

Predicting Performance (CTR) of Google Image and Text Ads

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1. Proposal

The aim of this project is to use machine learning techniques to estimate and predict the performance, specifically the CTR (*Click-through Rate*¹), of Google text (search only) and image ads. The CTR is an important metric, as it impacts the profitability and performance of an ad served through the Google AdWords[1] network. Being able to predict the CTR, at a high probability, is useful for advertisers as usually if you wanted to test the performance of an ad, you would have to push it live on Google AdWords. This can be expensive and take time to evaluate.

The dataset that I will be using for this project, consisting of several million ads, will be provided by my employers, *Opteo*[2], for whom I currently work as a software engineer. This data will be used for training the model, and also in the evaluation, where the accuracy/performance of individual predictions will be analysed. Most of the project research and testing will be done in *Python*, most likely with some use of *Javascript* for retrieving the data from the Opteo API. From each ad passed into the model there will be many inputs that we can make use of for training e.g. the ad text itself, sentiment analysis of the text, geographical targeting, company metadata, ad position on the page and much more. Important metrics for each ad will also be available, such as clicks, cost, impressions and conversions.

The machine learning techniques used e.g. *Logistic Regression*, which will be fully decided on after more initial data analysis, will have been learnt from my different modules and self-learning over the past year. As analysing image ads will likely make use of convolutional networks, which will be a new topic for me, I will have to learn more about them through independent study and research. The end goal for this project is to embed the machine learning model into the Opteo application, or create a free tool, that allows a customer to input a text or image ad and get an estimated CTR value.

Overall I think this project is an appropriate level of difficulty, and will likely lead to some interesting results, wherein we will hopefully discover some insight into factors that lead to a high performing text or image ad.

References

- [1] Google AdWords. <https://adwords.google.com>.
- [2] Opteo. <https://opteo.com>. 2017-18.

¹ A ratio showing how often people who see your ad end up clicking it. Click-through rate (CTR) can be used to gauge how well your keywords and ads are performing.