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APPLIANCE OF SMART METHODS FOR DATA ANALYSIS IN ONLINE ADVERTISING

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Abstract. In this article the problem of maximization of the traffic is considered. One of the areas of application of artificial intelligence techniques can be conducting advertising campaigns in the Internet. This area provides a large amount of data for automated analysis and decision making. Also efficiency and result of the implemented measures are easily calculated.

Keywords: optimization techniques; Web application; PHP.

In the area of Internet marketing the following questions often arise. How to get more visitors in contextual advertising at a lower price? How to spend the budget on Yandex Direct on the optimal way and get maximum clicks? How to constantly track advertisement conversions and get the maximum number of achieved goals, given an average price? How to maximize the overall value of the visits?

Intelligent automated system of contextual advertising management has been developed, completing the task of maximization of the number of clicks or achievement of goals under the given budgetary restraints. This system solves the following tasks:

- Maximizing traffic
- Maximizing the number of achieved goals

In this article the problem of maximizing traffic is considered.

GOVERNING IDEAS

Idea 1. The effectiveness of advertisements is presented as follows (figure 1). A plot of traffic against the average price of the advertisement.

It was found that the similar picture is common. It is evident that it is unprofitable to put an advertisement in the position marked by cross - value increase leads to insignificant increase in traffic. It is profitable to be located in the positions indicated by the flags - with a slight price increase traffic increases significantly.

Idea 2. Campaign budget will be spent optimally if every advertisement will go optimally. It remains to add the constraint at an average price.

Traffic from each advertisement depends on click-through ratio (CTR) of an ad, and CTR depends on the position of the advertisement.

This system determines the click-through ratio for each advertisement for each position. An example of the received data (figure 2)

CTR is calculated using the method of the GMDH.

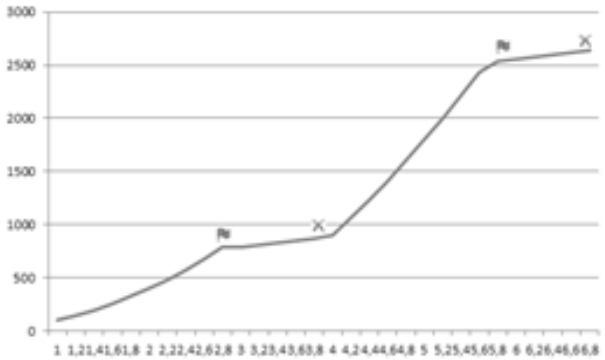

Fig. 1

DECISION MAKING ABOUT THE SELECTION OF THE POSITIONS FOR EACH ADVERTISEMENT

The difficulty lies in the fact that price we have to maintain the average for the entire campaign, and not for each advertisement separately. For example, it may be appropriate for one advertisement to keep the average price of 0.5 conditional units, for another - 8 conditional units, and for the entire campaign for marketing reasons it is necessary to keep the average price of 3 conditional units.

The system selects the position for each advertisement once in 10 minutes based on the current competitive environment and their own performance in the last days.

For each optimized campaign, the algorithm finds the function

$$M = f\left(P, CTR, \underset{V}{\rightarrow}\right)$$

Decision function *M* stands for metric, *P* is the price at a specific position, *CTR* is click-through ratio on a specific position of parameters (which is calculated in advance for each campaign, and is adjusted with the accumulation of statistics of our algorithm). Further, this function is calculated for each position of each advertisement.

The position at which this function is maximum, we choose for this advertisement.

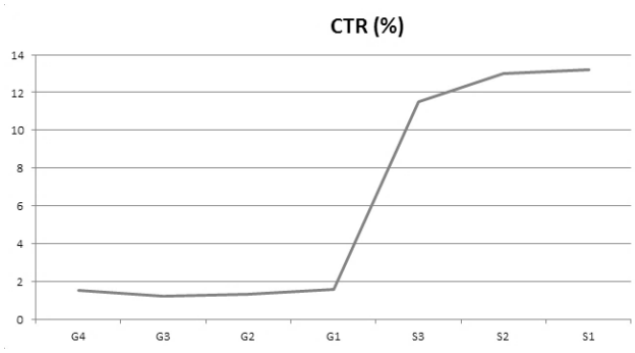

Fig. 2

ALGORITHM ADJUSTMENT FOR MAXIMIZING THE ACHIEVEMENT OF THE GOALS

Goals in Internet marketing can be different. From reading the article (on an information resource) to making a purchase on online stores.

For practical purposes the user of the system is interesting to ask the average cost of achieving the goal (for example, purchase), and get the maximum number of achievements at a given price.

Conceptually, this problem can be solved much easier than the previous one. In the decision function conversion parameter of the advertisement is added (that is values, the number of achieved goals / traffic). In case of insufficient statistical data average conversion of similar advertisements is accepted.

CONCLUSION

On advertising campaigns, working with this system has been achieved

1. Increase of the CTR of advertisements (from 20 to 30 %), moreover it can be considered as the side effect.

2. Decrease in the average cost of a visitor.

3. Increased traffic (on average two times in comparison with the work of an expert, and by 50 % in comparison with the similar existing algorithm)

4. Increase of number of sales on the website in 2.6 times

These figures are significantly dependent on the specifics of a particular business and the direction of the advertised website.

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МЕТАДАННЫЕ

Title: Appliance of smart methods for data analysis in online advertising

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Аннотация: Одним из применений методов искусственного интеллекта может быть реклама в Интернете. Эта область содержит большое количество данных для автоматизированного анализа и принятия решений. Рассматривается подход к оценке эффективности результатов действий.

Ключевые слова: оптимизация; веб-приложения; PHP.

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