

سمینار هفتگی ماده چگال نرم

عنوان سمینار

Studying the wisdom of the crowd through large-scale experiment & statistical simulations

ارائه دهنده

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چکیده

In this thesis, we have tried to study one of the most well known collective behavior phenomena known as the Wisdom of the crowd, from the perspective of statistical physics. In recent decades with the appearance of Social Networks and mass media, collective social phenomena have become a critical topic in the life of every human being. In the Wisdom of crowd phenomenon, the overall process is to ask the crowd's opinion regarding a special topic and after aggregating the predicted values, the aggregated quantity is declared as the wisdom of the crowd. It has been observed that in some polls and elections, the result of the wisdom of crowd outperforms every individual of the group and in some special cases, this result even outperformed some of the best experts in that topic.

The studies of this work have been performed on the datasets of an online prediction game, called “play the future”, which includes the data of more than 250000 users of the game. In the first steps, modifications were applied to the datasets and new features were generated with regards to the requirements of our problem and our methods. Next, with the help of the knowledge acquired in the early steps, a new method was designed based on the entropy difference to study the distribution of the users' predictions for each question. It was shown the most of the distributions of Users' predictions were non-Gaussian. With the help of this new method, we were able to measure the difficulty and the quality of each question. It was observed that there is a correlation between the performances of the users and the quality level of the questions. A model based on the Lotka-Volterra model was designed to describe the relationship between the wisdom of the crowd and the Questions' level of difficulty. It was shown that in this model, the quality of questions had been adjusted with the performances of the crowd and in the case of poor performances, the qualities of the questions were improved.

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