Ad Auctions – Current and Future Research

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Abstract. An exploding market has emerged during the last few years on the internet, the market of sponsored search slots. Advertisers are able to buy space on the webpages produced by popular search engines and place advertisements to promote their products alongside the regular algorithmic search results. The allocation of these advertising slots and their pricing is done via auctions. Since the introduction of this concept in 1998, sponsored search has evolved into a major source of revenue for internet giants such as Google, Yahoo!, MSN and others. Its success can be attributed partly to its effectiveness as a form of highly targeted advertising, and partly to the appealing framework that allows even small-scale advertisers to use it easily and effectively while only paying when their ad is clicked upon.

Numerous interesting mathematical, algorithmic and game-theoretic questions arise when one starts to think about these auctions. How should the auctions be designed so as to maximize search engine profit? What bidding strategies should the advertisers use? What are the dynamics and convergence properties of these systems? These questions are of extreme importance to the industry as even a minor change in the framework or in the way the advertisers bid could result in millions of dollars in profit or loss for both the advertisers and the search providers.

In this talk, we survey recent research on these kinds of questions and discuss open problems in the area.