

Online Advertising

- Placing ADs in the internet to deliver marketing messages to attract customers
- One of the main income sources of largest IT companies in the world
- Revenue Models:
 - CMP: cost per Thousand impressions (fixed)
 - CPC: cost per click (random)
- Goal:
 - Maximizing the revenue by maximizing the click through rate (CTR)

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CTR Effective Parameters

- Size of ADs
- Position in the webpage
- Relevancy to webpage
- Relevancy to reader
- Behavioral targeting
- Question:
 - Is there any correlation between the attractiveness of ADs image and CTR?
 - Is it possible to have a common explanation for attractiveness ?

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Problem Definition

- Creative Design Recommendation
 - Recommendation for AD designers to design Ads which have higher chance to be clicked.
- CTR Prediction
- CTR Classification

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Visual Features

- We developed 43 visual features from each creative.
- The features are categorized into 3 different sets;
 - Global Features:** Representing overall properties of image
 - Local Features:** Extracted from a special part of each creative
 - Advanced Features**

Global Features

- Gray Level Features
- Color Simplicity
 - 3 features are extracted based on RGB histogram
- Color Harmony
 - Indicates how much a creative matches the 8 color harmony models
- Color Coherence
 - 5 features are extracted to indicate the distribution of colors in a creative

- Hue Distribution
- Lightness

Local Features

- Each creative is partitioned into 5 different segments and the following sets of features are extracted
- Segment size
- Segment Hues
- Largest segment color harmony
- Segment lightness

Advanced Features

- 10 features are extracted based on the saliency of a creative
- Number of characters
- Number of faces

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Experimental Setup

- Creatives are extracted from largest online advertising exchange system, RightMedia
- Only non-animated images
- 2 datasets are extracted based on the Ads size and position in webpage
- The creatives have minimum number of impression 100k

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Creative Design Recommendation

Do's

- Creatives with higher gray level contrast achieve higher CTR
- Small number of salient components, with all components close to the center of the creative and the major component consistent with the rule of third, achieves higher CTR
- Creatives with good color harmony achieve higher CTR
- Average lightness across whole image and the largest segment of the image has a positive correlation with CTR

DONTs

- Cluttered creatives (those with large number of connected components) are unlikely to achieve high CTR
- Creatives with large number of characters are unlikely to achieve high CTR
- Too many different hues is not desirable.

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CTR prediction

- MSE is calculated for 4 different approaches; Weighted sampling, Uniform Voting, Linear Regression and Support Vector Regression

- The MSE of Weighted sampling over each approach is reported

Table 1: Performance of each method.

Data set	Samples	UV	LR	SVR
ID2	6272	1.71	2.28	3.27
ID6	3888	1.75	2.27	2.77

- Full paper address:

<http://arxiv.org/pdf/1202.2158v1.pdf>

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