ABSTRACT

Samos: a community-driven open-access prediction market system

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Objective

This poster presents a software system to provide a community-driven, user-generated, low-overhead, web-based prediction market system called Samos.

Introduction

Prediction markets are a type of futures market in which users trade shares that pay off if the event to which they are connected occurs. They are used to aggregate knowledge on a large scale, as the prices of the various contracts can be interpreted as probabilities of their events. Since 2006, our group has been using prediction markets and testing their utility in predicting the spread and impact of diseases, including seasonal influenza, syphilis, and others on a market called the Iowa Electronic Health Markets (IEhM), found at http://iehm.uiowa.edu. For example, in 2009, a series of markets were run on novel influenza A (H1N1), which showed success in predicting the extent and duration of the outbreak.[1]

We currently plan to move into a new phase of development that will allow the community of users to submit proposals for new prediction markets, which will then be approved by site editors and referees. We call the new system Samos.

Methods

Samos consists of the prediction market engine already in use coupled with a new proposal management system (Proposals) currently in development. Proposals provide a workflow for the submission, construction, and approval of prediction markets that is modeled after the workflow for the submission and approval of journal articles. A user can submit a proposal by first submitting an abstract. Then an editor can decide whether to accept, reject, request revise-and-resubmit, or send the abstract to referees who can then vote accept, reject, or revise-and-resubmit. Once an abstract has been accepted, the user must submit a mock-up of the market, which contains the market's question, further explanation of the market, and the various contracts that can be traded. Proposals provide a browser-based online tool to create mock-ups. This information is used for the eventual presentation of the market to users for trading. Like the abstract, the mock-up can either be accepted, rejected, have revision requested, or sent to referees. Once a mock-up has been accepted, an editor chooses start and end dates for the market. The engine takes over from there, starting and ending the market accordingly. When the market has finished, the user must submit a final write-up, summarizing the market's motivation, question, resolution, and performance. The write-up must also go through the same approval process as the mock-up and abstract. Once the write-up has been approved, it becomes available to users and visitors of the site to view.

The abstract's purpose is to ensure that the market has been designed according to the proper prediction market principles and is noteworthy from a public health perspective. As such, an editor will generally choose one referee from each of the prediction market and public health fields. Abstracts must include information regarding the motivation and objective of the market as well as the final data sources to be used in deciding the winning contract.

Samos also includes a forum, or discussion board, which can be posted to by registered users. The forum will also provide private messaging capabilities so that users can communicate with one another, discuss running markets, and collaborate on prediction market proposals.

Results

We have developed a platform for eliciting ideas for prediction markets from a user community, transforming these ideas into contracts suitable for prediction markets, and encouraging collaboration among users. The platform's workflow system supports an incremental refinement process

between editors and the community members who generate new contract ideas. Samos increases the efficiency and versatility of prediction markets.

Conclusions

Prediction markets aggregate expert opinion, tying the price of a contract to the probability of its associated event. Samos provides a method of allowing a community of users to collectively manage a website for running prediction markets.

Reference

1 Polgreen PM, Nelson FD. Using prediction markets to forecast infectious diseases. In: T Kass-Hout and X. Zhang (eds.) *Biosurveillance: Methods and Case Studies*. CRC Press: Boca Raton, FL, 2010, pp 145–60.