NCAA Football Prediction Market Game for MS&E211

Introduction

In this quarter, we are running a series of prediction markets for the NCAA Football games. The objective of this game is to help you understand the mechanisms of prediction markets you learned in this class and besides, there will be a final project based on this game. As incentives, we will give extra credits to those who ranked among the top in this series of games. And you will be awarded even more if you can find some new insights in this game and write an outstanding course project.

What is the background and how does this prediction market work?

There will be a series of markets. You are going to bid on 7 Stanford games in the current NCAA football season. The schedule of the games is as follows:

Date		Home Team	Away Team
Oct 10th	Sat	Oregon State	Stanford
Oct 17th	Sat	Arizona	Stanford
Oct 24th	Sat	Stanford	Arizona State
Nov 7th	Sat	Stanford	Oregon State
Nov 14th	Sat	USC	Stanford
Nov 21st	Sat	Stanford	California
Nov 28th	Sat	Stanford	Notre Dame

We divide the results of each game as follows:

State 1	State 2	State 3	State 4	State 5	State 6	State 7
<= -30	**(-30,-25]**	**(-25,-20]**	**(-20,-15]**	**(-15,-10]**	**(-10,-5]**	**(-5,0]**
State 8	**State 9**	**State 10**	**State 11**	**State 12**	**State 13**	**State 14**
(0,5]	**(5,10]**	**(10,15]**	**(15,20]**	**(20,25]**	**(25,30]**	**>=30**

In the above table, positive number means that the home team wins, and negative number means that the home team loses. The absolute value indicates the margin. For example, if the home team wins by 17, then it falls into State 11 and if it loses by 35, it falls into State 1.

You can bet on each game through http://www.outlastfootball.com/stanford/. (But you need to create an account on http://www.outlastfootball.com/ which you will be using to

submit your bids.) For each game, you can submit up to 3 bids. For each bid you submit, you must specify three things: the set of states that you are bidding on (a 0-1 vector), the price limit (between 0 and 1, and we only take the first two effective digits) and the quantity limit (any positive integer, but the value of the total bids should be less than your balance). The set of states you choose can be any combination of these 14 states, the quantity limit represents how many shares you would like to buy and the price limit represents how much price you would like to pay for each share.

For each game, after all the bids are received, we will use the algorithm we learned in class (in slides #2 and supplement slides on prediction market) to determine which bids are accepted and which are rejected. If your bids are accepted, the points of the amount equal to the multiplication of your limit price and the number of shares that is accepted will be automatically deducted from your account. When the game is over, if one of your selected states in an accepted bid occurs, you will receive 1 point for each share in this bid. If your bids are rejected, then your balance will stay unchanged. Each of you will start from an initial balance of 200. Each time, you can bid up to the balance you have (that is, the sum of the multiplication of the quantity and the price limit cannot exceed your current balance); however, once the budget is used up, you are not able to continue this game anymore.

Note that all of the model and mechanism is discussed in the Course Slides. You should understand this model before you come to this game.

Example:

For example, assume that in the first round, Eric bids on states 3、4 and 7 (that is, Stanford wins within the range of 15-24 or 0-4), for 0.3 points per share and ask for a quantity of 100. And it turns out that his bid is accepted.

When the game is over, if Stanford wins and the margin is in this range, then his balance will become:

$$200-100\times0.3+100\times1=270$$

where the first term is his original balance, the second term is the cost of his bid, and the last term is his revenue collected after the outcome is revealed. However, if Stanford loses or doesn't win in that range, his balance will become:

$$200-100\times0.3=170$$

And your objective is to gain as much point as possible after this quarter.

Hints:

1. Design your bids. If you bid too low, then the bids are likely to be rejected (you should look at

the linear program to recall when will one bid be accepted). If you bid too high, then you cannot win much even the state you selected occurs. An appropriate price is the key to win.

2. Don't put all your eggs in one basket. Be aware that if you loses all you money, they you will stay zero forever. Make an investment plan. If you don't have a good thought on one game, you can skip it. But don't skip too many of them since we want everyone to participate.

3. If you are not sure about some game, you can look up some betting website for some probabilities.

Logistics

Since every game is on Saturday. We will start each market on the previous Sunday and close the market on each corresponding Friday, 4pm at Pacific Time. We will collect all the bids and decide which one is accepted and which one is rejected and tell you before the game start. When the results come out, we will update the balance, rank and other related parameters as soon as possible. If you have any questions, please send Email to your TA.

How will the extra credit be awarded?

In order to incentivize you to try your best in this game, we reward credit to those who performs well in this game. The reward will be based on the points you win. Fifty points in your account worth 1 credit in the class. That is, if you ended up with x points, you will get $\frac{x}{50}$ extra credits. There is no risk of losing credit in this game (but other people may earn more than you do).

Have fun in this game!