Classification of Photographs based on Perceived Aesthetic Quality

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Aesthetic Classification

Feature Extraction

Methodology

Experimental Results

Hue: count # of distinct hues
Saturation: compute average saturation
Contrast: variance of pixel intensity

Spatial Correlation of Features

Extract features from each tile in partitioned image. Allow machine learning algorithm to infer relationships between the tiles.

Feature Selection

Entropy: measure of simplicity
Blur: variance of the Laplacian
Detail: ratio of subject edges to pixels

Dataset
Scraped 2300 images from photo.net, each photograph rated between 1 and 7. We only consider photographs rated below 4.3 or above 6.

Classifier Tuning
Selected regularization, gamma, and kernel parameters of SVM via grid search.

K-fold Cross Validation
Performance was measured using 10-fold cross validation. Balanced number of positive/negative examples used.

GBRT: 200 predictors, \( \gamma = 0.9 \)

10-fold Cross Validation Success 80.88%

<table>
<thead>
<tr>
<th>Predicted Label</th>
<th>Actual Label</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
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True Positives: 80.12% False Negatives: 19.88%
False Positives: 18.35% True Negatives: 81.65%

GBRT: 200 predictors, \( \gamma = 0.9 \)

10-fold Cross Validation Success 80.88%