

Maximizing bidder's profit in online auctions using grey system theory predictor agent

Abstract

Purpose

– As the demand for online auctions increases, the process of monitoring multiple auction houses, deciding which auction to participate in and making the right bids, become challenging tasks for consumers. Hence, knowing the closing price of a given auction would be an advantage, since this information will ensure a win in a given auction. However, predicting a closing price for an auction is not easy, since it is dependent on many factors. The purpose of this paper is to report on a predictor agent that utilises grey system theory to predict the closing price for a given auction.

Design/methodology/approach

– The focus of the research is on grey system agent. This paper reports on the development of a predictor agent that attempts to predict the online auction closing price in order to maximise the bidder's profit. The performance of this predictor agent is compared with two well-known techniques, the Simple Exponential Function and the Time Series, in a simulated auction environment and in the eBay auction.

Findings

– The grey theory agent gives a better result when less input data are made, while the Time Series Agent can be used with the availability of a lot of information. Although the Simple Exponential Function Agent is able to predict well with less input data, it is not an appropriate method to be applied in the prediction model since its formula is not realistic and applicable in predicting the online auction closing price. The experimental

results also showed that using moving historical data produces a higher accuracy rate than using fixed historical data for all three agents.

Originality/value

– Grey system theory prediction model, GM(1, 1) has not been applied in online auction prediction. In this paper the authors have applied grey theory into an agent to predict the closing price of an online auction, in order to increase the profit of bidders in the bidding stage. The experimental results show that the accuracy of the grey prediction model is more than 90 per cent, with less than eight historical data inputs.