

EE368 Project Proposal

Classification of photographic images based on perceived aesthetic quality

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Aesthetics in photography are highly subjective. The average individual may judge the quality of a photograph simply by gut feeling; in contrast, a photographer might evaluate a photograph he or she captures vis-a-vis technical criteria such as composition, contrast, and sharpness. Towards fulfilling these criteria, photographers follow many rules of thumb. The actual and relative visual impact of doing so for the general public, however, remains unclear.

In our project, we will attempt to show that the existence of certain characteristics does indeed make an image more aesthetically-pleasing in general. We plan to achieve this by way of machine learning and digital image processing techniques by building a learning pipeline that generates a hypothesis that classifies images as exhibiting high levels of aesthetic quality or not.

The potential impact of building a system to solve this problem is broad. For example, by implementing such a system, websites with community-sourced images can programmatically filter out bad images to maintain the desired quality of content. Cameras can provide real-time visual feedback to help users improve their photographic skills. Moreover, from a cognitive standpoint, solving this problem may lend interesting insight towards how humans perceive beauty in the world.

For our baseline, we'll begin by engineering features that capture several well-known photographic heuristics, such as rule-of-thirds composition, color balance, symmetry, and exposure. Our training set will comprise images and their star-ratings scraped from some photography website. We'll train a simple classifier such as logistic regression on this training data, test the classifier on a test set of images scraped from said website, and analyze the results.

To improve upon our baseline, we'll engineer more complex features and try out more advanced classification and regression algorithms.

There are no plans to use Android devices as of now, but if we reach a good enough prediction rate, we might want to implement some sort of interactive demo, of which the details are unclear at the moment.

References:

Studying Aesthetics in Photographic Images Using a Computational: Approach
<http://infolab.stanford.edu/~wangz/project/imsearch/Aesthetics/ECCV06/datta.pdf>

AUTOMATIC AESTHETIC VALUE ASSESSMENT IN PHOTOGRAPHIC IMAGES

<http://www.ee.columbia.edu/~wjiang/references/jiangicme10.pdf>

Evaluating photo aesthetics using machine learning

http://ailab.ijs.si/dunja/SiKDD2012/Papers/Pogacnik_Aesthetics.pdf