Bluffing could be common in prediction markets, study shows

July 10 2008

A new mathematical model by researchers at the University of Michigan suggests that bluffing in prediction markets is a profitable strategy more often than previously thought.

The analysis calls into question the incentives such markets create for revealing information and making accurate predictions. The researchers also pose a tactic to discourage bluffing.

A prediction market is a financial speculation market in which participants bet on the outcome of an event. In most cases, participants use fake money. But at some markets, including the Iowa Electronic Markets, it's legal to bet a small amount of real money. Sports betting Web sites, which are legal in other countries, could be considered prediction markets. Some companies are even using prediction markets as a project management tool to allow employees to predict when a project will be completed.

Studies have indicated such markets could be more accurate than polls in predicting events. But dishonest tactics such as bluffing can cloud their accuracy.

"We're the first to demonstrate that strategies involving deception of future traders are a real possibility under a wide range of information conditions," said Rahul Sami, an assistant professor in the U-M School of Information. "It could happen quite widely that bluffing is profitable."

Sami and Stanko Dimitrov, a doctoral student in the Department of Industrial and Operations Engineering, are authors of a paper on the research that Dimitrov presents July 11 at the ACM Conference on Electronic Commerce in Chicago.

"At a certain level, you don't care who makes money and who doesn't. But if you're running a prediction market, the whole point is to make predictions and you want your predictions to be reflecting the actual information the participants have," Sami said. "What bluffing does is worsen the predictions with the wrong information. It defeats the purpose."

The researchers' solution to bluffing is to penalize later trades by charging participants to make them.

Sami explained how bluffing can be profitable in a prediction market and how his new strategy could give participants more of an incentive to be honest.

It's an artificial example, Sami said, but suppose a prediction market involves two traders and the outcome of two coin flips. Participants bet on whether both coins will land the same or different. Each participant can see the outcome of one of the coin flips. This represents the fact that all participants in a prediction market presumably have a piece of information that helps them decide which outcome they believe is most likely. Each participant typically trusts that everyone is betting honestly.

One person must bet first and this person would not have the benefit of additional information from other participants. Say the first participant's coin is heads. If this trader wishes to bluff to extract more information from the other better, she could bet that both coins are tails (knowing this is impossible.) The other trader might read this as proof that the first trader's coin is tails. So if his is tails, he would also bet that both coins

are tails. Now, because of the bluff, the prediction market is not reflecting the outcome that is truly the most likely.

The first trader in this scenario now assumes that the second trader's coin is tails and would likely change her bet to reflect that the coins are different. She would win more money. Charging people to change their bets would give them more incentive to be honest from the start, the researchers say.

"I think it's important for people to consider our results when launching a prediction market," Dimitrov said. "The whole point is to aggregate information. Discounting is one way to guarantee information aggregation even with the presence of bluffing."

The paper is called "Non-myopic strategies in prediction markets." The research is funded by the National Science Foundation.

Source: University of Michigan