Introduction to Web Science

Assignment 11

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Tutorial on: February 10, 2017, 12:00 p.m.

This assignment focuses on **Online Advertisement**. As discussed in the class, teams with exact similar answers that give an indication of copying will receive null points for those questions. If you are taking answers from some source, please cite your sources.

Team Name: QUEBEC

1. Daniel Kostic

2. Stefan Vujovic

3. Igor Fedotov

1 Online advertisement (10 points)

In the videos about online advertisement, you learned about the three different payment methods for online advertisement.

1. Name all three methods.

2. Mention the advantages and disadvantages, for publisher and advertiser, of all the payment methods and explain them in your own words.

3. Provide real world examples for the three payment methods.

Answer:

1. Payment methods mentioned in the video are:

   a) CPM - Cost Per Mile

   b) CPC - Cost Per Click

   c) CPA - Cost Per Acquisition

2. Advantages and disadvantages of the methods for the publisher/advertiser:

   a) CPM - In this case the publisher is sure how much money he will make because the advertiser pays for every 1000 visitor views. From the advertisers perspective, on one hand, this method could be a waste of money, because even if an ad has a 1000 views it doesn't mean that he will have any sales at all. On the other hand, if the ad performs well (good CTR and conversion rate) and the advertiser is trying to reach large numbers of people this approach can be more affordable then CPC.

   b) CPC - In this case the advertiser pays only for the users who saw the ad and arrived to the website by clicking on the provided link. This way the advertiser doesn't pay for the people who are not interested in the product/service he is offering. The publisher is still making profit, but if the ad has a low CTR this means that he will have to display it many more times and instead of ads from different advertisers. A problem for both sides is click fraud, because the advertisers don't get what he payed for which is also not in the interest of the publisher who is therefore loosing advertiser trust.

   c) CPA - In this case, the advertiser is only paying for the customers who reached a certain goal (buy item, donload item etc.) after clicking on the ad. However, the publisher doesn't make profit if nobody reaches the goal set by the advertiser.

3. Examlples: disclaimer: We asume that in every case Google AdWords and Google AdSense are being used

a) CPM - A company "ABC" decided to advertise roduct "XYZ" and it decided the goal is to reach an audiance of 10000 people with their ad. The company will make an ad (or several ads) and they will be displayed as search results on Google and as banners on Peter's blog and other websites. ABC will pay a certain price for every 1000 views at the ad. Google gets one part of the money, and one part goes to Peter and other publishers(websites where the ads were displayed).

b) CPC - The company will make an ad (or several ads) and they will be displayed as search results on Google and as banners on several websites. This time, the company will be charged when ever someone clicks on their ad. The money is again divided by Google and the publishers.If nobody clicked on the ad which was displayed on Peter's blog, he will not get any money. It will be divided (who had a bigger share of clicks gets a biger share of the money) amoung the websites where clicks for this ad happened and Google. as search results on Google and as banners on several websites.

c) CPA - In this case, the company wants to pay only when someone buys product XYZ after clicking on their ad. This means that peter will get his money only if the user buys product XYZ on the companies website, after clickng on their ad displayed on his website. If there were 50 purchases after clicking on the ad Displayed on Peters blog, the company will be charged 50 times, Peter will get a certain amount for every of those clicks and so will Google. If the purchase happens after clicking on an ad displayed in Google Search results google gets payed for every one of those.

2 Payments in Online Advertisement(15 points)

Provide the complete calculation with your solutions for the following questions.

1. An online advertisement company offers you to advertise your website on a cost-per-click base (CPC) with a cost of 0.70€ per click. Assuming that in average three out of ten visitors of your website are buying a product from which you are earning 20€, would you accept this offer? What is your average profit/loss per visitor?

2. What would be the minimal conversion rate (CR) to guarantee your profit?

3. Two online advertisement companies A and B are making you offers to advertise your website. Company A follows a cost-per-mille (CPM) model with a cost of 2,40€ for displaying your banner advertisement thousand times. Company B follows a cost-per-action (CPA) model charging a commission of 6% from every profit generated on your website through clicks on the banner ad. Assuming a click-trough-rate (CTR) of 0.5%, a conversion rate (CR) of 20% and an average profit of 40€ for every transaction on your website, which offer is the best?

4. Assuming an online advertisement campaign for a website has obviously a high click-through-rate (CTR), but the earnings from the website are still very poor. What do you think could be the problem (please provide your answer in one or two paragraphs)?

Answer:

1. On 10 users who click on the ad and arrive to our website we spend 7€. As 3 out of those 10 will make us 20€ each, our earning will be 60€. This means that we will make a profit of 53€ in total, or 5.3€/per visitor. Assuming that the 20€ amount is the one we get after reducing the price of production etc.

2. Cost of acquisition needs to be less than 20€ in order to be profitable.

$costofacquisition < 20$

$CPC/CR < 20$

$CPC/20 < CR$

$0.7/20 < CR$

$CR > 0.035$

The conversion rate has to be greater than 3.5 percent in order to make profit.

3. For option A we pay 2.4€ for 1000 views With the CTR of 0.5% and a CR of 20% we can calculate the number of transactions:

$1000 * 0.05 * 0.2 = 10$

and in this case we make 40€*10-2.4€ $= 397.6$€.

Cost of acquisition $= 2.4/10 = 0.024$€

For option B we pay 6% for every transaction. For 10 transactions, we spend:
$40€ * 10 * 0.06 = 24$€

and in this case we make 40€*10-24€ $= 376$€.

Cost of acquisition $= 24/10 = 2.4$€

Taking the offer from company A would be a better option.

4. There could be many problems. First of all, even if the CTR is good, the CR could be poor, therefor resulting in low profit. Low conversion rate could be a result of a bad UI, a badly functioning web site, etc. Second, the price of the product/service could be too low, or the price of click is too high. Third, many clicks could be a result of a "click fraud" causing the CTR to lead us to a bad conclusion.

3 Online vs. TV Advertisement (10 points)

1. Which of the three payment models is most similar to advertisement on TV (*explain your choice and also why you think other models are not similar*)?

2. What do you think are the most important advantages of online advertisement compared to advertisement on TV (*highlight 5 advantages and explain each of them*)?

Answer:

1. The CPM model is the most similar to the TV advertisement model because the advertiser pays to reach the audiance of a certain population. With CPM, the advertiser pays for every 1000 views. The TV station can guarantee a certain amount of people watching the advertisement. In both cases, the advertiser is paying for the audiance he has reached. However, by advertising on the internet it is posible to quantify the effect of the ad campaign much easier and more precise.

   CPC is different from the TV model, because it is not possible to precisely measure how many people ended up in your store after watching a TV comercial. Even if the quantification was done, it would take much more time and it would cost even more.

   CPA is different from the TV model, because it is not possible to precisely measure how many people ended up buying a product in your store after watching a TV comercial.

2. Most important advantages of online advertising:

   a) Easier targeting of audience

   b) Reaching a global(worldwide) audiance with much less resources

   c) Creating, and correcting (if needed in a leter stage) of ads on the web takes less time and money than creating a TV comercial in most cases

   d) Effects of the campaign can be quantified easier and more precise

   e) More interaction and personalization is possible

Important Notes

Submission

- Solutions have to be checked into the github repository. Use the directory name `groupname/assignment11/` in your group's repository.

- The name of the group and the names of all participating students must be listed on each submission.

- Solution format: all solutions as *one* PDF document. Programming code has to be submitted as Python code to the github repository. Upload *all* `.py` files of your program! Use `UTF-8` as the file encoding. *Other encodings will not be taken into account!*

- Check that your code compiles without errors.

- Make sure your code is formatted to be easy to read.
    - Make sure you code has consistent indentation.
    - Make sure you comment and document your code adequately in English.
    - Choose consistent and intuitive names for your identifiers.

- Do *not* use any accents, spaces or special characters in your filenames.

Acknowledgment

This latex template was created by Lukas Schmelzeisen for the tutorials of "Web Information Retrieval".

LaTeX

Currently the code can only be build using LuaLaTeX, so make sure you have that installed. If on Overleaf, there's an error, go to settings and change the LaTeXengine to `LuaLaTeX`.