorithm. We assume that the advertisers have a fixed set of keywords for which they are interested to bid for higher positions among the sponsored links. To validate our method, we propose to implement our strategy as an agent to compete in the Trading Agent Competition Ad Auctions (TAC/AA) [9]. TAC/AA is a simulation of real-world keyword bidding scenario. Even though it does not try to mimic every single details of the real world scenario, it is a very good platform to try and test an algorithm that can be eventually applied to a real-world sponsored search bidding problem.