Chapter XI
Novel Business-Oriented Auctions

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ABSTRACT

With the advent of the Internet, traditional auction forms have evolved to fit into a plethora of business niches, either integrating into traditional approaches or simply creating new opportunities. This chapter examines two novel uses for auctions in a business context, namely sponsored search auctions and prediction markets. Understanding the potential auction benefits and limitations can hopefully provide practitioners with a more informed and successful approach when employing these auction-based tools in their business.

SPONSORED SEARCH AUCTIONS

Introduction

Search engines are big business on the Internet. The two main players, Google and Yahoo!, made $6 billion and $5 billion in 2005, respectively. This bonanza mainly comes from sponsored search, where search engines charge advertisers to display their ads when users search for particular terms. Instead of large banner ads directed to everyone, sponsored search allows advertisers to target their audience. Real estate agents can display their ads only to users searching on the term “real estate.” In Figure 1, Google’s unpaid (or native or organic) search results are in the middle of the screen, while its advertising network’s paid results (or sponsored links) are on the right-hand side.

To advertise via sponsored search, advertisers first identify potential search terms of interest and then bid on the cost per click (CPC) that they are willing to pay to the search engine if a user clicks on their advertisement. Each time a user searches, an auction occurs based on what advertisement keywords match the search terms. The auction ranks advertisements based on bid...
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amount, desired geographic location, and other criteria, then displays the advertisements according to their ranking in the paid results slots (e.g., Google Adwords, Yahoo! Search Marketing). Alternatively, Google’s AdSense serves ads when users visit Web sites enrolled in their program. Instead of matching using a user’s search query, they match advertisement keywords according to the Web site’s content.

Search engines make money from advertisers, who can choose to take their business to any one of several search engine companies. For a search engine to attract advertisers, they must attract or be able to target the users an advertiser desires, and to attract users, they must have good unpaid search results. So Yahoo! Search Marketing’s main competitor in the sponsored search business is not Google Adwords, but Google’s unpaid search results, and vice versa (Balcan, Chen, Devanur, & Kumar, 2006).

Behind the scenes in sponsored search, huge numbers of transient auctions are occurring, one for every time a user enters a query (Jansen, 2006). Instead of the standard one-shot one-item auction, sponsored search auctions are continuous real-time multi-item auctions. Instead of two main participants, there are three: the search engine, the advertiser, and the user. Academic research is just starting to evaluate auction mechanism tradeoffs in terms of properties such as maximizing revenue, consumer welfare, price stability, and robustness to fraud. In this chapter, we describe some current research results in this area and their implications for practitioners.

### Auction Mechanism Background

Google and Yahoo! are currently the major players in the sponsored search business, with several smaller players such as AskJeeves and LookSmart, and the more recent addition of the Microsoft adCenter. We focus here on the Yahoo! and Google contributors to the present day sponsored search auction format. GoTo.com (renamed Overture in 2001, and acquired by Yahoo! in 2003) originated the sponsored search auction in 1998, while Google’s first sponsored search auction followed in 2002 (Fain & Pedersen, 2005). The original GoTo.com auction used a first-price payment mechanism. The bidder with highest bid received the top advertising slot and was charged a price equal to the bid amount. The second highest bidder was assigned to the second highest slot, paying its bid amount, and so forth. This payment