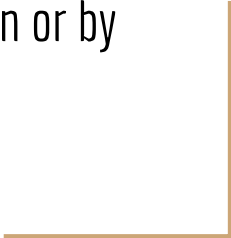# Kaggle Competition: Human or Robot

Is the bid made by human or by robot?

Outline

About the problem

Behavioral Difference

Recommendations

About the Problem

Human bidders on the site are becoming increasingly frustrated with their inability to win auctions vs. their software-controlled counterparts. As a result, usage from the site's core customer base is plummeting.

About the problem -- Are robot bidders a big problem?

Human and robot bidders in percentage

Proportion of auctions human/robots bidders participate in
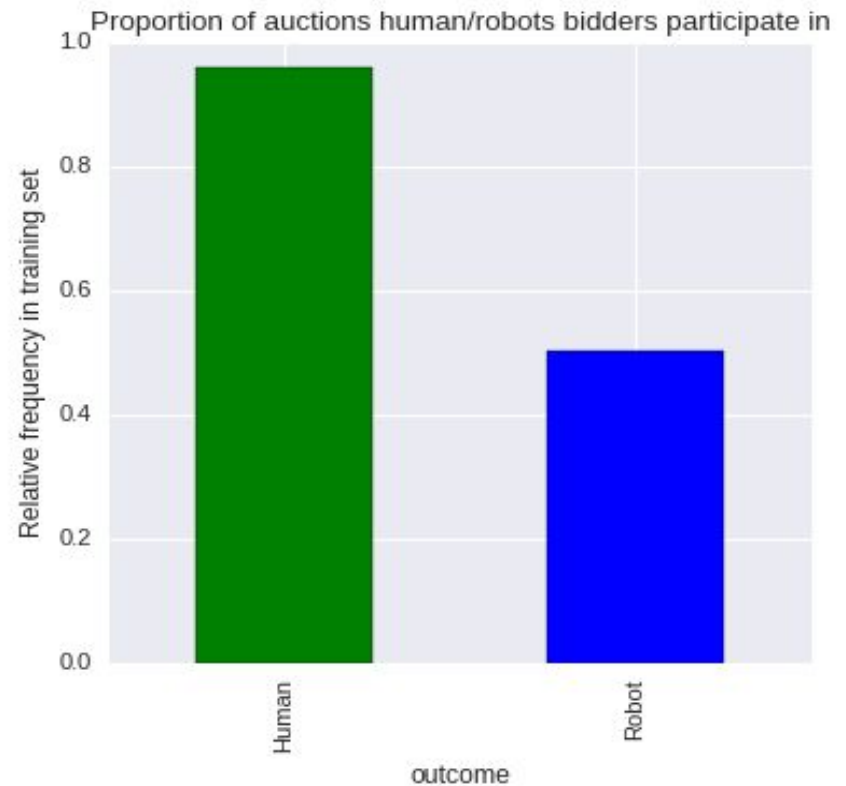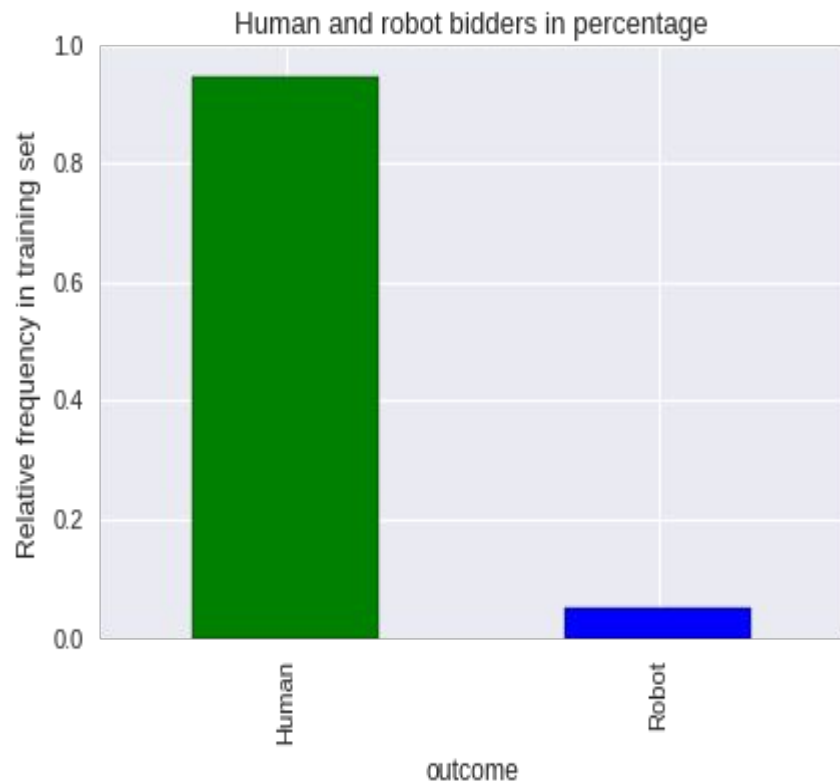
Behavioral Differences

The only way to distinguish human and robot bidders is by recognizing their behavioral differences. Robot bidders usually have relatively regular behaviors because they are programmed for bidding, while human bidders behaviors seem more random.
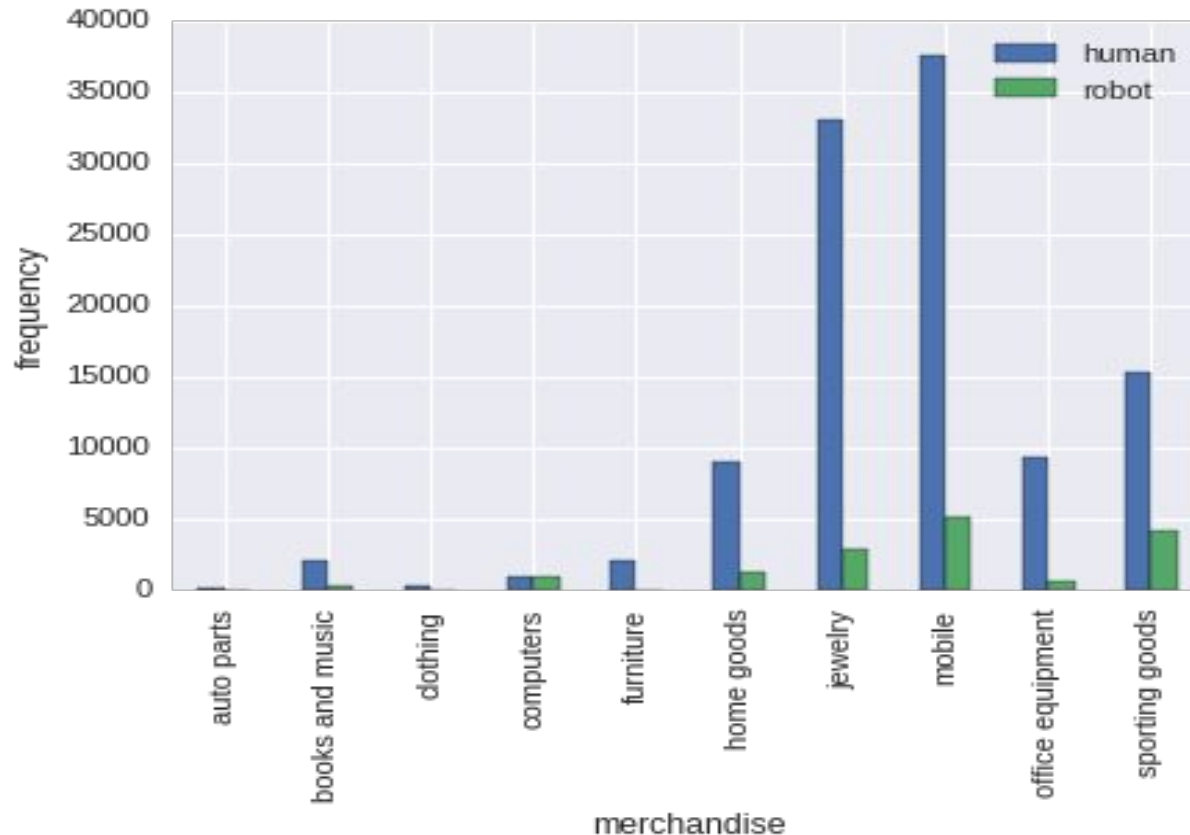
Behavioral Differences -- bidding speed
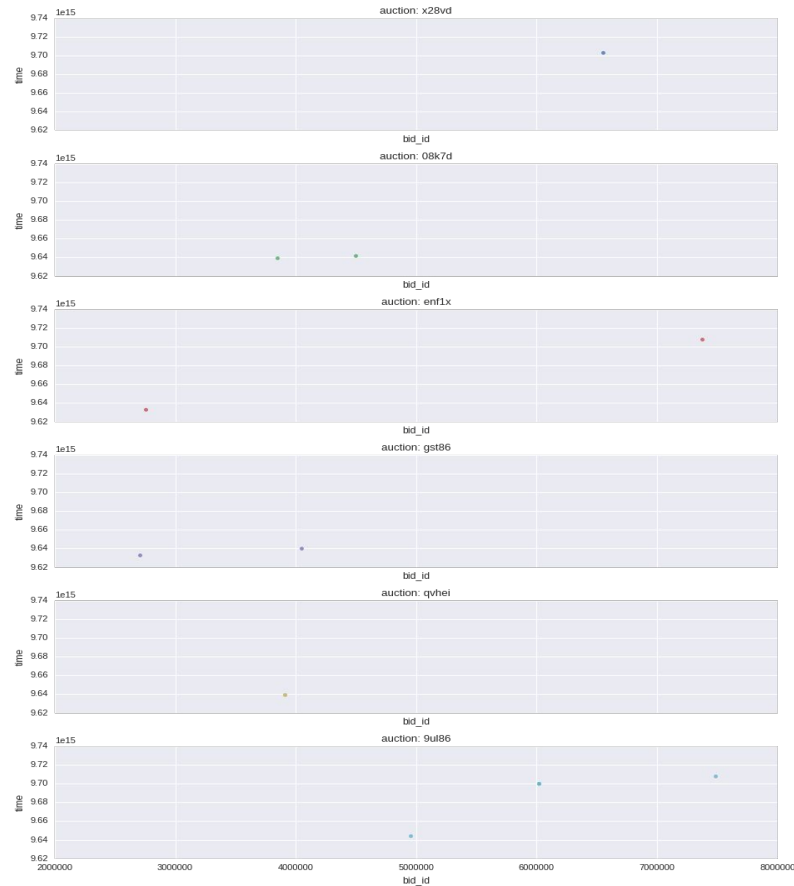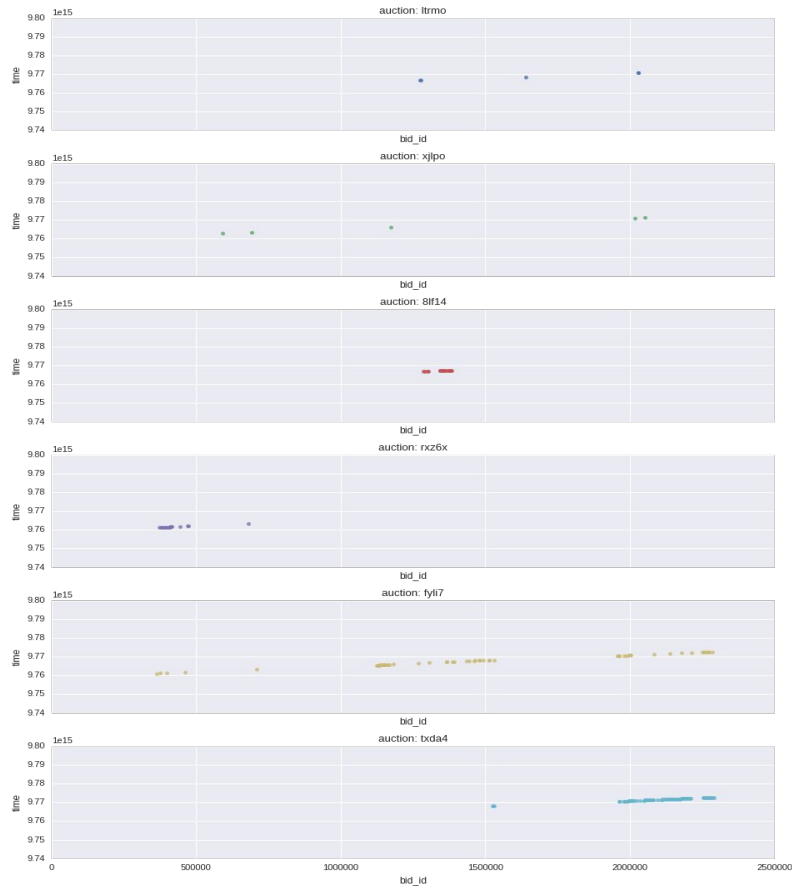
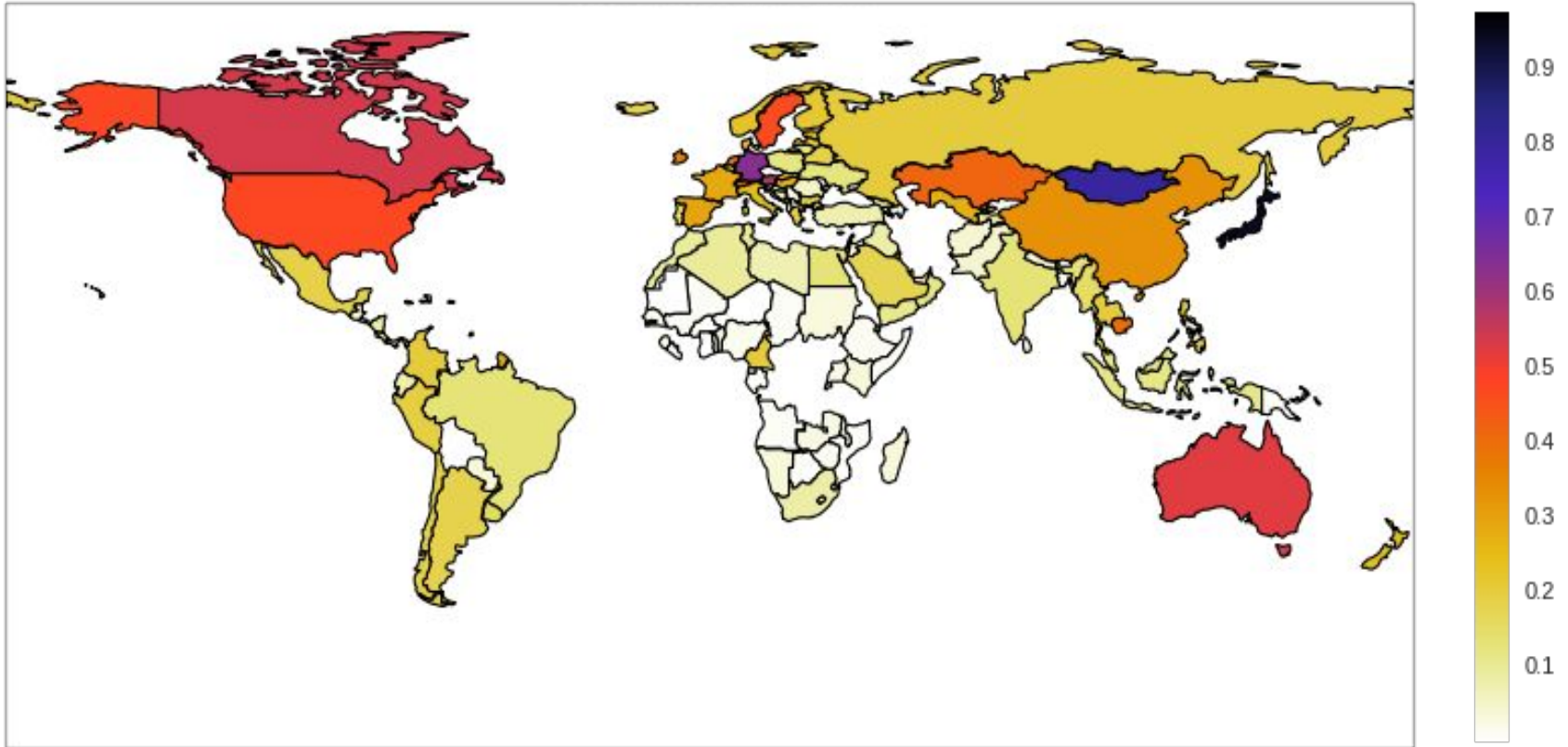# Behavioral Differences -- average number of bids
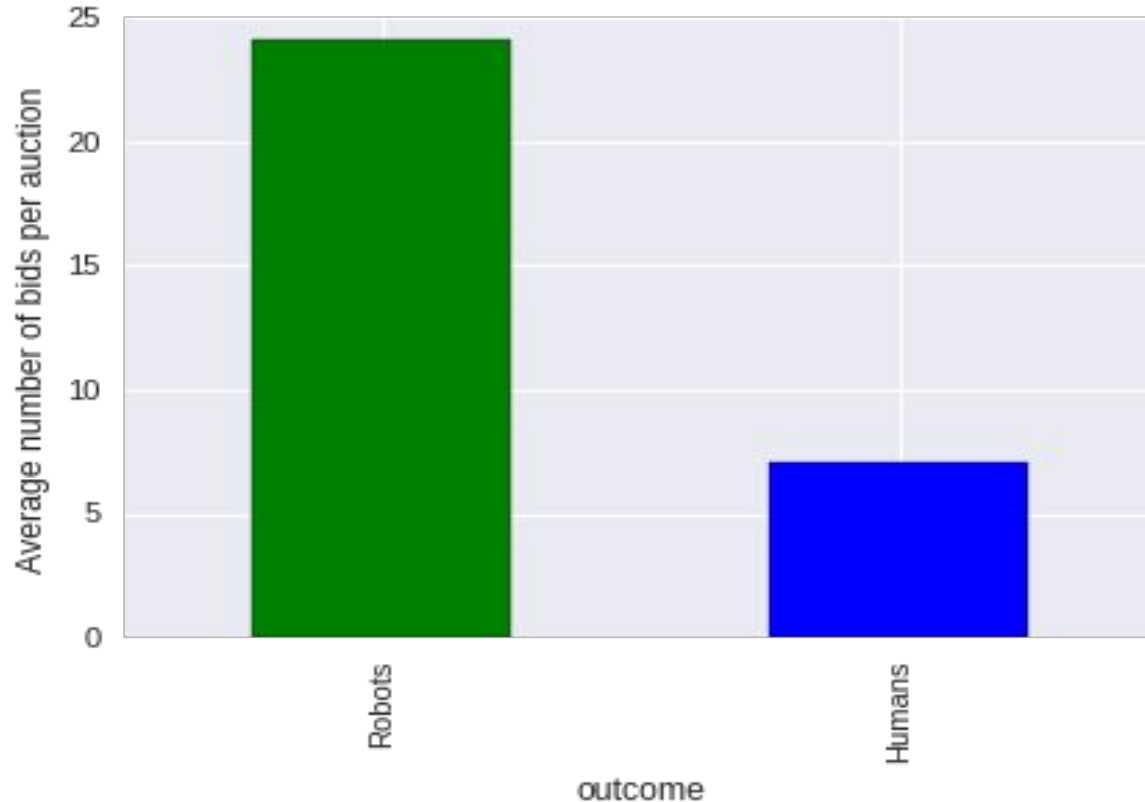
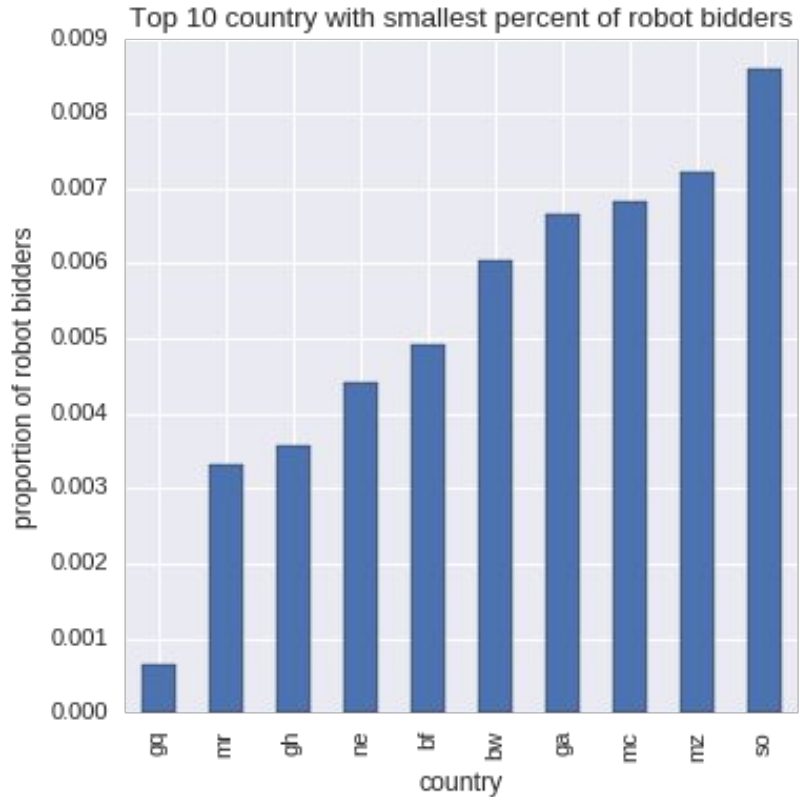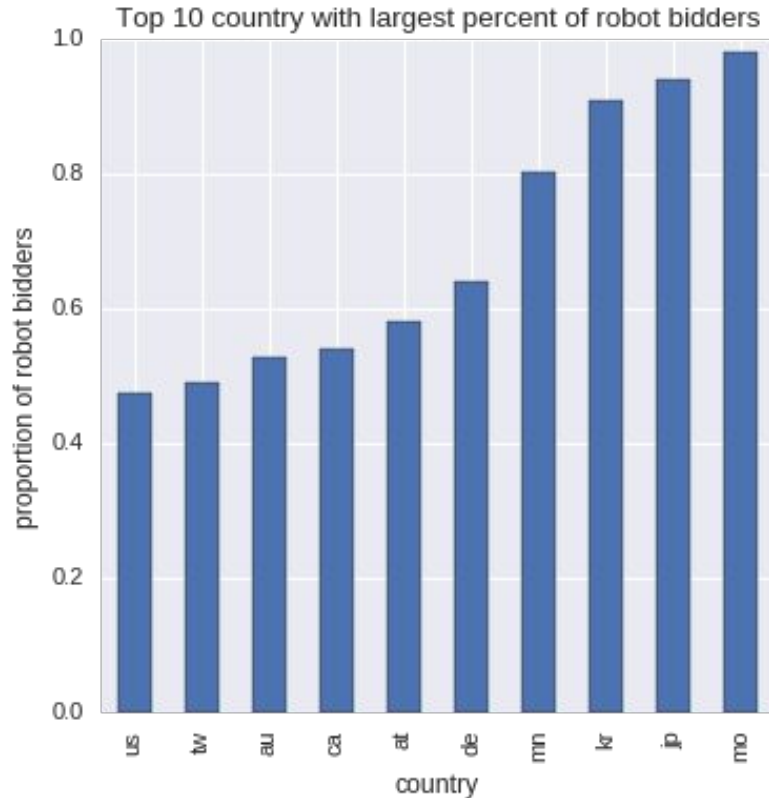# Behavioral Differences -- merchandise preference

Behavioral Differences -- country preference

Robot bidders' distribution

Behavioral Differences -- country preference

Top 10 country with largest percent of robot bidders

Top 10 country with smallest percent of robot bidders

Behavioral Differences -- device preference
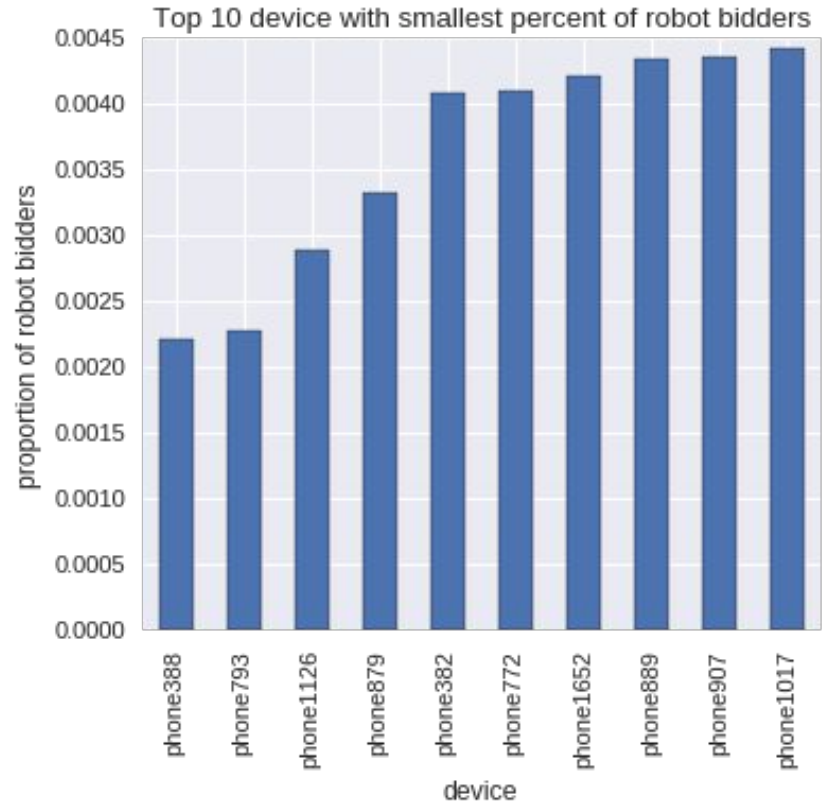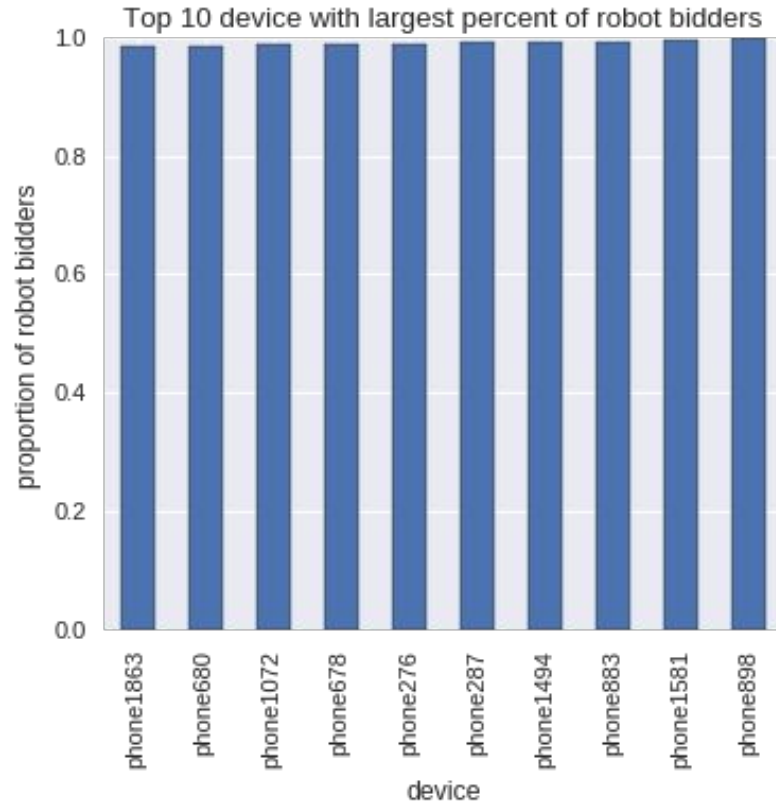
Recommendations

According to my findings, there are some recommendations to better recognize robot bidders.

Recommendation No.1 -- About Countries

Focus on bidders in certain countries/districts like Japan, Korea, Macau, Taiwan, German, US. Because in these countries, bidders much more likely to be classified as robots.

Recommendation No.2 -- About Devices

Certain models of devices that robot biders are more likely to use to making bids. Focusing on these models will increase the chance of recognizing robot bidders.

Recommendation No.3 -- Bidding Speed

Bidding speed is an very important difference between human and robot bidders. Robots are able to make a large number of bids in a short period of time. So in real bidding events, once a bidder's bidding speed is recognized as "abnormal", the bidder should be classified as a robot bidder.