Context-Aware Asset Search for Graphic Design (Supplemental Material)

May 30, 2018

1 Overview

In this supplemental material, we include additional details and results. We present:

- Additional statistics of our collected data
- Training details
- Activity log analysis
- Pairwise data task details

2 Dataset Statistics

| Category	Number of Images
Nature/Landscapes	110,059
Animals	47,114
Architecture/Buildings	39,731
Travel/Vacation	36,452
Food/Drink	24,294
People	22,021
Transportation/Traffic	14,771
Religion	13,022
Backgrounds/Textures	10,990
Emotions	6,267
Sports	6,149
Beauty/Fashion	5,810
Science/Technology	3,875
Places/Monuments	3,549
Music	3,262
Industry/Craft	3,200
Computer/Communication	2,757
Business/Finance	2,617
Education	1,534
Health/Medical	1,237
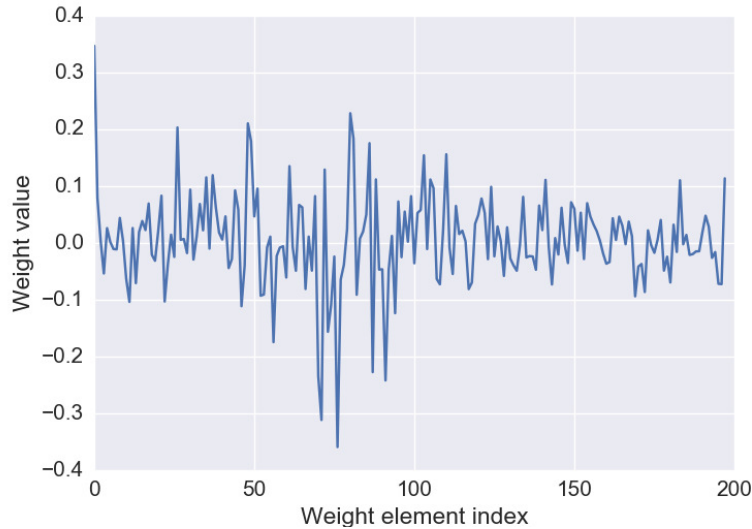
Figure 1: *Unary image weights* $\mathbf{w}_I$ *learned by our compatibility PW + R model.* The aesthetic score feature gets a significant weight at weight element index 0 (leftmost *x* value). Higher weights correspond to lower energy.

3 Training Details

We provide the Caffe [1] deploy, solver files and weights under the `models` path in the supplemental zip.

As we mention in the main paper, our model learns strong weights on the aesthetic score feature which suggests that image quality is an important factor in image search (see Figure 1).

4 Activity Log Analysis

In this section we provide additional analysis of the activity logs we collected during the interactive design study. We found no significant difference between the context-aware and conventional interface in how workers used the image suggestions. On the other hand, our context-aware color suggestions are used most of the time instead of the color picker and the total number of times workers try colors also decreases (see Figure 2).

5 Pairwise Data Task

In Figure 3 we show the instructions study participants saw before solving our pairwise data crowd-sourcing task.

References

[1] Yangqing Jia, Evan Shelhamer, Jeff Donahue, Sergey Karayev, Jonathan Long, Ross Girshick, Sergio Guadarrama, and Trevor Darrell. 2014. Caffe: Convolutional Architecture for Fast Feature Embedding. *arXiv preprint arXiv:1408.5093* (2014).
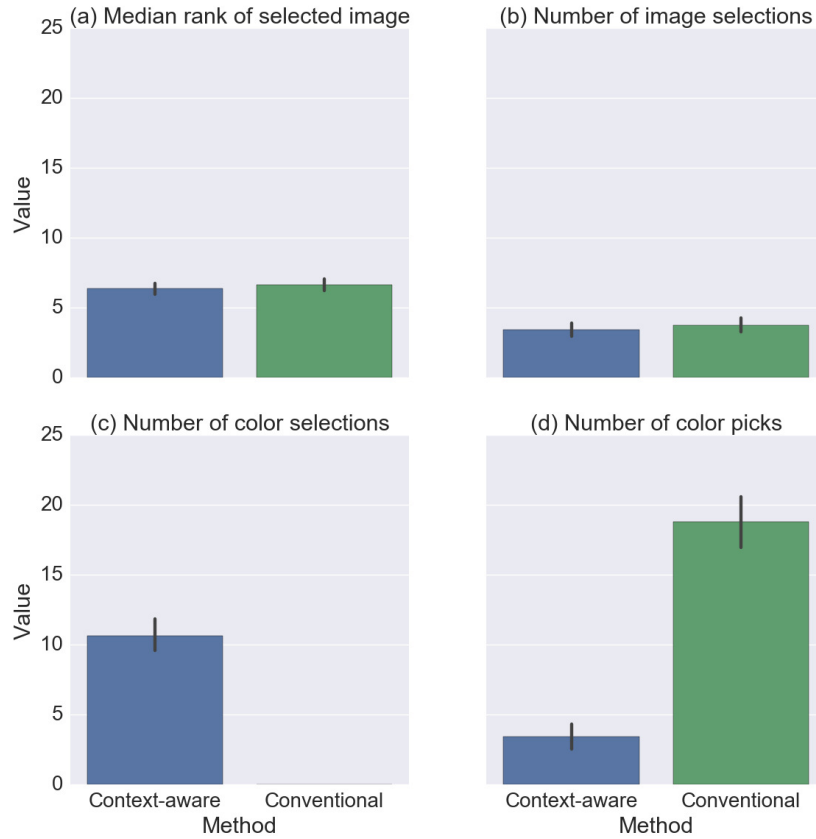
Figure 2: *Statistics of user activities for the interactive design study*. We compare the context-aware and conventional interface for each activity metric. Each metric value was computed on individual design sessions and the means are shown with 95% confidence intervals based on bootstrap sampling. **(a, b)** The median rank of the selected image suggestions and the number of times workers selected an image suggestion during a design session do not differ significantly for the two interfaces. **(c)** Workers select color suggestions approximately 10 times during a design session. **(d)** Workers use the color picker significantly less when we also show color suggestions in the context-aware interface. This suggests that our color suggestions are useful and they facilitate the design process.

In this task, choose which of the two webpages looks more aesthetically compatible to you.

What to do

We will show you two webpages. We would like you to choose the one which looks more aesthetically compatible by clicking on either the "left" or "right" button. Please don't pay attention to the content. Try to make your choice only based on how the different parts of the page fit together aesthetically.

Each HIT has 24 comparisons.
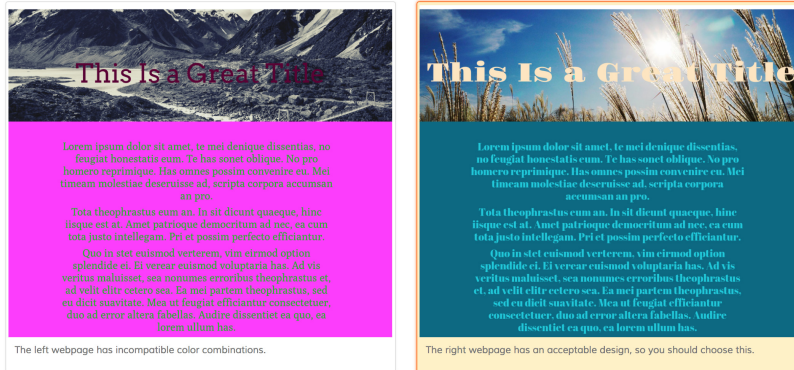
Examples

Example 1

Figure 3: *Instructions for the pairwise data task.* In our instructions we emphasized that participants should choose designs based on aesthetic compatibility.