Identifying Bots in Online Auction Data Set

The inability of human bidders on auction sites to win auctions against software-controlled auctions is becoming increasingly frustrating.

Bots frequently steal bidder information from auction sites and offer to sell the same item for which they are bidding, diverting bidders away from legitimate auction sites.

Online auctions have become an increasingly important aspect of e-commerce. Consumers, on the other hand, are finding it increasingly difficult to place a winning bid in online auctions due to the proliferation of "bidding robots."

Humans lack the capacity to attend and monitor auctions in the same way that computers can.

Computers can make complex bidding decisions in fractions of a second and can follow an auction with nonstop, undivided attention.

As a result, bidding robots have a significant competitive advantage over human counterparts, posing an interesting problem for auction sites looking to level the playing field by identifying and banning bid bots.

Step 1: Exploratory Data Analysis answers the following questions.

1. How many unique bidders we have in our data set?
2. How many unique auctions do we have in our data set?
3. What is the mean number of bids per unique bidder?
4. How many bidders have made less than 1000 bids?
5. How many bidders have made less than 500 bids?
6. Mean number of bids per auction
7. What are the highest number of total bids? (range of outliers considered as bots).

Since a bot that is constantly watching the auction may be more likely to bid frequently (in the same auction) in order to outbid competitors.

An experienced user (that has a high number of total bids) may be more likely to employ the use of bots for the competitive advantage they provide (conversely, those who do not use bots may be those who participate less frequently as a casual bidder, or possibly quit the marketplace in frustration having only made a few number of bids).

**Conclusion**

Using auction data, we can discover these trends and patterns, allowing us to predict whether a bid is made by a human or a bot. Although, while it may be difficult to attain full precision and accuracy in classifying bot activity with only the metrics used in our study, we can at least predict with enough accuracy to make meaningful conclusions about our assumptions on human versus non-human behavioral patterns.