

Blum, Avrim; Kumar, Vijay; Rudra, Atri; Wu, Felix

Online learning in online auctions. (English) Zbl 1091.91028
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Summary: We consider the problem of revenue maximization in online auctions, that is, auctions in which bids are received and dealt with one-by-one. In this paper, we demonstrate that results from online learning can be usefully applied in this context, and we derive a new auction for digital goods that achieves a constant competitive ratio with respect to the optimal (offline) fixed price revenue. This substantially improves upon the best previously known competitive ratio for this problem of $O(\exp(\sqrt{\log \log h}))$. We also apply our techniques to the related problem of designing online posted price mechanisms, in which the seller declares a price for each of a series of buyers, and each buyer either accepts or rejects the good at that price. Despite the relative lack of information in this setting, we show that online learning techniques can be used to obtain results for online posted price mechanisms which are similar to those obtained for online auctions.

MSC:

91B26 Auctions, bargaining, bidding and selling, and other market models
68T05 Learning and adaptive systems in artificial intelligence

Cited in **5** Documents

Keywords:

Online algorithms; Learning theory; auctions

Software:

AdaBoost.MH

Full Text: [DOI](#)

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